

Risk of Sperm Competition Moderates Men's Relationship Satisfaction  
And Interest in Their Partner's Copulatory Orgasm

by

Vincent M. Bates

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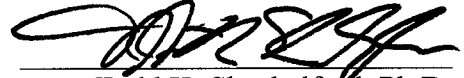
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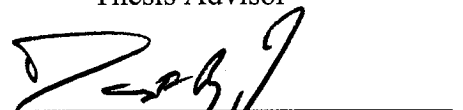
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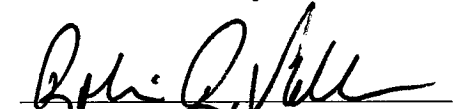
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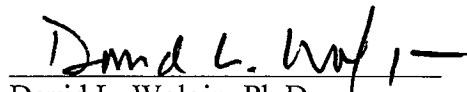
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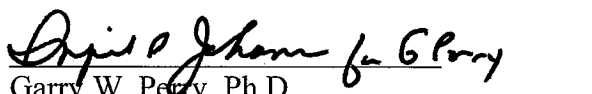
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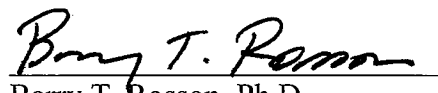
  
Todd K. Shackelford, Ph.D.  
Thesis Advisor

  
David F. Bjorklund, Ph.D.

  
Robin R. Vallacher, Ph.D.

  
David L. Wolgin, Ph.D.  
Chair, Department of Psychology

  
Garry W. Peery, Ph.D.  
Dean, Charles E. Schmidt College of Science

  
Barry T. Rosson, Ph.D.  
Dean, Graduate College

4-14-10  
Date

## ABSTRACT

Author: Vincent M. Bates  
Title: Risk of Sperm Competition Moderates Men's Relationship Satisfaction And Interest in Their Partner's Copulatory Orgasm  
Institution: Florida Atlantic University  
Thesis Advisor: Dr. Todd K. Shackelford  
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Sperm competition occurs when the sperm of multiple males concurrently occupy a female's reproductive tract and compete for fertilization. Sperm competition may have been a recurrent adaptive problem over human evolutionary history. Women's orgasm may facilitate retention of a particular man's sperm. I therefore hypothesized that men experiencing greater sperm competition risk will be particularly interested in the occurrence of their partner's copulatory orgasm. Men who are more satisfied with and invested in their relationship may experience greater costs in the event of sperm competition and potential cuckoldry. Therefore, these men may be more interested in ensuring their partner's copulatory orgasm. I hypothesized that men's relationship satisfaction and investment would predict interest in their partner's copulatory orgasm and moderate the link between sperm competition risk and interest in partner's copulatory orgasm. Using data secured from 229 men in a committed relationship, I tested and found support for these hypotheses.

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## I. Introduction

### **Overview of Evolutionary Psychology**

In his revolutionary and insightful *On the Origin of Species*, Charles Darwin first speculated that his theory of evolution by natural selection could inform our understanding of human psychology (Darwin, 1859). Following nearly a century and a half of relative stability of the social sciences, researchers are now actively applying the theory of evolution by natural selection to human psychology and behavior. Evolutionary psychology unifies the field of psychology using the theoretical framework of evolution by natural selection at its core (Tooby & Cosmides, 1992).

Evolution by natural selection operates on the individual's ability to survive to reproductive maturity and to bear offspring that possess the traits that were beneficial for their parents (Darwin, 1859). Traits that were beneficial for the survival and reproduction of individuals would have increased in prominence within a population, whereas traits that were detrimental to individuals' ability to survive and reproduce would have decreased in prominence within a population. The reoccurrence of selective pressures (e.g., escaping from predators and nourishing offspring) have been solved by the emergence and utilization of adaptations. Adaptations are physical, physiological, and psychological traits that solve an adaptive problem, such as the use of female nipples for nursing young (Tooby & Cosmides, 1992). Over the course of evolutionary history,



selection also yielded byproducts that are traits that did not directly solve an adaptive problem, but were linked to an adaptation. For example, male nipples do not serve any adaptive function, but arise as a result of males and females sharing embryological developmental processes and, therefore, as a byproduct of female nipples (Symons, 1979). In addition to traits that directly serve an adaptive function and the byproducts of adaptations, unassociated traits, noise, may be produced in the construction or maintenance of adaptations (e.g., areola color of female breasts).

Human cognition and behavior has been the subject of inquiry for many philosophers (e.g., Plato, Descartes) and empirically investigated by many psychologists (e.g., Skinner, Watson); however, evolutionary psychology affords researchers novel insights and a theoretical basis that may yield the most accurate investigation of human psychology. Evolutionary psychology contends that the brain is comprised of multiple cognitive mechanisms that were shaped by recurrent adaptive problems over human evolutionary history (Tooby & Cosmides, 1992). The evolved cognitive mechanisms (information processing devices, psychological adaptations) are sensitive to specific stimuli that our human ancestors encountered, and produce specific behaviors in response to the stimuli. For the behaviors to be adaptive, the cognitive mechanisms must have aided ancestral humans in survival and reproduction; however, the cognitive mechanisms may not produce beneficial results in current environments, as the selection pressures that shaped them may no longer be present. Hominids evolved in environments which included many life-threatening dangers that modern humans do not ordinarily face. The variety and numbers of predators present in ancestral human environments likely exceeded the variety and numbers of predators humans currently encounter

(Blumenschine, 1987). Furthermore, the primarily nomadic lifestyle of early humans lacked secure structures for our ancestors to take refuge in. As a result, early humans may have been especially sensitive to and inferred agency in stimuli that signaled a potential threat, such as unfamiliar sounds, shadows, and the rustling of bushes. Öhman and Mineka (2001) contend that the attribution of agency to potentially dangerous but ambiguous stimuli may have been the original function of our agency-detection system. Byrne and Whiten (1988) posited that our proper agency detection system evolved to make social inferences about other humans. However, early humans that inferred an intentional agent in a potentially life-threatening situation and acted to avoid a perceived predator, whether one was present, would have reproduced with frequency than those who ignored potentially threatening stimuli when a predator was present. Modern humans are the descendents of those ancestors who were successful at surviving and reproducing. Although such a system may no longer be adaptive in a world in which humans ought to be more cautious of automobiles than rustling bushes, a hyperactive agency detection mechanism can be found in psychology of modern humans.

Several misconceptions of evolutionary psychology are propagated in the popular press and standard social science research. Among the many misunderstandings, two arise with particular frequency: (1) evolutionary psychology supports a gene deterministic view of human psychology and behavior, and (2) evolutionary psychologists claim that because a behavior is natural, it must be good (i.e. the naturalistic fallacy).

With increasing frequency, scientists are able to link adaptations to the genes which code indirectly for their production. The heritability of human psychology and

behavior has been misunderstood to mean that of evolutionary psychologists make genetic deterministic claims. Such misunderstandings revolve around the central confusion that if a trait is heritable, it therefore cannot be altered (e.g., the structure and function of the human heart cannot be changed). While modern human cognition is the product of heritable psychological adaptations employed by our ancestors, modern humans are not bound to employ psychological adaptations. For example, ancestral men might have been motivated to sire many offspring. While contemporary men may have such desires, the relatively low offspring counts, per man, and the use of contraceptives contradict simplistic claims of genetic determinism.

The naturalistic fallacy posits that what is natural must be good. Critics of evolutionary psychology frequently levy the criticism that because evolutionary psychologists study a particular phenomenon (e.g., rape, infidelity, homicide) and claim that the psychology underlying the phenomenon stems from natural processes, evolutionary psychologists must think that the phenomenon is good. Scientists have a responsibility to objectively seek the truth without assigning a moral value to the topic. If one accuses an evolutionary psychologist of moralistically supporting a topic like rape or murder because he or she studies it, one must also accuse an oncologist of moralistically supporting cancer.

### **Sperm Competition Theory**

When the sperm of two or more males concurrently occupy the reproductive tract of a female, the sperm compete to fertilize an egg she may have produced (Parker, 1970a; Parker, 1970b; Shackelford, Pound, & Goetz, 2005). Female infidelity is the primary context for sperm competition in humans and other socially monogamous species (Smith,

1984; Shackelford, Pound, Goetz, & LaMunyon, 2005). Females may be especially motivated to seek out an extra-pair partner at the peak of their fertility. Women in a committed, romantic relationship report greater attraction to men other than their regular partner and report having more fantasies about extra-pair men when fertile (Gangestad, Thornhill, & Garver-Apgar, 2005). The results of blood-grouping analyses indicate that 5.7% (Edwards, 1957) to 30% (Philipp, 1973) of participants are sired by a man with whom their mother was not engaged in a long-term relationship. Similar results have been found in non-human animals. Within socially monogamous bird species, Birkhead and Møller (1995) identified that an average of 10% to 15% of females produce offspring sired by males other than their regular, long-term partner.

Infidelity may offer females several benefits that could not be gained within the confines of a monogamous relationship. Engagement in an EPC with a male of greater genetic quality than a regular partner may have allowed females to secure material and social investment from a long-term partner while acquiring “better” genes from the extra-pair partner for her offspring (Smith, 1984). Extra-pair matings and multiple matings may also allow women to secure investment from multiple men (Hrdy, 1981; Symons, 1979).

### **Sperm Competition Adaptations in Humans**

Male parental investment has been identified in less than 5% of mammalian species (Clutton-Brock, 1991). Women overwhelmingly invest more in parenting than men, while men tend to invest more in mating efforts than women (Andersson, 1994); however, human males sometimes provide far more than an ejaculate. Human males sometimes provide significant material investment for their offspring (Salmon, 2005), and as a result of an extended juvenile period for offspring (Bjorklund & Bering, 2003),

men may have the opportunity to invest in offspring for a substantial length of time. Female infidelity presents investing males with the risk of cuckoldry—unwittingly investing in offspring to whom the man is not genetically related (Shackelford, Pound, Goetz, & LaMunyon, 2005). If female infidelity and sperm competition have been recurrent in human evolutionary history, men may have evolved adaptations to prevent and “correct” female infidelity, which may have helped men to avoid the risk of sperm competition and cuckoldry (Shackelford, 2003; Shackelford, Pound, & Goetz, 2005).

