

INVESTIGATING SEXUAL COERCION  
IN ROMANTIC RELATIONSHIPS: A TEST OF  
THE CUCKOLDRY RISK HYPOTHESIS

A Thesis Submitted to the College of  
Graduate Studies and Research  
in Partial Fulfillment of the Requirements  
for the Degree of Master of Arts  
in the Department of Psychology  
University of Saskatchewan  
Saskatoon

By

Joseph Anthony Camilleri

© Copyright Joseph Anthony Camilleri, October 2004. All rights reserved.

## PERMISSION TO USE

In presenting this thesis in partial fulfilment of the requirements for a Postgraduate degree from the University of Saskatchewan, I agree that the Libraries of this University may make it freely available for inspection. I further agree that permission for copying of this thesis in any manner, in whole or in part, for scholarly purposes may be granted by the professor or professor who supervised my thesis work or, in their absence, by the Head of the Department or the Dean of the College in which my thesis work was done. It is understood that any copying, publication, or use of this thesis or parts thereof for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to the University of Saskatchewan in any scholarly use which may be made of any material in my thesis.

Requests for permission to copy or to make other use of material in this thesis in whole or part should be addressed to:

Head of the Department of Psychology

University of Saskatchewan

Saskatoon, Saskatchewan

S7N 5A5

## ABSTRACT

Sexual coercion in romantic relationships is a facet of criminal behaviour requiring psychological investigation. The cuckoldry risk hypothesis, that sexual coercion is a tactic used by some males to reduce the risk of cuckoldry by engaging in sperm competition, was developed to account for such behaviour. From this hypothesis, four predictions were generated and empirically tested: (1) males should be more willing to use sexually coercive tactics when the risk of cuckoldry is high; (2) greater instances of cuckoldry risk in the past should be related to greater instances of sexual aggression; (3) cuckoldry risk and sexual jealousy should positively correlate in men; and (4) among males, rape attitudes and arousal are highest when the risk of cuckoldry is high.

Theoretical considerations also suggested the following exploratory questions: (1) are factors currently known to be related to general sexual coercion also related to measures of coercion in romantic relationships; and (2) can the cuckoldry risk measures still predict coercion after controlling for psychopathy? In order to test these predictions, a sample of 82 male and 82 female undergraduate students who were sexually active in a heterosexual relationship completed a survey that collected information on demographics, relationship characteristics, arousal, antisociality, and attitudes. Results found: (1) a significant interaction between cuckoldry risk variables in predicting coercion among male participants and not among females; (2) no relationship between past instances of cuckoldry risk and instances of sexual aggression; (3) those who spend proportionally less time away from their partner were more likely to score higher on sexual jealousy; (4) significant interactions in the anticipated direction were found when predicting scores on the Rape Empathy Scale and Rape Myth Acceptance Scale, a trend in the anticipated direction was found when predicting Adversarial Sexual Beliefs, and

nonsignificant results were found when predicting Attraction to Sexual Aggression. Results addressing the exploratory questions found that: (1) only psychopathy significantly predicted partner sexual coercion; and (2) cuckoldry risk variables predicted sexual coercion after controlling for psychopathy. Discussion of these results cover: the importance of finding a sex difference; understanding the interaction between variables; how cuckoldry risk impacts rape-supportive thoughts, attitudes, and arousal; the role of sexual jealousy; the function of a cuckoldry risk psychological mechanism; and lastly, the implications on dynamic risk prediction.

## ACKNOWLEDGEMENTS

It is with great appreciation that I first thank my supervisor, Stephen Wormith, for supporting my academic interests throughout this master's thesis and program, committee members Lorin Elias and Stephen Wong for their valuable feedback and interest, and program coordinator Karen Lawson for her enthusiastic assistance along the way. I am indebted to Margo Wilson, Martin Daly, Martin Lalumière, Vern Quinsey, and Danny Krupp, as they have taught and inspired me to investigate human behaviour through the lens of evolutionary psychology. Of course, the efficiency of this project was facilitated through the dedicated work of research assistants Kelly Suschinsky, Albert Brews, Jacqueline Rhinas, and Janelle Ocrane, and the data collection opportunities provided by Cathy Stewart, Stephen Shaw, and Abigail Mallillin. Last, but never least, I thank my wife Myra who provided me with unconditional love and support over the seemingly endless two years we spent apart, and my parents Michael and Doreen, whose unwavering encouragement will always be remembered.

## TABLE OF CONTENTS

PERMISSION TO USE .....	i
ABSTRACT .....	ii
ACKNOWLEDGEMENTS .....	iv
TABLE OF CONTENTS .....	v
LIST OF TABLES .....	viii
LIST OF FIGURES .....	xi
LIST OF ABBREVIATIONS .....	xii
1. INTRODUCTION .....	1
1.1 Sexual Coercion in Romantic Relationships: Uncovering a Social Problem.....	2
1.1.1 Prevalence .....	2
1.1.2 Public Health Concern .....	3
1.1.2.1 Unwanted pregnancy .....	3
1.1.2.2 Sexually transmitted diseases (STDs).....	4
1.1.2.3 Physical injury .....	4
1.2 Evolutionary Theory and General Sexual Coercion.....	6
1.2.1 Early Evolutionary Perspective (Sociobiology).....	6
1.2.2 Combined Perspectives .....	8
1.2.3 Rape and Comparative Psychology .....	10
1.2.4 Defining Sexual Coercion .....	12
1.2.5 Current Theory: Adaptation versus Byproduct .....	12
1.2.5.1 Adaptation.....	12
1.2.5.2 By-product .....	13
1.2.6 Current Theory: Individual Differences in Propensity to Rape .....	14
1.3 Evolutionary Theory and Partner Sexual Coercion.....	15
1.3.1 Reacting to Partner Infidelity .....	15
1.3.1.1 Female infidelity .....	16
1.3.1.2 Sperm competition .....	17
1.3.1.3 Mechanisms identifying risk.....	18
1.3.1.4 Mechanisms reducing risk .....	19
1.4 Cuckoldry Risk Hypothesis, Predictions, and Exploratory Questions .....	20
2. METHOD.....	21
2.1 Participants .....	21
2.2 Materials .....	21
2.2.1 Demographics .....	22
2.2.2 Relationship Characteristics.....	22
2.2.2.1 Objective characteristics .....	22
2.2.2.2 Subjective characteristics.....	22
2.2.2.3 Infidelity.....	22

2.2.2.4 Coercion.....	23
2.2.3 Arousal .....	24
2.2.3.1 Attraction to Sexual Aggression (ASA; Malamuth, 1989).....	24
2.2.4 Antisociality .....	24
2.2.4.1 Aggressive Sexual Behavior Inventory (ASBI; Mosher & Anderson, 1986) .....	24
2.2.4.2 Self-Report Psychopathy Scale (SRP-III; Forth, Brown, Hart, & Hare, 1996) .....	25
2.2.5 Attitude Scales .....	26
2.2.5.1 Rape Empathy Scales (RES; Deitz, Blackwell, Daley, & Bentley, 1982) .....	26
2.2.5.2 Rape Myth Acceptance Scale (RMAS; Burt, 1980).....	27
2.2.5.3 Adversarial Sexual Beliefs (ASB; Burt, 1980).....	27
2.2.6 Jealousy Questionnaire .....	27
2.3 Procedure.....	28
2.3.1 Recruitment.....	28
2.3.2 Testing.....	29
2.3.2.1 Consent to participate .....	29
2.3.2.2 Survey completion .....	29
2.3.2.3 Debriefing .....	30
2.3.2.4 Reward.....	30
2.3.3 Data Analysis / Research Design .....	30
2.3.3.1 Comparison group.....	30
2.3.3.2 Transformations .....	30
2.3.3.3 Centering.....	31
2.3.3.4 Prediction 1: Proximal cues of cuckoldry risk, namely, time since last having intercourse with one’s partner and recent time away from partner since last having sex, will significantly predict sexual coercion used by men on their partner .....	31
2.3.3.5 Prediction 2: Increased cuckoldry risk in the past should be related to greater instances of sexual aggression .....	32
2.3.3.6 Prediction 3: Cuckoldry risk and sexual jealousy should positively correlate in men .....	32
2.3.3.7 Prediction 4: Rape attitudes and arousal are highest among males when risk of cuckoldry is high .....	33
2.3.3.8 Exploratory 1: Are factors currently known to be related to general sexual coercion also related to measures of persuasion in romantic relationships? .....	33
2.3.3.9 Exploratory 2: Can the cuckoldry risk measures still predict persuasion after controlling for psychopathy?.....	33
3. RESULTS .....	35
3.1 Sample Characteristics .....	35
3.2 Assumptions.....	35
3.2.1 Reliability.....	35
3.2.2 Normality/Outliers .....	35
3.2.3 Multicollinearity/Suppression.....	37

3.3 Prediction 1: Proximal measures of cuckoldry risk, namely, TIME and PROP, will significantly predict sexual coercion used by men on their partner....	38
3.3.1 Main Effects.....	38
3.3.2 Interactions.....	38
3.3.3 Simple Main and Interaction Effects .....	38
3.3.4 Simple Effects of TIME at levels of PROP .....	39
3.4 Prediction 2: Increased cuckoldry risk in the past should be related to greater instances of sexual aggression both in the past, and intentions for future behaviour among males.....	47
3.5 Prediction 3: Cuckoldry risk should predict / correlate with sexual jealousy..	50
3.5.1 Post-Hoc: Proportion .....	50
3.6 Prediction 4: Rape attitudes and arousal are highest among males when risk of cuckoldry is high.....	52
3.6.1 Empathy .....	52
3.6.2 Attitudes.....	53
3.6.3 Arousal.....	53
3.7 Exploratory 1: Are factors currently known to be related to general sexual coercion also related to measures of coercion in romantic relationships among males?.....	57
3.8 Exploratory 2: Can the cuckoldry risk measures predict coercion after controlling for psychopathy?.....	58
 4. DISCUSSION .....	 60
4.1 Testing For a Sex Difference .....	61
4.2 Interaction Between Cuckoldry Risk Variables.....	65
4.2.1 Measuring proportion .....	65
4.2.2 Different outcome .....	66
4.2.3 Interaction precedence .....	70
4.3 Cuckoldry Risk and Rape Thoughts, Attitudes, and Arousal .....	71
4.4 The Role of Sexual Jealousy .....	72
4.5 The Cuckoldry Risk Psychological Mechanism of Sexual Coercion .....	73
4.6 Synthesis of Discussion .....	74
4.7 Dynamic Risk Prediction .....	75
4.8 General Conclusions .....	76
 REFERENCES.....	 78
 APPENDIX.....	 87

## LIST OF TABLES

TABLE 1. GENDER COMPARISON ON DEMOGRAPHICS, RELATIONSHIP CHARACTERISTICS, AND CUCKOLDRY RISK VARIABLES. ....	37
TABLE 2. MEAN SCORES ON CUCKOLDRY RISK VARIABLES FOR MALES. .	40
TABLE 3. SUMMARY OF HIERARCHICAL REGRESSION ANALYSES FOR TRANSFORMED VARIABLES PREDICTING TOTAL PERSUASION ( $N = 158$ ). ....	41
TABLE 4. SUMMARY OF HIERARCHICAL REGRESSION ANALYSES FOR TRANSFORMED VARIABLES PREDICTING TOTAL, VERBAL, AND PHYSICAL PERSUASION AMONG MALES ( $N = 78$ ). ....	42
TABLE 5. SUMMARY OF HIERARCHICAL REGRESSION ANALYSES FOR TRANSFORMED VARIABLES PREDICTING TOTAL, VERBAL, AND PHYSICAL PERSUASION AMONG FEMALES ( $N = 80$ ). ....	43
TABLE 6. ANOVA FOR DICHOTOMIZED CUCKOLDRY RISK VARIABLES AND SEX PREDICTING TOTAL PERSUASION. ....	44
TABLE 7. ANOVA FOR CUCKOLDRY RISK VARIABLES PREDICTING TOTAL PERSUASION. ....	44
TABLE 8. SIMPLE MAIN EFFECTS FOR TIME OVER LEVELS OF PROP ON TOTAL PERSUASION SCORES. ....	45
TABLE 9. PEARSON CORRELATION COEFFICIENT BETWEEN STATIC CUCKOLDRY RISK VARIABLES AND SEXUAL AGGRESSION, BOTH PAST AND FUTURE, AMONG MALES ( $N = 82$ ). ....	48
TABLE 10. PEARSON CORRELATION COEFFICIENT BETWEEN STATIC CUCKOLDRY RISK VARIABLES AND SEXUAL AGGRESSION, PAST AND FUTURE AMONG FEMALES ( $N = 80$ ). ....	49
TABLE 11. PEARSON CORRELATION COEFFICIENTS BETWEEN CUCKOLDRY RISK VARIABLES AND JEALOUSY. ....	52
TABLE 12. SUMMARY OF HIERARCHICAL REGRESSION ANALYSIS FOR VARIABLES PREDICTING TOTAL, VERBAL, AND PHYSICAL PERSUASION AMONG MALES. ....	57
TABLE 13. SUMMARY OF HIERARCHICAL REGRESSION ANALYSIS FOR VARIABLES PREDICTING RAPE LIKELIHOOD AMONG MALES. ....	58
TABLE 14. SUMMARY OF HIERARCHICAL REGRESSION ANALYSIS FOR VARIABLES PREDICTING TOTAL AND VERBAL PERSUASION. ....	58

TABLE P.1. SUMMARY OF SKEWNESS AND KURTOSIS FOR RAW AND TRANSFORMED DATA.....	109
TABLE P.2. CORRELATION MATRIX OF TRANSFORMED INDEPENDENT AND DEPENDENT VARIABLES.....	110
TABLE P.3. CORRELATION MATRIX OF RAW INDEPENDENT AND DEPENDENT VARIABLES.....	110
TABLE P.4. SUMMARY OF HIERARCHICAL REGRESSION ANALYSES FOR TRANSFORMED VARIABLES PREDICTING VERBAL PERSUASION ( $N = 158$ ). .....	111
TABLE P.5. SUMMARY OF HIERARCHICAL REGRESSION ANALYSES FOR TRANSFORMED VARIABLES PREDICTING PHYSICAL PERSUASION ( $N = 158$ ) .....	112
TABLE P.6. SUMMARY OF HIERARCHICAL REGRESSION ANALYSES FOR RAW VARIABLES PREDICTING TOTAL PERSUASION ( $N = 160$ ).....	113
TABLE P.7. SUMMARY OF HIERARCHICAL REGRESSION ANALYSES FOR RAW VARIABLES PREDICTING VERBAL PERSUASION ( $N = 160$ ).....	114
TABLE P.8. SUMMARY OF HIERARCHICAL REGRESSION ANALYSES FOR RAW VARIABLES PREDICTING PHYSICAL PERSUASION ( $N = 160$ ). ..	115
TABLE P.9. SUMMARY OF HIERARCHICAL REGRESSION ANALYSES FOR RAW VARIABLES PREDICTING TOTAL, VERBAL, AND PHYSICAL PERSUASION AMONG MALES ( $N = 80$ ).....	116
TABLE P.10. SUMMARY OF HIERARCHICAL REGRESSION ANALYSES FOR RAW VARIABLES PREDICTING TOTAL, VERBAL, AND PHYSICAL PERSUASION AMONG FEMALES ( $N = 80$ ). .....	117
TABLE P.11. ANOVA FOR DICHOTOMIZED CUCKOLDRY RISK VARIABLES AND SEX PREDICTING VERBAL PERSUASION.....	118
TABLE P.12. ANOVA FOR CUCKOLDRY RISK VARIABLES BY SEX PREDICTING VERBAL PERSUASION. ....	118
TABLE P.13. SIMPLE MAIN EFFECTS FOR TIME OVER LEVELS OF PROP FOR VERBAL PERSUASION.....	119
TABLE P.14. ANOVA FOR DICHOTOMIZED CUCKOLDRY RISK VARIABLES AND SEX PREDICTING PHYSICAL PERSUASION. ....	120
TABLE P.15. ANOVA FOR TIME AND PROP BY SEX PREDICTING PHYSICAL PERSUASION.....	120

TABLE P.16. SIMPLE MAIN EFFECTS FOR TIME OVER LEVELS OF PROP ON  
PHYSICAL PERSUASION..... 121

TABLE P.17. SIMPLE MAIN EFFECTS FOR TIME OVER LEVELS OF PROP ON  
RES. .... 122

TABLE P.18. SIMPLE MAIN EFFECTS FOR TIME OVER LEVELS OF PROP ON  
RMAS. .... 123

TABLE P.19. SIMPLE MAIN EFFECTS FOR TIME OVER LEVELS OF PROP ON  
ASB..... 124

TABLE P.20. SIMPLE MAIN EFFECTS FOR TIME AND PROP ON ASA. .... 125

## LIST OF FIGURES

FIGURE 1. MEDIAN SPLIT COMPARISON BETWEEN TIME AND PROP ON TOTAL PERSUASION SCORES FOR MALES. ....	46
FIGURE 2. MEDIAN SPLIT COMPARISON BETWEEN TIME AND PROP ON TOTAL PERSUASION SCORES FOR FEMALES.....	46
FIGURE 3. MEAN COMPARISONS BETWEEN TIME AND PROP ON MALE RES SCORES.....	55
FIGURE 4. MEAN COMPARISONS BETWEEN TIME AND PROP ON MALE RMAS SCORES. ....	55
FIGURE 5. MEAN COMPARISONS BETWEEN TIME AND PROP ON MALE ASB SCORES.....	56
FIGURE 6. MEAN COMPARISONS BETWEEN TIME AND PROP ON MALE ASA SCORES.....	56

## LIST OF ABBREVIATIONS

ASA	Attraction to Sexual Aggression
ASB	Adversarial Sexual Beliefs
ASBI	Aggressive Sexual Behavior Inventory
CD	Competitive Disadvantage
DI	Developmental Instability (a measure of CD)
Lg	Log 10 transformation
PROP	Proportion of time away from partner since last having intercourse
PSI	Partner-Specific Investment
RES	Rape Empathy Scale
RMAS	Rape Myth Acceptance Scale
SEX	Gender of participant
Sq	Square root transformation
TIME	Time since last having intercourse with partner
YMS	Young Male Syndrome

## 1. INTRODUCTION

There are a number of women, who at the hands of their husbands, fiancés, partners, or boyfriends, are coerced into sexual activity and experience the physical and mental consequences of such abusive treatment. Understanding why some men engage in sexually coercive behaviour towards their romantic partners has been given very little attention in the psychological literature, unlike that of general sexual offending and child molestation. Even though researchers have identified a number of factors that significantly relate to sexual coercion, they may not fully account for instances that occur within the context of a romantic relationship. Unlike sexual assault against a child or stranger, partner sexual assault targets a victim who was a willing sexual partner in the past by someone who was successful in attaining a mating partner.

