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Intimacy, Orgasm Likelihood of Both Partners, Conflict, and Partner Response Predict Sexual Satisfaction In Heterosexual Male and Female Respondents

R. Vernon Haning

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Intimacy, Orgasm Likelihood of Both Partners, Conflict, and Partner Response
Predict Sexual Satisfaction In Heterosexual Male and Female Respondents

Thesis submitted to
the Graduate College of
Marshall University

In partial fulfillment of
the requirements for the degree of
Master of Arts
in Psychology

by

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Key Words:sexuality, intimacy, conflict, orgasm, sexual response, sexual satisfaction, empathy

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ABSTRACT

Intimacy, Orgasm Likelihood of Both Partners, Conflict, and Partner Response
Predict Sexual Satisfaction In Heterosexual Male and Female Respondents

by R. Vernon Haning

Anonymous data provided by 417 female and 179 male sexually active heterosexual respondents showed that in long term sexual relationships sexual satisfaction was positively correlated with two different intimacy variables, the respondent's orgasm likelihood, and the partner's orgasm likelihood and negatively correlated with conflict in the relationship. All were significant predictors together in a multiple linear regression model. Empathic sexuality was defined as sexual response modulated by the sexual arousal or lack of arousal of the partner. Of 696 respondents, 90.3% reported empathic turn-on, 68% reported empathic turn-off, and 63.4% reported both empathic turn-on and turn-off, findings significantly different from a random distribution.

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LIST OF ABBREVIATIONS

CES-D, the Center for Epidemiologic Studies Depression Scale (Radloff, 1977)

Intimacy-1, the Intimacy Scale (Walker & Thompson, 1983) as obtained by S-SAPE1

Intimacy-2, a novel 7-item intimacy predictor variable (©S-SAPE, LLC, 2002) also referred to as Sexual Partner Intimacy

IS, the Intimacy Scale (Walker & Thompson, 1983) subsequently referred to as Intimacy-1

ISS, the Index of Sexual Satisfaction (Hudson, Harrison, & Crosscup, 1981; Hudson, 1992)

SBAMP, sexual behaviors of any kind with all adult male partners

SBAFP, sexual behaviors of any kind with all adult female partners

S-SAPE1, ©S-SAPE, LLC, 2002, the computerized anonymous survey instrument

INTRODUCTION

General relationship satisfaction has been shown to be correlated with sexual satisfaction (Byers, 2001; Christopher & Sprecher, 2000; Sprecher, 2002), and low sexual satisfaction has been shown to predict break-up of relationships in males but not females in dating relationships (Sprecher, 2002). For many years self-help and scholarly texts on human sexuality and marriage have focused on ways to optimize sexual response, orgasmic response, and intimacy and how to minimize conflict (Gottman & Silver, 1999; Hawton, 1985; Kaplan, 1979; Masters, Johnson, & Kolodny, 1985). Since sexual satisfaction can be measured with multi-item scales (Christopher & Sprecher, 2000), it is possible to identify the statistical predictors of sexual satisfaction in the general population utilizing surveys and statistical techniques. Such information is vital to developing an understanding of sexual satisfaction that is empirically- as well as theoretically-based.

Literature Review

Orgasm. Orgasm is generally considered to be pleasurable and desirable (Masters, Johnson, & Kolodny, 1985), and the etiologies and cultural implications of orgasmic dysfunction are complex (Masters & Johnson, 1970). The research of Kinsey's group focused on orgasm type (single vs. multiple) and total orgasmic outlet (Kinsey, Pomeroy, Martin, 1948; Kinsey, Pomeroy, Martin, & Gebhard, 1953) while that of Masters and Johnson (1966) focused on orgasm physiology. Some people have only a single orgasm when they have sex, but about 14% of females and 8 - 15% of younger males are able to have multiple orgasms (Kinsey, Pomeroy, Martin, & Gebhard, 1953). Gebhard and Johnson (1979) later reported that 9% of white college educated married males and 9.2% of white college educated females had on average more than one orgasm per act of coitus. Masters and Johnson (1966, 1970) confirmed the existence of multiple orgasms in some individuals using direct laboratory observation and reported that while other parameters such as pleasure, vasocongestion of tissues, generalized muscle tension, and secretion of lubricating fluids were signs of sexual arousal that could persist for protracted periods of time whether or not orgasm occurred, the characteristic spasmotic muscular contractions that expel semen in the male and contract the introital region of the vagina in the female were the most reliable and readily observed evidence that orgasm had occurred (Masters, Johnson, & Kolodny, 1985). Kinsey recognized that the duration of orgasm was variable in women [from seconds to one or two minutes (Kinsey, Pomeroy, Martin, & Gebhard, 1953)]. Anecdotally, some individuals report that they can voluntarily extend the duration of their "sustained" orgasms as long as they desire by maintaining tension in their voluntary muscles and/or maintaining effective sexual stimulation. They then voluntarily stop such sustained orgasms by reducing voluntary muscle tension and/or terminating effective sexual stimulation. Ethologists speculate that the human female's orgasm functions evolutionarily by strengthening her emotional attachment to her mate (Eibl-Eibesfeldt, 1975; Morris, 1967; Gangestad & Thornhill, 1997).

Relationship factors. Many more recent studies have focused on the importance of various relationship factors for sexual satisfaction (e.g. Byers, 2001). Studies of potential predictors of sexual satisfaction have established statistically significant correlations between sexual satisfaction and each of the following constructs: self-esteem (Hally & Pollack, 1993); variety of sexual experience (Hally & Pollack, 1993); relationship satisfaction (Lawrance, & Byers, 1995); rewards and costs in the relationship (Lawrance, & Byers, 1995); sexual problems (Byers & MacNeil, 1997); communication (Byers & MacNeil, 1997); intimacy (Moret, Glaser, Page, & Barger, 1998); sexual self-disclosure (Byers, 1999); nonsexual self-disclosure (Byers, 1999); own level of sexual dysfunction (McCabe, 1999); age group (Deeks, & McCabe, 2001); and depression (Frohlich & Meston, 2002).

Conflict. Conflict is recognized as an inevitable part of close relationships and discussed in self-help books (e.g. Gottman & Silver, 1999; Zilbergeld, 1999), but the manner in which conflicts are resolved (or managed if they can not be resolved) differ among couples. Research on the relationship of marital partners in a controlled environment over a 12 hour period has identified the Four Horsemen of the Apocalypse (criticism, contempt, defensiveness, and stonewalling) as behaviors that can be so destructive of relationships that they can be used to predict divorce (Gottman, 1993).

Empathic sexuality. The ability to perceive the feelings of another person is one of the most fundamental aspects of empathy. Empathic responses of observer's autonomic physiology to mirror those of the viewed subject (heart rate, skin conductance, general somatic activity, pulse transmission time, and finger pulse amplitude) have been well documented (Levenson & Ruef, 1992). Two different but related empathic sexual responses have been mentioned anecdotally in the literature: (1) an increase in sexual arousal in response to the sexual arousal of the partner (positive feed-back) and (2) a decrease in sexual arousal in response to lack of sexual arousal in the partner (negative feed-back).

Kinsey recognized the positive feed-back loop of the phenomenon that I describe as empathic sexuality in a description of the instantaneous reflections of tensions between two sexual partners as they reach simultaneous orgasm in response to each other's excitement (Kinsey, Pomeroy, Martin, & Gebhard, 1953). In a laboratory study of male subjects monitored with penile strain gauges, both Abel, Blanchard, Barlow, & Mavissakalian, (1975) and Abrahamson, Barlow, Beck, Sakheim, & Kelly (1985) showed that the subjects' erectile responses to audiotapes were augmented when the audiotaped "partner" was responding in comparison to when the audio-taped "partner" was not responding or when the partner's response was ambiguous. The negative feed-back loop - abandoning of sexual interaction when the partner was not responsive has been described in bonobo chimpanzees (De Waal & Lanting, 1997). Ellis and Symons (1990) found sexually dimorphic content in sexual fantasies (how their imagined partners respond to them) was an important part of women's sexual fantasies but not of men's. On the other hand, the sexual response of sexually dysfunctional males to a sexually responding partner was lower than that of normals because they experienced such partners as demanding, resulting in inhibited sexual response through cognitive interference (Barlow, 1986).

Intimacy. Intimacy, denoted by a shared feeling of acceptance, trust, commitment, and tenderness is crucial for successful long-term relationships and marriages (Masters, Johnson, & Kolodny, 1985). Expressions of tenderness both physically (hugging, holding hands, cuddling) and verbally are part of intimacy in long-term sexual relationships (Masters, Johnson, & Kolodny, 1985). There is consensus that intimacy is a very important part of long-term romantic relationships. However, the definitions of intimacy and the scales used to measure intimacy have been quite variable [for reviews see Moss and Schwebel (1993) and Schwebel, Moss, and Fine (1999)]. After reviewing the descriptions of intimacy in the literature, Moss and Schwebel (1993) defined intimacy as including; (a) commitment, (b) affective intimacy, (c) cognitive intimacy, (d) physical intimacy, and (e) mutuality. Others include various aspects of self-disclosure within the intimacy construct (Carpenter, & Freese, 1979; Buhrmester, & Furman, 1987). Viewed from this broader perspective on intimacy, some of the literature which has identified correlates of sexual satisfaction can be viewed, at least in part, as research on the interrelationships among intimacy components (e.g. Lawrance, & Byers, 1995; Byers & MacNeil, 1997; Moret, Glaser, Page, & Bargerion, 1998; Byers, 1999). Some intimacy scales include items intended to measure physical interaction and/or sexual satisfaction; for example, one item, eliciting information about satisfaction with sex and two other items with the word “physical” are included in the Tesch Psychosocial Intimacy Questionnaire (Tesch, 1985). Other similarly confounded scales include the Personal Assessment of Intimacy in Relationship Scale (PAIR) (Schaefer & Olson, 1981) and the Waring Intimacy Questionnaire (Waring & Reddon, 1983). Such scales are unsatisfactory for research designed to evaluate correlations between sexual satisfaction and intimacy, because admixture of sexual items in the intimacy scales creates confounding. The general intimacy scale of Walker and Thompson (1983) was used by Moret, Glaser, Page, and Bargerion (1998) and in the present study because it is devoid of sexual items.

Volunteer bias. It is recognized that the potential for volunteer bias is inevitably introduced in research studies that require any form of cooperation from the respondents. Respondents who volunteer are self-selected (MacMahon, Pugh, & Ipson, 1960, Morokoff, 1986), and when potential subjects are identified prospectively based on some population-based random sampling protocol the potential of bias due to self-selection still occurs if information is not obtained from a large percentage of the group initially identified, just as in self-selected cohorts. The likelihood of self selection under these circumstances increases as the items queried become more personal (MacMahon, Pugh, & Ipson, 1960). Because data about the details of- and attitudes about- human sexual behavior are only available directly from the respondents themselves or indirectly from their sexual partners, studies on human sexuality all potentially fall prey to volunteer bias. Volunteer bias has the greatest impact on studies whose purpose is to describe the incidence or prevalence of a behavior in the general population or the change of such behavior over time (e.g. Kinsey, Pomeroy, & Martin, 1948; Maslow & Sakoda, 1952; Kaats & Davis, 1971). While, Maslow and Sakoda (1952) proposed showing that volunteer bias was not a problem by using “100%-sample” measures of allegedly correlated variables, such approaches have retrospectively proved impractically naive and useless since 100% samples from the general population can not be ethically obtained. Using uninformed forced participation to obtain the 100% samples used by Maslow and Sakoda (1952) and other researchers studying volunteer bias

in sex research (Barker & Perlman, 1975; Levitt, Lubin, & Brady, 1962; Martin & Marcuse, 1958; Siegman, 1956) is not ethical. In their study, Barker and Perlman (1975) combined forced 100% sampling in the control group with use of invisible ink marking of apparently unconnected “anonymous questionnaires” sent through the federal mail to identify the respondents and collate the responses with those on the initial instruments, not only violating ethical standards in two different ways but also possibly violating federal mail fraud laws. In more recent studies on volunteer bias, the investigators have reported either that some subjects the investigators attempted to force to fill out the dependent variable form for the baseline studies refused to comply with the request while others refused to participate in either experimental option eliminating both types of non-compliant respondents from the study (Kendrick & Stringfield, 1980) or that their study purporting to study volunteer bias actually utilized a self-selected group of volunteers for a sex-study as the baseline population and volunteering for genital insertion of a measuring device as the “volunteer” population (Morokoff, 1986; Wolchik, Braver, & Jensen, 1985). These latter two studies (Morokoff, 1986; Wolchik, Braver, & Jensen, 1985) provided no data at all about whether or not volunteer bias exists in the population who volunteered for the baseline study since they provide no data on the initial 100% sample - the unstudied population from which the volunteers were recruited. In summary, while the extant studies on volunteer-bias in studies on human sexuality (Barker & Perlman, 1975; Levitt, Lubin, & Brady, 1962; Kendrick & Stringfield, 1980; Martin & Marcuse, 1958; Maslow and Sakoda, 1952; Morokoff, 1986; Siegman, 1956; Wolchik Braver, & Jensen, 1985) have established that volunteer bias exists, they have neither provided any practical method for avoiding it nor any way to correct for it.