Men may perform mate guarding behaviors to attempt to thwart a long-term partner’s infidelity (Buss, 1988; Buss & Shackelford, 1997; Flinn, 1988), thereby avoiding the risk of sperm competition and subsequent risk of cuckoldry. Sex-differentiated mate guarding tactics have been reliably demonstrated (Buss, 1988). Men’s mate guarding tactics assume many forms, such as providing a partner with gifts, derogating the quality of rival men, calling a partner at unexpected times to check on her whereabouts and company, and inspecting the private possessions (e.g., mail) of a partner without her knowledge (Buss, 1988; Buss & Shackelford, 1997; Flinn, 1988). Men increase the frequency of mate guarding in conjunction with the ovulatory status of their partners (Gangestad, Thornhill, & Garver, 2002). For example, women report that their partners are more vigilant of their whereabouts at the peak of their fertility. While empirical support has not conclusively indicated that men can reliably detect when their partner is most fertile, Thornhill and colleagues (2003) suggest that men may be sensitive to olfactory cues of female fertility. Alternatively, the increase in men’s mate guarding may be a response to the increase of observable sexual behaviors of their partners at peak fertility. While men’s mate guarding behaviors may have been ancestrally adaptive, there

are potentially negative aspects of their continued performance. Mate guarding tactics that require the man to be physically present can be costly—the opportunity costs of vigilance and guarding may not be economical. Furthermore, the continued imposition of mate guarding can drive a man’s long-term partner away, motivating her to defect from the relationship altogether (Shackelford, Goetz, Buss, Euler, & Hoier, 2005).

If men are unsuccessful at preventing the infidelity of their partner or are not in a position to thwart a partner’s infidelity (e.g. physical absence), men may be motivated to “correct” their partner’s infidelity. As the proportion of time a man spends apart from his partner since the couple’s last in-pair sexual intercourse increases, men face an increased risk of sperm competition (Baker & Bellis, 1995; Shackelford et al., 2002). Shackelford and colleagues (2002) found that men who spent a greater proportion of their time apart from their partner since the couple’s last sexual intercourse—resulting in men’s inability to account for their partner’s sexual behavior—reported greater interest in having sexual intercourse with their partner. Men also express greater distress if their partner refuses sexual access and increased persistence in attempting to have sexual intercourse with their partner following her denial of his request for sexual intercourse, especially under conditions of greater risk of sperm competition (Shackelford, Goetz, McKibbin, & Starratt, 2007). The perceived risk of sperm competition may activate evolved cognitive mechanisms that motivate men to engage in sexual intercourse with their partner to enter their sperm into their partner’s reproductive tract.

Sales trends and categorical preferences in pornography may further illuminate the sexual contexts that men find most arousing. Colloquial wisdom suggests that men might be especially aroused by the prospect of sexual intercourse with multiple women,

simultaneously. However, Pound (2002) and Miner, McKibbin, and Shackelford (2010) demonstrated a male preference for pornography which contained scenes of multiple men simultaneously engaging in sexual acts with a single woman. Consequently, men's sexual arousal to multiple men/single woman pornography directly translated into higher sales rankings for pornography matching this preference. Overt cues of sperm competition may arouse men for the purpose of motivating them to actively compete in situations where the risk of sperm competition is greater.

The perceived risk of sperm competition may result in men unconsciously adjusting the quantity and quality of sperm in an ejaculate. Contrary to the popular understanding of sperm production, there are costs associated with increasing the quantity and quality of sperm in an ejaculate. Though there is little work concerning this subject in relation to humans, we may infer parallels with other vertebrates such as adders, *Vipera berus* and nematodes, *Caenorhabditis elegans*. In adders, at least half of all energetic expenditure for reproduction is attributed to factors such as sperm production (Olsson, Madsen, & Sine, 1997). This metabolic expenditure has been found to result in a significant decrease in total body mass. Research indicates that semen production in nematodes results in life span expectancy decreases (Wedell, Gage, & Parker, 2002). As a result, the benefits of producing a higher quality ejaculate must outweigh the metabolic costs of doing so. Baker and Bellis (1993a) provided evidence that men prudently adjust sperm numbers, per ejaculate, in response to the risk of sperm competition (see also Parker, 1990). Martin, Reimers, Lodge, and Dzuik (1974) liken increased sperm production to purchasing additional tickets in a lottery; if a man ejaculates more sperm into his partner's reproductive tract, there may be an increased likelihood that his sperm

outcompete the sperm of other men to fertilize an egg that she may have produced. Baker and Bellis (1993a, 1995) provide empirical support for the hypothesis that men who spend a greater proportion of time apart from their partner following the couple's last in-pair sexual intercourse ejaculate more sperm at the couple's next sexual intercourse.

### **Relationship Satisfaction and Investment**

Relationship satisfaction may serve as an emotional measure of the psychological calculation of costs and benefits one receives while engaged in a particular relationship (Buss, 1999; Shackelford & Buss, 2000). When the benefits outweigh the costs, a person may report positive perceptions of their relationship; however, if the costs of membership in a relationship exceed the benefits, a person may report negative perceptions of their relationship and may be motivated to defect. Several factors may influence relationship satisfaction, such as a partner's personality traits and incidence of suspicion of a partner's infidelity (Shackelford & Buss, 2000).

Men who express greater satisfaction with and investment in their romantic relationship may face greater costs associated with potential cuckoldry. Belsky, Gilstrap, and Rovine (1984) argue that men's relationship satisfaction, within a married dyad, is a key predictor of paternal investment in offspring. If cuckolded men express high levels of relationship satisfaction, which cause them to invest greater time, energy, and resources in offspring to whom they are not genetically related, they thereby squander these substantial investments in unrelated offspring.

### **Women's Orgasm**

Female orgasm may be an adaptation to preferentially retain the sperm of a favored man. Smith (1984) contends that the female orgasm may function as a means by



which women cryptically choose the paternity of their offspring (see also Thornhill & Gangestad, 1999, 2008). Fox, Wolff, and Baker (1970) posited that women's orgasm might produce suction—the upsuck hypothesis—within women's reproductive tract that takes sperm and seminal fluid from the upper vagina and deposits them into the uterus. Baker and Bellis (1993b) further argue that the timing of women's orgasm, in relation to the timing of men's ejaculation, may facilitate sperm retention. Women's orgasm that occurred one minute prior to men's ejaculation and up to 45 minutes after men's ejaculation may be the most effective at retaining sperm. Baker and Bellis (1993b) empirically tested the hypothesis that women's orgasm may retain sperm; the greatest sperm retention, approximately 70% of an ejaculate, occurred when a male's ejaculate was present within the woman's reproductive tract at the time of orgasm. Sperm retention as a function of women's orgasm may be especially interesting considering that copulations in which females do not experience orgasm result in greater amounts of flowback. Flowback, the ejection of sperm and seminal fluid from the female reproductive tract, can account for the expulsion of 80% of inseminated sperm in rabbits, *Oryctolagus cuniculus*, (Overstreet, 1983) and 3 ml of sperm and seminal fluid in humans (Baker & Bellis 1993a).

If women's orgasm functions as an adaptation to retain sperm, particular male qualities may be linked to the occurrence and frequency of women's copulatory orgasms. Thornhill and Gangestad (1995) found that women reported greater frequencies of orgasm when partnered to men with greater body and facial symmetry. Symmetry may provide outward indicators of genetic quality (Grammer, Fink, Møller, & Thornhill, 2003); greater symmetry may arise as a result of fewer developmental insults.

Additionally, women mated to men who they perceive as sexually and physically more attractive report experiencing more orgasms during in-pair sexual intercourse (Shackelford et al. 2000; Thornhill, Gangestad, & Comer, 1995). Like symmetry, attractiveness is a heritable signal of good genes. Pollet and Nettle (2009) analyzed data from a nationwide study of Chinese citizens, the Chinese Health and Family Life Survey, to evaluate the link between Chinese women's self-reported frequency of orgasm and partner wealth. The researchers indeed found a significant relationship between the two variables; however, assessments of partner symmetry and attractiveness were not available. As a result of the high minimum obligatory investment of reproduction (Symons, 1979), and if women's orgasm functions to selectively retain the sperm of particular men, women may unconsciously be highly selective about with whom she experiences copulatory orgasm.

Some researchers (see Gould, 1987; Symons, 1979; Wallen & Lloyd, 2008) have presented arguments against or inconsistent with the hypothesis that human female orgasm is an adaptation to selectively retain sperm. Symons (1979) argued that the female orgasm and clitoris are byproducts of the male orgasm and penis, respectively, and which arise from the shared embryological development of males and females. The male penis and female clitoris develop from the same embryological structure; the reception of sex-differentiated hormones is responsible for the developmental trajectory of the relevant tissue (Lloyd, 2005). Kinsey and colleagues (1957) identified the orgasmic function of the same nervous and erectile tissue in both sex organs.

Lloyd (2005) further contends that the wide variability in women's ability to achieve copulatory orgasm fails to support an adaptationist account of the female orgasm.

Hunt (1974) collected orgasm frequency data from a large sample of married American women, and found the 54% of surveyed women reported having an orgasm with all or most episodes of sexual intercourse, while 7% reported never having an orgasm. Hunt's study did not collect data on the method by which women achieved orgasm. Lloyd posits that sexual intercourse without the manual stimulation of the clitoris (e.g., from a partner or by self-masturbation) will only infrequently produce orgasm. Rates of unassisted orgasm (i.e. penile/vaginal sexual intercourse without manual stimulation) range from 15% to 35% (Fisher, 1973; Tavris & Saad, 1977). Furthermore, Fisher (1973) reports that 63% of surveyed women achieved orgasm as a function of manual stimulation before sexual intercourse.

### **Hypotheses**

In summary, women's orgasm may be an adaptation to bias retention of a particular man's sperm. If this is the case, men may have evolved counter-adaptations in response. For example, ancestral men who were particularly interested in the occurrence of their partner's copulatory orgasm may have been more successful in the context of sperm competition. This may be especially so in the context of long-term committed relationships in which men invest substantially.

Men who are more satisfied with and invested in a relationship may be more attentive to and interested in their partner's copulatory orgasm, regardless of the current sperm competition risk. In addition, men in committed, long-term relationships may be particularly attentive to and interested in their partner's copulatory orgasm when the risk of sperm competition is greater. I generated and tested in the current research the following hypotheses:

*Hypothesis 1:* Men who report higher relationship satisfaction will report greater interest in and attentiveness to their partner's copulatory orgasm, relative to men who report lower relationship satisfaction (see Figure 1 and Figure 2).

*Hypothesis 2:* The hypothesized positive relationship between men's relationship satisfaction and men's interest in their partner's copulatory orgasm will be moderated by the risk of sperm competition, such that men who experience greater sperm competition risk and are more satisfied with their relationship will be particularly interested in their partner's copulatory orgasm.

## II. METHOD

### **Participants**

Participants were 229 men who were 18 years or older, reported current involvement in a committed heterosexual relationship, and reported having sexual intercourse with their partner at least once in the past week. Participants were drawn from a university population in the Southeastern United States and from public websites. The mean age of the participants was 22.12 years ( $SD = 6.04$ ), and the mean age of the participants' partners was 21.80 years ( $SD = 6.24$ ). The mean length of the participants' relationships was 23.32 months ( $SD = 41.55$ ).