Evolutionary psychology, the overarching theoretical approach adopted in this thesis, predicts that although the act is similar across contexts (coercing sex from an unwilling person), the reasons why it occurs are very different: high mating effort coupled with mate deprivation when it is against nonpartners (Lalumière, Chalmers, Quinsey, & Seto, 1996; Thornhill & Palmer, 2000); malfunctioning psychological mechanism that responds to cues of fertility when it is against children (Quinsey & Lalumière, 1995); and finally, the crux of this thesis, potential risk of cuckoldry when it is against one's partner (Buss, 2003; Lalumière, Harris, Quinsey, & Rice, in press; Quinsey & Lalumière, 1995; Thornhill & Palmer, 2000). Thus, this thesis applies our understanding of sexual selection and extended sperm competition theory to generate a

hypothesis on partner sexual coercion, and empirically tests its veracity. The topic of partner sexual coercion will be introduced by reviewing the literature on the seriousness of such behaviour, assessing evolutionary minded theories on sexual assault, reporting how such theories do not account for sexual assault in the context of romantic relationships, and finally synthesizing all information to develop the cuckoldry risk hypothesis.

### *1.1 Sexual Coercion in Romantic Relationships: Uncovering a Social Problem*

#### *1.1.1 Prevalence*

A social problem that has received little attention in the forensic psychological literature is that of sexual coercion in romantic relationships. Such a lack in research and scholarly discussion does not reflect the reported prevalence rates of this type of sexual crime. For instance, a number of studies have estimated the prevalence rate to be between 7% and 14% among all married women (Hanneke & Shields, 1985; Russell, 1990). Bowker (1983) found that 23% of a sample of battered wives experienced rape<sup>1</sup> from their partner. Also, there is evidence to suggest rape takes place most often in the context of marriage, occurring in one out of every eight to ten wives (Finkelhor, Hotaling, & Yllo, 1988; Russell, 1990). If these estimates are correct and applicable in Canada, between 527,911 and 1,055,823 married women in Canada have experienced partner rape, which stands out as strikingly large<sup>2</sup>. More recently, Basile (2002) found that 34% of women experienced some form of sexual coercion from their husband or

---

<sup>1</sup> The terms 'rape' and 'sexual coercion' will be used interchangeably depending on the source being reviewed. Rape usually includes physical force, whereas sexual coercion is more inclusive (i.e. both verbal and physical coercion).

<sup>2</sup> Numbers were calculated using estimates of partner rape and the population of adult women in Canada, provided by Statistics Canada (2002).

partner. These numbers become especially pertinent when understanding the acts most commonly used in partner rape, and the resulting health risks involved with rape.

The most common form of rape in the context of marriage is penile-vaginal (Peacock, 1998). From a sample of 40 women raped by their husbands, 88% were raped vaginally. Anal and oral rapes were less common (40% and 17%, respectively). There are many risks from penile-vaginal rape, including risk of unwanted pregnancy and transmission of sexually transmitted diseases. Physical aggression also poses a serious risk to victims of all forms of rape. These issues, coupled with the high prevalence rate of partner rape, suggest partner rape may be posing a major problem for public health.

### *1.1.2 Public Health Concern*

*1.1.2.1 Unwanted pregnancy.* Women who experience unwanted pregnancies are at increased risk of suicide (Brockington, 2001), show elevated depressive symptoms (McLennan, Kotelchuck, & Cho, 2001), experience post-partum depression (Beck, 2001), and have a higher likelihood of experiencing violence from one's partner (Jasinski, 2001). These potential health concerns apply to partner rape victims because they are at risk of an unwanted pregnancy<sup>3</sup>. The risk of unwanted pregnancy from rape, compared to consensual sexual interaction, has been shown to be at the same or higher rate. Early data on pregnancy rates from rapes ranged from 0.6% to 10% (Krueger, 1988). Krueger suggested, however, that some of these studies might be biased due to influence from special interest groups, use of different methods of measurement, or lack of even describing data collection methods. Krueger pointed out that studies showing higher rape than nonrape pregnancy rates are extraordinary if one is able to account for

---

<sup>3</sup> It is possible that many rape victims may experience such health concerns resulting from the trauma of the event, independent of becoming pregnant. Much of the literature on direct health consequences resulting from rape has focused on post-traumatic stress disorder (Jaycox, Zoellner, & Foa, 2002).

the rapists who cannot maintain an erection or fail to ejaculate. More recently Gottschall and Gottschall (2003) calculated rape pregnancy rates by first clearly operationalizing rape as being penile-vaginal rape, and by controlling for women who may have been given emergency contraceptives after rape (such as the 'morning-after pill'). From a sample of 405 women who were raped, they found a pregnancy rate of 6.92%, higher than the estimated 2-4% pregnancy rate among consensual interactions. When controlling for use of contraceptives, the rate increased to 7.98%. Both adjusted and nonadjusted rates were significantly higher than the most recently supported consensual sex pregnancy rate of 3.1%. In addition to these risks, there are outcomes that pose greater consequences to the victim's health, including sexually transmitted disease and physical injury.

*1.1.2.2 Sexually transmitted diseases (STDs).* Fear of STDs are salient among rape victims (Resnick et al., 2000). This fear is substantiated, considering many sexual assaults are penile-vaginal, as outlined above. Although specific research on transmission of STD's among partner rapes has yet to be studied, a number of studies have shown that women who are victims of sexual abuse have a higher likelihood of contracting a sexually transmitted disease (Brown et al., 2003; Hogben et al., 2000). Another unfortunate finding across these studies was that rape victims are likely to suffer physical assault as well.

*1.1.2.3 Physical injury.* Another major health concern is that many partner rapes are coupled with violence (DeMaris, 1997; Kilpatrick, Best, Saunders, & Veronen, 1988; Monson & Langhinrichsen-Rohling, 1998; Resnick, Kilpatrick, Walsh, & Veronen, 1991). Bowker (1983) suggested that partner rape is always coupled with battering, but battering does not necessarily have to be coupled with partner rape. Other

researchers have also found strong relationships between violence and partner rape. Vogel and Marshall (2001) found that among partner rapes, 71% included severe violence. Subsequently, these rape victims also experienced mental health difficulties: 64% scored high on the Crime Related Post Traumatic Stress Disorder scale.

Discriminating between physical and sexual aggression is crucial at this point. Current literature differentiates between three general crime categories: (1) sexual, (2) nonsexual violent, (3) nonsexual nonviolent. All sexual crimes are considered violent because they include the physical violation of another person, whereas violent offending may not have a sexual component (Quinsey, Harris, Rice, & Cormier, 1998). Nonsexual nonviolent crimes are comprised of property crimes and violations of conditional orders. In addition to this, other researchers have discriminated between two types of aggression, those with and without physical injury (Monahan et al., 2001). It should also be noted that rape could occur with varying degrees of physical injury to the victim. Any form of nonconsensual copulation, whether it results from persuasion, threats, or physical violence, is necessary for a sexual encounter to be labelled as sexual coercion. The other necessary condition is that the act is resisted to the best of the victim's ability, or resistance is reduced due to real threats of injury<sup>4</sup>. Thus, the term sexual coercion includes rape, sexual assault, or any label that meets these two criteria. It should be noted that the literature contains varying definitions of sexual coercion, sexual assault, and rape, including any type of sexual contact between perpetrator and victim.

From the cited evidence, penile-vaginal rape appears to be a common form of sexual coercion with consequences including mental health problems, unwanted pregnancies, sexually transmitted diseases, and physical injury. The high prevalence rate

---

<sup>4</sup> Definition adapted from Thornhill and Palmer (2000)

of partner rapes suggests it poses a serious public health concern, deserving greater attention from empirical research. In the attempt to resolve such a social problem, a number of evolution-minded researchers have provided theoretical explanations as to why rape exists; however they have supported their position with little data or have fallen short in appropriately studying rape in the context of romantic relationships. The following section discusses these ideas.

## *1.2 Evolutionary Theory and General Sexual Coercion*

### *1.2.1 Early Evolutionary Perspective (Sociobiology)*

Central to an evolutionary account is to make use of functional hypotheses of psychological mechanisms to inform the study of behaviour. In the case of rape, sexual arousal to deviant stimuli may be a proximate mechanism of the behaviour (discussed below), but inevitably, why would a male be aroused to forcing sex on a female, or in the case of our topic, one's romantic partner? The discussion on evolutionary perspectives on rape is divided into two phases: first in the early 1980's, and second in the late 1990's. The first section will outline some of the earlier hypotheses and will show how current research in this area has built on early theory.

One of the first researchers to provide a thorough argument for rape as resulting from evolutionary processes was proposed by Symons (1979). He suggested that rape might have evolved from female resistance to male attempts to have sex. Females resist male advances because sexual strategies are different between males and females. Males can increase their fitness (measured by number of offspring) by copulating with many women. There is relatively little cost to the males in engaging in this behaviour and behaviours that maximize one's fitness would be selected over ones that do not. Females on the other hand, cannot increase their fitness with more copulations. When pregnant, a

woman is committed to carrying the child for nine months and nurturing him/her for many years after it is born. Women also face certain costs to engaging in frequent sex. For instance, bearing a child to a male who provides little time and resources to the upbringing of the child is costly to a woman. Thus, traits that discriminate who women should and should not have sex with would be selected. Symons summarized these strategies by stating sex is something men want that women have, causing situations where women are in a position to resist sexual advances of men. Some men may use aggressive and violent tactics in order to get what they want; however, several points identify why rape is not a tactic used by all men.

First, Symons described mutation. A blip in the copying of genes from one generation to another may randomly predispose some males to coercive sex than others. Second, males who are strongest in intrasexual competition are more likely to have their genes passed on. Third, when resistance becomes costly, likelihood of resistance is reduced. Fourth, when forcing copulation becomes costly, the likelihood of forced copulation is reduced. Lastly and quite simply, presence of others may stop an attempted rape. These adaptationist hypotheses of rape behaviour sparked the interest of other researchers, who began to provide their own evolutionary account of rape in humans.

Shortly after the publication of Symons' book, Thornhill and Thornhill (1983) generalized their research on forced copulation among scorpionflies to humans, and collected some new data from human populations to test an evolutionary theory of rape. They suggested that rape is a facultative reproductive strategy, meaning that from a number of strategic behaviours leading to the production of offspring, men will use the behaviour that maximizes their chances of success given particular past environments in human evolutionary history. For instance, when men are disadvantaged, both

competitively and in terms of resources, rape may be the only way of keeping their genes in the population. In the same issue, Shields and Shields (1983) also published their own evolutionary account of rape. Theirs reflected the cost/benefit analysis described by Symons. The authors predicted that rape would occur when its potential benefit of increasing fitness exceeds the potential cost of energy use and risk of retribution. Both views suggest a male psychology that uses rape as a strategy to gain an important benefit, reproductive success. Suggesting biological routes to rape behaviour came in sharp contrast with feminist perspectives on cultural causes to rape, sparking an early debate between social scientists and sociobiologists on the aetiology of rape behaviour.

Only a few years after sociobiological accounts of rape were published, an edited book was produced specifically to criticize such an account (Sunday & Tobach, 1985). Several chapters covered criticisms of sociobiology, how it accounted for rape, and provided alternative social explanations of rape. Interestingly, history repeated itself nearly 20 years later when Thornhill and Palmer (2000) published their book on evolutionary perspective on rape, which was followed by an edited book (Travis, 2003) attempting to refute their claims. In the meantime, some theorists attempted to temper the climate by synthesizing feminist and evolutionary accounts.

### *1.2.2 Combined Perspectives*

An attempt to amalgamate these perspectives was proposed by Ellis (1993). He believed rape could be understood from a biosocial perspective, which includes four propositions: (1) two drives, sex drive and possess/control drive, are not learned and motivate men to rape, (2) males have stronger sex drives than women, resulting from sexual selection, (3) tactics to achieve what is sexually motivating is learned from

experience, (4) increased exposure to male hormones predisposes individuals to have higher sex drive and higher disinhibition to other's pain. Many of Ellis's points are logical and are supported by data, however, the third faces some scrutiny. Ellis drew this point primarily from feminist theory that dominance and aggression are what motivates rapists. Rather than accepting dominance and aggression as primary motivators, he suggested they were learned behaviours that provided a person the ability to force sex on a female. However, the author did conclude that empirical evidence supporting learning in this context was untenable as virtually none of the studies actually measured sexual assault as their outcome variable.

Malamuth (1996) also proposed a combined theory on rape. He described his journey of first testing feminist theories on rape, and after being asked to critique evolutionary accounts, found those accounts to be 'illuminating'. Malamuth provided what he poetically dubbed a confluence model. He suggested that dominance/hostility, explained by feminists as a socially learned variable, to be more of a personality trait. The model suggested that sexual aggressors combine high levels of impersonal sex with hostile, dominating characteristics. These men are more likely to use coercive tactics to overcome the barrier of female resistance to sex. This research, interestingly, reflects what is known from the criminal justice psychological literature. Impersonal sex and hostility/dominance traits are indicative of deviant personality constructs, such as antisociality and psychopathy. Many studies have shown such traits can predict criminal behaviour, including sexual offending (Hanson & Bussière, 1998; Quinsey et al., 1998).

It seems as though attempts to combine perspectives lean towards using evolutionary principles as an overarching theory, while drawing on items that may have been generated by feminist thought. This is important, as these researchers support the

ultimate cause of rape to be traits selected for through sexual selection, not due to socialization of dominance and control over women. Some of the most salient evidence supporting sexual coercion as a mechanism shaped through sexual selection is the existence of forced copulatory behaviour across many animal species.

### *1.2.3 Rape and Comparative Psychology*

So far, the most exhaustive account of forced copulation in the animal kingdom was produced by Lalumière, Harris, Quinsey, and Rice (in press). They were able to categorize the various forced copulatory behaviours into 5 strategies. The first is known as the ‘opportunistic bachelor’. This occurs among species where pair bonds are not formed. Males are usually successful in courting females, but may resort to forceful tactics when females become unreceptive. The second category is known as the ‘opportunistic spouse’. This behaviour occurs primarily in bird species that form pair bonds. Again, males are usually successful in attracting a mate, but may use forced tactics for copulations with additional females. This behaviour is common and occurs when the female is most fertile, which may result in fertilization. Third is the ‘cuckold’: when males force copulate if they suspect their partner had engaged in an extra-pair copulation. It usually occurs when a male, upon returning to his territory, observes another male within his partner's vicinity. This strategy would have been selected for as males who force copulated (thus having sperm in competition with another's) had better odds in increasing his fitness than males who did not engage such behaviour. The fourth category is known as the ‘competitively disadvantaged’. Males who are less attractive, probably because they are not healthy, less dominant, or fail to have resources that are important to females, are more likely to engage in forced copulatory behaviour. Lastly, the final category is known as the ‘morph’. This strategy is different than the previous

four, because males who are more likely to force copulate are genetically different than others. In the case of swordtail fish, for example, a single genetic polymorphism on the Y chromosome determines whether males will be large or small. Large males always court females, whereas small males either court or force copulate.

According to Lalumière et al. (in press), the social conditions common to most species exhibiting forced copulatory behaviour are also present among humans. They include sexual size dimorphism (males are larger than females), polygynous mating, male biased operational sex ratio (at any given time, more males are able to copulate than females), asynchronous breeding (females do not mate and breed at the same time), group living, and lesser male than female parental investment. It is implied that human social composition created an environment where rape behaviour could have been selected for.

The purpose of reviewing the animal behaviour literature is to identify the presence of forced copulatory behaviour across various species, to learn ways in which rape among humans could be studied (i.e., identify under what circumstances rape occurs and whether it would be considered adaptive), to point out that the social conditions common to most species exhibiting forced copulation are present among humans, and to highlight the importance of providing an operational definition of rape. Lalumière et al. (in press) discriminate between forced copulation and resisted mating, where the latter occurs as a common form of mating and the former is rather uncommon, occurring under specific conditions. Defining rape among human populations, which is an uncommon form of intercourse, needs to be just as rigorous.

#### *1.2.4 Defining Sexual Coercion*

The most appropriate definition of sexual coercion should operationalize the behaviour without any reference to why it is occurring. So far, psychological and evolutionary perspectives have satisfied this criterion. Thornhill and Palmer (2000), for example, defined rape as “copulation resisted to the best of the victim’s ability unless such resistance would probably result in death or serious injury to the victim or in death or injury to individuals the victim commonly protects” (p. 210). This definition applies to instances where both physical and verbal coercion are tactics used by the rapist in order to achieve his goals. Such a clear definition is ideal in controlled experimental research, however, research on rape is quasi-experimental for obvious reasons. Much of the data collected for rape research comes from the criminal justice system, where rape is defined from a legal perspective. In Canada, for example, rape is included under charges of sexual assault, which also encompasses many other forms of sexual acts one person can do to another. In any case, attempts to remain as close to Thornhill and Palmer’s definition will be pursued.

#### *1.2.5 Current Theory: Adaptation versus Byproduct*

As described above, evolutionary accounts of rape has emerged in two phases, the first being initiated by Symons’ (1979) book on *The Evolution of Human Sexuality*, and the second by Thornhill and Palmer’s (2000) *A Natural History of Rape*. Thornhill and Palmer proposed two evolutionary informed hypotheses on rape behaviour. The former author is a proponent of the rape-as-adaptation hypothesis, whereas the latter prefers a by-product explanation.

*1.2.5.1 Adaptation.* The authors argue that rape may be a human adaptation, which means rape is a behaviour that was selected for because it solved the specific

problem of female resistance to male copulatory advances, thus increasing male fitness. They believe that such a psychological adaptation should be comprised of specific design features, much like the scorpionfly's notal organ, a physical adaptation that functions to aid males in forcing copulation. If rape is a special-purpose adaptation in humans, they proposed we should see psychological mechanisms that: (1) provide males with the ability to assess potential victim vulnerability; (2) motivate men who are unlikely to copulate consensually, to rape; (3) provide males the ability to assess attractiveness differently between potential victims than consensual partners; (4) see differences in ejaculates from rapes; (5) measure differences in arousal to rape stimuli; and (6) motivate men to rape under sperm competition circumstances. The authors provide some evidence to support each of these potential mechanisms.

*1.2.5.2 By-product.* The authors do not rule out the possibility that rape behaviour may be a by-product of other adaptations. For instance, it is possible that rape emerged from the following adaptations; (1) predilection for numerous partners with little commitment, (2) proclivity towards impersonal sex, (3) arousal to visual sexual stimuli, (4) reduced ability to abstain from sex and discriminate partners, and (5) preference for mate variety (Malamuth, 1996; Symons, 1979; Thornhill & Palmer, 2000). Some examples of behaviours believed to be by-products from male sexual desire are child molestation, bestiality, frottage and masturbation (Thornhill & Palmer, 2000).

Many academics have criticized Thornhill and Palmer's work on a number of levels, including, a focus on rape as an adaptation rather than by-product (Lloyd, 2003), little appropriate research on human populations (Tobach & Reed, 2003), and insufficient evidence to support a behavioural adaptation (Seto, 2000). In response to these and many other criticisms, Thornhill and Palmer have written a new prologue to

their book, and published a paper responding specifically to the criticisms addressed in Travis' (2003) edited book (Palmer & Thornhill, 2003). However, a criticism not pointed out in these reviews and not addressed by Thornhill and Palmer is their failure to account for the psychological literature on individual differences in male propensity to rape.