But potential sources of bias are not limited to volunteer bias nor to studies on human sexuality. Radioimmunoassays and other technically demanding measurements used in medical studies of human volunteers are well-known for differences between assays or between different methods used to measure the same parameter. Simple, generally applicable solutions to the foregoing general problem in use for over 40 years (Snedicor & Cochran, 1967) and which work regardless of the methods involved are to include internal controls, to use the same method for recruiting controls and experimental subjects, to use the same measures contemporaneously for both control and treatment groups, and to make all comparisons and calculate all statistics within the overall group of subjects or respondents who were recruited and processed using the same methodology. When these basic precautions are taken, any potential sources of bias operate equally on all subjects or respondents, and all identified statistically significant correlations or between group differences within the data so obtained can be considered to be valid because potential sources of bias have been neutralized by the experimental design. I have used the approach described in this paragraph in the present research. Because sources of volunteer bias have never been- and can never be- realistically be excluded from any study on human sexuality dependent on any form of cooperation from respondents, care must be used in generalizing the results beyond the study population itself. Realistically, such precautions must be applied to every single such study that has ever been published, including the present one.

Unanswered Questions

Importance and origin of different orgasm types. Bohlen, Held, Sanderson, and Boyer (1982) followed the de novo development of a multiple orgasm pattern in a 36 year old female volunteer under observation in a laboratory environment, and raised the question as to whether orgasm patterns are innate. (Bohlen, Held, Sanderson, & Boyer, 1982). It is well established that there is more than one type of orgasm and that some people have orgasms more frequently during sex with their partners than others, and Kinsey provided tables with orgasm type frequency (single vs multiple) tabulated by age and gender, but to my knowledge there is no published data on the frequency of reaching orgasm tabulated by both orgasm type and gender. It has also not been explained why some people have one type of orgasm, while others have a different type.

Relative importance of various predictors of sexual satisfaction. Orgasm type, orgasm frequency, emotional intimacy, and conflict have not been directly compared as predictors of sexual satisfaction in long-term relationships. Furthermore, the study on depression (Frohlich & Meston, 2002) utilized a single-item dependent variable for the sexual satisfaction and failed to investigate possible mediation by intimacy, a highly correlated construct. Many prior studies have focused on incidence and frequency of specific sexual behaviors (e.g. Kinsey, Pomeroy, Martin, 1948; Kinsey, Pomeroy, Martin, & Gebhard, 1953) sometimes in very narrowly restricted populations (e.g. single college age undergraduates in Madison, Wisconsin, Delamater & MacCorquodale, 1979), but the correlates of such behavior with past, current or future relationship variables have often not been explored (e.g. Delamater & MacCorquodale, 1979; Kinsey, Pomeroy, Martin, 1948; Kinsey, Pomeroy, Martin, & Gebhard, 1953).

Empathic sexuality. To my knowledge, there have been no systematic studies focusing on empathic sexuality in the human.

The Current Study

Overview. In the present study I explored 9 potential predictors for sexual satisfaction in heterosexual females and males: general intimacy, sexual partner intimacy, respondent's orgasm frequency, respondent's orgasm type with a partner, conflict, depression, gender, partner's orgasm frequency, and partner's orgasm type.

Hypotheses tested. Based on the broad clinical concepts of the importance of sexual response and intimacy to healthy long-term sexual relationships and known gender differences in sexual response, I formulated the following hypotheses regarding measures of sexual satisfaction, intimacy, and sexual response in long-term relationships.

- (1) Gender differences will be found in one or more of the variables (e.g. orgasm frequency).
- (2) The ability to have multiple or sustained orgasms reflects individual differences in sexual response, implying that individuals will be likely to report having the same type of orgasm while masturbating that they do while with a partner.
- (3) Sexual satisfaction will correlate positively with both general intimacy and sexual partner intimacy.

- (4) Sexual satisfaction will correlate positively with one or more measures of the respondent's orgasmic response (respondent's orgasm type and/or orgasm frequency).
- (5) Sexual satisfaction will correlate negatively with conflict.
- (6) Sexual satisfaction will correlate negatively with depression.
- (7) Empathic sexuality is a common phenomenon in the human being.
- (8) Empathic sexuality will enhance sexual satisfaction in respondents whose partners have high orgasm frequency and/or multiple or sustained orgasms and reduce sexual satisfaction in respondents whose partners have low orgasm frequency and/or only short single orgasms.

METHOD

Computer-assisted Self Interview

Overview. Computer-assisted self interview techniques have been shown to be superior to pencil and paper self interviews and face to face interviews for eliciting truthful responses about sensitive sexual behaviors (Gribble, Miller Rogers, & Turner, 1999). The advantages of using the computerized S-SAPE1 questionnaire ©S-SAPE, LLC, 2002, P.O. Box 11081, Charleston, WV 25339, were as follows: (1) It provided total anonymity for the respondents, making it possible for them to be truthful if they chose and providing a means of eliminating data from those who were not truthful. (2) Values for all items of data were accurately recorded for each respondent completing the study (no missing data, no need to guess about hand-written responses, and no need to punch data). (3) It provided real-time cross-checking of certain answers in the sexual behavior screen and prompted the respondents to correct out-of range or impossible answers. (4) I could ethically ask questions about potentially embarrassing, illegal, or reportable behaviors since the respondent's anonymity was secure. (5) The questions presented to the respondents were automatically selected in real-time to be appropriate to the age, gender, education, and certain prior answers of the respondent. (6) All data were automatically and accurately recorded in encrypted format and randomized into a large random-access data file containing encrypted fake data. (7) Multiple additional instances of randomized fake data were filed simultaneously with each instance of real data. (8) Lie scales were automatically scored for checking the validity of the respondent's responses, and only the valid data were used for the analyses presented here. (9) Use of computer laboratories with networked computers allowed us to simultaneously administer the questionnaire to many respondents at once. (10) The use of multiple tiers of screening questions allowed items of data for the sexual behavior questions to be skipped and to be filled in as negative in pyramids of questions below the screening question when the respondent answered the screening question with a negative response, explaining the survey's eliciting answers for 4,675 variables in an average of 79 minutes. The only limiting factors were the number of computers available, the personnel available to obtain informed consent and instruct respondents, and the number of available respondents.

Technical details. The computerized survey instrument, S-SAPE1, obtained data on 4,675 variables from each respondent, including the small subset of variables used for this thesis. The details on the variables used for this thesis are presented below under "Measures". S-SAPE1 was capable of filing data on a floppy disk, a hard drive, or a server, depending on the needs of the site. In large network installations, such as college campuses or clinical environments, S-

SAPE1 was capable of supporting multiple computers with more than 45 respondents working simultaneously on individual computers by writing all data to a single server file, using file-locking and file-availability checking protocols, and hiding the unique path to the file within its customized compiled version. Access to the program on each computer was protected by the requirement for both a password and a physical floppy disk key, allowing installation of S-SAPE1 on large semi-public networks subserving multiple functions. The database computed values for the scales after decoding and performed routine database functions such as providing large flat files containing desired subsets of variables and their names for entry into SPSS or other statistical processors. The floppy key was also capable of temporarily storing partial datasets for individual respondents, protected by a 12-digit random number access code, so that a respondent unable to complete the study could return to the exact spot in the questionnaire where he/she left off without loss of time or data. The floppy key could also preserve completed data for later entry protected by a 12-digit random number access code in case of server failure.

Number of variables. The S-SAPE1 program obtained a complete history of childhood and adult sexual behaviors. There were 4,675 variables because S-SAPE1 collected 11 variables on each specific behavior. The basic behavior series of items included items describing 15 childhood masturbation behaviors, 15 adult masturbation behaviors, 23 childhood behaviors with partners; and 10 adult behaviors with partners. Because data on behavior with male and female partners were collected separately (multiplying the number of behaviors times 2), and behavior considered voluntary at the time was collected separately from that considered at the time to have been coerced (multiplying the number of behaviors times 2), and data collected with partners of 5 age - differential groups was collected separately to take account of power differentials important to theories about consequences of child sexual abuse (multiplying the number of behaviors times 5), the basic set of adult behaviors was multiplied by 4 (2 X 2) and the basic set of childhood behaviors was multiplied by 20 (2 X 2 X 5). There were also screening questions. All told, a total of 388 behaviors X 11 variables per behavior = 4268 behavior variables. There was room for 500 multiple choice variables and 500 agree/disagree variables, and there were other variables collected separately with drop-down menus, and numeric inputs. The program as configured for the study elicited data on 4,675 variables from each respondent, but there was room for 738 additional questions, and questions in the survey can be suppressed in the future if they are no longer needed.

Origin and accuracy of data. All data were based on the adult respondent's recall of events that had occurred in the past. As such, the data were potentially subject to conscious and unconscious distortion or omissions, as well as to willful falsification. To prevent loss of data due to simple typing errors or misunderstanding of directions, the S-SAPE1 program conducted real-time checks to see that ages entered on the sexual behavior screen for earliest and latest age at which a behavior occurred were within the range specified for childhood (1 - 17) or adulthood (18 - 99), that earliest was less than or equal to latest, and that the number of partners reported never exceeded the number of times that a behavior was reported to have occurred. The computer prompted the respondents to correct such errors. But other answers were accepted without challenge so that cross-checking for consistency was possible at the time of data analysis.

It was not possible for the respondent to go back to a prior screen, making it impossible to fix prior answers when a possible inconsistency was detected later on by a willful falsifier. Thus, it was quite easy for respondents to accidentally or willfully enter numbers and responses to questions which were illogical and/or contradictory without getting any hint that the error would later be obvious.

Lie scales. The lie scale scores were the result of a large number of cross-checks for logical and numerical contradictions. Random entries or steadfast selection of a single answer category both result in high scores on the lie scales. I used two mechanisms to eliminate data that were unreliable: (1) The last question of the survey asked the respondents to rate the honesty of their answers with 5 possible responses, only one of which indicated that they had made their best try at total honesty. Any admission of lack of total honesty resulted in the data being instantly and summarily discarded. (2) Only data from individuals who passed all of the cross-checks used to compute the lie scale scores were used in the final analysis, resulting in my discarding 25% of the recorded data as possibly unreliable to insure the integrity of the rest.

Participants

Overview. All respondents were over the age of 18 and gave written informed consent on forms approved by the institutional review board. The respondents were individuals from a population consisting mainly of undergraduate and graduate college students from three mid-sized, mid-Atlantic college campuses. To obtain a wider base and to increase age, education, and life-experience diversity I also recruited university faculty and staff and individuals from the same general population of the mid-Atlantic United States who had already finished their education. All respondents were unpaid, but many of the student respondents received credit from their professors in psychology, social work, and criminal justice courses. Thus, my data was obtained from a volunteer sample of college students and adults from the same region who had finished their education. I recorded extensive data on demographic variables for each respondent (Table A1) so that I could test- and adjust for- potential confounding effects due to demographic differences.

Number of respondents and time required to complete survey. Data from 983 respondents¹ were entered into the database in encrypted format. After decoding the data and eliminating the 25.2% of all respondents that demonstrated any problems of internal logical or numerical consistency chosen for testing as lie scales, data from 239 men and 496 women were available for analysis. Elapsed time calculated from the computer clocks was recorded in the encrypted data. On average, it took these 735 respondents 79 ± 26 minutes (mean \pm SD) to successfully complete the computerized questionnaire.