### **Materials**

I administered a survey to participants using an online survey provider. This method allowed participants to answer questions in a comfortable setting, and helped to ensure anonymity for the participants. Responses were stored in a secure database accessible only by the researcher. The survey assessed (1) demographic information including participant's age, partner's age, and relationship length, (2) the total amount of time that had passed since the participant's last in-pair sexual intercourse, (3) the total amount of time that the participants spent together with their partner since the last time they had sexual intercourse, (4) participant's relationship satisfaction, and (5)

participant's interest in their partner's orgasm at the next in-pair sexual intercourse (see Appendix for the full survey).

*Time Since Last Sexual Intercourse.* I asked participants to indicate, in hours, how long ago they and their partner last had sexual intercourse (last.sex) (following Shackelford et al., 2002; Shackelford, Goetz, McKibbin, & Starratt, 2007).

*Proportion of Time Spent Apart.* I calculated the proportion of time the couple had spent apart since their last sexual intercourse (pro.time) by subtracting the time, in hours, that the couple spent together since their last sexual intercourse from the total time, in hours, since the couple last had sexual intercourse, and then dividing the difference by the time, in hours, that had elapsed since the couple's last sexual intercourse (Shackelford et al., 2002; Shackelford et al., 2007).

*Relationship Satisfaction.* The relationship satisfaction construct ( $\alpha = 0.89$ ) consisted of four measured variables ( $\beta = 0.78 - 0.93$ ) (following Shackelford et al., 2002; Shackelford & Goetz, 2004): (1) "How committed are you to your partner?" (you.com), (2) "How satisfied are you, overall, with your partner?" (ov.sat), (3) "How sexually satisfied are you with your partner?" (sex.sat), and (4) "How emotionally satisfied are you with your partner?" (emo.sat). Participants responded using a 9-point scale ranging from 0 = *Not at all* to 9 = *Extremely*.

*Interest in Partner's Orgasm.* The interest in partner's orgasm construct ( $\alpha = 0.73$ ) consisted of four composite variables ( $\beta = .41 - .85$ ): (1) int.org: men's interest in their partner achieving orgasm at the couples' next sexual intercourse ( $\alpha = 0.73$ ), (2) pers.org: men's persistence in helping or encouraging their partner to achieve orgasm at

the couples' next sexual intercourse ( $\alpha = 0.91$ ), (3) dis.org: men's distress if their partner does not achieve orgasm at the couples' next sexual intercourse ( $\alpha = 0.85$ ), and (4) reli.org: men's relief in response to their partner achieving orgasm at the couples' next sexual intercourse ( $\alpha = 0.72$ ).

The interest composite (int.org) consisted of responses to two questions: (1) "Thinking about the next time you and your partner have sex, how important is it to you for your partner to have an orgasm?" (imp.org), (2) "Thinking about the next time you and your partner have sex, how necessary is it to you for your partner to have an orgasm?" (nec.org). The persistence composite (pers.org) consisted of responses to two questions: (1) "Thinking about the next time you and your partner have sex, how persistent would you be in making sure your partner has an orgasm?" (per.org), (2) "Thinking about the next time you and your partner have sex, how determined would you be in making sure your partner has an orgasm?" (det.org). The distressed composite (dis.org) consisted of responses to three questions: (1) "Thinking about the next time you and your partner have sex, how frustrated would you be if you thought your partner did not orgasm?" (frus.org), (2) "Thinking about the next time you and your partner have sex, how angry would you be if you thought your partner did not orgasm?" (ang.org), (3) "Thinking about the next time you and your partner have sex, how upset would you be if you thought your partner did not orgasm?" (up.org). The relieved composite (reli.org) consisted of responses to two questions: (1) "Thinking about the next time you and your partner have sex, how excited would you be if you thought your partner had an orgasm?" (exc.org), (2) "Thinking about the next time you and your partner have sex, how relieved would you be if you thought your partner had an orgasm?" (rel.org). Participants

responded to all items on a 7-point scale ranging from 0 = *Not at all* to 7 = *Extremely*.

Table 1 presents the descriptive statistics for all variables included in the analyses.

### **Procedure**

I recruited participants through in-class invitations and through an undergraduate research subject pool. Participants were offered research credits for their participation. I provided participants with the web address necessary for participation either during in-class presentations or on a subject pool sign-up sheet. Upon arriving at the online survey, participants were instructed to read the consent form and indicate their approval for participation. If the participants did not indicate their consent, had already participated in the study, were not at least 18 years of age, or were not currently in a committed, heterosexual sexual relationship they were automatically exited from the study.

### **Statistical Analyses**

I used multiple-group structural equation modeling to test the hypothesis that sperm competition risk, as measured by the proportion of time men had spent apart from their partner since the couple's last sexual intercourse, moderates the relationship between men's relationship satisfaction and men's interest in their partners' orgasm, while controlling for the total time since the couples' last sexual intercourse. Structural equation modeling provides several statistical benefits over more traditional methods, including multiple regression and ANOVA. Through SEM, one can simultaneously test several predictor and outcome variables without constantly resetting variance. Though this process may not help one's hypotheses testing, it ensures a more realistic evaluation of data. Structural equation modeling also allows for a researcher to factor in the presence



of error. By doing so, one may achieve a more realistic analysis. In addition, structural equation modeling allows the researcher to assess the overall fit of a model through two primary processes, the “goodness-of-fit” index and the “badness-of-fit” index. The “goodness-of-fit” index compares the researcher’s specified model to the best possible model, while the “badness-of-fit” index compares the researcher’s model to the worst possible model. There are several measures to assess both fit indices; however, to assess the “badness-of fit” index, I used chi-squared ( $\chi^2$ ), and the root mean square error of approximation (RMSEA). To assess the “goodness-of-fit” index, I used the comparative fit index (CFI). Chi-square ( $\chi^2$ ) is a commonly reported measure of fit; it is used to test the validity of the null hypothesis. If the  $\chi^2$  is significant, one must accept the null hypothesis, while if the  $\chi^2$  is not significant, one may reject the null. A non-significant  $\chi^2$  will indicate that the specified model is not poorly fitting. The RMSEA assess how much worse one’s model is than the perfect conceivable model, (i.e. how similar is one’s model to the worst possible model). There are several advantages to using the RMSEA to assess the fit of a model, including the fact that this measure is not affected by sample size. A RMSEA less than 0.05 indicates a good model fit, a RMSEA less than 0.08 indicates an acceptable fitting model, and a RMSEA greater than 0.10 indicates that the specified model has poor fit. The CFI also is commonly accepted as a measures of model fit. This index assesses how much one’s specified model deviates from the null hypothesis. A CFI between 0.90 and 0.95 indicates an acceptable fitting model, a CFI greater than 0.95 indicates a good fitting model, and a CFI of 1.00 or greater indicates a perfect fitting model (Hu & Bentler, 1999).

I separated the participants into two groups: (1) greater proportion of time apart: men who had spent 50% or more of their time away from their partner following their last in-pair sexual intercourse ( $n = 154$ ), and (2) lesser proportion of time spent apart: men who had spent less than 50% of their time away from their partner following their last in-pair sexual intercourse ( $n = 75$ ). Within the greater proportion of time spent apart group, 19 participants reported spending exactly 50% of their time away from their partner. I ran the analyses excluding the data from the 19 participants, and the pattern of results remained the same. I also conducted analyses splitting the groups of participants into four additional groups: (1) men who had spent 75% or more of their time apart from their partner following their last in-pair sexual intercourse, (2) men who had spent less than 75% of their time apart from their partner following their last in-pair sexual intercourse, (3) men who had spent 25% or more of their time apart from their partner following their last in-pair sexual intercourse, and (4) men who had spent less than 25% of their time apart from their partner following their last in-pair sexual intercourse. The results from the additional group divisions did not significantly differ from the original group division; consequently, I used the original group division for the final analyses. The final analyses also included data from the 19 participants who spent exactly 50% of their time apart from their partner following their last in-pair sexual intercourse.

### III. RESULTS

#### *Measurement Model.*

I identified a good overall fit for the measurement model,  $\chi^2(50) = 56.462, p = 0.246$ ; CFI = 0.99; RMSEA = .02 (see Figure 3 and Figure 4). A model provides a good fit to the data when the CFI is greater than .95 and the RMSEA is .06 or lower (Hu & Bentler, 1999). Tables 2 and 3 show correlations among the measured variables.

After running the initial model, I respecified the model to include a correlation between dis.org and reli.org. These two measures assess emotional components of men's responses to either their partner not achieving orgasm or achieving orgasm. Upon making this respecification, model fit improved significantly,  $\chi^2(48) = 47.067, p = 0.511$ ;  $\chi^2_D(2) = 9.395, p = 0.511$ ; CFI = 1.000; RMSEA = 0.00 (see Figure 5 and Figure 6). Tables 4 and 5 provide the unstandardized, standardized, and significance values for all paths and correlations in the measurement model and respecified measurement model.

I tested the theoretical structural model to assess the relationships between the constructs, moderated by the proportion of time men spent apart from their partners. The model demonstrated good fit,  $\chi^2(48) = 47.067, p = 0.511$ ; CFI = 1.00; RMSEA = 0.00. Men's relationship satisfaction significantly predicted interest in their partner's orgasm when men had spent at least 50% of their time apart from their partner since the couple's last sexual intercourse, while controlling for the total time since last intercourse (see Figure 7). There were no significant relationships between these variables when men had

spent less than 50% of their time apart from their partner since the couple last had sexual intercourse (see Figure 8). Table 6 provides the unstandardized, standardized, and significance values for all paths in the structural model.

#### IV. DISCUSSION

I hypothesized that men who report higher relationship satisfaction will report greater interest in and attentiveness to their partner's copulatory orgasm, relative to men who report lower relationship satisfaction (Hypothesis 1). In addition, I hypothesized that the positive relationship between men's relationship satisfaction and men's interest in their partner's copulatory orgasm will be moderated by the risk of sperm competition, such that men who experience greater sperm competition risk and are more satisfied with their relationship will be particularly interested in their partner's copulatory orgasm (Hypothesis 2). Using multiple-group structural equation modeling, I found support for these hypotheses.

Sperm competition risk moderated the effect of relationship satisfaction and investment on interest in partner orgasm, such that men who reported a greater sperm competition risk and greater relationship satisfaction and investment were particularly likely to report an interest in and attentiveness to their partner's copulatory orgasm. The association between relationship satisfaction and investment and interest in partner orgasm was not significant for men who reported a lesser sperm competition risk.

Sperm competition risk represents the possibility of cuckoldry (Shackelford et al., 2005). Women's orgasm may be associated with greater sperm retention and, therefore, a greater chance of conception (Baker & Bellis, 1995; Thornhill & Gangestad, 1999, 2008; Thornhill et al., 1995). The results of this study provide evidence that men may be

particularly interested in and attentive to their partner's copulatory orgasm when they are under greater risk of sperm competition. In this way, men may encourage or facilitate their partner to bias the retention of their sperm, decreasing the risk of cuckoldry. As I discuss next, these results should be interpreted with caution, and additional research should investigate further the relationship between sperm competition risk and men's interest in their partner's orgasm.