#### *1.2.6 Current Theory: Individual Differences in Propensity to Rape*

Lalumière et al. (in press) provided the most comprehensive discussion on the aetiology of rape behaviour. The advantage of their synthesis is the incorporation of forensic psychological literature on individual differences towards sexually coercive behaviour. Based on a plethora of data and analyses, there emerged three major routes to sexual offending: (1) young male syndrome (YMS); (2) competitive disadvantage (CD); and (3) psychopathy. YMS refers to the literature demonstrating that males in late adolescence/young adulthood are more prone to competing for access to females, and thus, are prone to high risk behaviours – rape being one of them. Those who are competitively disadvantaged learn at an early age that they will have difficulties in gaining access to females, and adopt a facultative strategy towards using coercive tactics to gain sex. Psychopathy is a personality construct that accounts for males who use "aggression throughout the lifespan, dishonesty, extreme selfishness, high mating effort, callousness, and interpersonal exploitation" (p. 240). Additionally, there are a few minor routes to sexual offending, such as high status males who exhibit high mating effort and those who might be considered sexually disordered.

There is mounting evidence to suggest a proximal mechanism common to some forms of sexual coercion is sexual arousal to deviant stimuli. For instance, 60% of rapists show sexual responding to rape stimuli, as measured by a phallometric

assessment, whereas 90% of nonrapists do not (Lalumière, Quinsey, Harris, Rice, & Trautrimas, 2003). Also, meta-analytic research has shown that sexual arousal to stimuli depicting children is the strongest predictor of sexual recidivism (Hanson & Bussière, 1998). Although sexual responding to deviant stimuli appears to be intricately linked to different forms of sexual offending, no such relationship has been established among partner rapists.

Spousal rape, according to the Lalumière et al. (in press), is performed by males in any of the three major rape groups (YMS, CD, psychopathy), especially when cuckoldry is suspected. This latter view, that sexually coercing one's partner is a tactic used to reduce cuckoldry risk, is shared by other theorists (Buss, 2003; Thornhill & Palmer, 2000). All such theorists are in agreement that partner sexual coercion appears to be a special-case of sexual assault: that it may be an adaptation to sperm competition. The following investigates the potential design of sexual coercion, including: the social problem it functions to solve, other adaptations resulting from sperm competition in humans and other species, and finally a synthesis of all information to develop the cuckoldry risk hypothesis.

### *1.3 Evolutionary Theory and Partner Sexual Coercion*

#### *1.3.1 Reacting to Partner Infidelity*

Approaching behavioural analysis from an evolutionary perspective provides a functional answer to the question “what problem was the behaviour designed to solve?”. A reproductive problem that males have faced in the evolutionary past is that of female infidelity, because of paternity uncertainty. That is, males of most species with internal fertilization, such as humans, do not have complete confidence in their paternity of putative offspring, and hence are at risk of being cuckolded when their partners mate

with other males during the same fertile period. Behaviours, morphologies, and/or traits that identify and reduce the risk of cuckoldry would be favoured by selection. Much of the research in this area has been on male sexual proprietariness, which is a tactic used to control sexual access to one's partner. This hypothesis has been applied in understanding domestic assault and uxoricide (Daly & Wilson, 1988). Traits such as this could have evolved if males in our ancestral past experienced partner infidelity over successive generations. There are two ways of knowing this: (1) historical/archaeological records dating from the human ancestral environment (e.g. Pleistocene era), and (2) investigating whether psychological mechanisms function to solve such problems, otherwise known as 'reverse engineering' or inferring function from form. A problem faced by all evolutionary minded social psychologists is that social behaviour was never documented (unlike the fossil remains of bones), so in addition to establishing current day problem of partner infidelity, we must investigate evidence to suggest infidelity took place in our evolutionary past.

*1.3.1.1 Female infidelity.* The risk of cuckoldry is a genuine issue some men have to contend with. In his book on the evolution of desire, Buss (2003) outlined some of the findings on female infidelity. It was reported that 26% of women have cheated on their partner, even though men are more likely commit adultery. Also, it is estimated that 10% of all children are the offspring from an extra-pair copulation, unbeknownst to the male partner (Buss, 2003). Because investing resources towards genetically related children assists with their survival to a reproductive age, thus ensuring genes are passed down to subsequent generations, parents should behave in ways that benefit their offspring. However, since investment is costly, parents should allocate resources discriminatively amongst offspring (i.e., on the basis of relatedness, age, or health). For

example, it is well known that when men are aware of their child's relatedness, biologically related children are victimized less frequently and severely than step children, as measured by abuse and infanticide rates (Daly & Wilson, 1988). These behaviours are considered byproducts of discriminative parental solicitude, a psychological mechanism motivating parents to invest more in biologically related children. Likewise, it is expected that men will engage in behaviours that reduces any risk of raising nongenetically related children. Even though it was shown that a large proportion of females engage in extra-pair copulations, posing a serious problem of cuckoldry to their partner, it is important to know if this behaviour occurred in our evolutionary past. One such area of study that provides evidence for extra-pair copulations by women in our evolutionary past is sperm competition.

*1.3.1.2 Sperm competition.* An area of study that accounts for male sexual, rather than violent, responding to partner infidelity is sperm competition. Sperm competition occurs when females copulate with more than one male during the same fertile cycle, and competition between males ensue in order successfully inseminate the female's ova. Sperm competition over successive generations results in the evolution of morphological and behavioural adaptations that reduces risks of cuckoldry resulting from such competition (Birkhead, 2000). Much of the early research on sperm competition was conducted on nonhuman species. As reviewed by Lalumière et al. (in press), it was shown that among species exhibiting polyandrous mating systems, males produce more sperm in the presence of other males (e.g. male beetles & crabs), and force copulate if the male returns to see another male swimming near his partner (e.g. mallards). Among humans, sperm competition theory can be applied in the sense that sexual selection

would favour traits that identify high cuckoldry risk situations and traits that reduce this risk through sperm competition.

*1.3.1.3 Mechanisms identifying risk.* There are a number of human behavioural patterns that are consistent with sperm competition theory. First is mate guarding tactics, which is when males behave in ways to reduce any contact between their partner and other men (Birkhead, 2000). For example Daly and Wilson (Daly & Wilson, 1992) described Flinn's (1988) research that showed guarding one's mate occurs most often when the partner is fecund (fertile) than infecund (pregnant or postreproductive). Also, Gangestad and Thornhill (1997) found that mate guarding was most intense when a partner was young and attractive. Second is the role of sexual jealousy in moderating vigilance and mate guarding behaviour. For example, it was found that jealousy increased as a function of dominant rival characteristics (Dijkstra & Buunk, 1998). In other words, males were more prone to experiencing jealousy when presented with depictions of their partner flirting with a more dominant male, the same characteristics women are more likely to find attractive while ovulating (Buss, 2003). In addition to this, researchers found that jealousy of a partner was more likely to be experienced by men with lower phenotypic quality as measured by fluctuating asymmetry (Brown & Moore, 2003). Third are perceptions of one's partner in cuckoldry risk situations. Shackelford et al. (2002), for instance, found that perceptions of a partner's attractiveness and interest in copulating with that partner was moderated by levels of cuckoldry risk. Also, Pound (Pound, 2002) found greater arousal/preference for women depicted with multiple males. All results lend support for a specialized adaptation that identifies high cuckoldry risk situations which motivates males to do something about it.

The following will outline a series of mechanisms factors that actually reduces the risk of cuckoldry.

*1.3.1.4 Mechanisms reducing risk.* After risk situations have been identified, and the individual is motivated to act, behaviours must be consistent with reducing the risk of cuckoldry. First, ejaculate size seems to be moderated by high sperm competition risk situations. Baker and Bellis (1995) found male ejaculates to be larger when time away from a partner since their last copulation had increased. These effects were independent from time since last ejaculation (i.e. masturbation). Also, across many animal species, sizes of testes are correlated with levels of polyandry. In other words, species with promiscuous females will have males with larger testes because selection favoured those who produced more semen (Birkhead, 2000). Secondly, for the same adaptive outcome (greater semen production) Birkhead (2000) stated that copulation frequency is a common behavioural adaptation to sperm competition. Third, penis morphology may function to displace a rival's sperm. According to Gallup et al. (2003), the coronal ridge of a male's penis functions to displace another male's semen, with greater displacement seen with deeper and faster thrusting. Lastly, it is possible that partner rape is a tactic used to reduce the likelihood of cuckoldry. Only one study indirectly provided an early look into this possibility. Shields and Hanneke (1983) found that among married women who were beaten and raped by their husband, 47% reported having sex with another man, whereas 23% of those beaten and 10% of nonvictimized admitted to engaging in such behaviour. Of course, the direction of causality can not be determined from the design of this study.

#### *1.4 Cuckoldry Risk Hypothesis, Predictions, and Exploratory Questions*

From this evidence, it can be hypothesized that partner rape may in fact be a tactic used to reduce the risk of cuckoldry by engaging in sperm competition. Males who were successful in identifying high cuckoldry risk situations and forced sex on an unwilling partner were more likely to have their genes passed on to the following generation than males who did not possess such traits. If in fact partner sexual coercion was shaped through sexual selection for this particular reason, the following predictions can be made: (1) males should be more willing to use sexually coercive tactics when risk of cuckoldry is high; (2) greater instances of cuckoldry risk in the past should be related to greater instances of sexual aggression; (3) cuckoldry risk and sexual jealousy should positively correlate in men; and (4) rape attitudes and arousal are highest among males when the risk of cuckoldry is high. Theoretical considerations suggest the following exploratory questions: (1) are factors currently known to be related to general sexual coercion also related to measures of coercion in romantic relationships; and (2) can the cuckoldry risk measures still predict coercion after controlling for psychopathy?

## 2. METHOD

### 2.1 *Participants*

In order to test the cuckoldry risk hypothesis, a sample of male and female adults who are sexually active in a heterosexual, romantic relationship was required. Romantic relationships are those who are in a dating or committed relationship. Committed relationships include couples who are living together, legally considered common-law, are engaged to be married, or are currently married. A sample from this population was acquired from the student participant pool, class testing, and poster advertisements at the University of Saskatchewan. A total sample of 82 men and 82 women met the eligibility criteria. Individuals from the participant pool and class testing were rewarded for their involvement by receiving credit towards their course, whereas those from poster advertisements were entered into a draw to win \$300 (Appendix A). In order to participate, each individual was required to provide informed consent by reading and signing the *consent to participate* form (Appendix B). Upon completion participants were given a debriefing form that described the purpose of the study (Appendix C).

### 2.2 *Materials*

Data for this study were collected using a 25 page survey (Appendix D – M; O). This survey collected demographic information, relationship characteristics, and measures of arousal, antisociality, and attitudes. Two versions of the survey were developed, tailoring questions and scales according to gender.

### 2.2.1 Demographics

Demographic data included standard information on gender, age, sexual orientation, employment status, income, and level of education (Appendix D).

### 2.2.2 Relationship Characteristics

*2.2.2.1 Objective characteristics.* A questionnaire was developed to gain insight on each participant's relationship (Appendix E). Questions were asked about his or her type of relationship (dating, living-in, common-law, engaged, or marital), length of relationship, how much time is spent together in a typical day/week/month, intercourse frequency, length of time since last having intercourse with one's partner (TIME), and length of time since last seeing one's partner. The last variable was used to calculate proportion of recent time away from partner since last having intercourse (PROP). Both TIME and PROP were variables used to determine cuckoldry risk.

*2.2.2.2 Subjective characteristics.* Four questions using a 5-point unidirectional ordinal scale were developed to ask each participant's subjective opinion on various topics related to his or her relationship, including: (a) how much time he/she invested, (b) how much money he/she invested, (c) how serious he/she thinks the relationship is, and (d) how serious his/her partner thinks the relationship is. These same questions were reworded to ask participants how their partner would answer. Answer choices for the first two items ranged from 'none' to 'lots', whereas answer choices for the last two items ranged from 'not serious' to 'definitely serious' (Appendix E).

*2.2.2.3 Infidelity.* A set of questions was developed to measure items related to infidelity (Appendix F). Cues to infidelity were generated from those that are described in the literature (Shackelford & Buss, 1997) and situations that are commonly known to provoke jealousy. All questions were asked on a 5-point unidirectional ordinal scale,

with answer choices of never, once, rarely, sometimes and often. Questions were asked about how often: (a) has the partner refused to have sex, (b) other people flirt with partner, (c) partner flirts with other people, (d) partner threatened to break up, (e) partner actually broken up, (f) thought partner cheated, and (g) know partner cheated. Also, they were asked about the amount of time one's partner spends with members of the opposite sex at school/work and socially, if the partner ever smelled differently, and how often he/she surprised the participant in wanting to have sex in a new position (Shackelford & Buss, 1997).

*2.2.2.4 Coercion.* Two questions were developed to measure a person's likelihood to use sexual coercion with their partner (Appendix E). To date, no such measures have been reported in the literature. These questions asked participants about their behavioural intent in response to the following scenario:

Suppose you were with your partner this evening, and he/she refused to have sex with you: (a) How likely would you try to verbally persuade him/her to have sex with you? Think of any verbal statement, from saying sweet things to threatening, and (b) How likely would you try to physically persuade him/her to have sex with you? Think of any physical contact, from tickling/massaging to grabbing/holding.

Participants could select whether he or she would 'not likely', 'maybe', 'probably', or 'definitely' engage in that act. The purpose at this stage of the research is to identify the likelihood a person will use any degree of force or persuasion for intercourse when a partner is refusing to have sex.

### 2.2.3 Arousal

2.2.3.1 *Attraction to Sexual Aggression (ASA; Malamuth, 1989)*. This measure identifies those who are more or less inhibited/disinhibited from sexually coercive and/or rape behaviour (Appendix G). In so doing, it also identifies individuals who find sexually aggressive behaviour to be an arousing and attractive experience. I predicted that those who perceive that they are at higher risk of cuckoldry will find sexual aggression more attractive than others. Previous research using this measure found that individuals who score high on the ASA are more likely to score high on a composite score using the Rape Myth Acceptance scale, the Acceptance of Interpersonal Violence measure, and Adversarial Sexual Beliefs scale, showing a correlation of 0.41,  $p < 0.00001$  (Malamuth, 1989). Malamuth also found the ASA to have excellent internal consistency ( $\alpha = 0.91$ ) and was shown to correlate with having had already forced sex ( $r = 0.33$ ,  $p < 0.00001$ ), enjoyed forcing sex ( $r = 0.31$ ,  $p < 0.05$ ), intent on raping in the future ( $r = 0.30$ ,  $p < 0.00001$ ), and will force sex in the future ( $r = 0.58$ ,  $p < 0.00001$ ). Subsequent research has found that a predictor of the ASA score is hostility towards women (Calhoun, Bernat, Clum, & Frame, 1997). This study aims to see if differences in ASA correspond with changes in cuckoldry risk.

### 2.2.4 Antisociality

2.2.4.1 *Aggressive Sexual Behavior Inventory (ASBI; Mosher & Anderson, 1986)*. The ASBI measures the extent to which an individual has used physical, verbal, and other sexual aggression tactics in the past (Appendix H). This measure will be useful to test whether men who experienced higher cuckoldry risk in the past also exhibited instances of sexual aggression. Its internal consistency is excellent with a Chronbach's alpha of 0.94 (Mosher & Anderson, 1986). A problem with this scale is that it is not

specifically designed to measure sexual assault within the context of a romantic relationship

2.2.4.2 *Self-Report Psychopathy Scale (SRP-III; Forth, Brown, Hart, & Hare, 1996)*. Psychopathy, typically measured by the Psychopathy Checklist Revised (PCL-R; Hare, 2003; Appendix I), is a personality construct that has been a strong predictor of violent behaviour and has been the best noninvasive predictor of sexual offending (Hare, 1999; Hemphill & Hare, 2004; Lalumière & Quinsey, 1996; Quinsey, Rice, & Harris, 1995). Its utility in predicting criminal recidivism is best seen through its use in actuarial risk assessments (e.g. Quinsey et al., 1998). Although psychopathy has traditionally been studied among male offenders, theorists have suggested this construct is prevalent in noncriminal populations and accounts for variability in impulsive and thrill seeking behaviour, including low empathy and anxiety in the general population (Paulhus & Williams, 2002).

Although some theorists argue that psychopathy is a distinct categorical group, as investigated by Harris, Rice, and Quinsey's (1994) taxonomic research, other researchers have found it useful to view psychopathy as a dimensional construct. For example, the SRP-III provides a dimensional measure of psychopathy in the general population (Forth et al., 1996). An earlier version of the scale (SRP-II) had a correlation of 0.54 with PCL-R total scores (Hare, 1991), and 0.62 with the PCL-R Screening Version (Forth et al., 1996) suggesting these scales are tapping into the same construct. Considering psychopathy has traditionally been the strongest predictor of antisocial behaviour, showing a mean weighted correlation with general recidivism of 0.26 across

33 effect sizes<sup>5</sup> (Walters, 2003), and that this study is not interested in a personality variable but a specific psychological mechanism that responds to cuckoldry risk, it will be important to use psychopathy as a covariate.

Even though psychopathy is expected to be related to sexual coercion, it is a static factor<sup>6</sup> that is not influenced by the risk of cuckoldry. There are, however, attitudes and arousal to sexual coercion that are predicted to change as a function of cuckoldry risk. Such attitude and arousal scales are useful measures as they gauge human thoughts, feelings, and behaviour in a combined score.

### *2.2.5 Attitude Scales*

#### *2.2.5.1 Rape Empathy Scales (RES; Deitz, Blackwell, Daley, & Bentley, 1982).*

The RES measures an individual's empathy towards rape victims and rape offenders (Appendix J). Internal consistency of the scale ranged from an alpha of 0.84 to 0.89 (Deitz et al., 1982; Ward, McCormack, Hudson, & Polaschek, 1997). The scale was found to correlate with the Attitude Towards Women Scale, support for marital rape law, general support for the women's movement, and for the equal rights amendment (Deitz et al., 1982), all suggesting good discriminant validity. Dietz et al. also provided evidence for discriminant validity from a nonsignificant correlation between RES and the Marlowe-Crowne Social Desirability Scale. Ward et al. (1997) reported that Gillis (1991) found the RES was able to discriminate between rapists and property offenders and was negatively correlated with desire to rape a woman.

---

<sup>5</sup> Across all studies, the  $r^2$  statistic ranged from 0.03 to 0.49 for general recidivism and -0.01 and 0.14 for sexual recidivism

<sup>6</sup> Psychopathy has largely been viewed as a static risk factor because it is considered a personality construct, thus, it is not amenable to change.

*2.2.5.2 Rape Myth Acceptance Scale (RMAS; Burt, 1980).* The RMAS is one of the most widely used measures of rape attitude (Appendix K). Research using the RMAS has shown that men with higher RMAS scores are more likely to misinterpret female resistance to intercourse as playful resistance (Garcia, 1998). Since the development of this scale, research has tested its relationship to demographic variables, behavioural intentions, actual behaviour, and how such attitudes may be modified. Disappointingly, little research supports the ability of the RMAS to discriminate between violent and sexual offenders (Epps, Haworth, & Swaffer, 1993; Garcia, 1998). Overall, the scale was found to have good internal consistency ( $\alpha = 0.875$ ).

*2.2.5.3 Adversarial Sexual Beliefs (ASB; Burt, 1980).* Another attitude that is expected to change with higher cuckoldry risk involves trusting one's partner (Appendix L). The Adversarial Sexual Beliefs scale (ASB) was therefore selected as it was designed to measure "the expectation that sexual relationships are fundamentally exploitive, that each party to them is manipulative, sly, cheating, opaque to the other's understanding, and not to be trusted" (Burt, 1980, p. 218). The internal consistency is good with an alpha of 0.802 (Burt, 1980). Additional research (Hastings, 2000) has shown the ASB to be related to the Conflict Tactics Scale, which measures the number of verbal and physical assaults that took place with one's partner over the past year (Straus & Gelles, 1990).