¹The data were part of a larger study

Adult sexual experience of respondents. The adult sexual experience of the respondents was pertinent to the present research because from a purely logical point of view only those with sexual experience could provide data that would be useful in identifying and evaluating predictors of sexual satisfaction in long-term relationships. Those respondents who answered the screening questions positively were subsequently asked further questions about whether they had engaged in a number of specific sexual behaviors. Among the 179 males classified as heterosexual, 72% reported having ejaculated intravaginally with an adult female partner; 88% reported having ejaculated as a result of oral stimulation of their penis by an adult female partner; 90% reported bringing their adult female partner to orgasm by manual stimulation of her genital area; 80% reported bringing their adult female partners to orgasm by oral stimulation of her genital area; 11% reported having sexual relations with an adult female partner other than their wives while legally married; and 10% reported having sexual relations with a female prostitute. Among the 417 females classified as heterosexual, 91% reported reaching orgasm during sexual relations with an adult male partner; 81% reported reaching orgasm by accepting an adult male partner's penis intravaginally; 77% reported reaching orgasm during oral stimulation of their genital area by an adult male partner; 70% reported reaching orgasm with manual stimulation of their genitals by an adult male partner, 89% reported bringing their adult male partner to orgasm by orally stimulating his penis; 84% reported bringing their adult male partner to orgasm by manual stimulation of his penis; 90% reported bringing their adult male partner to orgasm by accepting their adult male partner's penis vaginally; 9.4% reported having sexual relations with a male other than their husband while legally married; and one (0.2%) reported having sexual relations with a male prostitute.

Measures

Index of Sexual Satisfaction (ISS). The ISS (Davis, Yarber, Bauserman, Schreer, & Davis, 1998; Hudson, Harrison, & Crosscup, 1981; Hudson, 1992), is a widely used scale designed to measure the sexual component of a couple's relationship. The ISS is copyright protected, and its use is restricted to the paper-and-pencil form sold by the copyright holder, thus preventing its incorporation into S-SAPE1. A subset of 52 of the respondents correctly filled out the ISS forms anonymously immediately after completing the S-SAPE1, and these results were used to determine the correlation between the ISS and other variables: Sexual Relationship Index, $r = -.827$; CES-D, $r = .523$; Intimacy-1, $r = -.497$ ($N = 52$, $p < 0.001$ for each). The ISS has a mean Chronbach alpha of .916. The ISS also has excellent short-term stability, with a two-hour test-retest correlation of .94. The ISS has excellent concurrent validity, correlating significantly with the Locke-Wallace Marital Adjustment Scale and the Index of Marital Satisfaction (Hudson, Harrison, & Crosscup 1981; Hudson, 1992). It has excellent known-groups validity, significantly distinguishing between people known to have problems with sexual satisfaction and those known not to. The ISS also has excellent construct validity since it correlates poorly with measures it should not correlate with, and it correlates highly with marital satisfaction and marital problems.

Sexual Relationship Index. The Sexual Relationship Index (©S-SAPE, LLC, 2002) is a 27 item questionnaire designed to assess adult sexual satisfaction (Appendix B). The Sexual Relationship Index is comprised of 27 statements utilizing a clear 5-item response variable for

each item that was assigned values from 0 to 4. Thirteen statements with randomized locations are reverse scored (items 4-8, 11, 13-15, 18, 20, 24, 26). On the Sexual Relationship Index higher scores indicate higher satisfaction, but on the ISS *higher* scores indicate *less* sexual satisfaction. As expected, there was a negative correlation ($r = -0.827$, $N = 52$) between the Sexual Relationship Index and the ISS among respondents who completed both scales. The correlations of the Sexual Relationship Index with CES-D and Intimacy-1 were $r = -0.199$ and 0.409 respectively in 200 male and 441 female sexually active respondents ($p < 0.001$ for both). Cronbach's α was $.928$ in sexually active respondents ($N = 641$) for the Sexual Relationship Index, a result quite similar to the figure of $.916$ reported for ISS (Hudson, Harrison, & Crosscup 1981). The scree plot from a factor analysis of the 27 items from the Sexual Relationship Index demonstrated that there were three separate components above the shoulder, a major component (explaining 31.8 percent of the variation) and two minor components near the shoulder, explaining 11.4 and 11.0 percent of the variation, respectively. Principal component analysis and Varimax rotation with extraction of the 3 components showed that the major component, which I have named the "*Sex-positive and Partner-affirming Statements*", included all 14 of the items that were not reverse scored (1-3, 9, 10, 12,16,17,19, 21-23, 25, 27) and none of the reverse scored items (e.g. "My spouse or long-term partner and I both have fun at sex."). The two minor components were exclusively composed of the reverse scored items. The second component, which I have named the "*Sex-positive Complaints About Sex With Partner*", included 7 reverse scored items that indicated a positive attitude about sex (4-6, 8, 11, 20, 24) even though they rated specific complaints about the partner's behavior with regard to sex (e.g. "My spouse or long-term partner does not seem to want sex when I am in the mood for it."). The third component which I have named the "*Sex-negative Statements About Sex with the Partner*" included 6 reverse scored items that rate a respondent's dislike of having sex (7, 13-15, 18, 26) with his/her partner (e.g. "Having sex with my spouse or long-term partner is a tedious duty for me."). To provide additional validation of the Sexual Relationship Index variable, I hypothesized that the Sexual Relationship Index would be significantly higher in individuals reporting sexual satisfaction than those that did not. The statement "My sex life with my spouse or long-term partner is not satisfactory to me now (or was not satisfactory to me for extensive periods in the past).", ©S-SAPE, LLC, 2002, was presented by S-SAPE1 as "agree/disagree". I then utilized the response to this statement as the independent variable to perform a Mann-Whitney U non-parametric test in 417 heterosexual female and 179 heterosexual male respondents. The analysis showed that the mean Sexual Relationship Index was significantly lower in those who reported that their sex life was not satisfactory than in those who did not in both the female (90 ± 15 , $N = 338$ vs 66 ± 19 , $N = 79$, $p = 3.3 \times 10^{-22}$) and the male (87 ± 15 , $N = 139$ vs 68 ± 16 , $N = 40$, $p = 2.5 \times 10^{-9}$) respondents. Moreover, the pattern of correlations of the Sexual Relationship Index with the established scales, Intimacy-1 (Moret, Glaser, Page, & Barger, 1998) and CES-D (Frohlich & Meston, 2002), was as expected based on studies by other investigators. I utilized the Sexual Relationship Index (comprised of all 27 items) as my measure of sexual satisfaction throughout the remainder of the study and refer to it as "Sexual Satisfaction".

Intimacy-1. The Intimacy Scale (IS; Walker & Thompson, 1983) was used for the study with permission from the National Council on Family Relations. IS is a 17-item scale measuring general intimacy. The scale has been used to study relationships among female/female pairs Walker and Thompson (1983), male/male and male/female dyads (Cooney, 1994), and unmarried sexually active male and female college students (Moret, Glasser, Page, Barger, 1998).

To adapt the Walker and Thompson (1983) IS scale for use in present study I changed the pronoun “she” to “he/she” and the pronoun “her” to “him/her.” I used a 5- point Likert scale, scored 0 - 4. I report the sum, Intimacy. Cronbach alpha in the present study was 0.963, N = 200 male and 441 female sexually active respondents, providing excellent agreement with Cronbach alphas measured in adult parent-child dyads of .92 and .96 for mother-child and father-child respectively (Cooney, 1994) and those reported in the original paper which ranged from .91 to .97 depending on respondent and relationship being examined (Walker & Thompson, 1983). I hereafter refer to the adapted Walker and Thompson (1983) intimacy scale as the Intimacy-1 scale or Intimacy-1. I have provided the modified intimacy scale (Walker & Thompson, 1983) as Appendix C for the convenience of the readers. It was published in the reference cited and copyright protected.

Center for Epidemiologic Studies Depression Scale (CES-D). The CES-D (Radloff, 1977) is a 20 item scale originally designed to measure depression in the general population for epidemiologic research. It was incorporated into S-SAPE1 with permission from the National Institute of Mental Health. In the present study the Chronbach alpha was 0.901 (N = 200 male and 441 female sexually active respondents).

Factor analysis of 64 items from the Sexual Satisfaction, Intimacy scale, and CES-D Scales. I performed factor analysis using data from 200 male and 441 female sexually active respondents. As expected, a scree plot on a total of 64 items (27 from the Sexual Satisfaction, 17 from the Intimacy Scale, and 20 from the CES-D scale) showed that there were three separate factors above the shoulder. A principal component analysis to extract the 3 factors, and a Varimax rotation with a Kaiser normalization on the above 64 items showed that each scale item had high loading for the associated component and low loading for the two un-associated components, demonstrating that these three scales measured different constructs.

Conflict scale. I developed a novel 9-item conflict variable (©S-SAPE, LLC, 2002) called Sexual Partner Conflict (Appendix D) to measure certain aspects of conflict appropriate to spouses or long-term sexual partners. In the computerized presentation, the 9 items were dispersed semi-randomly among a total of 167 statements, most of which were not part of the scale. In the current study, the Sexual Partner Conflict was presented as “agree/disagree” scored 1/0. All items were summed to give a range of scores from 0 to 9 for use as a predictor variable. The Pearson correlation of Sexual Partner Conflict (hereafter referred to as Conflict) with Intimacy-1 was -0.445, and its correlation with Intimacy-2 was -.399 (both $p < .001$, N = 641). Alpha was 0.689. (For dichotomous data, this is equivalent to the Kuder-Richardson 20 (KR20) coefficient.)

Intimacy-2 scale. I developed a novel 7-item intimacy predictor variable (©S-SAPE, LLC, 2002) called the Sexual Partner Intimacy scale (Appendix E) to measure certain aspects of intimacy appropriate to sexual partners that were not covered in the Intimacy-1 scale. In the current study, Sexual Partner Intimacy (hereafter referred to as Intimacy-2) was presented as “agree/disagree” scored 1/0. In the computerized presentation, the 7 items were dispersed semi-randomly among a total of 167 statements, most of which are not part of the scale. After items 2-4 were reverse scored by subtraction from 1, all items were summed to give a range of scores from 0 to 7 for use as a predictor variable. The Pearson correlation of Intimacy-2 with Intimacy-1 was 0.504 ($p < .001$, $N = 641$). Alpha was .270.

Orgasm Likelihood variable. I asked the respondents to categorize their Orgasm Likelihood and their partner’s Orgasm Likelihood using questions worded to be applicable to same-gender as well as heterosexual couples. For the respondent’s I used the following item “At my currently attained age when I am with my favorite sex partner, the best way to describe the percentage of time that I am able to achieve an orgasm is; “ (1) “Never”, (2) “1 to 25%”, (3) “26 to 50%”, (4) “51 to 75%”, and (5) “76 to 100%” (©S-SAPE, LLC, 2002). To obtain information through the respondent about their partner I used the item; “At my currently attained age, the best way to describe the percentage of time that my favorite partner can achieve an orgasm is;” 1) “I don't know, or I don't have a favorite partner”, 2) “0 to 25 percent”, 3) “26 to 50 percent”, 4) “51 to 75 percent”, 5) “76 to 100 percent” (©S-SAPE, LLC, 2002).

Orgasm Type variables. I asked the respondents to categorize their Orgasm Type and their partner’s Orgasm type using a questions worded to provide the information required to distinguish between single, multiple, and sustained orgasm. For the respondent I used the item; “When I am with a good partner, the best way to describe my orgasm (a series of genital muscular contractions associated with pleasurable sensations and sexual release) is; (1) a single orgasm consisting of a single series of contractions and release of sexual tension (2) often two or more orgasms with a period of 30 seconds or more between orgasms and continuing sexual tension in between the orgasms (3) my orgasm often lasts and lasts - as long as I am getting sufficient sexual stimulation and I do not feel the need to make it stop (4) I have never had an orgasm with a partner although I can have one either when I masturbate or while I am sleeping (5) I have never had an orgasm in any way ” (©S-SAPE, LLC, 2002). For the respondent’s partner I used the item; “The best way to describe my favorite partner's orgasm (a series of genital muscular contractions associated with pleasurable sensations and sexual release) is: (1) “A single orgasm consisting of a single series of contractions and release of sexual tension. (2) Often two or more orgasms with a period of 30 seconds or more between orgasms and continuing sexual tension in between the orgasms. (3) My partner's orgasm often lasts and lasts - as long as he/she is getting sufficient sexual stimulation and does not feel the need to make it stop. (4) My favorite partner has never had an orgasm with me. (5) I don't know, or I don't have a favorite sex partner.” (©S-SAPE, LLC, 2002).