### **Limitations and Future Directions**

The men in this sample were primarily undergraduate students with a mean age of 22 years. We recruited participants from a relatively affluent Western population. Although all participants were currently in a committed relationship, I did not code for the type of relationship such as exclusive dating, marriage, etc. It may not be appropriate to generalize the current results to men in non-Western countries or in other types of long-term relationships.

I did not assess whether women actually experienced orgasm. It may be particularly important to determine whether women report greater frequency of orgasm during intercourse with their partner during times in which their partners are at greater risk of sperm competition. Women are likely to provide more accurate estimates of their experience of orgasm. Men may not be accurate in their assessments of whether their partner achieved orgasm (Thornhill et al., 1995).

In conclusion, sperm competition has likely been an adaptive problem for human males over evolutionary history (Smith, 1984; Shackelford & Pound, 2006). Sperm competition risk can influence the number of sperm present in an ejaculate (Baker &

Bellis, 1989, 1993, 1995), men's perceptions of their partner's attractiveness (Shackelford et al., 2002), men's copulatory behavior (Goetz et al., 2005), and even men's purchasing decisions (Miner et al., 2010). The current research provides evidence that men also may have psychological mechanisms that motivate them to experience greater interest in and attentiveness to their partner's experience of orgasm when men are at greater risk of sperm competition.

## V. Appendix

### Section A

This survey includes questions concerning intimate details about your intimate relationship. This data will help researchers better understand the dynamics of intimate relationships. For this reason, it is important to be as *honest* and *accurate* as possible. Remember that your responses are completely anonymous and cannot be linked to you in any way.

1. How long have you been involved in your current, committed, sexual relationship? Please respond in months. (1 year equals 12 months) \_\_\_\_\_ months
2. What is *your* age? \_\_\_\_\_ years
3. What is *your partner's* age? \_\_\_\_\_ years
4. How long ago did you and your partner last have *sexual intercourse*? Please think carefully about this and provide the most accurate answer you can. Please answer in hours. (1 day equals 24 hours) \_\_\_\_\_ hours ago
5. Since the last time you and your partner had *sexual intercourse*, how many hours have you and your partner spent *together, including sleeping time*? Note that the number of hours you indicate here must be less than or equal to the number of hours you indicated for the previous question. \_\_\_\_\_ hours

### Section B

6. Thinking about the next time you and your partner have sex, how *important* is it to *you* for your partner to have an orgasm?

1      2      3      4      5      6      7

**Much  
less important  
than usual**

**Much  
more important  
than usual**



7. Thinking about the next time you and your partner have sex, how *necessary* is it to *you* for your partner to have an orgasm?

1      2      3      4      5      6      7

**Much  
less necessary  
than usual**

**Much  
more necessary  
than usual**

8. Thinking about the next time you and your partner have sex, how *persistent* would *you* be in making sure your partner had an orgasm?

1      2      3      4      5      6      7

**Much  
less persistent  
than usual**

**Much  
more persistent  
than usual**

9. Thinking about the next time you and your partner have sex, how *determined* would *you* be in making sure your partner has an orgasm?

1      2      3      4      5      6      7

**Much  
less determined  
than usual**

**Much  
more determined  
than usual**

10. Thinking about the next time you and your partner have sex, how *frustrated* would *you* be if you thought your partner did not orgasm?

1      2      3      4      5      6      7

**Much  
less frustrated  
than usual**

**Much  
more frustrated  
than usual**

11. Thinking about the next time you and your partner have sex, how *angry* would *you* be if you thought your partner did not orgasm?

1      2      3      4      5      6      7

**Much  
less angry  
than usual**

**Much  
more angry  
than usual**

12. Thinking about the next time you and your partner have sex, how *upset* would you be if you thought your partner did not orgasm?

1      2      3      4      5      6      7

**Much  
less upset  
than usual**

**Much  
more upset  
than usual**

13. Thinking about the next time you and your partner have sex, how *excited* would you be if you thought your partner had an orgasm?

1      2      3      4      5      6      7

**Much  
less excited  
than usual**

**Much  
more excited  
than usual**

14. Thinking about the next time you and your partner have sex, how *relieved* would you be if you thought your partner had an orgasm?

1      2      3      4      5      6      7

**Much  
less relieved  
than usual**

**Much  
more relieved  
than usual**

15. Thinking about the next time you and your partner have sex, how *frustrated* would you be if you thought your partner *faked* an orgasm?

1      2      3      4      5      6      7

**Much  
less frustrated  
than usual**

**Much  
more frustrated  
than usual**

16. Thinking about the next time you and your partner have sex, how *angry* would you be if you thought your partner *faked* an orgasm?

1      2      3      4      5      6      7

**Much  
less angry  
than usual**

**Much  
more angry  
than usual**

17. Thinking about the next time you and your partner have sex, how *upset* would you be if you thought your partner *faked* an orgasm?

1      2      3      4      5      6      7

**Much  
less upset  
than usual**

**Much  
more upset  
than usual**

18. Thinking about the next time you and your partner have sex, how *likely* is it that your partner will *fake* an orgasm?

1      2      3      4      5      6      7

**Much  
less likely  
than usual**

**Much  
more likely  
than usual**

19. Thinking about the next time you and your partner have sex, how *probably* is it that your partner will *fake* an orgasm?

1      2      3      4      5      6      7

**Much  
less probable  
than usual**

**Much  
more probable  
than usual**

**Section C**

20. Thinking about your partner *at this moment in time*, how *physically* attractive do you think she is?

1      2      3      4      5      6      7

**Much  
less attractive  
than usual**

**Much  
more attractive  
than usual**

21. Thinking about your partner *at this moment in time*, how *sexually* attractive do you think she is?

1      2      3      4      5      6      7

**Much  
less attractive  
than usual**

**Much  
more attractive  
than usual**

22. Thinking about your partner *at this moment in time*, how *physically* attractive do *other men* think she is?

1      2      3      4      5      6      7

**Much  
less attractive  
than usual**

**Much  
more attractive  
than usual**

23. Thinking about your partner *at this moment in time*, how *sexually* attractive do *other men* think she is?

1      2      3      4      5      6      7

**Much  
less attractive  
than usual**

**Much  
more attractive  
than usual**

24. Thinking about your partner *at this moment in time*, how *physically* attracted is *she* to you?

1      2      3      4      5      6      7

**Much  
less attracted  
to me than usual**

**Much  
more attracted  
to me than usual**

25. Thinking about your partner *at this moment in time*, how *sexually* attracted is *she* to you?

1      2      3      4      5      6      7

**Much  
less attracted  
to me than usual**

**Much  
more attracted  
to me than usual**

26. Thinking about your partner *at this moment in time*, how *physically* attracted is *she* to *other men*?

1      2      3      4      5      6      7

**Much  
less attracted  
to other men  
than usual**

**Much  
more attracted  
to other men  
than usual**

27. Thinking about your partner *at this moment in time*, how *sexually* attracted is *she* to *other men*?

1 2 3 4 5 6 7

**Much  
less attracted  
to other men  
than usual**

**Much  
more attracted  
to other men  
than usual**

28. *At this moment in time*, how interested are *you* in having sexual intercourse with *your partner*?

1 2 3 4 5 6 7

**Much  
less interested  
than usual**

**Much  
more interested  
than usual**

29. *At this moment in time*, how excited are *you* to have sexual intercourse with *your partner*?

1 2 3 4 5 6 7

**Much  
less excited  
than usual**

**Much  
more excited  
than usual**

30. *Regardless* of what your schedule and your partner's schedule *actually allows*, when would you next like to have sexual intercourse with your partner? Please be as specific as possible and please answer in hours. (1 day equals 24 hours)

\_\_\_\_\_ **hours**

31. How likely do you think it is that *your current partner* will in the future have *sexual intercourse* with someone other than you, while in a relationship with you?

0 1 2 3 4 5 6 7 8

**Not at all  
likely**

**Not at all  
likely**

32. Thinking about *this moment in time*, please indicate your agreement or disagreement with the following statement: "My partner will probably be sexually unfaithful to me."

0 1 2 3 4 5 6 7 8

**Completely  
disagree**

**Completely  
agree**

**Section D**

**INSTRUCTIONS:** For the next four questions, think about the *next* time that *you suggest to your partner* that you would like to have sexual intercourse with your partner. Your suggestion of sexual intercourse doesn't have to be in words, but may be a certain look that your partner knows or something you do that leads your partner to believe that you want to have sexual intercourse. *Imagine now that your partner declines your request*, either in words or with body language. Please answer the next four questions with this situation in mind.

33. How *angry* would you feel if your partner declined your request for sexual intercourse?

1      2      3      4      5      6      7

**Much  
less angry  
than usual**

**Much  
more angry  
than usual**

34. How *frustrated* would you feel if your partner declined your request for sexual intercourse?

1      2      3      4      5      6      7

**Much  
less frustrated  
than usual**

**Much  
more frustrated  
than usual**

35. How *upset* would you feel if your partner declined your request for sexual intercourse?

1      2      3      4      5      6      7

**Much  
less upset  
than usual**

**Much  
more upset  
than usual**

36. How *persistent* would you be in your request for sexual intercourse?

1      2      3      4      5      6      7

**Much  
less persistent  
than usual**

**Much  
more persistent  
than usual**

**Section E**

37. How *committed* are you to your partner?

0      1      2      3      4      5      6      7      8

**Not at all  
committed**

**Extremely  
committed**

38. How *satisfied* are you, *overall*, with your partner?

0      1      2      3      4      5      6      7      8

**Not at all  
satisfied**

**Extremely  
satisfied**

39. How *sexually* satisfied are you with your partner?

0      1      2      3      4      5      6      7      8

**Not at all  
satisfied**

**Extremely  
satisfied**

40. How *emotionally satisfied* are you with your partner?

0      1      2      3      4      5      6      7      8

**Not at all  
satisfied**

**Extremely  
satisfied**

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*Table 1*  
*Descriptive Statistics of Constructs and Measured Variables*

(N = 229)

| Variable                            | Mean  | SD     | $\alpha$     |
|-------------------------------------|-------|--------|--------------|
| Last.Sex                            | 49.98 | 43.054 | -            |
| Pro.Time                            | 0.577 | 0.311  | -            |
| <b>Relationship Investment</b>      | -     | -      | <b>0.885</b> |
| Ov.Sat                              | 7.681 | 1.576  | -            |
| Sex.Sat                             | 7.559 | 1.661  | -            |
| Emo.Sat                             | 7.520 | 1.670  | -            |
| <b>Interest In Partners' Orgasm</b> | -     | -      | <b>0.732</b> |
| <b>Int.Org</b>                      | 5.334 | 1.189  | <b>0.726</b> |
| Imp.Org                             | 5.515 | 1.241  | -            |
| Nec.Org                             | 5.153 | 1.435  | -            |
| <b>Pers.Org</b>                     | 5.537 | 1.202  | <b>0.914</b> |
| Per.Org                             | 5.504 | 1.257  | -            |
| Det.Org                             | 5.570 | 1.249  | -            |
| <b>Dis.Org</b>                      | 3.891 | 1.562  | <b>0.849</b> |
| Frus.Org                            | 4.419 | 1.696  | -            |
| Ang.Org                             | 3.328 | 1.852  | -            |
| Up.Org                              | 3.926 | 1.794  | -            |
| <b>Reli.Org</b>                     | 5.235 | 1.190  | <b>0.723</b> |
| Rel.Org                             | 4.972 | 1.456  | -            |
| Exc.Org                             | 5.498 | 1.223  | -            |