### *2.2.6 Jealousy Questionnaire*

A measure was used to calculate sexual jealousy in relation to emotional jealousy (Appendix M). Participants were provided with seven jealousy eliciting scenarios. For each scenario they had to choose whether the sexual or emotional component of the

scenario distressed them more. Similar scales have been used to assess sex differences in such responding (Buss, Larsen, Westen, & Semmelroth, 1992).

## *2.3 Procedure*

### *2.3.1 Recruitment*

Three approaches were used to recruit our sample: (a) psychology participant pool, (b) class testing, and (c) poster campaign. All first year psychology students had the opportunity to participate. They were informed of the web-based participant pool, where students could log onto a website and select from a variety of experiments made available from the department of psychology. Before choosing, students are provided with a description of what he/she will be doing, how long it will take, and whether there are eligibility restrictions. By participating in a few experiments, students were rewarded by being given credit towards their final grade. For this study it was specified that participants must be sexually active in a heterosexual dating, living-in, common-law, engaged, or marital relationship.

In addition to the participant pool, students in two upper year psychology classes were given the opportunity to participate in this study during class time. Participation was rewarded by credit towards their final grade. If students were not able to attend that class, arrangements were made to reschedule participation at a more convenient day and time. Participation was on a voluntary basis and only those who met eligibility criteria were used in the analyses.

From previous experience in running participants from the psychology department participant pool, it was anticipated that there would be an overrepresentation of female students using only this method. Therefore, a poster campaign recruiting only male participants was initiated. This final recruiting procedure did not require

participation from students alone. All that was required was that the individuals were sexually active in a heterosexual romantic relationship. The poster provided information on gender restrictions and that anyone interested are to call the researcher to see if they met all other eligibility criteria. Upon calling the researcher, these males were asked if they were over the age of 18 and whether they were currently single or in a romantic relationship. If they were in a romantic relationship, they were asked if they were sexually active in that relationship. Respondents who answered no to any of the questions were thanked for their interest and informed that they were not eligible to participate. Those eligible to participate were scheduled a day and time to write the survey at their convenience.

### 2.3.2 *Testing*

2.3.2.1 *Consent to participate.* Prior to testing, all participants were asked to provide signed consent. To ensure each individual's consent was informed, a form describing the purpose, procedure, potential benefits, potential risks, confidentiality, right to withdraw, and contact information was provided (Appendix N).

2.3.2.2 *Survey completion.* Upon signing the consent to participate form, all participants were given instructions to complete the survey. They were informed that to ensure anonymity, no identifiers, such as their name or student number, are to be written on the survey. Also, they were given as much time as was needed to complete the survey, though on average it could be completed in 45 minutes. The researcher was present throughout the duration of the session in order to answer any questions. Upon completion, participants submitted their anonymous surveys into a collection box. Consent forms were collected separately to ensure the participant's name could not be linked to their survey.

*2.3.2.3 Debriefing.* Prior to leaving, a debriefing page and a copy of the consent form were given to each participant. The debriefing page described in detail the purpose of the study, provided references for further reading on the topic, and explained that each participant may contact the researcher if he/she had any more questions or concerns. See Appendix C for a copy of the debriefing page.

*2.3.2.4 Reward.* Students from the psychology participant pool and class testing were rewarded with credits towards their final grade. Individuals who were recruited from the poster campaign were given a ballot form for a chance to win \$300. Only the participant's first name, phone number, and e-mail were provided. All ballot forms were destroyed upon completion of the draw.

### *2.3.3 Data Analysis / Research Design*

*2.3.3.1 Comparison group.* A methodological gap in the literature investigating adaptations to sperm competition among males concerns the use of a comparison group. If a particular psychological mechanism was shaped by sexual selection to remove a barrier to fitness in a particular sex, it would follow that it should function only in that sex. However, when testing for sex-specific psychological adaptations in males, it has often been assumed that the same adaptation does not function in females, and so this group has not been used as a basis for comparison. It is important that this sex difference is also empirically tested. Therefore, the relationship between cuckoldry risk variables and sexual coercion was compared between males and females.

*2.3.3.2 Transformations.* Both cuckoldry risk variables required transformations in order to normalize their distributions. All statistical analyses performed on the cuckoldry risk variables (i.e. continuous TIME and PROP variables used in Prediction 1) were conducted on the transformed variables, then again on the raw data. If results were

consistent between transformed and raw data, the latter would be used in any discussions to facilitate interpretation. In other words, the effects of time since last intercourse or proportion of time away from one's partner since last intercourse on sexual coercion, rather than the effects of log time or square root proportion, could be described.

*2.3.3.3 Centering.* In order to test the interaction between independent variables, a centering procedure must first be used in order to alleviate any concerns with multicollinearity (Tabachnik & Fidell, 2001). Prior to calculating the interaction term, the mean was subtracted from raw scores on the independent variables. Centering was performed on transformed and raw data for both males and females before calculating each interaction term and regression analysis.

*2.3.3.4 Prediction 1: Proximal cues of cuckoldry risk, namely, time since last having intercourse with one's partner and recent time away from partner since last having sex, will significantly predict sexual coercion used by men on their partner.* The total time in hours since last having intercourse and the proportion of recent time away from one's partner were entered as the first block in an hierarchical regression analysis, whereas the interaction term between these two independent variables was entered in the second block. Separate regression analyses were conducted to predict levels of verbal persuasion, physical persuasion, and total persuasion among men. These same analyses were carried out with female participants. This procedure offered two observations: (a) how much of the variability in sexual coercion each independent variable accounted for and (b) if an interaction between the two independent variables exists in predicting sexual coercion.

Ancillary analyses using ANOVA were used to further interpret results. The first step in using ANOVA was to transform the continuous independent variables into

categorical ones. Both independent variables (time since last having intercourse with one's partner, and proportion of recent time away from one's partner since last having intercourse) were recoded into dichotomous variables using the median split technique. This produced a high and low category for each variable. Even though this procedure reduces statistical power due to eliminating variability in the data (i.e. precision in the independent variable), there are the added benefits of allowing us to visually inspect any interaction between variables and to test whether a gender difference is also present (Tabachnik & Fidell, 2001).

*2.3.3.5 Prediction 2: Increased cuckoldry risk in the past should be related to greater instances of sexual aggression.* Eleven questions were asked about the frequency of past instances indicative of cuckoldry risk, known as stable cuckoldry risk scores. These questions include asking how often: (1) partner refused to have sex in the past, (2) other men flirt with partner, (3) partner flirts with other men, (4) partner threatened to break up relationship, (5) partner actually broke up relationship, (6) participant thought partner had cheated, (7) participant knew partner cheated, (8) partner spends time at work/school with opposite sex, (9) partner spends social time with opposite sex, (10) partner smells differently, and (11) partner tries new sex position. Participants could rate each of these items on a 4-point ordinal scale including; 1 (not at all), 2 (once), 3 (sometimes), and 4 (often). Also, a total score summing responses to each of the items was calculated. Each of these stable cuckoldry risk scores were correlated with past sexual aggression as measured by the ASBI, and each of the three persuasion measures (i.e. verbal, physical, & total).

*2.3.3.6 Prediction 3: Cuckoldry risk and sexual jealousy should positively correlate in men.* A total sexual jealousy score was calculated by assigning a score of 1

to any choice of sexual jealousy in the jealousy questionnaire. Scores could range from 0 (no sexual jealousy, all emotional jealousy) to 7 (all sexual jealousy, no emotional jealousy). A Pearson correlation coefficient was calculated between this measure and time since last having intercourse and proportion of recent time away from partner since last having intercourse.

*2.3.3.7 Prediction 4: Rape attitudes and arousal are highest among males when risk of cuckoldry is high.* To further test gender differences on the relationship between cuckoldry risk and measures of attitudes and arousal, ANOVA techniques were used. Separate analyses were conducted for each arousal and attitude measure. Attitude measures include, RES, RMAS, and the ASB; the ASA was used to measure arousal to sexual aggression.

*2.3.3.8 Exploratory 1: Are factors currently known to be related to general sexual coercion also related to measures of persuasion in romantic relationships?* The most comprehensive and recent model on sexual coercion was proposed by Lalumière et al. (in press), where they argue that there are 3 independent routes to sexual offending: (a) psychopathy, (b) development instability (Appendix O), and (c) young male syndrome (i.e. measured by age). This model was tested using a standard multiple regression. If this model applies to sexual coercion in romantic relationships, one would expect each of these variables to show an independent significant relationship with the total persuasion score. A second model tested the inclusion of cuckoldry risk items, and a new model of sexual coercion in romantic relationships was also proposed.

*2.3.3.9 Exploratory 2: Can the cuckoldry risk measures still predict persuasion after controlling for psychopathy?* In order to test the strength of the cuckoldry risk interaction, the same analysis will be run as in prediction one, but in this case,

psychopathy will be entered as a covariate. Hierarchical regression analysis was used by entering psychopathy in the first block, both predictors in the second block, and the interaction variable in the third block. This procedure was undertaken to determine if the interaction accounted for a significant proportion of unique variance in partner sexual coercion.

### 3. RESULTS

#### *3.1 Sample Characteristics*

A total of 164 participants, 82 males and 82 females, met the eligibility criteria and were included in the analyses. Male and female participants did not differ significantly on any of the demographic, relationship characteristic, or cuckoldry risk variables. See Table 1 for a summary of these comparisons. Any subsequent analyses will not require controlling for these items as we can be sure they are not confounding the results.

#### *3.2 Assumptions*

*3.2.1 Reliability.* Data entry was checked for reliability by randomly selecting 12.1% of the participants entered, and correlating the values entered by two independent raters. The mean Pearson correlation coefficient between raters across 241 variables was 0.993.

*3.2.2 Normality/Outliers.* Multiple regression analyses are robust to the normality assumption, however, normality does enhance precision of the prediction equation (Tabachnik & Fidell, 2001). Outliers, on the other hand, pose statistical problems in the regression solution and in the estimation of regression weights (Tabachnik & Fidell, 2001). Any outliers must therefore be dealt with prior to running any analyses.

Among male participants, dependent variables were normally distributed with no outliers, however, both cuckoldry risk variables, TIME and PROP, were found to have

non-normal distributions with outliers. The variable TIME was positively skewed,  $z_s = 12.29$ ,  $p < 0.001$ , leptokurtic,  $z_k = 20.15$ ,  $p < 0.001$ , and had 8 outliers<sup>7</sup>, whereas PROP was positively skewed  $z_s = 3.84$ ,  $p = 0.0001$  with 5 outliers. Visual inspection of both frequency distributions confirms non-normal, almost L-shaped distributions. A log transformation on TIME corrected skewness,  $z_s = -1.792$ ,  $p = 0.07$ , substantially reduced kurtosis,  $z_k = 0.203$   $p = 0.84$ , and eliminated all outliers. A square-root transformation on PROP corrected skewness,  $z_s = 1.76$ ,  $p = 0.08$ , kurtosis remained normal,  $z_k = 1.96$ ,  $p = 0.05$ , and eliminated all outliers. The transformation procedure, by correcting all outliers and generating normal distributions, allows one to run regression analyses and interpret results with greater confidence. Subsequent analyses will be performed on both transformed and raw data.

Similar non-normal distributions with outliers were observed with female participants. TIME was positively skewed,  $z_s = 25.8$ ,  $p < 0.001$ , and leptokurtic,  $z_k = 103.45$ ,  $p < 0.001$ , with 7 outliers. PROP was positively skewed,  $z_s = 3.045$ ,  $p = 0.002$ , with no outliers. A log transformation corrected both skewness,  $z_s = -0.643$ ,  $p = 0.52$ , and kurtosis,  $z_k = -0.03$ ,  $p = 0.97$  for TIME, and reduced the number of outliers to two. The frequency distribution remained normal after removal of both outliers. To remain consistent with transformations on male participant data in addition to correcting skewness, a square root transformation was calculated for PROP. This corrected skewness,  $z_s = 0.989$ ,  $p = 0.32$ , slightly increased kurtosis,  $z_k = -2.411$ ,  $p = 0.016$ , and no outliers remained. The distributions of all dependent measures were found to be normal with no outliers. For a summary of the transformed variables being used, see Table P.1.

---

<sup>7</sup> Boxplot was used to identify outliers.

As discussed in the Method section, a centering procedure was implemented on both transformations and raw data in order to test the interaction.

**Table 1.** Gender comparison on demographics, relationship characteristics, and cuckoldry risk variables.

	Males ( <i>n</i> )	Females ( <i>n</i> )	<i>t</i>	<i>df</i>	$\chi^2$	<i>df</i>	<i>p</i>
Age	22.3 (82)	21.2 (80)	.86	160			.39
Mos together <sup>a</sup>	4.8 (82)	5.1 (82)	-.54	157.97			.59
Hrs together	178.98 (79)	221.3 (79)	-1.6	156			.112
Sex frequency	13.2 (82)	14.3 (81)	-.56	161			.574
TIME	127.3 (80)	184.6 (82)	-1.1	160			.268
PROP	.328 (80)	.371 (82)	-.57	160			.567
Income <sup>b</sup>	<\$10,000 (51/79)	<\$10,000 (54/72)			5.87	4, <i>N</i> =151	.212
Education	University	University			5.39	3, <i>N</i> =163	.145
	Dating	<i>n</i> = 61	<i>n</i> = 50				
	Committed	<i>n</i> = 21	<i>n</i> = 32		3.37	1, <i>N</i> =164	.066

a = Number of months with partner, equal variances not assumed.

b = Mode reported.

*3.2.3 Multicollinearity/Suppression.* There is no redundancy in the independent variables as correlations were nonsignificant (Tables P.2 & P.3). Inflating the size of the error term is not a concern since the Pearson correlation coefficient between TIME and PROP are well below 0.70 (Tabachnik & Fidell, 2001). Also, we are not concerned with any potential suppression effects as the sign of correlation coefficients are the same between independent variables and among independent and dependent variables.

*3.3 Prediction 1: Proximal measures of cuckoldry risk, namely, TIME and PROP, will significantly predict sexual coercion used by men on their partner*

*3.3.1 Main Effects.* Cuckoldry risk variables and gender did not independently predict total and verbal persuasion scores in Step 1 of the regression analysis (Tables 3 & P.4). Gender, however, was able to predict physical persuasion, showing that women were more likely to engage in such behaviour while holding cuckoldry risk variables constant (Table P.5). These same results were found when substituting raw data in the regression analysis (Tables P.6 – P.8).

*3.3.2 Interactions.* There was a significant 2-way interaction between LgTIME and SqPROP in Step 3 when predicting total and verbal persuasion (Tables 3 & P.4). Furthermore, a significant 3-way interaction provided the first indication of a potential sex difference on cuckoldry risk items predicting total (Table 3), verbal (Table P.4), and physical (Table P.5) persuasion scores. This three way interaction accounted for 15% of the variance in total persuasion ( $\Delta R^2 = 14.9$ ), 17% of verbal persuasion ( $\Delta R^2 = 16.8$ ), and 14% of physical persuasion ( $\Delta R^2 = 13.5$ ). Raw data found the same results with an exception where TIME by SEX was found in Step 3 in predicting total and verbal persuasion and a significant main effect for TIME in Step 3 for total, verbal, and physical persuasion (Tables P.6 – P.8). To further investigate a potential sex difference from this three way interaction, simple main effects and simple interactions were tested.

*3.3.3 Simple Main and Interaction Effects.* After finding a significant 3-way interaction, interpretation requires running regression analyses of the cuckoldry risk variables for each sex (Tabachnik & Fidell, 2001, p. 152). Partitioning independent variables so that effects of cuckoldry risk variables were tested for each sex was decided

a priori, as it was hypothesized that any relationship between cuckoldry risk and sexual coercion occurs only in men and not in women.

Among males, there was a negative relationship between LgTIME and both total and verbal persuasion, giving the impression that a longer time since last having sex is related to reduced likelihood males will use persuasion. Such a finding is questionable in light of a significant 2-way interaction between LgTIME and SqPROP when predicting all three persuasion measures (Table 4). After substituting raw for transformed data, a few results differed: (1) a significant main effect of PROP in Step 2 when predicting verbal persuasion, (2) a main effect for TIME in Step 2 when predicting physical persuasion, and (3) a nonsignificant interaction between TIME and PROP when predicting physical persuasion<sup>8</sup> (Table P.9). Discussion of results from Prediction 1 will refer to the nontransformed variables (i.e. TIME and PROP), as differences in output are minimal and do not alter interpretation of results that test the hypothesis.

No significant main effects or interactions were found among female participants (Table 5). Also, nonsignificant results were found when using raw data. These results provide evidence that an interaction between cuckoldry risk variables in predicting sexual coercion exist only in men and not women. Further investigation is needed to identify whether this interaction functions in a manner that is consistent with the cuckoldry risk hypothesis.

*3.3.4 Simple Effects of TIME at levels of PROP.* Considering a 2-way interaction was found among males and not among females, subsequent analyses are required to interpret the nature of this interaction. As these variables are transformed and continuous, it is recommended that factorial ANOVA techniques using raw data be

---

<sup>8</sup> The standardized beta weight for this interaction, however, was significant.

examined in order to determine simple effects (Grant, 2004). Continuous variables were recoded dichotomously using the median split method, creating four cuckoldry risk groups. Median splits were calculated separately for each gender. Table 2 provides the cuckoldry risk variable means for these four groups among males.

**Table 2.** Mean scores on cuckoldry risk variables for males.

	TIME (days)	PROP (%)
HighPROP – HighTIME	10.77 ( <i>n</i> = 17)	69.65 ( <i>n</i> = 17)
LowPROP – HighTIME	7.96 ( <i>n</i> = 23)	6.03 ( <i>n</i> = 23)
HighPROP – LowTIME	1.29 ( <i>n</i> = 23)	52.5 ( <i>n</i> = 23)
LowPROP – LowTIME	1.66 ( <i>n</i> = 17)	5.64 ( <i>n</i> = 17)

Analyses using factorial ANOVA confirmed results using hierarchical regression, where a significant 3-way interaction between TIME, PROP, and SEX (Table 6) and subsequent 2-way interaction between TIME and PROP among males were observed (Table 7). Simple effects found that greater time since last having intercourse is related to a higher likelihood in using total, verbal, and physical persuasion only when the proportion of time away from one’s partner since last having intercourse was also high among men and not women (Table 8; Figures 1 & 2). Interestingly, when the proportion of recent time away from one’s partner since last having intercourse was low, males who had intercourse recently were more likely to use persuasion than those who had not had intercourse in a while. These same interactions and simple effects were found when predicting verbal and physical persuasion alone, with the exception of the simple main effect for TIME at high PROP for physical persuasion, where there was marginal significance (Tables P.11 – P.16).

**Table 3.** Summary of hierarchical regression analyses for transformed variables predicting total persuasion ( $N = 158$ ).