Self-Perceived Empathic Sexuality variables. I have defined “empathic sexuality” as an involuntary sexual response dependent on the sexual arousal or lack of arousal of the partner. Measurement of self-perceived empathetic sexuality was based on two statements with which the respondent could either agree or disagree: (1) “I find that it is a turn-on for me when my sex partner is really sexually excited” (©S-SAPE, LLC, 2002); and, (2) “I find that I often notice a decrease in my own sexual arousal when my sex partner does not get sexually excited during lovemaking” (©S-SAPE, LLC, 2002). The variable corresponding to item (1) above was called “Empathic Turn-on” and the variable corresponding to item (2) above was called “Empathic Turn-off”.

Behavioral Sexual Orientation and identification of heterosexual respondents. The Behavioral Sexual Orientation (%) was calculated as 100 times the number of times that the respondent reported engaging in sexual behaviors of any kind with all adult male partners (SBAMP) during adulthood divided by the total number of times that the respondent reported engaging in sexual behaviors of any kind with all adult male (SBAMP) and with all adult female partners (SBAFP) during adulthood ($100 \times \text{SBAMP} / [\text{SBAMP} + \text{SBAFP}]$). The specific wording of the two screening questions used for the calculation was as follows “Behavior; Sexual relations of any kind with a male age 18 or older”, ©S-SAPE, LLC, 2002 and “Behavior: Sexual relations of any kind with a female age 18 or older”, ©S-SAPE, LLC, 2002 for the male and female partner questions respectively. (The definition of “Sexual relations of any kind” for these two counts was left entirely up to the respondent). The maximum for all behavior entries was 999, with the directions instructing respondents to enter 999 for 999 or more. An individual reporting sexual behaviors with only male partners would have a score of 100% while one reporting sexual behaviors with only female partners would have a score of 0. Individuals reporting less than 5% of their partner-based sexual behaviors with same-gender partners were classified as behaviorally heterosexual (hereafter called heterosexual). My use of the actual reported adult sexual behaviors of the respondents to create the Behavioral Sexual Orientation (%) was modeled on Kinsey’s arbitrary assignment of a 0 - 6 scale which was the first to provide a graded scale for human sexual preference (Kinsey, Pomeroy, Martin, 1948). The individuals included in my groups of “heterosexuals” would have received a Kinsey heterosexual-homosexual rating scale of 0, “Exclusively heterosexual with no homosexual” or 1, “Predominantly heterosexual, only incidentally homosexual” (Kinsey, Pomeroy, & Martin, 1948, p 638). Individuals who reported no sexual relations of any kind with either adult males or adult females were coded as “missing data”, eliminating all individuals from the present study who had not ever been sexually active as adults. The classification of only three respondents did not agree with the respondent’s response (“1” for heterosexual males or “2” for heterosexual females) to two items: a) “My favorite type of sex partner is (or would be): (1) an adult female (2) an adult male (3) a female child (4) a male child (5) This question is not applicable to me since I have never had a sex partner or thought about having a sex partner of any of these types.”, ©S-SAPE, LLC, 2002. and b) “My favorite type of sex partner is (or would be): (1) a female (2) a male (3) this question is not applicable to me since I have never had a sex partner, and I have never thought about having a sex partner.”, ©S-SAPE, LLC, 2002. These individuals (all three females) were also coded as “missing data”.

Procedure

Overview. Respondents were recruited by personal invitation and by university subject pools. The research was conducted in university computer laboratories with sufficient space between participants so that others were not in a position to see their computer screens. The respondent's anonymity was protected by electronic randomized filing of the encrypted results in a hidden random access file filled with fake data as well as simultaneous filing of many fake decoy lines as described. Decoding was performed on the randomized file containing all 983 respondent's randomly filed encrypted data, and statistical analysis was performed using SPSS 11.5, SPSS, Inc. Chicago, IL. I used the probability of $p = 0.05$ as the critical level to achieve statistical significance, and considered $p > 0.05$ to indicate non-significant results (ns). I also used the concept of Bernouli Trials and the binomial probability function to estimate the family probability of finding the observed results by random chance when multiple correlation or regression analyses were performed (Appendix F).

Impact/non-impact of self-selection. Because of the nature of many questions in my study, my informed consent procedures required the inclusion of a description of the study and a general-language warning about the possibility of triggering a post-traumatic stress reaction in vulnerable individuals. As pointed out by Morokoff (1986), it is inevitable that self-selection will occur among respondents for a face-valid study of human sexuality. However, Morokoff, (1986) showed that satisfaction with current sex life did not significantly differentiate between respondents and non-respondents for a sexuality study requiring insertion of a vaginal measuring device. Furthermore, because all my respondents had volunteered for the same study and provided their data using the same computerized survey instrument, the same selective factors had acted on all respondents, so all within-study correlations, regressions and comparisons between groups were valid. Furthermore, the highly protected anonymity provided by the computerized survey instrument was designed to minimize any motivation to withhold embarrassing or personal information or to supply incorrect information to appear either more- or less- sexually experienced. And use of the lie scale results to eliminate unreliable reporters was designed to prevent unreliable or random entries from degrading the quality of the data.

Study Design and Generalizability. Unfortunately, much of the research on human sexuality has been conducted exclusively using undergraduate college students. Despite such descriptors as "systematic random sample", and "probability sample" (e.g. Johnson & Delamater, 1976, p. 168), including only single undergraduate 18-23 year old students from a highly selective university and same aged non-students from the surrounding predominantly upper middle class town as study subjects provides a highly selected sample. Through a topsy-turvy logic, such studies are said to be more generalizable (e.g. Johnson & Delamater, 1976) than studies based on a more diverse population, precisely because they are so narrowly focused. The source of the topsy-turvy logic is that apparently many authors and readers assume that the only function that such as study can subserve is a population-demographic or census function: to describe the age, gender, and behaviors of some population. The purpose of the present study was to deduce general principles about the correlations and interrelationships among the set of predictors for sexual satisfaction in sexually active men and women that applied to a wide range

of ages and education levels.

In the present study I purposely tried to recruit a wide range of individuals to the study to increase the variation in the predictor variables (age range, 18 - 76; education range, highschool only - doctoral degree; marital status range, single, married, divorced, remarried, re-divorced). I created a recognizable group for generalization by restricting the population for the present analysis to sexually active heterosexual individuals without inconsistencies in their responses and by showing that age, level of education, living arrangements, current marital status and respondent's orgasm type were not predictors for sexual satisfaction once the other predictors were in the model. I therefore believe that my correlation and regression results should be more- rather than less- generalizable than those from more narrowly focused studies. Descriptive data on a number of variables were included for use in determining external validity of the results - to describe the characteristics of the individuals who contributed data to the study. On the other hand, because of the selective factors involved in the recruiting process, I do not believe that the descriptive statistics can be used to accurately estimate the incidence or prevalence of behaviors or any other descriptor in any specific or general population.

Because Morokoff (1986) showed that satisfaction with current sex life did not significantly differentiate between respondents and non-respondents, because any self-selection process operated equally on all respondents, and because it is an established principle of regression analysis that it is not necessary for the predictors to be either normally distributed or randomly selected (Hosmer & Lemeshow, 1989; Kleinbaum, Kupper, Muller, & Nizam, 1998), I believe that the statistical models are valid even though I did not use a randomly selected sample of respondents due to ethical constraints and the self-selection phenomenon.

RESULTS AND DISCUSSION

Hypothesis (1) Gender Differences

Demographics. There were no significant differences between the genders in age, marital experience, or the proportions living with a spouse, sex partner, or by themselves or with a person who was not a sex partner. There were small but statistically significant differences in education level between the genders (Table A1).

Scales. Female respondents' scores on the scales for Sexual Satisfaction, Intimacy-2, Intimacy-1, and Depression were all significantly higher than Male respondents' scores. On the other hand, male respondents' scores were significantly higher on scales for Orgasm Likelihood with a partner and conflict. These findings support hypothesis 1.

Orgasm Likelihood. There were significant differences in the distribution of answers reported for Orgasm Likelihood between male and female respondents [Table A2, $\chi^2(4, N = 596) = 90.3, p = 1.1 \times 10^{-18}$]. I re-coded the data to contrast the highest category (5) vs other (combined 1 - 4) to obtain a 2 X 2 table $\chi^2(1, N = 596) = 87.4, p = 1.0 \times 10^{-14}$, Fisher's Exact Test, indicating that significantly more males than females had orgasms at the highest frequency,

supporting hypothesis #1. I re-coded 1 to 0, 2 to .25, 3 to .50, 4 to .75 and 5 to 1 to reproduce the highest likelihood of achieving orgasm in each likelihood range provided in the original items presented to the respondents by the questionnaire. Averaging yielded a mean estimate of Maximal Orgasm Likelihood of $.89 \pm .26$ for males and $.65 \pm .35$ for females.

Hypothesis (2) Orgasm Types Reflect Individual Differences in Sexual Response

Female Respondents. The distribution of the respondent's answers to the Orgasm Type item is presented in Table A3. To test whether there was a correlation between orgasm type and orgasm frequency I re-coded data from individuals who had not reported having an orgasm with a partner to "missing data", leaving valid data for 391 female respondents. The non-parametric Kendall's tau-b correlation between orgasm frequency and orgasm type with a good partner was .246 ($p = 1 \times 10^{-6}$, $N = 391$), showing that orgasm frequency with a partner was positively correlated with orgasm type with a partner. The non-parametric Kendall's tau-b correlation between orgasm frequency and orgasm type while masturbating was $-.070$ ($p = .16$, $N = 314$), showing that orgasm frequency with a partner was not significantly correlated with orgasm type while masturbating. On the other hand, the non-parametric Kendall's tau-b correlation between Orgasm Likelihood with a partner and Partner's Orgasm Type was .160 ($p = .007$, $N = 230$), indicating that the respondent's Orgasm Likelihood increased when *their partners* were capable of having multiple orgasms or sustained orgasms (e.g. the percent of respondents reporting Orgasm Likelihood with a Partner at the highest level was 39.4%, 56.5%, and 71.4% in those whose partners had single ($N = 193$), multiple ($N = 23$), and sustained orgasms ($N = 14$), respectively.) The non-parametric Kendall's tau-b correlation between Orgasm Type with a partner and Orgasm Type while masturbating was .316 ($p = 1 \times 10^{-6}$, $N = 303$ when females who did not report having orgasm with both kinds of stimuli were excluded), providing evidence that Orgasm Type was an individual characteristic in females that was subject to inhibition when situational factors were not optimal.

Male Respondents. The distribution of the respondent's answers to the Orgasm Type item is presented in Table A3. To test whether there was a correlation between orgasm type and orgasm frequency I re-coded data from individuals who had not reported having an orgasm with a partner to "missing data", leaving valid data for 176 male respondents. The non-parametric Kendall's tau-b correlation between orgasm frequency and orgasm type with a good partner was .005 ($p = .95$, $N = 176$), showing that orgasm frequency with a partner was not significantly correlated with orgasm type with a partner. The non-parametric Kendall's tau-b correlation between orgasm Likelihood and Orgasm Type while masturbating was $-.091$ ($p = .21$, $N = 176$), showing that orgasm Likelihood with a Partner was not significantly correlated with Orgasm Type while masturbating. The non-parametric Kendall's tau-b correlation between Orgasm Likelihood with a partner and Partner's Orgasm Type was .032 ($p = .733$, $N = 93$), indicating that the two variables were not significantly correlated. The non-parametric Kendall's tau-b correlation between Orgasm Type with a partner and Orgasm Type while masturbating was .493 ($p = 1 \times 10^{-6}$, $N = 173$ when males who did not report having orgasm with both kinds of stimuli were excluded), providing evidence that Orgasm Type was also an individual characteristic in males that was subject to inhibition when situational factors were not optimal.

Hypothesis (3) Sexual Satisfaction Correlation with Intimacy Variables

Females. Pearson correlation analysis showed that Sexual Satisfaction was positively correlated with Intimacy-2 and Intimacy-1 (Table A4). These results support hypothesis 3.

Males. Sexual Satisfaction was positively correlated with Intimacy-2 and Intimacy-1 (Table A5). These results support hypothesis 3.

Hypothesis (4) Sexual Satisfaction Correlation with Sexual Response Variables

Females. Sexual Satisfaction was positively correlated with Orgasm Likelihood (Table A4) but not with the respondent's Orgasm Type with a Partner.

Males. Sexual Satisfaction was positively correlated with Orgasm Likelihood (Table A5) but not the respondent's Orgasm Type with a Partner. These results support hypothesis 4.