Table 2

*Correlations Between Measured Variables for Greater Proportion of Time Spent Apart*

(*N* = 154)

|             | 1      | 2       | 3       | 4       | 5       | 6       | 7       | 8       | 9 |
|-------------|--------|---------|---------|---------|---------|---------|---------|---------|---|
| 1. Last.Sex | 1      |         |         |         |         |         |         |         |   |
| 2. Reli.Org | .123   | 1       |         |         |         |         |         |         |   |
| 3. Dis.Org  | .083   | .325*** | 1       |         |         |         |         |         |   |
| 4. Pers.Org | .224*  | .417*** | .281**  | 1       |         |         |         |         |   |
| 5. Int.Org  | .221** | .411*** | .277*** | .751*** | 1       |         |         |         |   |
| 6. You.Com  | .062   | .140*   | .094    | .255*** | .252**  | 1       |         |         |   |
| 7. Emo.Sat  | .065   | .149**  | .100    | .271*** | .268*** | .616*** | 1       |         |   |
| 8. Sex.Sat  | .055   | .124*   | .084    | .227**  | .223**  | .514*** | .547*** | 1       |   |
| 9. Ov.Sat   | .076   | .172*   | .115    | .313*** | .309**  | .711*** | .756*** | .631*** | 1 |

Notes:  $p < .05^*$ ,  $p < .01^{**}$ ,  $p < .001^{***}$

Table 3

*Correlations Between Measured Variables for Lower Proportion of Time Spent Apart*

(N = 75)

|             | 1     | 2       | 3      | 4       | 5    | 6       | 7       | 8       | 9 |
|-------------|-------|---------|--------|---------|------|---------|---------|---------|---|
| 1. Last.Sex | 1     |         |        |         |      |         |         |         |   |
| 2. Reli.Org | .102  | 1       |        |         |      |         |         |         |   |
| 3. Dis.Org  | .069  | .403*** | 1      |         |      |         |         |         |   |
| 4. Pers.Org | .144  | .505*** | .345** | 1       |      |         |         |         |   |
| 5. Int.Org  | .141  | .495*** | .338** | .703*** | 1    |         |         |         |   |
| 6. You.Com  | -.006 | .066**  | .045   | .094    | .092 | 1       |         |         |   |
| 7. Emo.Sat  | -.007 | .077    | .053   | .109    | .107 | .709*** | 1       |         |   |
| 8. Sex.Sat  | -.006 | .070*   | .047   | .099    | .097 | .641*** | .747*** | 1       |   |
| 9. Ov.Sat   | -.007 | .079    | .054   | .113    | .110 | .730*** | .850*** | .768*** | 1 |

Notes:  $p < .05^*$ ,  $p < .01^{**}$ ,  $p < .001^{***}$



Table 4

*Unstandardized, Standardized, and Significance Levels for the Measurement Model:  
Greater Proportion of Time spent apart*

*(Standard Errors in Parentheses: N = 154)*

|                               | Unstandardized | Standardized | P     |
|-------------------------------|----------------|--------------|-------|
| <b>Measurement Model</b>      |                |              |       |
| Satisfaction → Ov.Sat         | 1.000          | 0.934        | -     |
| Satisfaction → Sex.Sat        | 0.734 (0.076)  | 0.676        | 0.000 |
| Satisfaction → Emo.Sat        | 0.896 (0.070)  | 0.809        | 0.000 |
| Satisfaction → You.Com        | 0.833 (0.072)  | 0.762        | 0.000 |
| Partner Orgasm → Int.Org      | 1.000          | 0.861        | -     |
| Partner Orgasm → Pers.Org     | 0.995 (0.108)  | 0.873        | 0.000 |
| Partner Orgasm → Reli.Org     | 0.528 (0.092)  | 0.478        | 0.000 |
| Partner Orgasm → Dis.Org      | 0.480 (0.127)  | 0.322        | 0.000 |
| Satisfaction ↔ Last.Sex       | 5.456 (5.721)  | 0.081        | 0.340 |
| Satisfaction ↔ Partner Orgasm | 0.628 (0.162)  | 0.384        | 0.000 |
| Partner Orgasm ↔ Last.Sex     | 11.827 (4.171) | 0.257        | 0.005 |
| Dis.Org ↔ Reli.Org            | 0.315 (0.131)  | 0.206        | 0.016 |
| 1 (Variance in Ov.Sat)        | 0.350 (0.115)  | 0.873        | .002  |
| 2 (Variance in Sex.Sat)       | 1.539 (0.192)  | 0.456        | 0.000 |
| 3 (Variance in Emo.Sat)       | 1.015 (0.149)  | 0.655        | 0.000 |
| 4 (Variance in You.Com)       | 1.205 (0.162)  | 0.580        | 0.000 |
| 5 (Variance in Int.Org)       | 0.389 (0.110)  | 0.741        | 0.000 |
| 6 (Variance in Pers.Org)      | 0.345 (0.107)  | 0.762        | 0.001 |
| 7 (Variance in Dis.Org)       | 2.224 (0.259)  | 0.103        | 0.000 |
| 8 (Variance in Reli.Org)      | 1.049 (0.126)  | 0.228        | 0.000 |

Table 5

*Unstandardized, Standardized, and Significance Levels for the Measurement Model:  
Lower Proportion of Time Spent Apart*

*(Standard Errors in Parentheses: N = 75)*

|                               | Unstandardized | Standardized | P     |
|-------------------------------|----------------|--------------|-------|
| Measurement Model             |                |              |       |
| Satisfaction → Ov.Sat         | 1.000          | 0.935        | -     |
| Satisfaction → Sex.Sat        | 1.020 (0.100)  | 0.821        | 0.000 |
| Satisfaction → Emo.Sat        | 1.088 (0.084)  | 0.909        | 0.000 |
| Satisfaction → You.Com        | 0.783 (0.085)  | 0.780        | 0.000 |
| Partner Orgasm → Int.Org      | 1.000          | 0.830        | -     |
| Partner Orgasm → Pers.Org     | 1.108 (0.185)  | 0.847        | 0.000 |
| Partner Orgasm → Reli.Org     | 0.796 (0.162)  | 0.596        | 0.000 |
| Partner Orgasm → Dis.Org      | 0.678 (0.208)  | 0.407        | 0.001 |
| Satisfaction ↔ Last.Sex       | -0.380 (6.020) | -0.008       | 0.950 |
| Satisfaction ↔ Partner Orgasm | 0.172 (0.160)  | 0.142        | 0.282 |
| Partner Orgasm ↔ Last.Sex     | 6.051 (4.575)  | 0.170        | 0.186 |
| Dis.Org ↔ Reli.Org            | 0.306 (0.181)  | 0.219        | 0.091 |
| 1 (Variance in Ov.Sat)        | 0.245 (0.080)  | 0.875        | 0.002 |
| 2 (Variance in Sex.Sat)       | 0.856 (0.164)  | 0.675        | 0.000 |
| 3 (Variance in Emo.Sat)       | 0.424 (0.109)  | 0.827        | 0.000 |
| 4 (Variance in You.Com)       | 0.675 (0.124)  | 0.608        | 0.000 |
| 5 (Variance in Int.Org)       | 0.385 (0.133)  | 0.689        | 0.004 |
| 6 (Variance in Pers.Org)      | 0.411 (0.159)  | 0.718        | 0.010 |
| 7 (Variance in Dis.Org)       | 1.981 (0.339)  | 0.165        | 0.000 |
| 8 (Variance in Reli.Org)      | 0.980 (0.180)  | 0.355        | 0.000 |

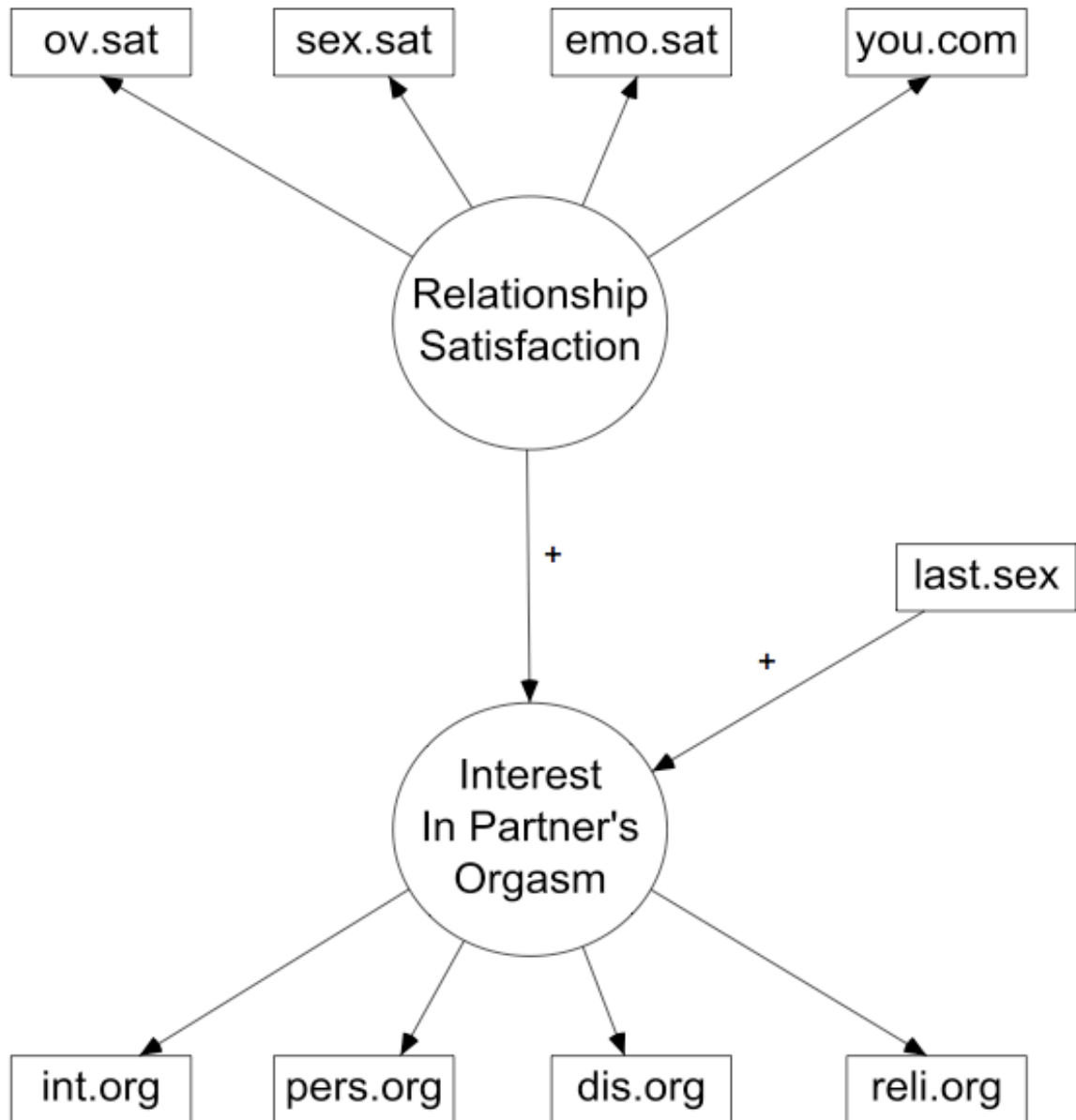
Table 6

*Unstandardized, Standardized, and Significance Levels for the Structural Models*