		<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$\Delta R^2$
Step 1	LgTIME	-0.316	0.223	-0.113		
	SqPROP	-0.361	0.398	-0.072		
	SEX	0.286	0.253	0.09	0.025	0.025
Step 2	LgTIME	-0.587	0.711	-0.21		
	SqPROP	1.272	1.273	0.255		
	SEX	0.283	0.251	0.089		
	LgTIME x SqPROP	1.105	0.719	0.126		
	LgTIME x SEX	0.143	0.444	0.082		
	SEX x SqPROP	-1.166	0.792	-0.374	0.055	0.03
	LgTIME x SqPROP SEX	-1.044	0.686	-0.373		
Step 3	SqPROP	0.135	1.243	0.027		
	SEX	0.205	0.24	0.064		
	LgTIME x SqPROP	9.94	2.273	1.134***		
	LgTIME x SEX	0.436	0.429	0.249		
	SEX x SqPROP	-0.454	0.774	-0.146		
	LgTIME x SqPROP SEX	-5.632	1.382	-1.05***	0.149	0.094***
	SqPROP x SEX					

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

**Table 4.** Summary of hierarchical regression analyses for transformed variables predicting total, verbal, and physical persuasion among males ( $n = 78$ ).

		<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$\Delta R^2$
Total						
Step 1	LgTIME	-0.387	0.298	-0.149		
	SqPROP	0.252	0.532	0.054	0.026	0.026
Step 2	LgTIME	-0.608	0.265	-0.234*		
	SqPROP	-0.319	0.482	-0.069		
	LgTIME*SqPROP	4.308	0.894	0.503***	0.259	0.232***
Verbal						
Step 1	LgTIME	-0.203	0.171	-0.137		
	SqPROP	-0.041	0.305	-0.016	0.019	
Step 2	LgTIME	-0.337	0.149	-0.227**		
	SqPROP	-0.387	0.271	-0.146		
	LgTIME*SqPROP	2.611	0.503	0.534***	0.28	0.262***
Physical						
Step 1	LgTIME	-0.184	0.164	-0.127		
	SqPROP	0.293	0.294	0.114	0.032	0.032
Step 2	LgTIME	-0.271	0.158	-0.188		
	SqPROP	0.068	0.286	0.027		
	LgTIME*SqPROP	1.697	0.531	0.358**	0.149	0.117**

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

**Table 5.** Summary of hierarchical regression analyses for transformed variables predicting total, verbal, and physical persuasion among females ( $n = 80$ ).

		<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$\Delta R^2$
Total						
Step 1	LgTIME	-0.242	0.33	-0.082		
	SqPROP	-0.93	0.588	-0.177	0.036	0.036
Step 2	LgTIME	-0.172	0.333	-0.058		
	SqPROP	-0.773	0.597	-0.147		
	LgTIME*SqPROP	-1.324	1.017	-0.15	0.057	0.021
Verbal						
Step 1	LgTIME	-0.169	0.179	-0.105		
	SqPROP	-0.559	0.319	-0.196	0.047	
Step 2	LgTIME	-0.129	0.18	-0.08		
	SqPROP	-0.469	0.323	-0.164		
	LgTIME*SqPROP	-0.761	0.551	-0.158	0.07	0.023
Physical						
Step 1	LgTIME	-0.072	0.174	-0.047		
	SqPROP	-0.37	0.31	-0.135	0.02	0.02
Step 2	LgTIME	-0.042	0.176	-0.028		
	SqPROP	-0.304	0.316	-0.111		
	LgTIME*SqPROP	-0.563	0.539	-0.122	0.034	0.014

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

**Table 6.** ANOVA for dichotomized cuckoldry risk variables and SEX predicting total persuasion.

Source	<i>df</i>	<i>F</i>	$\eta^2_p$	<i>p</i>
TIME	1	0.577	0.004	0.448
PROP	1	0.001	0.000	0.972
SEX	1	0.623	0.004	0.431
TIME*PROP	1	3.308	0.021	0.071
TIME*SEX	1	0.369	0.002	0.544
SEX*PROP	1	0.117	0.001	0.732
TIME*PROP*SEX	1	13.833	0.082	<0.001***
Error	154	(2.403)		

*Note.* Values enclosed in parentheses represent mean square errors.

**Table 7.** ANOVA for cuckoldry risk variables predicting total persuasion.

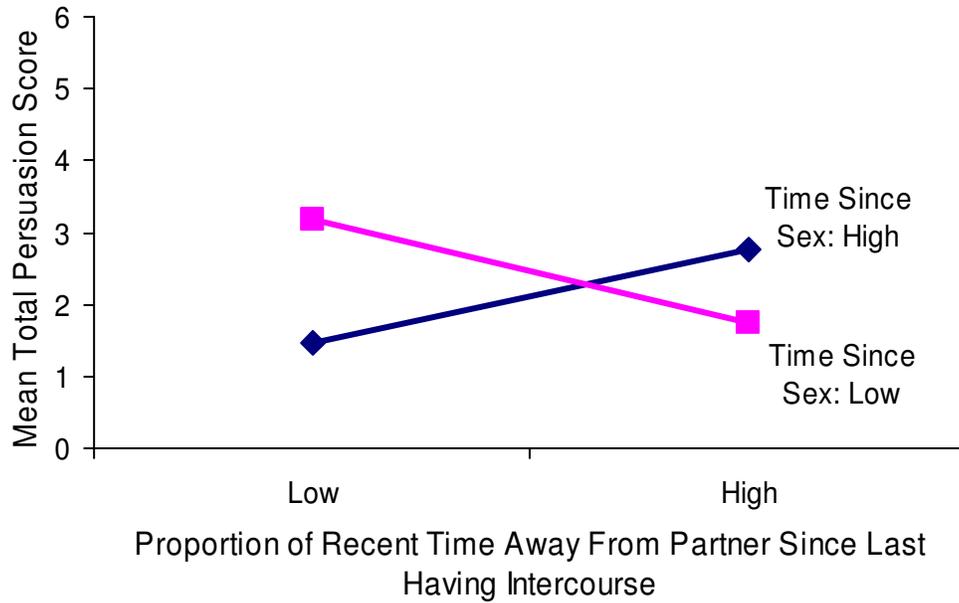
	Source	<i>df</i>	<i>F</i>	$\eta^2_p$	<i>p</i>
Males	TIME	1	1.257	0.016	0.266
	PROP	1	0.063	0.001	0.802
	TIME*PROP	1	20.611	0.213	<0.001***
	Error	76	(1.759)		
Females	TIME	1	0.009	0.000	0.923
	PROP	1	0.058	0.001	0.811
	TIME*PROP	1	1.456	0.018	0.231
	Error	78	(3.03)		

**Table 8.** Simple main effects for TIME over levels of PROP on total persuasion scores

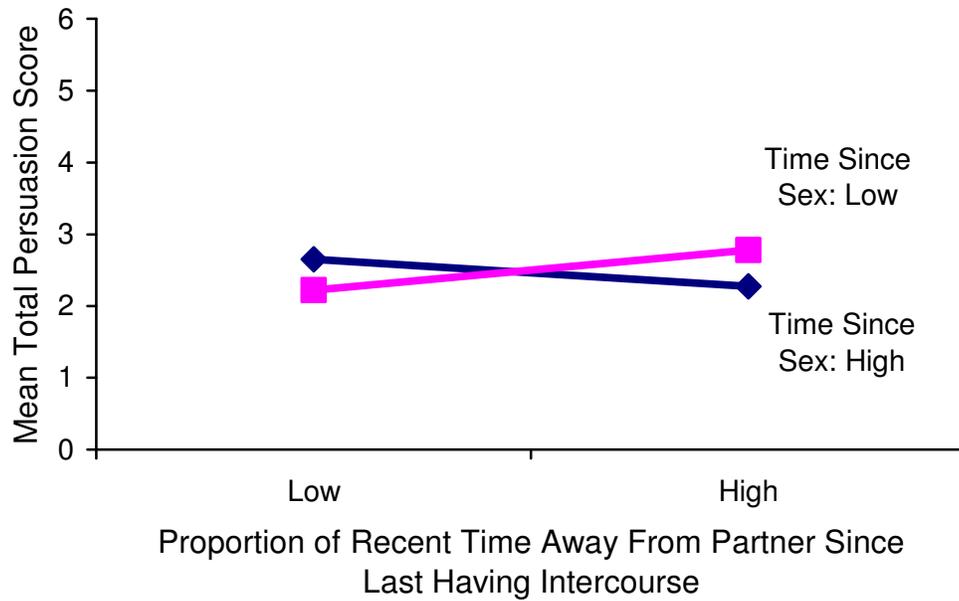
		Source	<i>df</i>	<i>F</i>	$\eta_p^2$	<i>p</i>
Males	Low PROP	TIME	1	18.403	0.326	<0.001***
		Error	38	(1.532)		
	High PROP	TIME	1	5.175	0.12	0.029*
		Error	38	(1.987)		
Females	PROP Low	TIME	1	0.613	0.015	0.439
		Error	39	(3.047)		
	PROP High	TIME	1	0.854	0.021	0.361
		Error	39	(3.013)		

\**p* < 0.05, \*\**p* < 0.01, \*\*\**p* < 0.001

**Figure 1.** Median split comparison between TIME and PROP on total persuasion scores for males.



**Figure 2.** Median split comparison between TIME and PROP on total persuasion scores for females.



*3.4 Prediction 2: Increased cuckoldry risk in the past should be related to greater instances of sexual aggression both in the past, and intentions for future behaviour among males*

The Aggressive Sexual Behavior Inventory (ASBI) was used to measure sexually aggressive behaviour in the past among male participants. The persuasion measures were used to measure behavioural intent. Among men, no significant correlations were found between stable cuckoldry risk variables, and aggressive sexual behaviour as measured by the ASBI (Table 9). Only one variable, the stable cuckoldry risk variable that measures how often one's partner spends with other men socially, had a significant positive relationship with physical and total persuasion (Table 9).

Among women, no significant correlations were found between static cuckoldry risk variables and any of the behavioural intent measures, however, one variable was related to the ASBI. This variable asked how often her partner refused to have sex with her in the past (Table 10).

**Table 9.** Pearson correlation coefficient between static cuckoldry risk variables and sexual aggression, both past and future, among males ( $n = 82$ ).

	Past		Current	
	ASBI	Verbal	Physical	Total
Partner refused to have sex	0.095	0.032	0.053	0.048
Other men flirt with partner	-0.068	-0.024	0.018	-0.004
Partner flirts with other men	0.084	0.003	-0.015	-0.006
Partner threatened to break up	-0.006	-0.048	-0.097	-0.082
Partner actually broke up	-0.046	-0.084	0.000	-0.048
Think partner cheated	0.038	-0.152	-0.046	-0.113
Know partner cheated	0.017	-0.147	-0.082	-0.129
Partner spends work/school time with other men	0.116	-0.001	-0.016	-0.009
Partner spends social time with other men	0.047	0.176	0.23*	0.228*
Partner smells differently	-0.014	0.024	0.067	0.051
Partner tries new sex position	-0.107	-0.001	0.000	0.000
Total score	0.032	-0.043	-0.039	-0.047

\* $p < 0.05$

**Table 10.** Pearson correlation coefficient between static cuckoldry risk variables and sexual aggression, past and future among females ( $n = 80$ ).

	Past		Current	
	ASBI	Verbal	Physical	Total
Partner refused to have sex	0.237*	0.172	0.073	0.132
Other men flirt with partner	-0.003	-0.065	0.118	0.027
Partner flirts with other men	0.054	-0.087	-0.03	-0.063
Partner threatened to break up	0.075	0.011	-0.056	-0.024
Partner actually broke up	0.106	0.072	0.046	0.064
Think partner cheated	0.146	-0.004	-0.013	-0.009
Know partner cheated	0.000	0.041	0.024	0.035
Partner spends work/school time with other men	-0.137	-0.152	-0.087	-0.128
Partner spends social time with other men	-0.075	-0.103	0.055	-0.027
Partner smells differently	0.041	-0.146	-0.16	-0.163
Partner tries new sex position	0.019	0.131	0.161	0.156
Total score	0.125	-0.004	0.041	0.02

\* $p < 0.05$

### 3.5 Prediction 3: Cuckoldry risk should predict / correlate with sexual jealousy

None of the cuckoldry risk variables, both transformed and raw, significantly correlated with any of the jealousy measures for both men and women (Table 11). What was found, however, was a nonsignificant, yet moderate negative correlation between sexual jealousy and PROP. In other words, regardless of how long it has been since each male had intercourse with his partner, the trend suggested males may be more likely to score higher on sexual jealousy when the proportion of time away from their partners since last having sex was low. Considering this trend was in the opposite direction than what was initially expected, and that the direction is consistent with the notion that sexual jealousy influences mating guarding behaviour (i.e. reasons to be sexually jealous will motivate men to spend more time with their partners), post-hoc analyses were conducted.

*3.5.1 Post-Hoc: Proportion.* If in fact sexual jealousy may inspire mate guarding tactics as opposed to sexual coercion, we would expect those who are low on PROP to score higher on factors that would instigate sexual jealousy. These factors were identified by referring to all items on the survey and identifying those that measure relationship characteristics that are indicative of infidelity. Seventeen items were identified from the relationship characteristic questionnaire and PSI (Appendix Q). Thus, we are comparing males who spend on average 5.87% (low) versus 59.81% (high) recent TIME away from their partner since last having intercourse on jealousy provoking items. It should be noted that there was no difference between these groups on TIME,  $M(\text{low}) = 126.87$ ,  $M(\text{high}) = 127.65$ ,  $t(78) = -0.021$ ,  $p > 0.05$ .

It was found that among men, 9 out of 17 cues to infidelity had a positive relationship with proportion of time spent with partner since last having intercourse

among men. Specifically, males who spend proportionately more recent time with their partner since last having intercourse are more likely to have a partner who: (1) has threatened to break up,  $t(78) = 2.067, p < 0.05$ ; (2) smelled differently, like unfamiliar cologne;  $t(77) = 2.111, p < 0.05$ ; (3) wants to have sex less often;  $M_1 = 2.83, SD = 1.01, M_h = 3.48, SD = 0.599, t(63.394) = -3.502, p < 0.001$ ; (4) has sex less often with him,  $M_1 = 3.03, SD = 0.811, M_h = 3.44, SD = 0.652, t(77) = -2.491, p = 0.015$ ; (5) doesn't try to please him sexually,  $M_1 = 3.18, SD = 0.813, M_h = 3.53, SD = 0.64, t(78) = -2.139, p < 0.05$ ; (6) ignores him in social settings,  $M_1 = 0.88, SD = 0.822, M_h = 0.5, SD = 0.679, t(78) = 2.223, p < 0.05$ ; (7) tries to deceive him,  $M_1 = 0.63, SD = 0.667, M_h = 0.28, SD = 0.506, t(72.679) = 2.643, p = 0.01$ ; (8) doesn't respect what he has to say,  $M_1 = 4.03, SD = 0.974, M_h = 4.47, SD = 0.64, t(78) = -2.444, p = 0.017$ ; and (9) does not like to find time for him,  $M_1 = 1.38, SD = 0.586, M_h = 1.08, SD = 0.267, t(54.515) = 2.948, p < 0.01$ .

One variable, partner refusing to have sex, had marginal significance with a p-value of 0.06. In no cases were the cues to infidelity related to spending a high proportion of time away from partner since last having sex. In other words, mean scores on jealousy provoking items were never higher in the low PROP than high PROP group.

Among women, only 1 of the 17 variables was able to discriminate between high and low proportion groups. It was found that women who spend proportionately more recent time with their partner since last having intercourse are less likely to agree with a statement that her partner is a willing and enthusiastic sex partner,  $M_1 = 4.5, M_h = 4.85, t(61.789) = -2.563, p = 0.013$ .

**Table 11.** Pearson correlation coefficients between cuckoldry risk variables and jealousy.

Gender	IV	Sexual Jealousy	Emotional Jealousy	Overall Jealousy
Males	TIME	-.05	.05	-.05
N = 56	PROP	-.21	.21	-.21
	LgTIME	.07	-.07	.07
	SqPROP	-.21	.21	-.21
Females	TIME	-.06	.09	-.04
N = 79	PROP	.1	-.09	.11
	LgTIME	-.05	.08	-.02
	SqPROP	.11	-.1	.11

*3.6 Prediction 4: Rape attitudes and arousal are highest among males when risk of cuckoldry is high*

*3.6.1 Empathy.* A 2 x 2 factorial ANOVA on males found a significant main effect for PROP,  $F(1, 76) = 4.231, p < 0.05$ , but not for TIME,  $F(1, 76) = 1.942, p > 0.05$  on RES scores. This result must be understood in the context of a significant 2-way interaction between PROP and TIME,  $F(1, 76) = 4.351, p < 0.05$ . Simple effects revealed a significant difference between high and low TIME only when PROP was high,  $F(1, 76) = 6.05, p < 0.05^9$ , and not when PROP was low,  $F(1, 76) = 0.239, p > 0.05$ . This demonstrated that a longer interval since last having intercourse is related to lower empathy towards rape victims only when the proportion of time away from their

<sup>9</sup> Omnibus error mean square term used for all simple effects

partner since last having sex is high. When the proportion of time is low, there is no difference between low and high time since last sex on RES scores (Figure 3; Table P.17).

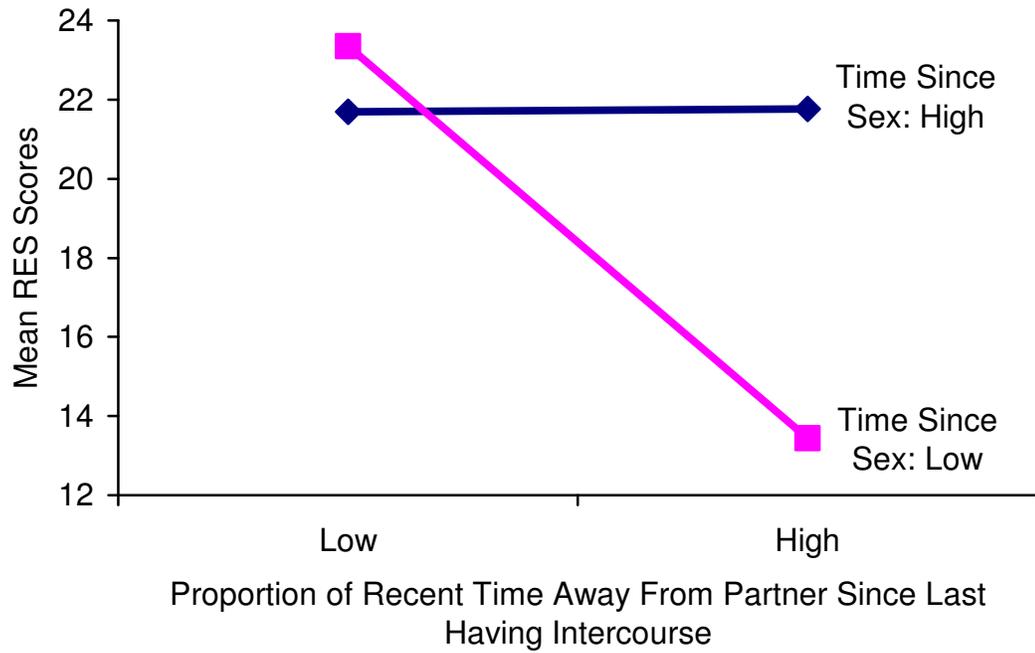
*3.6.2 Attitudes.* Likewise, a 2-way interaction between PROP and TIME was found on Rape Myth Acceptance scores,  $F(1, 76) = 4.443, p < 0.05$ . Simple effects, using the omnibus mean square error, found a significant difference between high and low TIME only when PROP was high,  $F(1, 76) = 4.06, p < 0.05$ , than when it was low,  $F(1, 76) = 0.933, p > 0.05$ . This demonstrated that a longer time since last having intercourse is related to higher acceptance of rape myths, only when the proportion of time away from his partner since last having sex is also high. When the proportion is low, time since last having sex does not influence RMAS scores (Figure 4; Table P.18).