Hypothesis (5) Sexual Satisfaction Correlation with Conflict Scale

Females. Sexual Satisfaction was negatively correlated with Conflict (Table A4).

Males. Sexual Satisfaction was negatively correlated with Conflict (Table A5). These results support hypothesis 5.

Hypothesis (6) Sexual Satisfaction Correlation with Depression Scale

Females. Sexual Satisfaction was negatively correlated with the CES-D ($r = -.173$, $p = .00039$).

Males. Sexual Satisfaction was negatively correlated with CES-D ($r = -.223$, $p = .0027$). These results support hypothesis 6.

Hypothesis (7) Empathic Sexuality is a Common Phenomenon

My data provide support for hypothesis (7) by showing that 90.3% of the 696 respondents agreed that they experienced Empathic Turn-on, 68% agreed that they experienced Empathic Turn-off, and 63.4% agreed that they experienced both Empathic Turn-on and Turn-off, findings significantly different from a random distribution ($\chi^2(1, N = 596) = 13.5$, $p = 5.4 \times 10^{-4}$, Fisher's Exact Test, Table A9). When tabulated separately by gender, there was excellent agreement between genders with a maximal difference in any one of the four cells of 0.8% (data not shown).

Hypothesis (8) Respondents' Sexual Satisfaction was Modulated by Their Partner's Sexual Response

Hypothesis (8) predicted that there would be a positive correlation between my respondent's Sexual Satisfaction and the sexual response of their partners. When I belatedly realized during data collection that the effect of empathic sexuality on Sexual Satisfaction would be expected to depend on the partner's sexual response and added two items to estimate the partner's sexual response, 227 (38%) of the 596 respondents had already filed their data. Accordingly, data on the partner's sexual response were available only from the 369 subsequent

respondents, of whom 260 were females and 109 were males. Data from 26 female and 15 male respondents were coded as missing because they selected the answer, “I don't know, or I don't have a favorite partner”, leaving valid data from 234 female (Table A4) and 94 male (Table A5) respondents for analysis. Partner's Orgasm Likelihood was positively correlated with Sexual Satisfaction in both genders (Tables 4 and 5), providing support for hypothesis (8).

Overview

Although the data presented above provided support for all 8 hypotheses, further statistical analysis was required to put the results in a perspective that allowed evaluation of the relative predictive importance of the correlated variables and synthesis of a more generalizable understanding of the implications of the results. This required comparison of the relative effect sizes of the interrelationships, evaluation of the covariance among the predictors, and construction of statistical models using multiple linear regression techniques as detailed below.

Relative Sizes of the Correlations Between the Sexual Satisfaction and the Predictors

In female respondents Pearson correlation analysis showed that Sexual Satisfaction was significantly correlated with 7 out of the 8 predictors analyzed ($p = 5.9 \times 10^{-9}$, Appendix F). Sexual Satisfaction was positively correlated with Intimacy-2, Orgasm Likelihood, and Intimacy-1, negatively correlated with conflict, and positively correlated with Partner's Orgasm Likelihood in order of decreasing power (Table A4). Sexual Satisfaction was also negatively correlated with CES-D ($r = -.173$, $p = .00039$) and positively correlated with Partner's Orgasm Type ($r = .140$, $p = 0.034$) but not with the respondent's Orgasm Type with a Partner.

In male respondents Pearson correlation analysis showed that Sexual Satisfaction was significantly correlated with 6 out of the 8 predictors analyzed ($p = 3.9 \times 10^{-7}$, Appendix F). Sexual Satisfaction was positively correlated with Intimacy-2, Orgasm Likelihood, and Intimacy-1, negatively correlated with conflict, and positively correlated with Partner's Orgasm Likelihood in order of decreasing power (Table A5). Sexual Satisfaction was also negatively correlated with CES-D ($r = -.223$, $p = .0027$) but not with Partner's Orgasm Type or the respondent's Orgasm Type with a Partner. The order of decreasing predictive power of Orgasm Likelihood and Intimacy-1 was reversed between females and males, but there were no other changes in the order of decreasing predictive power. However, correlations among the predictors may explain some of the correlations described above.

Correlations Among the Predictors

The following inter-correlations among the predictors were statistically significant in both male and female heterosexual respondents. Intimacy-1 and Intimacy-2 were positively correlated with one another, and both were negatively correlated with Conflict. Orgasm Likelihood was positively correlated with Intimacy-2 and Partner's Orgasm Likelihood. A gender difference was also noted for Orgasm Likelihood with a Partner, which was positively correlated with Intimacy-1 in female respondents ($p = 0.003$) but not in male respondents where the sign was negative but significance was not achieved ($p = .68$). As will be seen below, gender differences in the order of relative predictive power and in the inter-correlation between Orgasm Likelihood with a Partner and Intimacy-1 contribute to gender differences in the minimal set of variables selected for

predicting Sexual Satisfaction separately in female and male respondents. Because of the correlations among the predictors, multiple regression analysis was needed to identify the most powerful set of predictors that explain the variation in sexual satisfaction in female and male respondents.

Equations for Predicting Sexual Satisfaction in Heterosexual Respondents

I utilized correlation analysis and multiple-partial correlation analysis to systematically construct three sets multiple regression equations that would facilitate understanding the relationships among the variables: one set each for the subset of 417 female heterosexual respondents (Table A6) , the subset of 179 male heterosexual respondents (Table A7), and the set of 596 male and female heterosexual respondents (Table A8). At this stage I only considered the set of four potential linear predictors with relatively high correlations with the dependent variable (Intimacy-2, Orgasm Likelihood with a Partner, Intimacy-1, and Conflict) because data for Partner's Orgasm Likelihood were available only for a subset of respondents. (The item needed to obtain the Partner's Orgasm Likelihood data was added to the questionnaire after initial data collection had already begun. So, the item was presented only to the later respondents.) To repeat the same process in the combined set including both females and males, I then added a gender dummy variable arbitrarily coded 1 for female and 0 for male to the above set of 4 potential predictors.

The partial eta squared (coefficient of partial determination) estimates the proportion of the total variation in the dependent variable that is explained by a given predictor when the other predictors are already in the model (Tables 6-8). In the text below, I have listed the predictors in the order of decreasing predictive power measured with the other predictors already in the equation: For heterosexual female respondents, the set of selected predictors were Orgasm Likelihood, Intimacy-2, and Conflict ($r^2 = .411$, Model 3, Table A6). Intimacy-1 was not a significant predictor once the other 3 predictors were in the model. For heterosexual male respondents, the set of selected predictors were Intimacy-2, Orgasm Likelihood, and Intimacy-1 ($r^2 = .450$, Model 6, Table A7). Conflict was not a significant predictor once the other 3 predictors were in the model. For the set of 596 female and male respondents all 5 predictors remained statistically significant when they were added to the model: Orgasm Likelihood with a Partner, Intimacy-2, Gender, Conflict, and Intimacy-1 ($r^2 = 0.429$, Model 11, Table A8). In each set of equations where they appeared, the signs of the regression coefficients for Intimacy-2, Orgasm Likelihood with a Partner, and Intimacy-1 remained positive and that for conflict remained negative, consistent with their Pearson correlation signs. The coefficient for the Gender dummy variable was 4.919 (Model 11, Table A8), indicating that after adjusting for the four linear predictors in the model, the average Sexual Satisfaction score in females was 4.9 scale points higher than that of males. In each case partial plots of the dependent variable on each predictor were consistent with linear relationships between the dependent and predictor variables, and histogram and normal probability plots showed that the residuals were normally distributed. In each case, stepwise and backwards elimination methods also yielded the same final model as that systematically constructed using correlation analysis and multiple-partial correlation analysis. The gender interaction terms (cross products between the gender dummy variable and

each of the independent variables in the equation) were not statistically significant when added to the set of predictors, showing that there was no evidence for statistically significant differences in any of the regression coefficients between males and females. Regression explained approximately 41%, 45%, and 43% in heterosexual female, male, and combined male and female respondents based on the r^2 for Models 3, 6, and 11 respectively. Neither the Education of the Respondents ($p = .12$) nor the age ($p = .29$), nor the Orgasm Type of the respondents ($p = .39$), nor depression ($p = .12$), nor living arrangements ($p = .096$), nor current marital status ($p = 0.087$) were statistically significant predictors of sexual satisfaction when added to Model 11.

I did not initially assume that males and females could validly be fitted into a single statistical model because it was well established that there were gender differences in some variables related to human sexuality. Gender differences in life-time incidence of masturbation are well established (Oliver & Hyde, 1993). In the present study I found that a significantly greater proportion of heterosexual males than heterosexual females had orgasms at the highest frequency and that a significantly greater proportion of women than men reported having multiple orgasms. Both findings agree with the results of Kinsey's group (Kinsey, Pomeroy, & Martin, 1948; Kinsey, Pomeroy, Martin, & Gebhard, 1953). After reviewing the literature, Baumeister, Catanese, & Vohs, (2001) concluded that males have a stronger sex drive than females. Moret, Glasser, Page, Barger (1998) showed gender differences in Intimacy and the ISS among sexually active unmarried college students. Gender differences in intimacy have been shown in several other studies (Caldwell & Pimplau, 1982; Fischer & Narus, 1981; Hacker, 1981; McAdams, Lester, Brand, McNamara, & Lensky, 1988; Reis, Senchak, & Solomon, 1985). And clinical texts acknowledge that there are emotional differences between men and women when it comes to sex (Gottman, 1993, Gottman & Silver, 1999; Hawton, 1985; Kaplan, 1979; Masters, Johnson, & Kolodny, 1985).

My separate statistical analyses showed that 41.1% and 45.0% of the variation in the Sexual Satisfaction scale (in women and men respectively) could be explained by including orgasm likelihood and sexual partner intimacy as two of the three predictors in multiple regression models, but the third predictor was Conflict in female respondents and Intimacy-1 in the male respondents. While this may initially appear to indicate a fundamental difference between females and males, I believe that it reflects the statistical effects of the well-known gender difference in the likelihood of reaching orgasm with a partner which resulted in a gender reversal in the relative order in predictive power of Intimacy-1 and Orgasm Likelihood with a Partner. A gender difference was also noted in the correlations of Orgasm Likelihood with a Partner, which was positively correlated with Intimacy-1 in female respondents ($p = 0.003$) but not in male respondents where the sign was negative but significance was not achieved ($p = .68$). These two gender differences were quite sufficient (from a mathematical point of view) to explain the observation that the third predictor was Conflict in female respondents and Intimacy-1 in the male respondents.

Because the separate multiple linear regression models for men and women were somewhat similar I proceeded to also construct models which included both female and males in

a single multiple linear regression analysis. As can be seen from the entries for partial eta squared for Model #16 in Table A10, the relative effect sizes of the predictor variables were as follows, Orgasm Likelihood with a Partner, Intimacy-2, Conflict, Partner's Orgasm Likelihood, Intimacy-1, and Gender in order of decreasing size, indicating that the respondent's Orgasm Likelihood with a Partner was the most powerful predictor and that Partner's Orgasm likelihood was the fourth most powerful predictor among the 6 in the model when effect size was measured with the other predictors already in the model. Lack of statistical significance for the interaction terms (gender X Orgasm Likelihood with a Partner, gender X Intimacy-2, gender X Intimacy-1, gender X Conflict, and Gender X Partner's Orgasm Likelihood) showed that there was no evidence for differences in the regression coefficients for Orgasm Likelihood, Intimacy-2, Intimacy-1, Conflict, or Partner's Orgasm Likelihood between males and females.

Empathic Sexuality

Three different lines of evidence were available to demonstrate the existence of empathic sexuality in my data set. First, my data provide support for hypothesis 7 by showing that 90.3% of the 696 respondents agreed that they experienced Empathic Turn-on, 68% agreed that they experienced Empathic Turn-off, and 63.4% agreed that they experienced both Empathic Turn-on and Turn-off, findings significantly different from a random distribution.