*(Standard Errors in Parentheses: N = 229: Greater Proportion of Time Spent Apart N = 154, Lower Proportion of Time Spent Apart N = 75)*

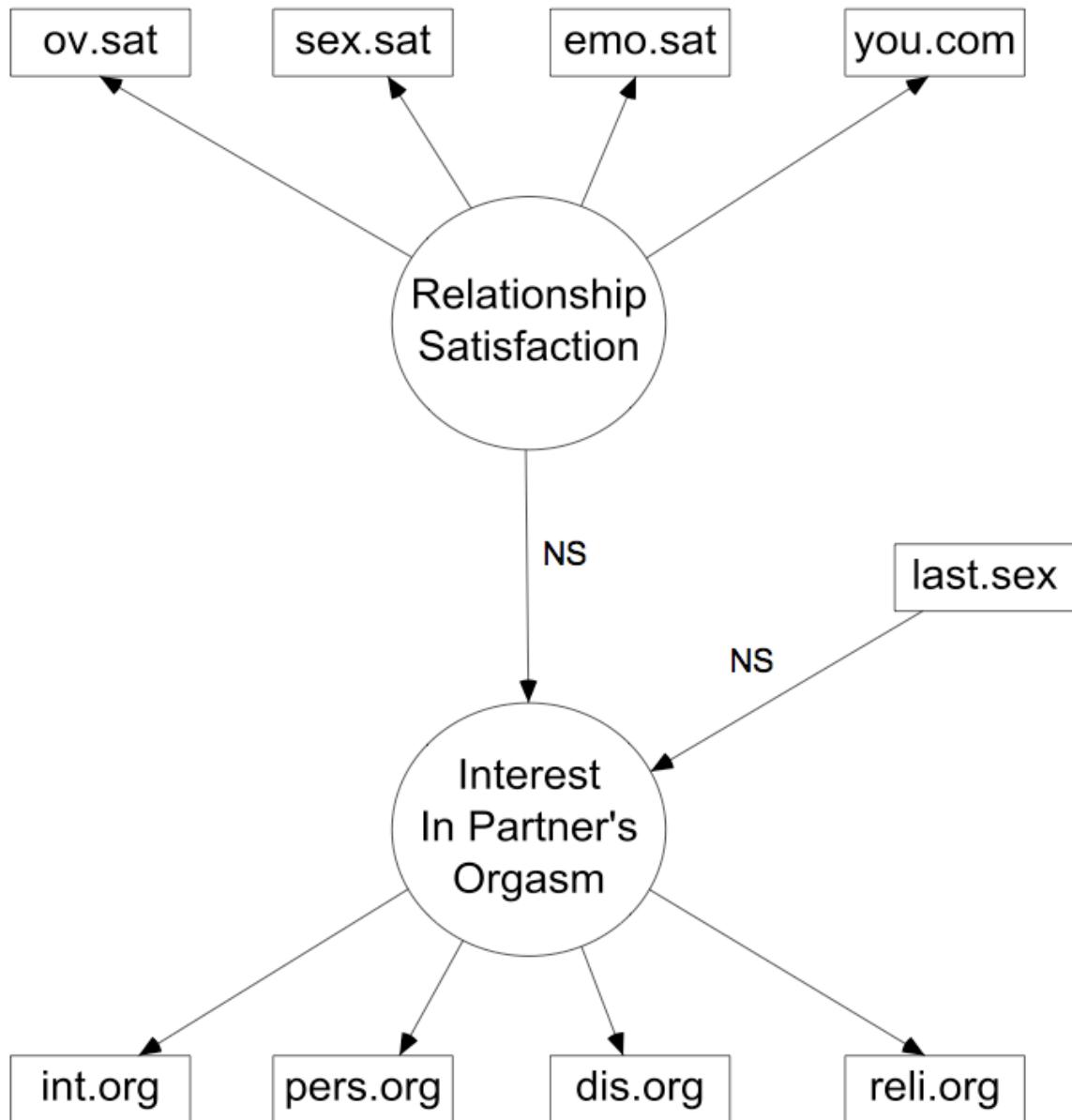
|                                | Unstandardized | Standardized | P     |
|--------------------------------|----------------|--------------|-------|
| Structural Model:              |                |              |       |
| Greater Pro.Time               |                |              |       |
| Last.Sex → Partner Orgasm      | 0.006 (0.002)  | 0.228        | 0.005 |
| Satisfaction → Partner Orgasm  | 0.249 (0.059)  | 0.366        | 0.000 |
| U (Variance in Partner Orgasm) | 0.893 (0.160)  | 0.199        | 0.000 |
| Structural Model:              |                |              |       |
| Lower Pro.Time                 |                |              |       |
| Last.Sex → Partner Orgasm      | 0.004 (0.003)  | 0.171        | 0.169 |
| Satisfaction → Partner Orgasm  | 0.101 (0.091)  | 0.143        | 0.264 |
| U (Variance in Partner Orgasm) | 0.811 (0.216)  | 0.050        | 0.000 |

Figure 1. Theoretical model for men in the high proportion of time spent apart since last sexual intercourse group



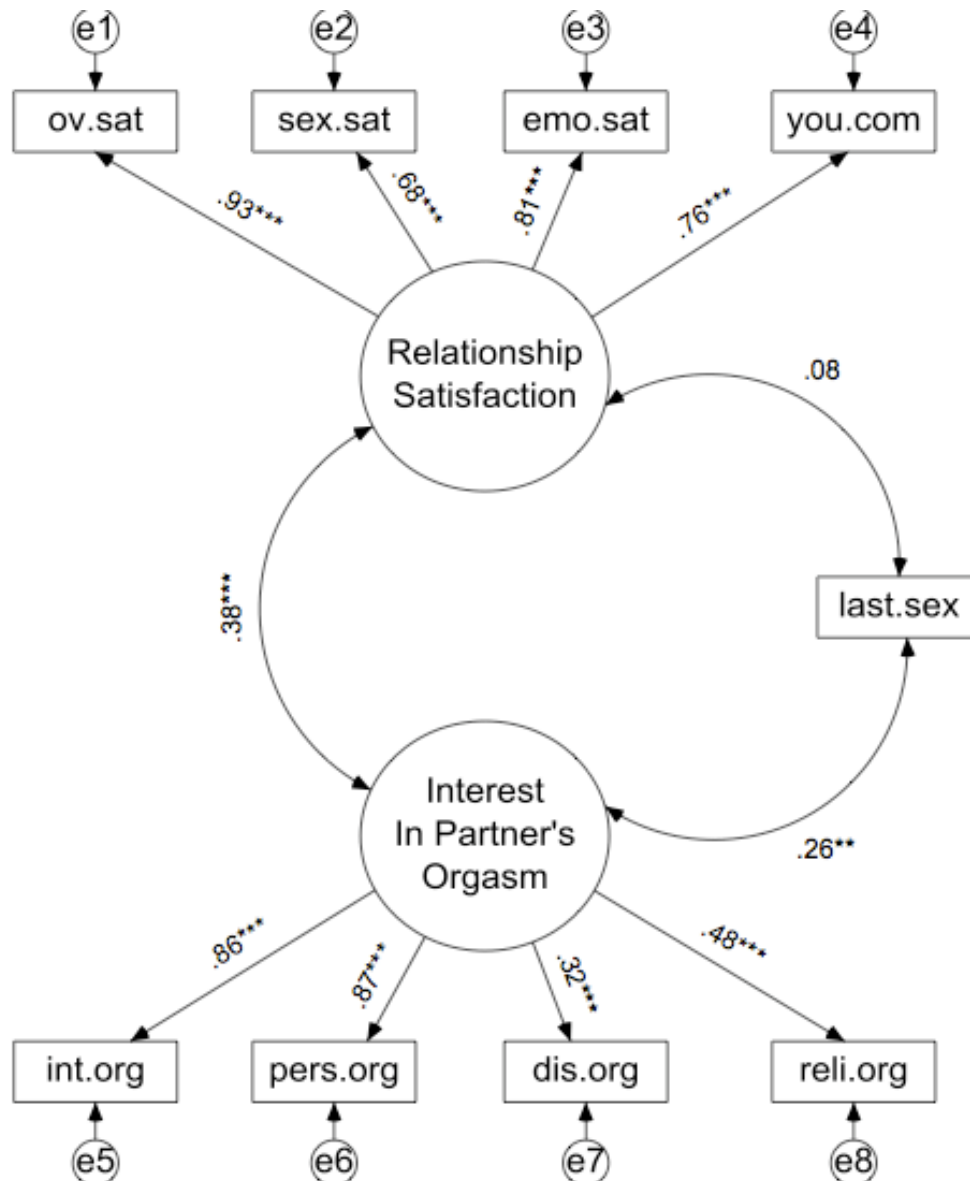
Variables in model: overall satisfaction (*ov.sat*), sexual satisfaction (*sex.sat*), emotional satisfaction (*emo.sat*), your commitment (*you.com*), time since last sex (*last.sex*) interest in partner orgasm (*int.org*), persistence in helping partner orgasm (*pers.org*), distress if partner does not orgasm (*dis.org*), and relief if partner has an orgasm (*reli.org*)

Figure 2. *Theoretical model for men in the low proportion of time spent apart since last sexual intercourse group*