Adversarial Sexual Beliefs did not yield a significant 2-way interaction,  $F(1, 76) = 2.486, p > 0.05$ , or main effects for PROP,  $F(1, 76) = 0.957, p > 0.05$ , and TIME,  $F(1, 76) = 2.173, p > 0.05$ . Even though there was no significant interaction, there was a simple effect for time when the proportion of time since last having intercourse was high,  $F(1, 38) = 4.265, p < 0.05$ , and not when it was low,  $F(1, 38) = 0.006, p > 0.05$ . This finding replicates the interactions seen in RES and RMAS, and is similar to the interactions predicting persuasion. Examining simple effects is justified as the marginal mean plots reveal a similar interaction to what was found with other dependent variables (Figure 5; Table P.19).

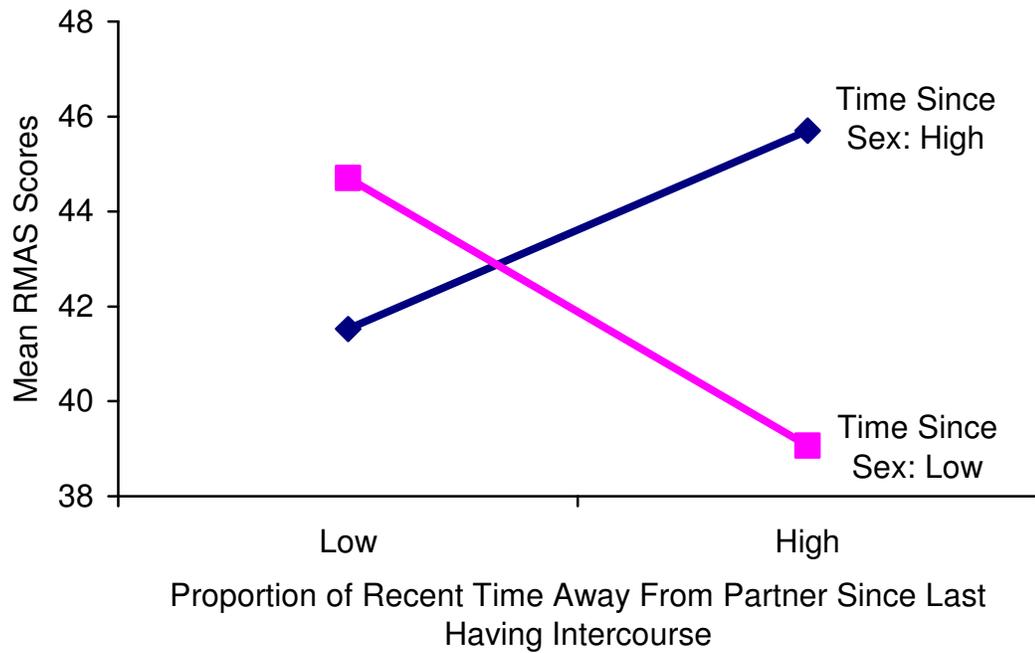
*3.6.3 Arousal.* A 2 x 2 factorial ANOVA found no significant interaction between PROP and TIME,  $F(1, 76) = 0.383, p > 0.05$  on attraction to sexual aggression scores. Also, there were no significant main effects for PROP,  $F(1, 76) = 0.796, p > 0.05$ , and for TIME,  $F(1, 76) = 0.383, p > 0.05$ . In other words, finding sexual

aggression attractive as measured by the ASA did not depend on either the independent effects of, or interaction between cuckoldry risk variables (Figure 6, Table P.20).

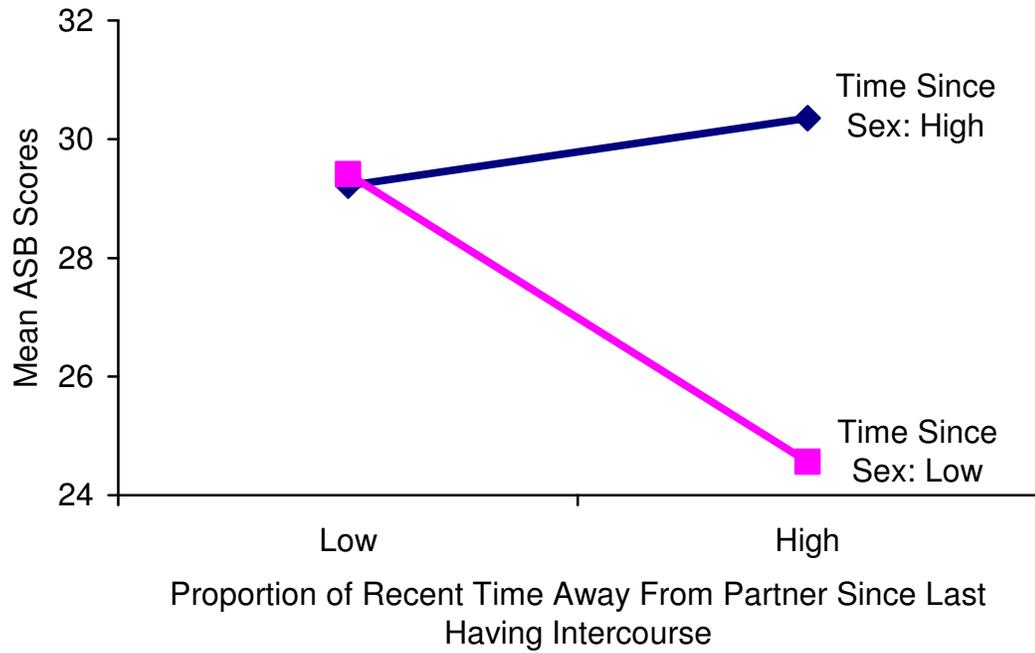
**Figure 3.** Mean comparisons between TIME and PROP on male RES scores.



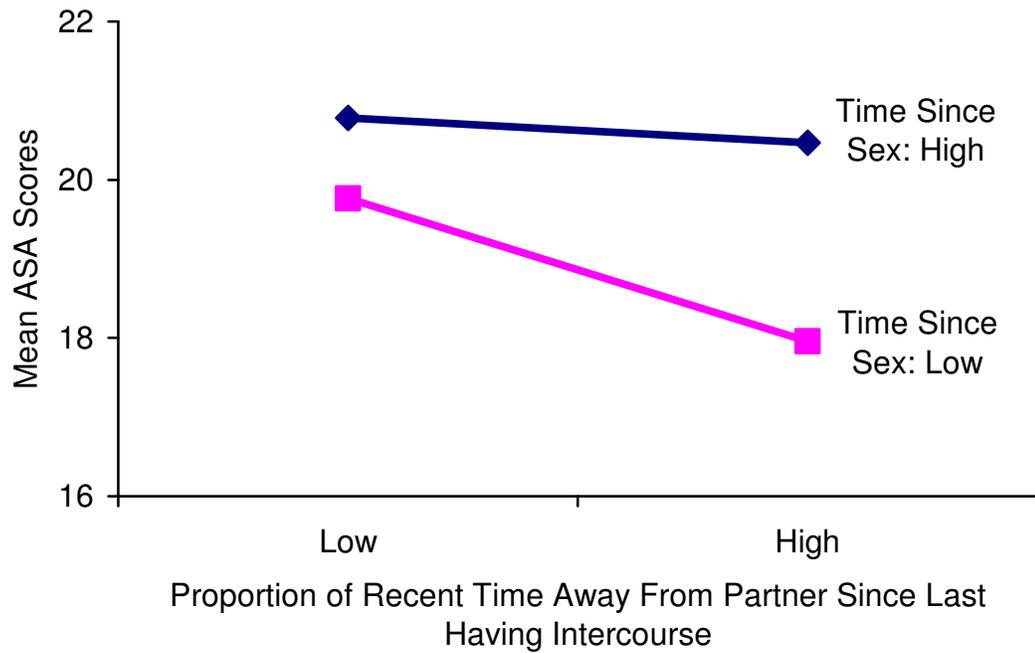
**Figure 4.** Mean comparisons between TIME and PROP on male RMAS scores.



**Figure 5.** Mean comparisons between TIME and PROP on male ASB scores.



**Figure 6.** Mean comparisons between TIME and PROP on male ASA scores.



*3.7 Exploratory 1: Are factors currently known to be related to general sexual coercion also related to measures of coercion in romantic relationships among males?*

The three path model, using age, developmental instability, and psychopathy was not significant in predicting total,  $F(3, 81) = 2.305, p > 0.05$ , and physical persuasion,  $F(3, 81) = 1.472, p > 0.05$ , but was significant for verbal persuasion,  $F(3, 81) = 3.203, p = 0.028$ . However, psychopathy was the only significant predictor of persuasion when predicting verbal and total persuasion (see Table 12). This model was better in predicting a male's rape likelihood,  $F(3, 80) = 3.839, p = 0.013$ , where both psychopathy and developmental instability were significant predictors (Table 13).

**Table 12.** Summary of hierarchical regression analysis for variables predicting total, verbal, and physical persuasion among males.

DV	IVs	<i>B</i>	<i>SE B</i>	$\beta$
Total	Age	0.023	0.032	0.084
	DI	-0.203	0.193	-0.114
	Psychopathy	0.029	0.012	0.283*
Verbal	Age	-0.03	0.018	0.188
	DI	-0.047	0.108	-0.047
	Psychopathy	-0.02	0.007	0.339**
Physical	Age	-0.007	0.018	-0.043
	DI	-0.156	0.109	-0.158
	Psychopathy	0.009	0.007	0.162

**Table 13.** Summary of hierarchical regression analysis for variables predicting rape likelihood among males.

IVs	<i>B</i>	<i>SE B</i>	$\beta$
Age	0.0002	0.01	0.002
DI	0.142	0.062	0.243*
Psychopathy	0.009	0.004	0.254*

*3.8 Exploratory 2: Can the cuckoldry risk measures predict coercion after controlling for psychopathy?*

Knowing psychopathy was the only other significant predictor of sexual coercion as measured by the verbal and total persuasion scores, it is important to know whether the interaction between cuckoldry risk variables accounts for a significant proportion of unique variability in coercion after controlling for psychopathy. It was found that the interaction between TIME and PROP significantly accounted for 20% more of the variance in total persuasion, and 27.3% more of the variance in verbal persuasion than what psychopathy and each variable independently accounted for. Also, standardized beta coefficients for the interaction terms were nearly twice as high as the psychopathy coefficients (Table 14).

**Table 14.** Summary of hierarchical regression analysis for variables predicting total and verbal persuasion.

			<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$\Delta R^2$	
Total	Step 1	Psychopathy	0.025	0.012	0.239*	0.057	0.057*	
	Step 2	Psychopathy	0.023	0.012	0.221			
		LgTIME	-0.332	0.294	-0.128			
		SqPROP	0.098	0.528	0.021	0.074	0.017	
	Step 3	Psychopathy	0.013	0.011	0.125			
		LgTIME	-0.565	0.267	-0.217*			
		SqPROP	-0.376	0.483	-0.081			
		TIME*PROP	4.08	0.911	0.476***	0.273	0.2***	
	Verbal	Step 1	Psychopathy	0.016	0.007	0.269*	0.073	0.073*
		Step 2	Psychopathy	0.016	0.007	0.266*		
LgTIME			-0.166	0.167	-0.111			
SqPROP			-0.147	0.300	-0.055	0.087	0.014	
Step 3		Psychopathy	0.010	0.006	0.166			
		LgTIME	-0.305	0.149	-0.205*			
		SqPROP	-0.431	0.270	-0.162			
		TIME*PROP	2.439	0.509	0.498***	0.306	0.219***	

\* $p < 0.05$ , \*\*\*  $p < 0.001$

#### 4. DISCUSSION

It was hypothesized that sexual coercion in romantic relationships is a tactic used by males to reduce the risk of cuckoldry, as being cuckolded has serious fitness costs. This risk is unique to males, as a female knows that a child belongs to her, whereas a male, due to concealed ovulation, can never be as sure. Such a problem faced by our male ancestors set the stage for evolution by sexual selection to shape specific psychological and physiological mechanisms to identify and reduce high cuckoldry risk situations. This thesis set out to test this hypothesis as it applies to sexual coercion: when a female partner refuses to have sex, males are more likely to use coercive tactics only when the risk of cuckoldry is high. A number of results provide support for this hypothesis; however, there were some unexpected results.

Results supporting sexual coercion as a tactic to reduce cuckoldry risk include: (1) an interaction between cuckoldry risk factors was evident among men and not women; (2) those who had not had intercourse with their partner in some length of time and spent a large proportion of recent time away from their partner since then were more likely to engage in sexual coercion; (3) thoughts and attitudes towards rape are predicted by a similar interaction between cuckoldry risk variables; (4) arousal to rape has a trend similar to the interaction between cuckoldry risk variables; (5) effects were found in a nonforensic sample; and (6) cuckoldry risk accounts for a large proportion of the variance in sexual persuasion after controlling for psychopathy. Each of these items will be discussed in greater detail.

Some results were not consistent with the cuckoldry risk hypothesis: (1) men who had intercourse recently and spent proportionally little time away from their partner were just as likely as the highPROP-highTIME group to use sexual persuasion; and (2) sexual jealousy did not correlate with or predict higher risk. Discussion will first synthesize all expected and unexpected results in order to argue for sexual coercion as an adaptation in romantic relationships by focusing on three areas: sex differences; PROP by TIME interaction; and rape supportive measures. Secondly, the relationship between sexual jealousy and cuckoldry risk will be examined. Third, discussion will identify how the data support a cuckoldry risk psychological mechanism. Fourth, all findings will be synthesized into a new model of sexual coercion in romantic relationships, discussing what is known, and what still needs to be tested. Lastly, findings will be discussed in the context of dynamic risk prediction.

#### *4.1 Testing For a Sex Difference*

Previous researchers who have studied the functions of cuckoldry risk found that the time since last in-pair copulation (TIME) and the proportion of time with one's partner since last having intercourse (PROP) independently predicted the number of sperm inseminated during copulation with one's partner (Baker & Bellis, 1993). Also, Shackelford et al. (2002) found PROP to independently predict greater interest in having sex with one's partner and finding one's partner more attractive. These studies have assumed a sex difference in psychological and physiological responding to infidelity without directly testing for such a difference. Although the former study could not test for sex differences because only men produce sperm, the latter study could. Results from this thesis, by testing for a sex difference, addresses a large methodological gap when arguing for an adaptive male-sexual strategy.

A sample of women equal in number and demographics to that of men was collected. First, a regression analysis found a significant 3-way interaction between gender, PROP and TIME, providing the statistical impetus to further investigate this theoretical difference between sexes. Simple main effects and interactions demonstrated that cuckoldry risk variables predicted verbal, physical, and total persuasion in the form of an interaction between PROP and TIME among men and not women. Specifically, males who had not had intercourse with their partner in a while, and spent proportionally greater time away from his partner since then, were found to consistently score higher on these rape-supportive measures. No such relationship between cuckoldry risk and coercion were found among women. Subsequent analysis using factorial ANOVA also found a significant 3-way interaction. Results from the latter analysis were even more impressive, considering substantial power to detect an effect was lost when dichotomizing the continuous cuckoldry risk variables. Thus, these results confirm a significant relationship between sexual coercion and cuckoldry risk in the only gender that would benefit from such responding.

It was found that females were more likely to score higher than males on physical persuasion scores. There are two explanations as to why this result appears contrary to the more common finding that males are more likely to use physical coercion. First, it is possible that males were more likely than females to underreport their likelihood of physical persuasion because of differential demand characteristics. Specifically, there may now be more social pressure on males than on females not to acknowledge engaging in such behaviour. Secondly, the study did not collect data on coercion severity. It is quite possible that females are more likely to initiate and acknowledge their role in less severe and less invasive types of coercion. Further

investigations should refine both the verbal and physical persuasion measures so that severity of coercion can also be determined.

A sex difference was also found in the relationship between static cuckoldry risk variables and the proportion of recent time away from one's partner since last having sex. Among males, the low proportion group was more likely to score higher on nine out of these seventeen items, whereas only one such item was higher in the lowPROP group among females. These results also show how the complexity of cuckoldry risk influences mate guarding behaviour in males.

There appears to be no sex difference on static cuckoldry risk variables as it relates to past sexual aggression and intended future coercion, as one of the eleven factors show a significant relationship to any of these outcomes in both genders. In fact, considering only 1 out of the 11 items showed a relationship between static cuckoldry risk and coercion suggests there is very little or no relationship at all between static cuckoldry risk and past or intended behaviour. This is consistent with the notion that static cuckoldry risk may alter mate guarding behaviour and not directly have any bearing on sexual coercion.

Results from this thesis address a large methodological gap in the argument for an adaptive male-sexual strategy by testing for a sex difference. This procedure was able to ensure that if a cuckoldry risk mechanism does exist, as measured by PROP and TIME, it exists primarily among men. This finding is important as it demonstrates the potential shaping of this mechanism through sexual selection, via sperm competition. Sexual selection accounts for the evolution of sex differences when males with certain traits have a reproductive advantage on the mating market. Sperm competition theory looks at competition within a specific context, which predicts evolved psychological and

physiological mechanisms that respond to potential insemination of a partner by a rival. Thus, it would be counterintuitive to expect an adaptive benefit for women to use persuasive tactics when the risk of infidelity is high. This does not mean being coercive or persuasive is not adaptive for women, only that the circumstances in which using this strategy is optimal at different times.

The fitness risks imposed on women in this infidelity scenario are much less severe than the risks faced by men. Infidelity by a male's partner may result in nongenetically related offspring and paternity uncertainty is a salient problem faced by all men in romantic relationships. A tactic used to alleviate this uncertainty is for a male to decrease the likelihood of rearing a competitor's offspring. This adaptive logic, shared by Buss (2003), Thornhill and Palmer (2000), and Lalumière et al. (in press), finally has some empirical backing. However, it must also be shown that inseminating a partner after another male still leads to fertilization. Research on various species, including our own, suggests this timing does play an important role.

Across many species, being the last male to inseminate a female has been a successful when vying for fertilization. Birkhead (2000) describes what is known in the biological literature as 'last male sperm precedence', where in various sperm-competing species, sperm inseminated most recently are more likely to fertilize a female gamete. Although several mechanisms have been proposed, the most applicable mechanism appears to be the displacement of a rival's sperm. For instance, Birkhead notes that some insects have a penis that functions in such a way as to displace sperm from another male in the reproductive tract. Insects may seem like an enormous morphological leap from humans, but recent research suggests the same basic function for the design of the human penis. Gallup et al. (2003) tested the notion that the human penis was shaped by

sexual selection as sperm displacement device. They found that the amount of artificial sperm displaced using inanimate model penises and vagina (i.e. sexual novelty items) varied as a function of coronal ridge size and depth of thrusting. Although this newly found sex difference in cuckoldry risk management does appear to exist only among males, it functions in an unexpected, but theoretically consistent way.