Second, hypothesis (8) predicted that there would be a positive correlation between my respondent's Sexual Satisfaction and the sexual response of their partners. When I belatedly realized during data collection that the effect of empathic sexuality on Sexual Satisfaction would be expected to depend on the partner's sexual response and added two items to estimate the partner's sexual response, 227 (38%) of the 596 respondents had already filed their data. Accordingly, data on the partner's sexual response were available only from the 369 subsequent respondents, of whom 260 were females and 109 were males. Data from 26 female and 15 male respondents were coded as missing because they selected the answer, "I don't know, or I don't have a favorite partner", leaving valid data from 234 female (Table A4) and 94 male (Table A5) respondents for analysis. Partner's Orgasm Likelihood was positively correlated with Sexual Satisfaction in both genders (Tables 4 and 5). I also tested hypothesis #8 by adding Partner's Orgasm Likelihood to model #15 and restricting the analysis to the 328 cases without missing data. Partner's Orgasm Likelihood was a statistically significant positive linear predictor ($p = 0.004$), and the other predictors remained statistically significant (Table A10). The Gender X Partner's Orgasm Likelihood interaction term was not statistically significant ($p = .545$) when added to Model # 16. The predictor variables were Orgasm Likelihood with a Partner, Intimacy-2, Conflict, Partner's Orgasm Likelihood, Intimacy-1, and Gender in order of decreasing effect size, indicating that Partner's Orgasm likelihood was the fourth most powerful predictor among the 6 in the model when effect size was measured with the other predictors already in the model. Although asking the respondent's to report on their partner's Orgasm Likelihood and their partner's Orgasm Type provided information important for measuring the impact of empathic sexuality on Sexual Satisfaction, I was now not only relying on the respondent to accurately report his/her impression about the partner's orgasm variables but also relying on the accuracy of the partner's reports to the respondent. Accordingly, to assess the accuracy of the data, I re-

coded the data to achieve strict parallelism between the data (by combining the respondent's Never and 1 - 25% categories into the 0-25% category). I then compared the Orgasm Likelihood and Type with a Partner reported by my male respondents to the Partner's Orgasm Likelihood and Type reported by my female respondents (Tables 11 and 12, respectively), and I compared the Orgasm Likelihood and Type with a Partner reported by my female respondents to the Partner's Orgasm Likelihood and Type reported by my male respondents (Tables 13 and 14, respectively). In the case of the males, both the data reported by the male respondents themselves and the data reported by the female respondents on their (male) partners agree remarkably well with no significant differences between the two sources of information in the proportion of individuals in each category despite the fact that, to my knowledge, there were only a few overlaps between the two groups of males. But in the case of the females, the data reported by the female respondents themselves systematically disagreed with the data reported by the male respondents on their (female) partners ($p < .001$) for Table A13 and ($p < .001$) for Table A14. The reports provided by the male respondents about their female Partner's Orgasm Likelihood and Orgasm Type were inflated when compared with the reports provided by my female respondents about their own Orgasm Likelihood and their Orgasm Type with a partner. Since both my female and my male respondents had demonstrated their accuracy of reporting by having a perfect score on the lie scales and by their excellent agreement in Tables 11 and 12, I concluded that there was a tendency of my male respondent's female partners to over-report their orgasmic response frequency and duration to my male respondents. This presumably occurred because the female partners of the male respondents realized that they could improve their partner's sexual satisfaction by providing inflated reports.

Third, I calculated the Maximum Orgasm Type as the maximum value of Orgasm Type that the individual reported (with a partner or while masturbating). I then evaluated the non-parametric correlation between the Maximum Orgasm Type and the Orgasm Type -with a partner and -while masturbating. In female respondents these correlation coefficients were .841 and .596 respectively, and in male respondents these correlation coefficients were .984 and .538, respectively, indicating that the respondents of both genders were more likely to experience multiple or sustained orgasms with their partners than when they masturbated alone ($p = 1 \times 10^{-6}$ for each correlation).

Summary of Evidence for Empathic Sexuality

To my knowledge, the present study was one of the few to systematically investigate this little recognized and heretofore little studied, but nearly universal and important phenomenon. The "turn-on" positive feed-back loop mentioned in passing by Kinsey (Kinsey, Pomeroy, Martin, & Gebhard, 1953) helps promote mutual arousal for both partners while the "turn-off" negative feed-back loop, observed even in bonobo chimpanzees (De Waal & Lanting, 1997), helps keep the partners in step by decreasing the arousal of an individual when his/her partner is unable to achieve arousal. There were 3 distinct lines of evidence for the existence and operation of empathic sexuality in the data provided by my respondents. First, 90% of the respondents endorsed the turn-on-, 68% endorsed the turn-off- item, and 63% endorsed both, indicating that these respondents had become aware of the operation of empathic arousal in their own

experiences. Second, multiple regression analysis showed that the respondent's sexual satisfaction was influenced by his/her perceptions of his/her partner's sexual response. I even found evidence that the male respondent's female partners had very likely made use of empathic sexuality to positively influence their partner's sexual satisfaction by systematically inflating their reports of their own orgasm likelihood and number of orgasms. Third, the respondents were more likely to report multiple and sustained orgasms with their partners than while masturbating. These three lines of evidence were each supported by their own tests of statistical significance and they were derived from 5 different independent variables (Turn-on, Turn-off, Partner's Orgasm Likelihood, Partner's Orgasm Type, and Sexual Satisfaction) that were based on answers that were widely separated in the item sequence and in the mode and circumstances of presentation, making it extremely unlikely that the findings could have been consciously influenced or the result of random chance.

Orgasm Type

My data indicate that under optimum conditions the maximal number of orgasms and duration of orgasm was determined by factors intrinsic to the individual. According to Masters and Johnson (1966) considerable variation exists in both the duration and intensity of the orgasm that females experience and women can return to another orgasm from any place in their resolution phase if they choose to permit further effective stimulation. Based on data from 7,802 women who reported having orgasms during coitus, Kinsey, Pomeroy, Martin, and Gebhard (1953) found that between 10 and 16% of women between the age of adolescence and age 60 experienced on average more than one orgasm in each coital experience. Between in the age interval of 16-20 the figure was 12%, in the interval of 21-25 the figure was 13%, and between the ages of 26 and 50 years, 14 - 16% of them reported having multiple orgasms during each 5-year interval. My question was phrased differently from Kinsey's since I specified "with a good partner", so my figure of 29% for females with multiple orgasms undoubtedly reflects optimum conditions. Only 8% of my male respondents reported having multiple orgasms. Although Kinsey, Pomeroy, Martin, and Gebhard (1953) and Masters and Johnson (1966) both recognized that some women's orgasms lasted for a very long time, they did not provide figures on what proportion of women and men experienced such sustained orgasms. Nearly 12% of my female respondents and 9.5% of my male respondents reported having sustained orgasms with a good partner. The data provided by my female respondents on their partner's orgasm type matched the data provided by my male respondents quite closely, suggesting that all three groups of individuals involved were accurate reporters. The fact that Orgasm Likelihood in females was correlated with their partner's orgasm type provided evidence that the type of orgasm that a partner has can be of more than just academic importance: It actually influenced the female's likelihood of achieving orgasm. In the regression models, such effects were accounted for by the Orgasm Likelihood with a Partner variable because of the correlation between orgasm type and orgasm likelihood (e.g. Model numbers 3, 6, 11, and 16), and Orgasm likelihood was the most powerful single predictor of Sexual Satisfaction when the other significant predictors were in the model and the model included females (e.g. Model numbers 3, 11, and 16).

Influence of Partners on Orgasm Type

My finding that in females orgasm likelihood was positively correlated with orgasm type with a good partner in women but not with orgasm type while masturbating was consistent with the two being linked through the level of sexual arousal that the women experienced with their partners. The fact that no such relationship was found in men may be due to the relatively small sample size: 80% of males reported the highest level of orgasm likelihood, and 82% reported having the single orgasm type, leaving only a total of 15 men who reported multiple orgasms and 17 who reported sustained orgasms with their partners.

What is the Probability that My Findings Could be the Result of Random Chance?

Separating the data into two distinct populations (females and males) and showing that the related results were obtained in both distinct populations provided additional assurance that the statistically significant results were unlikely to be the result of random chance. Very low p-values for the regression coefficients for intimacy-2 (4.5×10^{-15} and 4.6×10^{-9}) and orgasm likelihood (5.1×10^{-18} and 5.6×10^{-7}) in female and male respondents, respectively, also provided evidence that such findings would be unlikely to occur by random chance since all p-values were far lower than the Bonferroni corrected type I error rate ($\alpha/k = 0.05/3 = .0167$) for 3 predictors. Furthermore, finding three ($p = .0054$) of the 8 predictors statistically significant with an individual $\alpha = 0.05$ would be unlikely by random chance if there were no real relationships among the variables (Appendix F).

Research Implications of the Data

Intimacy-2 scale. The observation that my 7 item Intimacy-2 scale with 0,1 scoring was a better predictor of sexual satisfaction than the 15 item Intimacy-1 scale with 5-point scale scoring in both female and male respondents indicates the importance of having a scale capable of measuring the special kind of intimacy between sexual partners. The Intimacy-2 scale could potentially be improved for use as a dependent variable by adding similar items and utilizing a 5-point response scale.

Conflict scale. While suitable for use as an independent variable, the conflict scale could be improved for use as a dependent variable by adding similar items and utilizing a 5-point response scale.

Sexual Satisfaction scale. Careful review of the paper in which the validation of the ISS was published (Hudson, Harrison, & Crosscup, 1981) revealed that factor analysis had showed that 4 items were poor and were modified *after* the published data on the ISS validation were obtained, meaning that the validation statistics published do not characterize the ISS in use today (Hudson, 1992). I believe that my Sexual Satisfaction index is now superior to the Hudson's ISS (Hudson, Harrison, & Crosscup, 1981) in several respects. I evaluated 29 items prior to settling on the 27 items included in my Sexual Satisfaction Index. I found that 2 items indicating that the respondent believed that their partner wanted too much sex or thought too much about sex did not correlate with the remaining 27 items. I have utilized these latter two items to produce the two-item "Too Much Sex" scale. I consider the fact that the ISS contains such an item a

weakness of the ISS since thinking that partners want too much sex is a symptom of a low sex drive or sexual aversion in the respondent (explaining lack of correlation with the remaining items) which my S-SAPEI instrument specifically identifies with the Too Much Sex scale. To my knowledge the current (reformulated) ISS has not been subjected to factor analysis. I have not made use of the three Sexual Satisfaction sub-scales in the present analysis, but they have the potential for differentiating between partner-based- [(1) *Sex-positive and Partner-affirming Statements* and (2) *Sex-positive Complaints About Sex With Partner*] and sexual aversion based-decreases in sexual satisfaction [(3) *Sex-negative Statements About Sex with the Partner*]. They should prove to be useful tools for future research.

Imbalance Between Numbers of Females and Males. The imbalance in numbers of females and males among the respondents was the result of several factors. First, the psychology, social work, and counseling classes from which many respondents were recruited had more females than male students. Second, in the non-student population, females seemed more willing to participate than males. The resulting imbalance gave the females more weight than the males in determining the regression coefficients in the regression analyses that included both males and females. Equal numbers of males and females could have been achieved in the combined regression analyses by randomly selecting a number of females from the database equal to the number of males prior to construction of the regression equations. However, my primary purpose was to identify predictors for sexual satisfaction rather than to determine the average magnitude of the regression coefficients across genders. So, I believed that my use of all available data would better served my purpose than would the use of a smaller data set with equal numbers of males and females. The alternative approach can be kept in mind in the event that it facilitates different goals.

Clinical Implications of the Regression Findings

Since the regression coefficients for orgasm likelihood, Partner's Orgasm Likelihood, and both intimacy scales were positive and the regression coefficient for conflict was negative, the implications of these findings were that to optimize sexual satisfaction, orgasmic likelihood for both partners and both sexual partner- and non-sexual- intimacy must be optimized while conflict must be minimized. This suggests that when treating couples for sexual dysfunction, it would be very appropriate to attempt to improve both sexual-partner intimacy- and general intimacy- skills and to also attempt to improve the couples' conflict-resolution skills in addition to dealing with any specific areas of sexual dysfunction (which may only be symptoms of deficits in sexual-partner intimacy-, general intimacy-, or conflict resolution- skills). My description of empathic sexuality provides an important intellectual basis for identifying, understanding, and fully utilizing this general, deep-seated, and basic form of non-verbal communication, which may have preceded verbal communication from an evolutionary perspective. Recognition of the existence of empathic sexuality underscores the importance of being open, expressive, and sharing with our partners of our own sexual response. Empathic sexuality may explain otherwise-unexplained cases of pre-coital or mid-coital erectile dysfunction in males whose partners are disinterested and/or unable to respond sexually. Similarly, empathic sexuality may explain lower sexual satisfaction or loss of sexual arousal of clients of either gender whose partners are compliant with

regard to sexual access, but who themselves have little or no sexual response. The existence of empathic sexuality in the majority of both males and females implies that there are direct gains for clients of both genders when they can help their partners optimize their sexual response and orgasmic response.