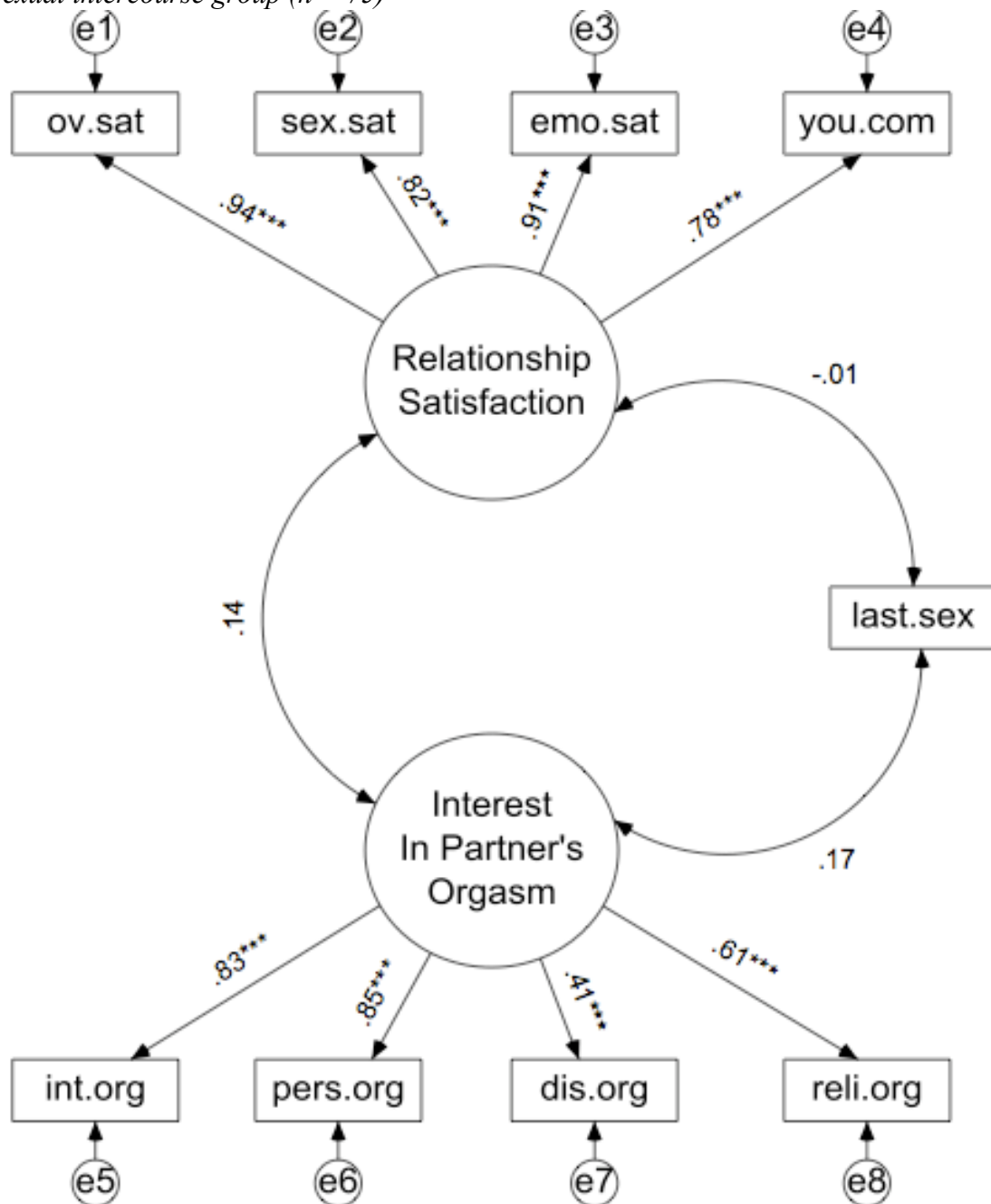
*Variables in model: overall satisfaction (ov.sat), sexual satisfaction (sex.sat), emotional satisfaction (emo.sat), your commitment (you.com), time since last sex (last.sex) interest in partner orgasm (int.org), persistence in helping partner orgasm (pers.org), distress if partner does not orgasm (dis.org), and relief if partner has an orgasm (reli.org)*

Figure 3. Measurement model for men in the high proportion of time spent apart since last sexual intercourse group ( $n = 154$ )



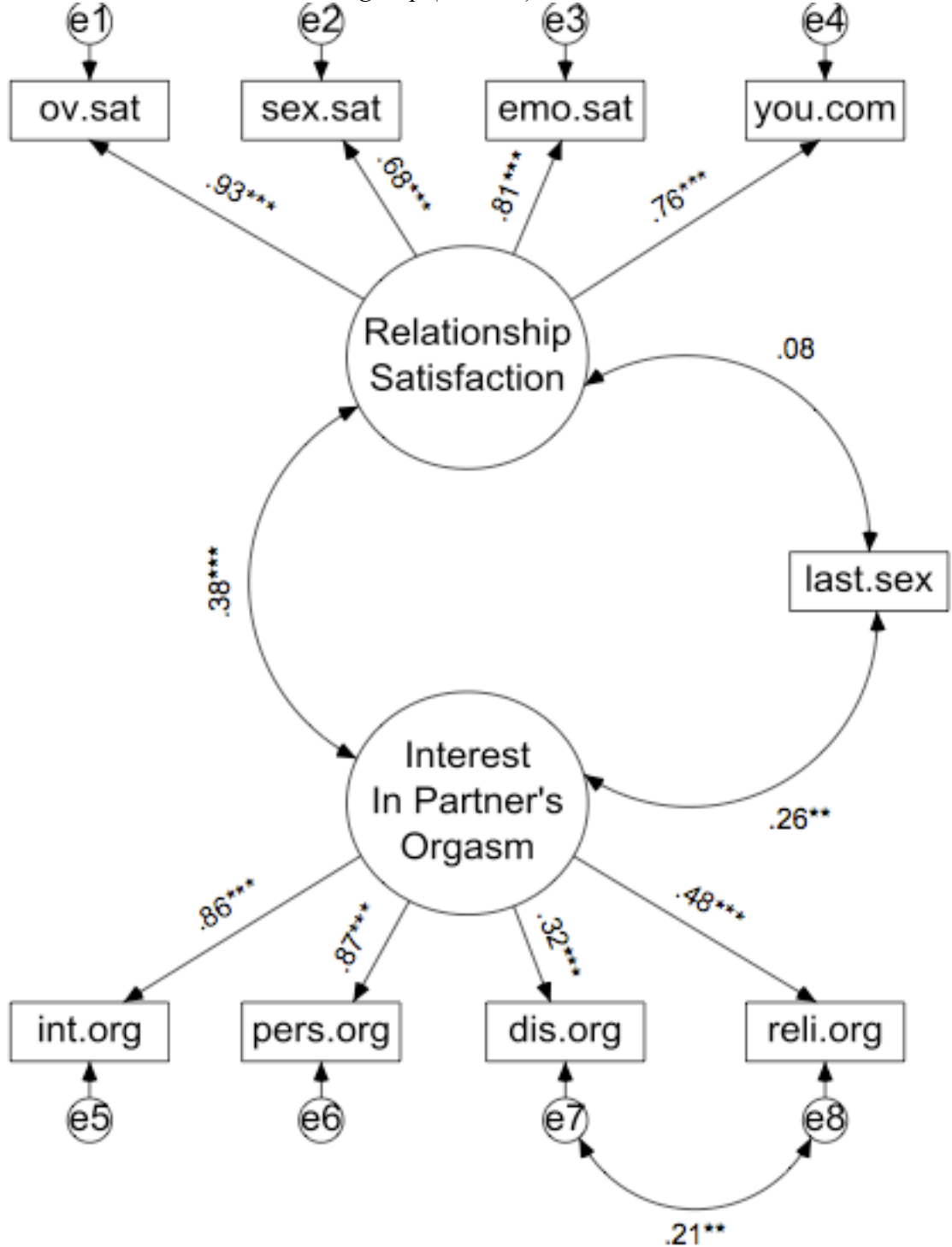
Note: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ . Variables in model: overall satisfaction (ov.sat), sexual satisfaction (sex.sat), emotional satisfaction (emo.sat), your commitment (you.com), time since last sex (last.sex) interest in partner orgasm (int.org), persistence in helping partner orgasm (pers.org), distress if partner does not orgasm (dis.org), and relief if partner has an orgasm (reli.org)

Figure 4. Measurement model for men in the low proportion of time spent apart since last sexual intercourse group ( $n = 75$ )



Note: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ . Variables in model: overall satisfaction (ov.sat), sexual satisfaction (sex.sat), emotional satisfaction (emo.sat), your commitment (you.com), time since last sex (last.sex) interest in partner orgasm (int.org), persistence in helping partner orgasm (pers.org), distress if partner does not orgasm (dis.org), and relief if partner has an orgasm (reli.org)

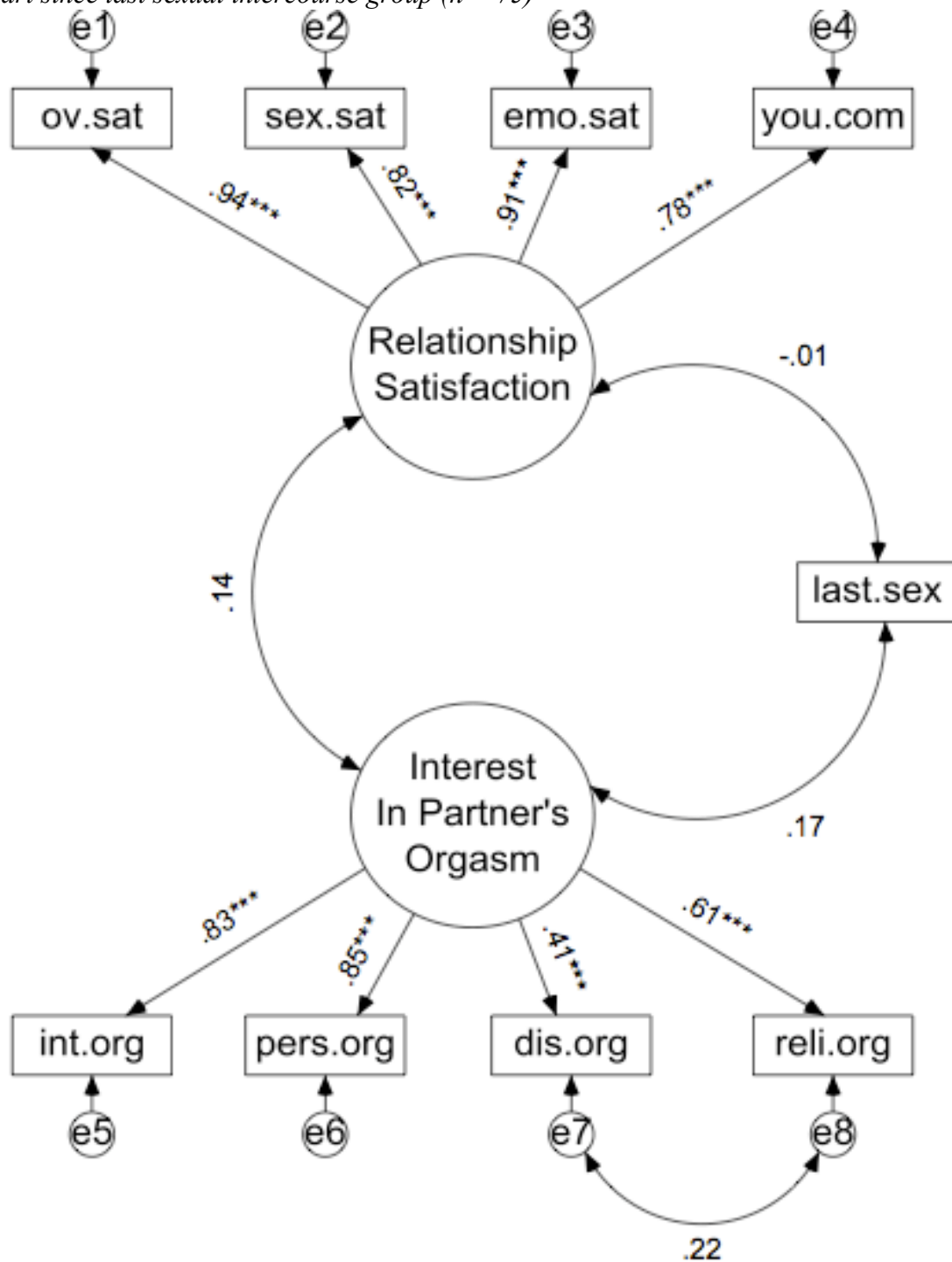
Figure 5. Respecified Measurement model for men in the high proportion of time spent apart since last sexual intercourse group (n = 154)