#### *4.2 Interaction Between Cuckoldry Risk Variables*

Results from Prediction 1 forced me to rethink the cuckoldry risk variables as they predicted sexual coercion in the form of an interaction and not independently as was found by Baker and Bellis (1993) and Shackelford et al. (2002). Also, this interaction did not function in the expected manner. There are a number of reasons why the cuckoldry risk variables did not function in exactly the same way as previous studies, namely: (1) different use of the proportion variable; (2) outcome being predicted is different; or (3) perhaps an interaction is how the mechanism works, but was simply not tested in previous studies (i.e. only main effects were tested). All such reasons will be discussed in light of a potentially new way to think about cuckoldry risk.

*4.2.1 Measuring proportion.* The most obvious reason why one of the cuckoldry risk variables, PROP, did not independently predict coercion was because it was not measured in exactly the same way. In previous research, the proportion variable measured specifically the proportion of time a male was with his partner since last having intercourse. Baker and Bellis (1993) were able to reliably gather this information as participants were to record this information on a daily log. Although Shackelford et al. (2002) asked for this information through survey design, it is almost inconceivable for a person to reliably account for the total proportion of time with his partner since last

having sex. A more reliable question that was used in this study was to ask participants when they last saw their partner.

There may also be a theoretical reason to use recent as opposed to total time with/without partner. A cuckoldry risk mechanism may function more efficiently on this proximally recent cue. That is, it may be cognitively easier to implicitly or explicitly recall the last time we saw our partner, but much more difficult to recall the cumulative amount of time away from one's partner, especially within a given time period (i.e. since last having intercourse). Identifying which version of PROP best measures the construct of cuckoldry risk needs to be tested empirically. This procedure is important as it is possible that the proportion variable could have been a robust independent predictor of any of the outcome variables if it were measured in the same manner.

*4.2.2 Different outcome.* A second potential reason why the cuckoldry risk variables did not function in the same way as previous research was because the outcome being predicted is different in many ways. When moving into the realm of complex interpersonal behaviour, many more variables need to be accounted for. First is that engaging in sexually coercive behaviour has many negative consequences: judicial sanctions; reduced trust from one's partner; risk of losing one's partner; and dealing with the partner's family. Therefore, it is important that a mechanism functions to act when the benefits of the sexually coercive behaviour are likely to outweigh the costs of using such force. Secondly, there may be more 'causes' of partner sexual coercion than cuckoldry risk alone (e.g. deviant sexual arousal, substance abuse, personality factors). Other variables may therefore be accounting for a large proportion of variance, raising the possibility of reducing independent effects of PROP and TIME.

It is not inconceivable that sexual coercion has more risks accompanying it than outcomes used in previous studies; finding one's partner more attractive, having a greater interest in having sex with her, or producing larger quantities of sperm has much fewer social consequences. As such, a male must be convinced that his cuckoldry risk is significant if in fact this facultative mechanism were to respond by using sexual coercion. Thus, time since last having sex, although gauging how much viable sperm is in a partner's vaginal tract, is not a good indicator of risk on its own if the male has spent all his time with her since having sex. This is true regardless of how long it has been. In this case, the cost of using force outweighs its benefit as there is little possibility of partner infidelity, and is not worth risking the negative consequences associated with coercing one's partner. Likewise, proportion of time with partner since last having sex would also be an inaccurate gauge of cuckoldry risk if the couple had sex quite recently (i.e. in the past few hours). The cuckoldry risk of a male who spent proportionally little time with his partner since having sex that morning is very different from a male who spent proportionally little time with his partner since having sex the previous week. Even though some evidence supports the idea that these two variables function independent of one another when predicting less socially sensitive outcomes, such claims cannot be made without appropriately testing their independence.

Contrary to the independent influence of cuckoldry risk argument, a consistent interaction between cuckoldry risk variables was found with my data. Both TIME and PROP are needed to predict when sexual coercion is most likely to occur. But only part of this interaction appeared to be consistent with the cuckoldry risk hypothesis. In predicting total, verbal, and physical persuasion, as well as RES, RMAS ( $p = 0.055$ ), and ASB, those who have not had intercourse in a while scored consistently higher on these

measures than those who had intercourse recently, only when the proportion of time away from one's partner since last having intercourse was also high. It would then follow that if vigilance is important only when the time since last having intercourse is high, we would expect men who spend more time away than those spending less to be higher on coercion, only when time since last having sex is high. Again, I found this result when predicting verbal, physical, and total persuasion, as well as rape-supportive attitudes and empathy, but not when predicting arousal. Thus, the interaction between cuckoldry risk variables appears to be a good predictor of physical, verbal, and total persuasion, and a moderate predictor of arousal and attitudes. Effect size appears to vary according to the relevance of outcome measures. Across all outcome measures was a group of individuals who were equally likely to use persuasion or have similar attitude/arousal measures as the high-high group. Unexpectedly, these were individuals in the exact opposite category, lowPROP – lowTIME. Why is it that a group expected to exhibit the lowest scores on coercion end up scoring the highest? One explanation includes a potential confound from recent risk reduction behaviour.

The responses provided by the lowPROP – lowTIME group, although surprising, adds a new dimension towards understanding coercion in romantic relationships. There are a number of possible explanations worth discussing. First is finding the lowPROP – lowTIME category score high on coercion may be confounded by recently experiencing and reacting to a high cuckoldry risk incident. This potential confound was not expected and thus, was not measured. One finding, however, sheds light on this new hypothesis: the low proportion group was more likely than the high proportion group to score higher on relationship characteristics that are indicative of partner infidelity. As such, scoring low on PROP may be reflective of mate guarding, and those who have had sex recently

may have already reacted to a proximal cue indicating immediate cuckoldry risk. The lowPROP – lowTIME group, therefore, may currently be responding to high cuckoldry risk. An optimal statistical procedure would be to partial out the variance of those who have just responded to a cuckoldry risk situation. Perhaps after doing so, we will find the highPROP - highTIME group to be at the greatest risk over all other groups.

It was also mentioned that the cuckoldry risk variables did not function in the expected way because there are multiple predictors of sexual coercion. As discussed in the literature review, the criminal justice literature has investigated many social, developmental, and personality variables accounting for much of the variance in past and predicted coercive behaviour. Cuckoldry risk may therefore serve as one of many predictors of sexual coercion, especially when predicting more serious forms of violence. For instance, only one item, psychopathy, from the three-path model to sexual coercion proposed by Lalumière et al. (in press) predicted sexual coercion in romantic relationships, whereas two items, psychopathy and developmental instability, significantly predicted more severe behavioural intentions of raping. The third variable, age, was not a significant predictor in any analyses, but this is most likely due to the restricted age distribution of the sample.

Knowing that psychopathy predicts sexual coercion in relationships, and has been one of the strongest predictors of many antisocial behaviours, it is important to know if cuckoldry risk predicts coercion after controlling for psychopathy. Indeed, this is exactly what was found. The interaction between PROP and TIME accounted for 20% unique variance in total persuasion. This suggests the ubiquity of a cuckoldry risk mechanism that is independent from individual differences in coercion propensity. Again, it must be noted that the persuasion measure included all levels of verbal and

physical severity. It would be interesting in future research to observe how well the cuckoldry risk variables predict different degrees of seriousness.

*4.2.3 Interaction precedence.* Shackelford et al. (2002) found that PROP independently predicted partner's attractiveness and interest in having intercourse with partner, but was not able to predict distress following a partner's refusal to have intercourse. The time since last intercourse did not predict any of these outcomes. They concluded that "these effects of the proportion of time spent apart since the couple's last copulation are independent of the total number of hours since the couple's last copulation" (p. 134). They also argued that proportion of time spend apart is the key variable, although it is conceivable that time since last intercourse is also influential. Baker and Bellis (1993) on the other hand place as much importance on time as they do on proportion, but they also believed these two predictors are independent: "we conclude that % time together and inter-copulation interval have significant but independent influences on the number of sperm ejaculated during in-pair copulation" (p. 868). Both of these conclusions do not make logical or theoretical sense. First there was no empirical test of 'independence', and secondly, my results suggest their interdependence is what is important in making strong predictions.

A methodological error committed by Baker and Bellis (1993) and Shackelford et al. (2002) was the assumption that TIME and PROP independently predict the outcome. Independence of a variable should be tested against its potential interaction with other predictors. Logically and theoretically speaking, even if the time since last having copulated independently predicts sperm count, is it not possible that males who have not had sex in a while, and spent all their time with their partner, will be at a lower risk than males who have not had sex in a while and spent much of their time away from

each other? This is exactly what was found with the data predicting sexual coercion. This finding enriches our understanding of a cuckoldry risk mechanism, as it provides evidence for a more intricately designed function.

#### *4.3 Cuckoldry Risk and Rape Thoughts, Attitudes, and Arousal*

The largest effect sizes were found when cuckoldry risk variables were used to predict highly relevant outcomes: verbal and physical tactics in the context of a partner refusing to have sex. The effects of cuckoldry risk variables on general rape-related thoughts, attitudes, and arousal were similar but not as strong. These results illustrate the predictive validity of these cuckoldry risk variables.

Regardless of the size of the effect, there was a consistent pattern where males who have not had intercourse in a while were more likely to be less empathic to rape victims, more accepting of rape myths, and hold more adversarial sexual beliefs than males who had intercourse recently, only when the proportion of time away their partners since last having intercourse was also high. Such results provide an early indication of how a facultative mechanism of cuckoldry risk influences other psychological mechanisms that facilitate easier use of sexual coercion or rape as these measures of rape-supportive thoughts and attitudes are associated with deviant behaviour. This could work in one of two ways. Rape-supportive attitudes and thoughts may actually motivate the person to engage in such behaviour, or, such attitudes and thoughts disinhibit one's reaction to the negative aspect of raping. These differences in function are outside the scope of this thesis, but are of interest for future research. The most important conclusion on the impact of cuckoldry risk on our attitudes and beliefs is knowing that a simple interaction between time since last having sex and proportion of time with partner since then is able to modify these measures in a predictable way.

#### *4.4 The Role of Sexual Jealousy*

It was initially hypothesized that sexual jealousy serves as an important motivator in engaging in sexual coercion. Much of the literature on sexual jealousy has shown that it is postdictive of actual or perceived sexual infidelity (Buss, 2000; Pines & Aronson, 1983). Other researchers have shown sexual jealousy to be a motivator in domestic assault and homicide (Daly & Wilson, 1988). There are two possible reasons why sexual jealousy was not related to sexual coercion or higher cuckoldry risk: (1) it was not a good measure of jealousy, as it only gauges responding to either emotional or sexual jealousy, and not degrees of each; and (2) sexual jealousy may be an initial motivator of mate guarding, but not of sexual coercion. Both of these must be investigated further before truly understanding the potential role of sexual jealousy in cuckoldry risk. As will be discussed, this thesis was able to provide some evidence for latter explanation.

The findings of this thesis indicate that sexual jealousy does not predict higher risk of cuckoldry. What was found, however, was a main effect for PROP on sexual jealousy scores. In other words, those who spent proportionally more time with their partner since last having sex were more likely to have higher scores on sexual jealousy, independent of the time since last having intercourse. Although post-hoc, such findings could tell us why some individuals are spending more time with their partner. Static relationship characteristic variables indicative of partner infidelity were selected from the survey, and tested to see if the low proportion group scored higher on these items: among males, 9 of 17 items followed this pattern and 0 of 17 were in the opposite direction, whereas among females only 1 of 17 items was significantly related (in the direction expected for males). To rephrase, males who spent proportionally more time

with their partner since last having sex were more likely to score higher on experiencing possible infidelity in the past. This provides further evidence that individuals in the low proportion group are more likely to be on 'high alert' for suspected infidelity, which is why they are spending more time with their partner. An extension of this finding is to account for the lowPROP – lowTIME group scoring high on coercion. Future research should investigate whether these individuals recently experienced a high cuckoldry risk scenario and have just recently acted on it. What we may be seeing are coercive scores that are the residual effects of recent coercion. At this stage, such a result is merely speculative, but it would account for the finding that lowPROP -lowTIME males scoring high on persuasion.

#### *4.5 The Cuckoldry Risk Psychological Mechanism of Sexual Coercion*

We now turn our attention to sexual coercion in romantic relationships as an adaptation or byproduct. In order for a male-specific phenotype or psychological mechanism to be considered an adaptation, it must have become prevalent after successive generations where males who had this trait out-reproduced males lacking it. Logically, as per sexual selection theory, males who are able to identify and reduce any risk of partner infidelity will have higher fitness than other males. Therefore, in our evolutionary past, men who were faced with higher risk of cuckoldry with a reluctant sex partner and used sexual coercion in order to copulate would have been more likely to pass on those genes coding for a facultative cuckoldry risk mechanism onto future generations. This differs from a byproduct, where sexual coercion would be a byproduct of other adaptations among males, such as higher sexual drive, indiscriminate sex, or partner variety. To be considered an adaptation, it must satisfy three criteria: reliability, efficiency, and economy. The cuckoldry risk mechanism can be said to be reliable if

measures of coercion increase each time the risk is high. This could be tested using a within-subjects design. The mechanism can be considered efficient when very specific and highly relevant cues elicit coercive responding. This is probably why general cuckoldry risk could not predict behavioural intent, only the proximal cues. Lastly, the mechanism exhibits economy as it is a tactic used under very specific circumstances. Future research may also show that the cuckoldry risk interaction accounts for milder persuasion and the mechanism in conjunction with antisocial traits account for violent responding. These data do not tell us if these men will engage in this behaviour. They merely inform us that it elevates their self-reported likelihood to engage in some acts.

#### *4.6 Synthesis of Discussion*

There are several important outcomes from this study: (1) finding a sex difference in the cuckoldry risk mechanism; (2) the mechanism functions such that an interaction between TIME and PROP is required, where males are more likely to be coercive when the time since last having sex is high only when the proportion of time away was also high; (3) this interaction also predicts rape-supportive thoughts and attitudes; (4) this interaction may also identify who has recently been coercive with one's partner; (5) men who spend more time with their partner may be responding to static cuckoldry risk cues through mate guarding; (6) this interaction accounts for much of the variance in coercion after controlling for psychopathy; and (7) other factors may be important in addition to cuckoldry risk when predicting more severe forms of sexual aggression. These conclusions could be summarized in a new model predicting sexual coercion in romantic relationships.

Model 1 outlines the simple cuckoldry risk mechanism in predicting any form of coercion (Appendix R). This model is supported from results of this research, as the high

PROP - high TIME group had elevated coercion scores as measured by verbal/physical persuasion, rape attitudes, adversarial beliefs, and rape empathy. Model 2 incorporates what is known from the literature on rape proclivity, which may account for all forms of sexual coercion (Appendix S). It is possible that the cuckoldry risk interaction – in addition to psychopathy, age, and developmental instability – independently increases one’s propensity to sexually coerce his partner. Model 3 attempts to account for the lowPROP – lowTIME group scoring high on sexual coercion (Appendix T). There is some evidence from this thesis supporting this third model. For instance, static cuckoldry risk items influenced the proportion of time with one’s partner, suggesting greater use of mate guarding tactics. This scenario, when coupled with having had intercourse recently, might indicate recent or current behaviour that is reducing one’s risk.

Future research can use these models as a general guide to test additional hypotheses. Areas of concentration should focus on replicating these results, separating outcome into levels of severity, asking about relationship characteristics over the past few days, and re-testing sexual jealousy using continuous measures.

#### *4.7 Dynamic Risk Prediction*

The practical implication of this research was to uncover an important dynamic risk factor in predicting sexual coercion in romantic relationships. The current trend in risk prediction literature is to move from focusing on general to specific criminal behaviour. For instance, many tools have been designed to predict future violent and/or sexual offending, such as the Violence Risk Appraisal Guide (Quinsey, Harris, Rice, & Cormier, 1998) and STATIC-99 (Hanson & Thornton, 2000). Only recently have risk assessments been developed to predict domestic violence, after empirical evidence

suggested there are additional items related to this specific type of offense (Hilton, Harris, & Rice, 2001). These specialized assessments include the Ontario Domestic Assault Risk Assessment (Hilton et al., 2003) and the Spousal Assault Risk Assessment (Kropp & Hart, 2000). A problem with such risk assessments is the use of only static risk factors, resulting in reduced ability to inform treatment or intervention. Thus, current research in risk assessment development have incorporated the use of dynamic risk factors. One such tool, the Violence Risk Scale, exemplifies the successful utilization of both types of factors. The use of cuckoldry risk variables may not be useful for long term prediction of behaviour, but may be of use by front line workers who are interested in assessing imminent risk. These individuals include police officers, social workers, and public health nurses. Further research validating the use of cuckoldry risk variables to predict actual behaviour is needed prior to including this risk factor.

#### *4.8 General Conclusions*

The hypothesis that cuckoldry risk may elicit sexually coercive tactics to reduce such risks was supported by finding significant effects among males alone, and a high risk group to be those who have not had intercourse in a while with their partner and spent proportionally little time with their partner since then. These findings appeared to be consistent with other physiological and psychological reactions to cuckoldry risk. The evidence of using sexual coercion towards a reluctant partner when cuckoldry risk is high matches other reactions to this risk, including: increased sperm size; greater interest in having sex; finding a partner more attractive; and the function of the penis as a sperm displacement device. All such findings converge on an intricate system that addresses partner infidelity. Unfortunately, the exact form of the cuckoldry risk mechanism could not be concluded as some results were in the unexpected direction. Thus, new avenues

of research were discovered, including: investigating the importance of sexual jealousy; developing a psychometrically sound measure of partner sexual coercion; and partialling out variance in coercion accounted for by those who recently used coercion with their partner. Hopefully, all such results will inspire and provide directions for future research investigating the importance and function of this psychological mechanism.

## REFERENCES

- Baker, R. R., & Bellis, M. A. (1995). *Human sperm competition*: Chapman and Hall.
- Basile, K. C. (2002). Prevalence of wife rape and other intimate partner sexual coercion in a nationally representative sample of women. *Violence and Victims, 17*(5), 511-524.
- Beck, C. T. (2001). *Predictors of postpartum depression: An update*.
- Birkhead, T. R. (2000). *Promiscuity: An evolutionary history of sperm competition*. Cambridge: Harvard University Press.
- Bowker, L. H. (1983). Marital rape: A distinct syndrome? *Social Casework: The Journal of Contemporary Social Work, 64*(6), 347-352.
- Brockington, I. (2001). *Suicide in women*.
- Brown, N. L., Wilson, S. R., Kao, Y. M., Luna, V., Kuo, E. S., Rodriguez, C., et al. (2003). Correlates of sexual abuse and subsequent risk taking. *Hispanic Journal of Behavioral Sciences, 25*(3), 331-351.
- Brown, W. M., & Moore, C. (2003). Fluctuating asymmetry and romantic jealousy. *Evolution and Human Behaviour, 24*, 113-117.
- Burt, M. R. (1980). Cultural myths and supports for rape. *Journal of Personality and Social Psychology, 38*(2), 217-230.
- Buss, D. M. (2000). *The dangerous passion*. New York: Free Press.
- Buss, D. M. (2003). *The evolution of desire: Strategies of human mating* (2nd ed.). New York: Basic Books.
- Buss, D. M., Larsen, R., Westen, D., & Semmelroth, J. (1992). Sex differences in jealousy: Evolution, physiology and psychology. *Psychological Science, 3*, 251-255.