Summary

In summary, the present study showed that the variables, sexual satisfaction, sexual partner intimacy, orgasm likelihood with a partner, partner's orgasm likelihood, general intimacy, and conflict were interrelated, and previous studies have shown positive correlations between general relationship satisfaction and sexual satisfaction (Byers, 2001; Christopher & Sprecher, 2000; Sprecher, 2002). Use of multiple linear regression and general linear model processors allowed construction of statistical models that showed that sexual satisfaction increased with increasing sexual partner intimacy, increasing orgasm likelihood for both partners, and increasing general intimacy and decreased as conflict increased. My description of empathic sexuality provides an important intellectual basis for identifying, understanding, and fully utilizing this general, deep-seated, and basic form of non-verbal communication, which may have preceded verbal communication from an evolutionary perspective. These findings have important implications for treatment of symptomatic couples.

Table A1

Demographic and Other Data Provided by the 417 Female and 179 Male Heterosexual Respondents

Variables , N, and p-Values for Female vs Male	Female	Male	All
N	417	179	596
Age			
Mean \pm SD (p = .97, Mann-Whitney U)	26.2 \pm 10.5	28.1 \pm 13.8	26.8 \pm 11.6
range	18 - 76	18 - 74	18 - 76
Marital Experience			
Never Married	74.1%	74.9%	74.3%
Married at least once (p = .92, Fisher's Exact χ^2)	25.9%	25.1%	25.7%
Divorced at least once (p = .88, Fisher's Exact χ^2)	10.1%	9.6%	9.7%
Currently Married (p = .45, Fisher's Exact χ^2)	22.9%	20.1%	21.0%
Education (p = .01 Pearson χ^2)			
None beyond highschool	1.9%	3.4%	2.3%
Some college undergraduate education but no degree	63.8%	67%	64.8%
Bachelor's degree	24.7%	16.2%	22.1%
Master's degree	6.5%	5.0%	6.0%
Doctoral degree	3.1%	8.4%	4.7%
Living Arrangements (p = .63 Pearson χ^2)			
Living with spouse	18.9%	19.0%	19.0%
Living with sex partner	13.4%	10.6%	12.6%
Living by themselves or with a person who was not a sex partner	67.6%	70.4%	68.5%

(Table A1 continued)

Scales

Sexual Relationship Index (p = .050, t-test)	85.5	82.4	84.6
Intimacy-2 (p = .0017, Mann-Whitney U)	5.47	5.01	5.33
Orgasm Likelihood (p = 1.5×10^{-18} , Mann-Whitney U)	3.62	4.56	3.90
Intimacy-1 (p = .017, t-test)	50.6	47.6	49.7
Conflict (p = .22, Mann-Whitney U)	2.02	2.23	2.08
CES-D (p = .351, t-test)	11.9	11.2	11.7

Table A2

Orgasm Likelihood in Heterosexual Respondents

Category	Orgasm Likelihood Choices	Females N (%)	Males N (%)
1	Never	47 (11.3%)	10 (5.6%)
2	1-25% of the time	65 (15.6%)	3 (1.7%)
3	26-50% of the time	48 (11.5%)	7 (3.9%)
4	51-75% of the time	98 (23.5%)	16 (8.9%)
5	76 - 100% of the time	159 (38.1%)	143 (79.9%)
Total		417 (100%)	179 (100%)

Table A3

Orgasm Types with A Good Partner in Heterosexual Respondents

Category	Answer Choices	Females N (%)	Males N (%)
1	Single orgasm	220 (52.8%)	144 (80.4%)
2	Multiple orgasm	122 (29.3%)	15 (8.4%)
3	Sustained orgasm	49 (11.8%)	17 (9.5%)
4	Only while sleeping or while masturbating	12 (2.9%)	3 (1.7%)
5	Never	14 (3.4%)	0 (0%)
Total		417 (100%)	179 (100%)

Table A4

Pearson Correlations Among the Variables in
417 Female Heterosexual Respondents

r	Sexual	Intimacy-2	Orgasm	Intimacy-1	Conflict	Partner's
p-value	Satisfaction		Likelihood			Orgasm
N						Likelihood
Sexual Satisfaction	1 - 417					
Intimacy-2	.542 8.1×10^{-31} 417	1 - 417				
Orgasm Likelihood	.452 2.5×10^{-22} 417	.244 4.6×10^{-7} 417	1 - 417			
Intimacy-1	.378 1.2×10^{-15} 417	.517 7.5×10^{-30} 417	.144 .0031 417	1 - 417		
Conflict	-.363 1.8×10^{-14} 417	-.457 6.3×10^{-23} 417	-.062 .20 417	-.494 4.6×10^{-27} 417	1 - 417	
Partner's Orgasm Likelihood	.304 2.1×10^{-6} 234	.149 .023 234	.363 1.0×10^{-8} 234	.061 .36 234	-.021 .75 234	1 - 234

Table A5

Pearson Correlations Among the Variables in
179 Male Heterosexual Respondents

r	Sexual	Intimacy-2	Orgasm	Intimacy-1	Conflict	Partner's
p-value	Satisfaction		Likelihood			Orgasm
N						Likelihood
Sexual Satisfaction	1 - 179					
Intimacy-2	.573 5.6×10^{-17} 179	1 - 179				
Intimacy-1	.406 1.7×10^{-8} 179	.402 2.2×10^{-8}	1 - 179			
Orgasm Likelihood	.394 5.1×10^{-8} 179	.247 .00086 179	-.0310 .68 179	1 - 179		
Conflict	-.268 .00028 179	-.276 .00018 179	-.340 3.2×10^{-6} 179	.082 .28 179	1 - 179	
Partner's Orgasm Likelihood	.213 .039 94	.165 .113 94	.041 .696 94	.261 .011 94	-.057 .59 94	1 - 94

Table A6

Models for Predicting Sexual Satisfaction
In 417 Female Heterosexual Respondents

Model, R Square, & Change in R Square	N = 417 for each model	Unstandardized Coefficients		t-value	Significance	Partial Eta Squared
		B	Std. Error			
Model 1 $r^2 = .275$ $\Delta r^2 = .275$	Constant	51.028	2.852	17.9	1.8×10^{-53}	.435
	Intimacy-2	6.301	0.502	12.5	8.1×10^{-31}	.275
Model 2 $r^2 = .386$ $\Delta r^2 = .111$	Constant	40.517	2.894	14.0	9.6×10^{-37}	.321
	Intimacy-2	5.292	0.477	11.1	3.3×10^{-25}	.229
	Orgasm Likelihood	4.433	0.511	8.7	1.0×10^{-16}	.154
Model 3 $r^2 = .411$ $\Delta r^2 = .025$	Constant	48.971	3.480	14.1	5.2×10^{-37}	.324
	Intimacy-2	4.285	0.526	8.1	4.5×10^{-15}	.138
	Orgasm Likelihood	4.553	0.502	9.1	5.1×10^{-18}	.166
	Conflict	-1.672	0.399	-4.2	3.4×10^{-5}	.041

Table A7

Models for Predicting Sexual Satisfaction
In 179 Male Heterosexual Respondents

Model #, R Square, & Change in R Square	N = 179 for each model	Unstandardized Coefficients		t-value	Significance	Partial Eta Squared
		B	Std. Error			
Model 4 $r^2 = .328$ $\Delta r^2 = .328$	Constant	53.352	3.298	16.2	1.0×10^{-36}	.596
	Intimacy-2	5.789	0.623	9.3	5.6×10^{-17}	.328
Model 5 $r^2 = .395$ $\Delta r^2 = .068$	Constant	36.563	4.914	7.4	4.3×10^{-12}	.239
	Intimacy-2	5.119	0.612	8.4	1.7×10^{-14}	.285
	Orgasm Likelihood	4.420	0.996	4.4	1.6×10^{-5}	.101
Model 6 $r^2 = .450$ $\Delta r^2 = .054$	Constant	24.192	5.567	4.346	2.3×10^{-5}	.097
	Intimacy-2	3.985	0.646	6.2	4.6×10^{-9}	.179
	Orgasm Likelihood	5.007	0.963	5.2	5.6×10^{-7}	.134
	Intimacy-1	0.323	0.078	4.2	5.2×10^{-5}	.090

Table A8

Models for Predicting Sexual Satisfaction
In 417 Female and 179 Male Heterosexual Respondents

Model and Adjusted R Square	N = 596 for each model	Unstandardized Coefficients		t-value	Significance	Partial Eta Squared
		B	Std. Error			
Model 7 $r^2 = 0.294$ $\Delta r^2 = .294$	Constant	51.854	2.171	23.9	7.4×10^{-89}	.490
	Intimacy-2	6.132	0.390	15.5	8.6×10^{-47}	.294
Model 8 $r^2 = 0.379$ $\Delta r^2 = .085$	Constant	40.099	2.418	16.6	5.0×10^{-51}	.317
	Intimacy-2	5.511	0.373	14.8	2.3×10^{-42}	.269
	Orgasm Likelihood	3.865	0.428	0.031	2.4×10^{-18}	.121
Model 9 $r^2 = 0.403$ $\Delta r^2 = .024$	Constant	33.864	2.697	12.6	3.1×10^{-32}	.210
	Intimacy-2	4.531	0.417	10.9	3.8×10^{-25}	.166
	Orgasm Likelihood	3.922	0.420	9.3	2.0×10^{-19}	.128
	Intimacy-1	0.226	0.046	4.9	1.5×10^{-6}	.038
Model 10 $r^2 = 0.415$ $\Delta r^2 = .012$	Constant	30.008	2.882	10.4	2.0×10^{-23}	.155
	Intimacy-2	4.283	0.419	10.2	1.1×10^{-22}	.150
	Orgasm Likelihood	4.468	0.443	10.1	3.8×10^{-22}	.147
	Intimacy-1	0.221	0.046	4.8	2.0×10^{-6}	.038
	Gender	4.717	1.325	3.6	4.0×10^{-4}	.021

(Table A8 continued)	Constant	36.774	3.391	10.8	4.1×10^{-25}	.166
	Intimacy-2	3.899	0.428	9.1	1.2×10^{-18}	.124
Model 11	Orgasm Likelihood	4.592	0.440	10.4	1.7×10^{-23}	.156
$r^2 = 0.429$ $\Delta r^2 = .014$	Intimacy-1	0.164	.048	3.4	6.7×10^{-4}	.019
	Gender	4.919	1.312	3.7	2.0×10^{-4}	.023
	Conflict	-1.215	0.329	-3.7	2.5×10^{-4}	.023

Table A9

Self-Reported Sexual Empathy

		Empathic Turn-on			
			Disagree	Agree	Total
Empathic Turn-off	Disagree	Count	31	160	191
		% of Total	5.2%	26.8%	32%
	Agree	Count	27	378	405
		% of Total	4.5%	63.4%	68.0%
Total		Count	58	538	596
		% of Total	9.7%	90.3%	100.0%

Table A10
 Model for Predicting Sexual Satisfaction
 In 234 Female and 94 Male Heterosexual Respondents

Model and R Square	N = 328	Unstandardized Coefficients		t-value	Significance	Partial Eta Squared
		B	Std. Error			
Model 16	Constant	31.633	6.440	4.9	1.4×10^{-6}	.070
$r^2 = 0.412$	Intimacy-2	2.780	0.571	4.9	1.7×10^{-6}	.069
	Orgasm Likelihood	3.925	0.654	6.0	5.3×10^{-9}	.101
	Intimacy-1	0.157	0.064	2.5	.014	.019
	Gender	3.735	1.791	2.1	.038	.013
	Conflict	-1.621	0.447	-3.6	3.3×10^{-4}	.039
	Partner's Orgasm Likelihood	3.465	1.185	2.9	.0037	.026

Table A11
Orgasm Likelihood In Males

Cell Contents: % Count	Male Respondents (about themselves)	Female Respondents (about their partners)	All
0-25%	7.26% 13	2.56% 6	4.60% 19
26-50%	3.91% 7	3.85% 9	3.87% 16
51-75%	8.94% 16	11.11% 26	10.17% 42
76-100%	79.89% 143	82.48% 193	81.36% 336
All	100.00% 179	100% 234	100.00% 413