Note: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ . Variables in model: overall satisfaction (ov.sat), sexual satisfaction (sex.sat), emotional satisfaction (emo.sat), your commitment (you.com), time since last sex (last.sex) interest in partner orgasm (int.org), persistence in helping partner orgasm (pers.org), distress if partner does not orgasm (dis.org), and relief if partner has an orgasm (reli.org)

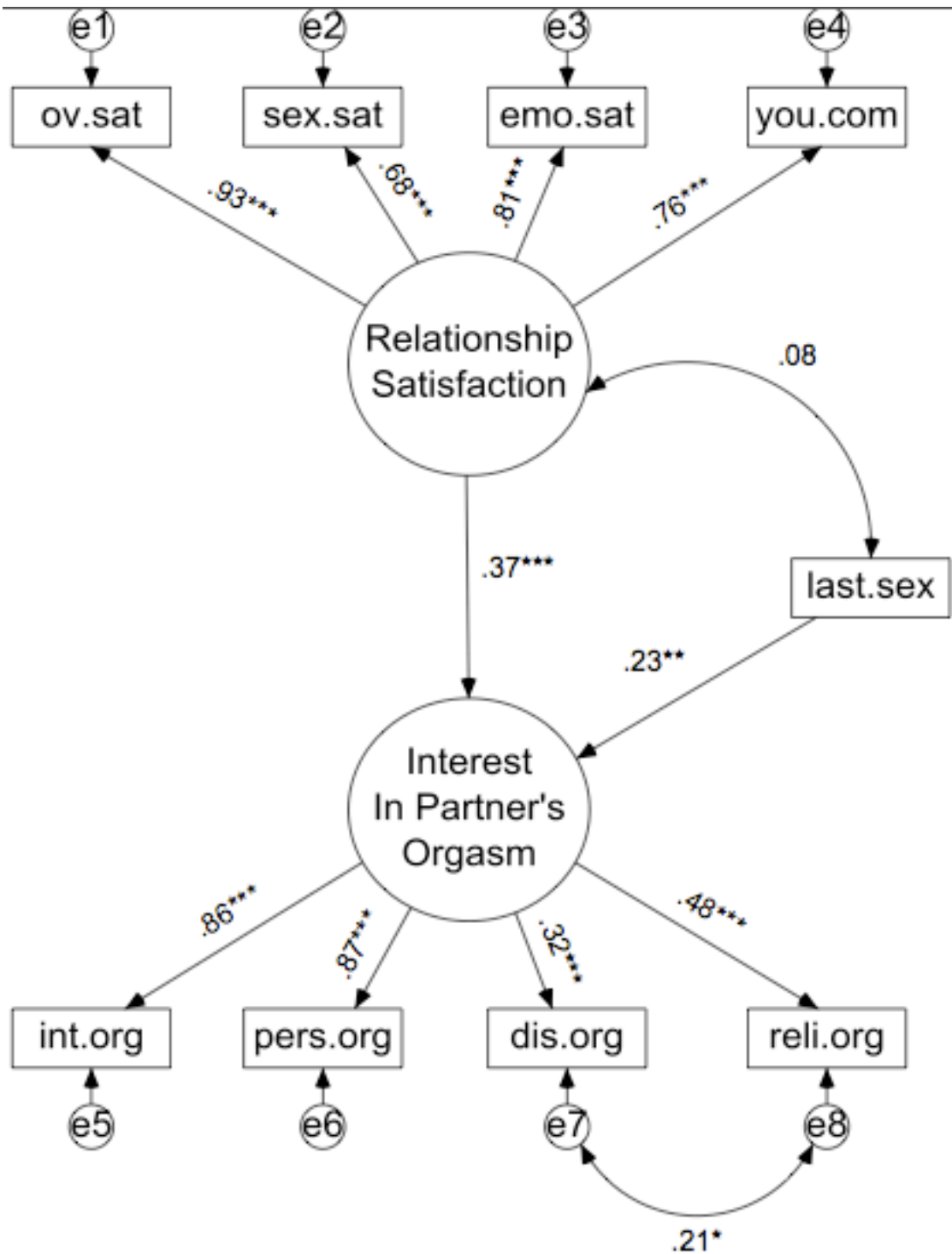


Figure 6. Respecified Measurement model for men in the low proportion of time spent apart since last sexual intercourse group ( $n = 75$ )



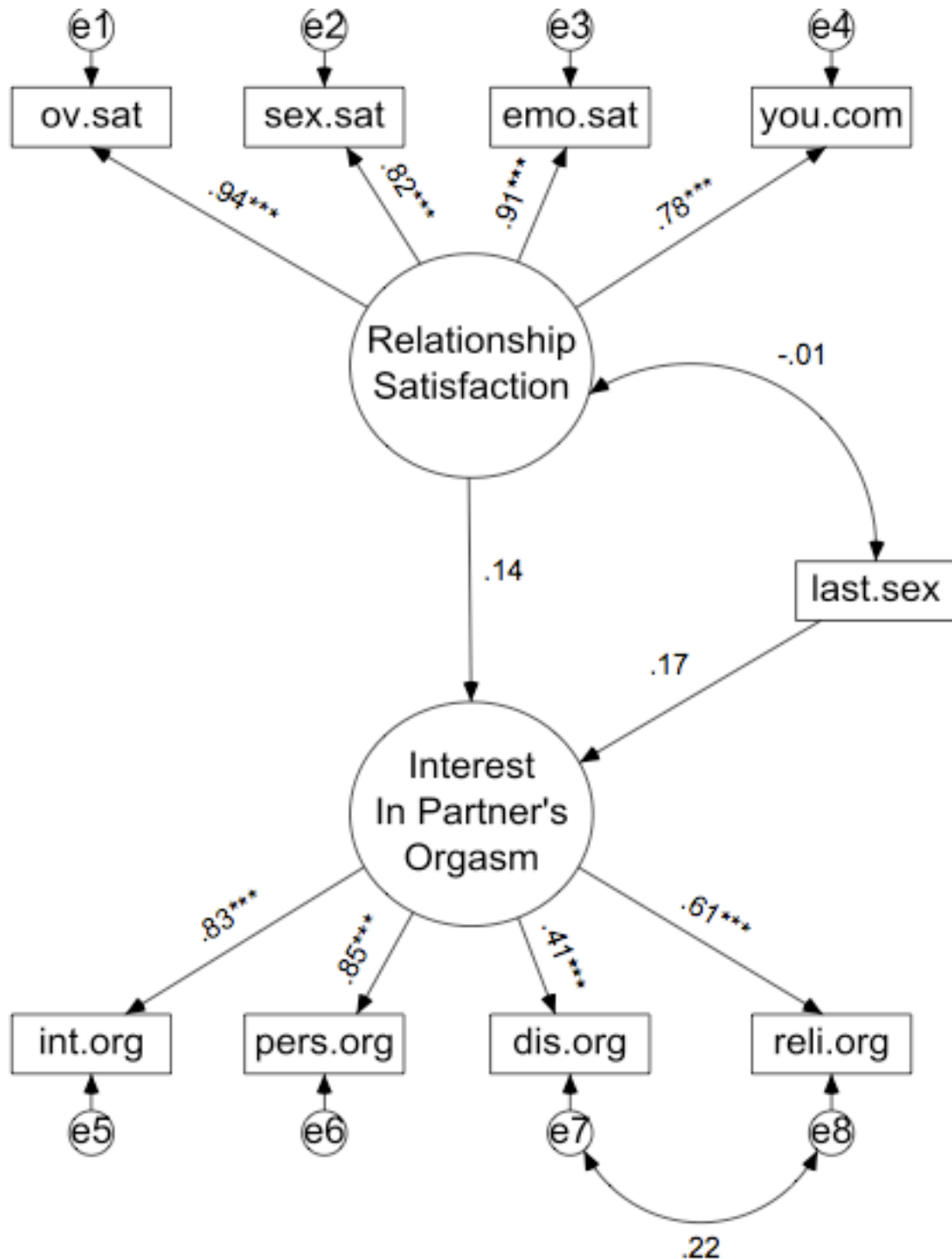
Note:  $*p < .05$ ,  $**p < .01$ ,  $***p < .001$ . Variables in model: overall satisfaction (ov.sat), sexual satisfaction (sex.sat), emotional satisfaction (emo.sat), your commitment (you.com), time since last sex (last.sex) interest in partner orgasm (int.org), persistence in helping partner orgasm (pers.org), distress if partner does not orgasm (dis.org), and relief if partner has an orgasm (reli.org)

Figure 7. Structural model for men in the high proportion of time spent apart since last sexual intercourse group (n = 154)



Note: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ . Variables in model: overall satisfaction (ov.sat), sexual satisfaction (sex.sat), emotional satisfaction (emo.sat), your commitment (you.com), time since last sex (last.sex) interest in partner orgasm (int.org), persistence in helping partner orgasm (pers.org), distress if partner does not orgasm (dis.org), and relief if partner has an orgasm (reli.org)

Figure 8. *Structural model for men in the low proportion of time spent apart since last sexual intercourse group (n = 75)*



Note: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ . Variables in model: overall satisfaction (ov.sat), sexual satisfaction (sex.sat), emotional satisfaction (emo.sat), your commitment (you.com), time since last sex (last.sex) interest in partner orgasm (int.org), persistence in helping partner orgasm (pers.org), distress if partner does not orgasm (dis.org), and relief if partner has an orgasm (reli.org)