$\chi^2 (3, N = 413) = 5.422, p = .143$

Table A12
Orgasm Type In Males

Cell Contents: % Count	Male Respondents (about themselves)	Female Respondents (about their partners)	All
Single Orgasm	81.82% 144	83.91% 193	83.00% 337
Multiple Orgasm	8.52% 15	10.00% 23	9.36% 38
Sustained Orgasm	9.66% 17	6.09% 14	7.63% 31
All	100% 176	100% 230	100% 406

$\chi^2 (2, N = 406) = 1.951, p = .377$

Table A13
Orgasm Likelihood In Females

Cell Contents: % Count	Female Respondents (about themselves)	Male Respondents (about their partners)	All
0-25%	26.86% 112	0.00% 0	21.92% 112
26-50%	11.51% 48	8.51% 8	10.96% 56
51-75%	23.50% 98	26.60% 25	24.07% 123
76-100%	38.13% 159	64.89% 61	43.05% 220
All	100.00% 417	100.00% 94	100.00% 511

$\chi^2 (3, N = 484) = 38.945, p < .001$

Table A14

Orgasm Type In Females

Cell Contents: % Count	Female Respondents (about themselves)	Male Respondents (about their partners)	All
Single Orgasm	56.27% 220	21.51% 20	49.59% 240
Multiple Orgasm	31.20% 122	52.69% 49	35.33% 171
Sustained Orgasm	12.53% 49	25.81% 24	15.08% 73
All	100.00% 391	100.00% 93	100.00 484

$\chi^2 (2, N = 484) = 36.9, p < .001$

Appendix B

Sexual Relationship Index, ©S-SAPE, LLC, 2002

Instructions:

This screen will present a series of statements designed to evaluate your sexual relationship with your current spouse or long-term partner. If a medical condition or advanced age now makes sex difficult or impossible, think of a time before the problems developed. If you do not currently have a spouse or long-term partner, think of each statement as applying to your relationship with your last (or deceased) spouse or long-term partner. If you have never had a sex partner, later questions will clarify this - choose 'less than 10% of the time' for each statement. For each statement, please select the item in the list which best describes how often the statement applies to your sexual relationship.

Choices for response scale:

- (1) less than 10% of the time
- (2) about 25% of the time
- (3) about 50% of the time
- (4) about 75% of the time
- (5) more than 90% of the time

Items for Index: (correlation of the item with the total score from the other 26 items)

- 1) Our sexual interaction greatly enhances our over-all relationship. (0.65)*
- 2) My partner uses sexual behaviors that I enjoy. (0.80)
- 3) I really think that our sexual relationship is sensational. (0.85)
- 4) My spouse or long-term partner shames me for some of the sexual behaviors that I want to try with him/her. (0.18)
- 5) My spouse or long-term partner criticizes me when we are having sex. (0.19)
- 6) My spouse or long-term partner does not satiate my sexual appetite. (0.44)
- 7) I perform sex-acts that I don't like to please my spouse or long-term partner sexually. (0.18)
- 8) My spouse or long-term partner actively uses certain ways to avoid sexual relations with me. (0.39)
- 9) My spouse or long-term partner is receptive to introducing new and innovative sex-acts into our sexual relationship. (0.50)
- 10) My spouse or long-term partner goes out of his/her way to please me sexually. (0.68)
- 11) My spouse or long-term partner does not seem to want sex when I am in the mood for it. (0.35)
- 12) My spouse or long-term partner is very responsive to my sexual requirements and cravings. (0.70)
- 13) When we have sex, my spouse or long-term partner is too rough-and-tumble or mean. (0.18)
- 14) Having sex with my spouse or long-term partner is a tedious duty for me. (0.42)
- 15) My sexual relationship with my spouse or long-term partner is boring and monotonous. (0.56)
- 16) I believe that I please my spouse or long-term partner sexually. (0.63)

- 17) It is easy for me to become aroused sexually by my spouse or long-term partner. (0.68)
- 18) I think that sex with my spouse or long-term partner is filthy and revolting. (0.22)
- 19) My spouse or long-term partner relishes our sexual relationship. (0.59)
- 20) When my spouse or long-term partner and I have sex it is finished too quickly. (0.24)
- 21) Our sexual relationship is very arousing to me. (0.83)
- 22) I believe that sex is a normal part of our over-all relationship. (0.67)
- 23) I find my spouse or long-term partner to be very sexually arousing. (0.78)
- 24) I believe that my sexual relationship with my spouse or long-term partner is deficient in essential ingredients. (0.33)
- 25) My spouse or long-term partner and I both have fun at sex. (0.81)
- 26) I attempt to avoid sexual relations with my spouse or long-term partner. (0.48)
- 27) My spouse or long-term partner is a great sex companion. (0.83)

*The number in parentheses after each question is the correlation coefficient between the response variable for that one statement and the score based on the other 26 statements constituting the Sexual Relationship index but excluding the statement itself.

Appendix C

Intimacy-1 Scale

Instructions:

This screen will present 17 items designed to assess your relationship with your current spouse or long-term partner. (If you do not currently have either, consider it as assessing your last relationship with a spouse or long-term partner.) If you have not had a sexual partner, you may describe a long-term non-sexual relationship. (Later questions will give an ample chance for you to clarify your situation.) The responses will be used to generate one of the many variables in this study. Choose the response which best describes your perception of the relationship.

Choices:

- (1) never
- (2) occasionally to sometimes
- (3) often
- (4) frequently to almost always
- (5) always

Items (modified from Walker & Thompson, 1983 with permission):^{2, 3}

- 1 We want to spend time together
- 2 He/she shows that he/she loves me.
- 3 We're honest with each other.
- 4 We can accept each other's criticism of faults and mistakes.
- 5 We like each other.
- 6 We respect each other.
- 7 Our lives are better because of each other.
- 8 We enjoy the relationship.
- 9 He/she cares about the way I feel.
- 10 We feel like we are a unit.
- 11 There is a great amount of unselfishness in our relationship.
- 12 He/she always thinks of my best interest.
- 13 I'm lucky to have him/her in my life.
- 14 He/she makes me feel better.
- 15 He/she is important to me.
- 16 We love each other.
- 17 I'm sure of this relationship.

²modified from Walker and Thompson, 1983, with permission

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Appendix D
Sexual Partner Conflict Scale, ©S-SAPE, LLC, 2002

Items:

- 1) My spouse or long-term partner usually gets his or her way on most financial and other non-sexual areas of living together. (.167)
- 2) Having children in the home has interfered with our sex life. (.183)
- 3) I frequently feel rejected by my spouse or long-term partner. (.295)
- 4) I frequently feel resentment toward my spouse or long term partner because of being rejected, criticized, not getting my way, or because of money issues etc. (.383)
- 5) In my relationship with my spouse or long-term partner there is frequently eye rolling when one of us says things, name calling, sneering , or jokes made at the expense of the other person. (.384)
- 6) Rather than engage in verbal fights, my spouse or long-term partner or I frequently 'tune-out' or leave the room. (.206)
- 7) There is a lot of criticism going on between myself and my long-term partner (.406).
- 8) When my spouse or long term partner and I respond to one-another's complaints, at least one of us usually gets defensive rather than admitting any responsibility for the problem. (.371)
- 9) My spouse or long-term partner and I have frequent verbal fights. (.369)

The numbers in parentheses are the Kendall's Tau_b rank correlation coefficients between the statement and the sum of the scores for the other 8 items in the scale in 200 male and 441 female sexually active respondents. Each correlation is statistically significant at $p < .00001$ based on the non-parametric analysis.

Appendix E

Items of the Sexual Partner Intimacy Scale ©S-SAPE, LLC, 2002

- 1) My partner and I often speak during sex to let each other know how we are feeling and to let each other know what we need to maximize our enjoyment. (.227)
- 2) My spouse or long-term partner and I have not been able to fully discuss our sexual needs in an open, honest, and loving way. (-.279) (Reverse Score)
- 3) When I was at home I sometimes found that I was feeling lonely even though my spouse or long-term partner was home too. (-.231) (Reverse Score)
- 4) When I was having sex with my spouse or long-term partner, I frequently found myself distracted by being unsure about whether he/she was enjoying himself/herself. (-.078) (Reverse Score)
- 5) My sexual partner and I spend a lot of time talking, touching, holding, and enjoying each other even when neither of us is being sexual. (.327)
- 6) I try to share everything that happens in my life and all of the thoughts and concerns that I have with my spouse or long-term partner because it makes me feel closer to him/her and I find that I sleep better and feel less lonely. (.303)
- 7) I feel comfortable and fulfilled in my relationship with my spouse or long-term partner. (.571)

The numbers in parentheses are the Kendall's Tau_b rank correlation coefficients between the statement and the sum of the scores for the other 6 items in the scale in 200 male and 441 female sexually active respondents. Each correlation is statistically significant at $p = .000001$ based on the non-parametric analysis except for item 4 which is significant at $p = .03$.

Appendix F

Estimated Family Probabilities From the Binomial Probability Distribution

Type 1 error is declaring a test significant when the observed data were the result of random chance. Type II error is declaring a test not-significant when the observed data were the result of a factor. There are always trade-offs between guarding against Type 1 and Type II error. The higher the bar is set to protect against Type 1 error, the greater the probability of Type II error.

The issue of protecting against Type 1 error comes up most commonly when multiple pairwise comparisons are made between treatment groups in an ANOVA. There the solution is to use Scheffé's test or one of many others designed to adjust the Family probability to the stated level of significance.

In the present study, the issue of Family probabilities was been raised because more than one independent variable was being tested as a predictor for one dependent variable. The theoretical basis for the concern is that under the null hypothesis, there would be no actual relationships among the variables, and the criterion for accepting a simple regression or correlation as statistically significant is set at $p \leq 0.05$ for an individual regression or correlation. The question becomes: What is the chance of observing the outcome that we actually found under the null hypothesis?

In the present situation under the null hypothesis, each test for regression or correlation of a dependent variable on or with an independent variable can be looked at as a Bernoulli Trial. The conventional level of significance of $p = 0.05$ will be used for the analysis. For our purposes, let's define $q = (1 - p) = 0.95$. Let's define success as finding a test for regression as significant at $p \leq 0.05$ and failure as not achieving significance, namely $p > 0.05$.

The formula for finding the probability of the event of finding "y" successes in "n" trials is the binomial probability function (Wackerly, Mendenhall, & Scheaffer, 1996).

probability of event = $\binom{n}{y} p^y q^{n-y}$ (binomial probability function, Equation 1)

Where $\binom{n}{y}$ gives the binomial coefficients, the number of points that the event contains. It is

evaluated using the formula: $\binom{n}{y} = [(n)(n-1)...(n-y+1)]/y! = n!/[y!(n-y)!]$ (Equation 2)

A) In our study, we performed either 8 or 9 correlation or regression analyses between the dependent variable and either 8 or 9 possible predictors. In this situation $n = 8$ or $n = 9$ and y can take on values for success of 0, 1, 2, ..., 8 or 0, 1, 2, ..., 9, depending on the n and the observed outcome. Equation 1 Gives p -values for each outcome. The sum of the event probabilities for all possible outcomes is always 1.

Number of Predictors = 9			Number of Predictors = 8		
y	$\binom{9}{y}$	probability of event	y	$\binom{8}{y}$	probability of event
0	1	.6302494097246090	0	1	.6634204312890620
1	9	.298539194080078	1	8	.2793349184374999
2	36	.0628503566484375	2	28	.0514564323437500
3	84	.0077184648515625	3	56	.0054164665625000
4	126	.0006093524882812	4	70	.0003563464843750
5	126	.0000320711835938	5	56	.0000150040625000
6	84	.0000011253046875	6	28	.0000003948437500
7	36	.0000000253828125	7	8	.0000000059375000
8	9	.0000000003339844	8	1	.0000000000390625
9	1	.0000000000019531			

In our study we observed several different outcomes with 6 of 8 correlations in males ($p = 3.9 \times 10^{-7}$), 7 of 8 in females ($p = 5.9 \times 10^{-9}$), and 8 of 9 (3.3×10^{-10}) in combined males and females that were statistically significant. We observed 3 of 8 ($p = .0054$) multiple linear regression predictors to significant in females and 3 of 8 ($p = .0054$) in males when analyzed separately by gender, and we observed 6 of 9 ($p = 1.1 \times 10^{-6}$) multiple linear regression predictors to be significant in combined males and females. The family probability of observing any one of the outcomes was far less than .05 in each instance.

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