- Calhoun, K. S., Bernat, J. A., Clum, G. A., & Frame, C. L. (1997). Sexual coercion and attraction to sexual aggression in a community sample of young men. *Journal of Interpersonal Violence, 12*(3), 392-406.
- Daly, M., & Wilson, M. (1988). *Homicide*. New York: Aldine de Gruyter.
- Daly, M., & Wilson, M. (1992). The man who mistook his wife for a chattel. In J. H. Barkow, L. Cosmides & J. Tooby (Eds.), *The adapted mind. Evolutionary psychology and the generation of culture* (pp. 289-322). New York: Oxford University Press.
- Deitz, S. R., Blackwell, K. T., Daley, P. C., & Bentley, B. J. (1982). Measurement of empathy toward rape victims and rapists. *Journal of Personality and Social Psychology, 43*(2), 372-384.
- DeMaris, A. (1997). Elevated sexual activity in violent marriages: Hypersexuality or sexual extortion? *Journal of Sex Research, 34*(4), 361-373.
- Dijkstra, P., & Buunk, B. P. (1998). Jealousy as a function of rival characteristics: An evolutionary perspective. *Personality and Social Psychology Bulletin, 24*(11), 1158-1167.
- Ellis, B. J. (1998). The partner-specific investment inventory: An evolutionary approach to individual differences in investment. *Journal of Personality, 66*(3), 383-442.
- Ellis, L. (1993). Rape as a biosocial phenomenon. In G. C. N. Hall, R. Hirschman, J. R. Graham & M. S. Zaragoza (Eds.), *Sexual aggression: Issues in etiology, assessment, and treatment* (pp. 17-41). Philadelphia, PA: Taylor & Francis.
- Epps, K. J., Haworth, R., & Swaffer, T. (1993). Attitudes toward women and rape among male adolescents convicted of sexual versus nonsexual crimes. *Journal of Psychology, 127*(5), 501-506.

- Finkelhor, D., Hotaling, G. T., & Yllo, K. (1988). *Stopping family violence: Research priorities for the coming decade*. Newbury Park, CA: Sage Publications.
- Flinn, M. (1988). Mate guarding in a Caribbean village. *Ethology and Sociobiology*, 9, 1-28.
- Forth, A. E., Brown, S. L., Hart, S. D., & Hare, R. D. (1996). The assessment of psychopathy in male and female noncriminals: Reliability and validity. *Personality and Individual Differences*, 20(5), 531-543.
- Gallup, G. G., Burch, R. L., Zappieri, M. L., Parvez, R. A., Stockwell, M. L., & Davis, J. A. (2003). The human penis as a semen displacement device. *Evolution and Human Behaviour*, 24, 277-289.
- Gangestad, S. W., & Thornhill, R. (1997). The evolutionary psychology of extrapair sex: The role of fluctuating asymmetry. *Evolution and Human Behaviour*, 18(2), 69-88.
- Garcia, L. T. (1998). Perceptions of resistance to unwanted sexual advances. *Journal of Psychology and Human Sexuality*, 10(1), 43-52.
- Gillis, J. R. (1991). *The rapist as a sexual deviant offender*. Queen's University, Kingston.
- Gottschall, J. A., & Gottschall, T. A. (2003). Are per-incident rape-pregnancy rates higher than per-incident consensual pregnancy rates? *Human Nature*, 14(1), 1-20.
- Grant, P. (2004). Graduate course notes in multivariate statistics. Saskatoon, SK: University of Saskatchewan.

- Hanneke, C. R., & Shields, N. A. (1985). Marital rape: Implications for the helping professionals. *Social Casework: The Journal of Contemporary Social Work*, 66(8), 451-458.
- Hanson, R. K., & Bussière, M. T. (1998). Predicting relapse: A meta-analysis of sexual offender recidivism studies. *Journal of Consulting and Clinical Psychology*, 66, 348-362.
- Hare, R. D. (1991). *Manual for the hare psychopathy checklist-revised*. Toronto, ON: Multi-Health Systems.
- Hare, R. D. (1999). Psychopathy as a risk factor for violence. *Psychiatric Quarterly*, 70(3), 181-197.
- Hare, R. D. (2003). *Hare psychopathy checklist revised (PCL-R)* (2nd Ed ed.). Toronto, ON: Multi-Health Systems.
- Harris, G. T., Rice, M. E., & Quinsey, V. L. (1994). Psychopathy as a taxon: Evidence that psychopaths are a discrete class. *Journal of Consulting and Clinical Psychology*, 62(2), 387-397.
- Hastings, B. M. (2000). Social information processing and the verbal and physical abuse of women. *Journal of Interpersonal Violence*, 15(6), 651-664.
- Hemphill, J. F., & Hare, R. D. (2004). Some misconceptions about the hare PCL-R and risk assessment: A reply to Gendreau, Goggin, and Smith. *Criminal Justice and Behavior*, 31(2), 203-243.
- Hogben, M., Gange, S. J., Watts, D. H., Robison, E., Young, M., Richardson, J., et al. (2000). The effect of sexual and physical violence on risky sexual behavior and STDs among a cohort of HIV seropositive women. *AIDS and Behavior*, 4(4), 353-361.

- Jasinski, J. L. (2001). *Pregnancy and violence against women: An analysis of longitudinal data.*
- Jaycox, L. H., Zoellner, L., & Foa, E. B. (2002). Cognitive-behavior therapy for PTSD in rape survivors. *Journal of Clinical Psychology, 58*(8), 891-906.
- Kilpatrick, D. G., Best, C. L., Saunders, B. E., & Veronen, L. J. (1988). Rape in marriage and in dating relationships: How bad is it for mental health? *Annals of the New York Academy of Sciences, 528*, 335-344.
- Krueger, M. M. (1988). Pregnancy as a result of rape. *Journal of Sex Education and Therapy, 4*(1), 23-27.
- Lalumière, M. L., Chalmers, L. J., Quinsey, V. L., & Seto, M. C. (1996). A test of the mate deprivation hypothesis of sexual coercion. *Ethology and Sociobiology, 17*, 299-318.
- Lalumière, M. L., Harris, G. T., Quinsey, V. L., & Rice, M. E. (in press). *The nature of rape: Understanding male propensity for sexual aggression.* Washington: American Psychological Association.
- Lalumière, M. L., & Quinsey, V. L. (1996). Sexual deviance, antisociality, mating effort, and the use of sexually coercive behaviors. *Personality and Individual Differences, 21*(1), 33-48.
- Lalumière, M. L., Quinsey, V. L., Harris, G. T., Rice, M. E., & Trautrimas, C. (2003). Are rapists differentially aroused by coercive sex in phallometric assessments? *Annals of the New York Academy of Sciences, 989*, 211-224.
- Lloyd, E. A. (2003). Violence against science: Rape and evolution. In C. B. Travis (Ed.), *Evolution, gender, and rape.* Cambridge: MIT Press.

- Malamuth, N. M. (1989). The attraction to sexual aggression scale: Part one. *The Journal of Sex Research*, 26(1), 26-49.
- Malamuth, N. M. (1996). The confluence model of sexual aggression: Feminist and evolutionary perspectives. In D. M. Buss & N. M. Malamuth (Eds.), *Sex, power, conflict: Evolutionary and feminist perspectives* (pp. 269-295). London: Oxford University Press.
- McLennan, J. D., Kotelchuck, M., & Cho, H. (2001). *Prevalence, persistence, and correlates of depressive symptoms in a national sample of mothers of toddlers*.
- Monahan, J., Steadman, H., Silver, E., Appelbaum, P., Robbins, P., Mulvey, E., et al. (2001). *Rethinking risk assessment: The Macarthur study of mental disorder and violence*. New York, NY: Oxford University Press.
- Monson, C. M., & Langhinrichsen-Rohling, J. (1998). Sexual and nonsexual marital aggression: Legal considerations, epidemiology, and an integrated typology of perpetrators. *Aggression and Violent Behavior*, 3(4), 369-389.
- Mosher, D. L., & Anderson, R. D. (1986). Macho personality, sexual aggression, and reactions to guided imagery of realistic rape. *Journal of Research in Personality*, 20, 77-94.
- Palmer, C. T., & Thornhill, R. (2003). A posse of good citizens brings outlaw evolutionists to justice. *Evolutionary Psychology*, 1, 10-27.
- Paulhus, D. L., & Williams, K. M. (2002). The dark triad of personality: Narcissism, Machiavellianism, and psychopathy. *Journal of Research in Personality*, 556-563.
- Peacock, P. (1998). Marital rape. In R. K. Bergen (Ed.), *Issues in intimate violence* (pp. 225-235). Thousand Oaks: Sage Publications.

- Pines, A., & Aronson, E. (1983). Antecedents, correlates, and consequences of sexual jealousy. *Journal of Personality, 51*(1), 108-136.
- Pound, N. (2002). Male interest in visual cues of sperm competition. *Evolution and Human Behaviour, 23*, 443-466.
- Quinsey, V. L., Harris, G. T., Rice, M. E., & Cormier, C. A. (1998). *Violent offenders: Appraising and managing risk*. Washington, DC: American Psychological Association.
- Quinsey, V. L., & Lalumière, M. L. (1995). Evolutionary perspectives on sexual offending. *Sexual Abuse: A Journal of Research and Treatment, 7*(4), 301-315.
- Quinsey, V. L., Rice, M. E., & Harris, G. T. (1995). Actuarial prediction of sexual recidivism. *Journal of Interpersonal Violence, 10*, 85-105.
- Redneck, H. S., Holmes, M. M., Kilpatrick, D. G., Clum, G., Acheron, R., Best, C. L., et al. (2000). Predictors of post-rape medical care in a national sample of women. *American Journal of Preventative Medicine, 19*(4), 214-219.
- Redneck, H. S., Kilpatrick, D. G., Walsh, C., & Veronen, L. J. (1991). Marital rape. In R. T. Ammerman & M. Harsens (Eds.), *Case studies in family violence*. New York, NY: Plenum Press.
- Russell, D. E. H. (1990). *Rape in marriage* (2nd ed.). Bloomington and Indianapolis: Indiana University Press.
- Seto, M. C. (2000). A natural history of rape: Biological bases of sexual coercion. *Animal Behaviour, 60*(5), 705-707.
- Shackelford, T. K., & Buss, D. M. (1997). Cues to infidelity. *Personality and Social Psychology Bulletin, 23*(10), 1034-1045.

- Shackelford, T. K., LeBlanc, G. J., Weekes-Shackelford, V. A., Bleske-Rechek, A. L., Euler, H. A., & Hoier, S. (2002). Psychological adaptation to human sperm competition. *Evolution and Human Behaviour*, 23, 123-138.
- Shields, N. M., & Hanneke, C. R. (1983). Battered wives' reactions to marital rape. In D. Finkelhor, R. J. Gelles, G. T. Hotaling & M. A. Straus (Eds.), *The dark side of families* (pp. 131-148). Beverly Hills, CA: Sage.
- Shields, W. M., & Shields, L. M. (1983). Forcible rape: An evolutionary perspective. *Ethology and Sociobiology*, 4, 115-136.
- Statistics Canada. (2002). Retrieved November 7, 2003, from <http://www.statcan.ca/english/Pgdb/famil01.htm>
- Straus, M. A., & Gelles, R. J. (1990). *Physical violence in American families: Risk factors and adaptations to violence in 8,145 families*. New Brunswick, NJ: Transaction Books.
- Sunday, S. R., & Tobacco, E. (1985). *Violence against women: A critique of the sociobiology of rape*. New York: Gordian Press.
- Symons, D. (1979). *The evolution of human sexuality*. New York: Oxford University Press.
- Tabachnik, B. G., & Fidell, L. S. (2001). *Using multivariate statistics* (4 ed.). Needham Heights, MA: Allyn & Bacon.
- Thornhill, R., & Palmer, C. T. (2000). *A natural history of rape*. London: MIT Press.
- Thornhill, R., & Thornhill, N. W. (1983). Human rape: An evolutionary analysis. *Ethology and Sociobiology*, 4, 137-173.
- Tobach, E., & Reed, R. (2003). Understanding rape. In C. B. Travis (Ed.), *Evolution, gender, and rape*. Cambridge: MIT Press.

- Travis, C. B. (Ed.). (2003). *Evolution, gender and rape*. London: Massachusetts Institute of Technology.
- Vogel, L. C. M., & Marshall, L. L. (2001). PTSD symptoms and partner abuse: Low income women at risk. *Journal of Traumatic Stress, 14*(3), 569-584.
- Walters, G. D. (2003). Predicting criminal justice outcomes with the psychopathy checklist and lifestyle criminality screening form: A meta-analytic comparison. *Behavioral Sciences and the Law, 21*, 89-102.
- Ward, T., McCormack, J., Hudson, S. M., & Polished, D. (1997). Rape: Assessment and treatment. In D. R. Laws & W. T. O'Donohue (Eds.), *Sexual deviance: Theory, assessment, and treatment*. New York, NY: Guildford Press.

# Want to win \$300?

**All it will take is 45 minutes of your time...**

We need volunteers for a  
psychology experiment

If you are a male and 18 years of age or older, you  
may qualify to participate in this study.

Participants have a 1/100 chance of winning...  
1<sup>st</sup> \$300, 2<sup>nd</sup> \$100, 3<sup>rd</sup> \$50

If interested, contact Joe Camilleri: 966-6719

(If no one is in, provide your **first name** and **phone number** where we can contact you.)

---

Department of Psychology  
University of Saskatchewan



## APPENDIX B

*You are invited to participate in a study entitled Sexual behaviour and characteristics of men and their partner in dating, common-law and marital relationships. Please read this form carefully, and feel free to ask questions you might have.*

**Researcher:** Joseph A. Camilleri, Department of Psychology, University of Saskatchewan, (306) 966-6657, joseph.camilleri@usask.ca

**Purpose and Procedure:** The purpose of this study is to examine the relationship between personality characteristics, attitudes, and environmental situations on sexual behaviour. We hope to learn that some of these items are more related to certain sexual behaviours than others. Inevitably, this line of research will help scientists and practitioners understand the potentially dynamic relationship between these factors. The study involves filling out a series of surveys and questionnaires about your personality, attitudes and beliefs towards various sexual behaviours, and will ask you about certain characteristics of yourself and partner, if applicable. This survey should take no longer than 30 minutes to complete. All participants are being asked to complete the same survey.

**Potential Benefits:** There are two benefits in participating in this study. First, you will be debriefed following completion of the survey, at which time you will be provided the most current understanding on sexual behaviour in dating, common-law, and marital relationships. Also, references will be provided to give you additional sources of information on the type of work being done this area. Second, your participation will expose you to research methods using survey design, and you will learn first hand what is done to test psychological theories.

It is anticipated that your participation in this study will benefit scientists in understanding the complexities of sexual behaviour in various relationships, and that psychologists and other professionals will be better equipped to work with their clientele.

**Potential Risk:** There is a risk that you may feel uncomfortable in answering some of the questions because of their personal nature. Please feel free to skip any questions you do not feel comfortable in answering. Also, you may stop participating at any time if you wish to do so. Your decision to stop participating will have no effect on your academic standing. If any of the questions makes you feel uncomfortable, you may contact the researcher, and a counsellor will be referred to you. If you decide to withdraw you will still receive your course credit, or \$10 honorarium when applicable.

**Confidentiality:** Your data will be stored in a locked office (Arts, 69a) by Dr. J. S. Wormith for a minimum of five years. Although the data from this study will be published and presented at conferences, the data will be reported in aggregate form, so that it will not be possible to identify individuals. Moreover, the consent forms will be stored separately from the surveys so that it will not be possible to associate a name with any given set of responses. Please do not put your name or other identifying information on the survey.

**Right to Withdraw:** You may withdraw from the study for any reason, at any time, without academic penalty of any sort. If you withdraw from the study at any time, data that you have contributed will be destroyed.

**Questions:** If you have any questions concerning the study, please feel free to ask at any point; you are also free to contact the researchers at the numbers provided above if you have questions at a later time. This study has been approved on ethical grounds by the University of Saskatchewan Behavioural Sciences Research Ethics Board on ( ). Any questions regarding your rights as a participant may be addressed to that committee through the Office of Research Services (966-2084). Out of town participants may call collect.

**Consent to Participate:** I have read and understood the description provided above; I have been provided with an opportunity to ask questions and my questions have been answered satisfactorily. I consent to participate in the study described above, understanding that I may withdraw this consent at any time. A copy of this consent form has been given to me for my records.

\_\_\_\_\_  
(Signature of Participant)

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
(Signature of Researcher)

## APPENDIX C

### Debriefing Page

The primary objective of this study is to test the hypothesis that some males are more likely to engage in sexually coercive behaviour towards their partner when there is an elevated risk of cuckoldry. The literature on male sexual coerciveness has focused on committing such acts towards any type of female. Recently, a number of theorists have suggested that the situational precursor to committing such acts may be different between pair-bonded individuals (Buss, 2003; Lalumière, Harris, Quinsey, and Rice, under review; Thornhill & Palmer, 2000). The cuckoldry risk hypothesis has not been directly tested, though some evidence provides some support (Shields & Hanneke; Russell 1990).

The second objective of this study is to identify whether personality traits, developmental incidents, and attitudes currently understood to be related to sexually coercive behaviour are also related to behaving in such a way with one's partner. For instance, three major paths to general sexually coercive behaviour, as proposed by Lalumière et al, are psychopathy, competitive disadvantage, and young male syndrome. It is possible that an interaction between each of these factors with cuckoldry risk may best account for sexually coercing one's partner.

Thank-you once again for your participation in this study. If you have any questions or concerns, please feel free to contact the principle investigator, Joe Camilleri, at joseph.camilleri@usask.ca.

If you are interested in this topic, or would like to read more about this type of research, the following books are recommended:

Buss, D. M. (2003). *The Evolution of Desire: Strategies of Human Mating* (2nd ed.). New York: Basic Books.

Lalumière, M. L., Harris, G. T., Quinsey, V. L., & Rice, M. E. (under review). *The Nature of Rape: Understanding Male Propensity for Sexual Aggression*. Washington: American Psychological Association.

Thornhill, R., & Palmer, C. T. (2000). *A Natural History of Rape*. London: Massachusetts Institute of Technology.

## APPENDIX D

### Demographic information

---

1. Sex:    Male    Female
  
2. Age: \_\_\_\_\_  
  
Number of older brothers:        \_\_\_\_\_  
Number of younger brothers:    \_\_\_\_\_  
Number of older sisters:        \_\_\_\_\_  
Number of younger sisters:     \_\_\_\_\_
  
3. Sexual orientation:        heterosexual    homosexual    bisexual
  
4. Are you employed?  
  
 yes, fulltime  
 yes, part-time  
 no, currently period of rest  
 no, currently jobless  
 no, pupil/student/trainee  
 no, retired
  
5. If currently employed, please specify your job: \_\_\_\_\_
  
6. What is your annual income?  
  
 < \$10,000  
 \$10,000 - \$30,000  
 \$30,000 - \$60,000  
 \$60,000 - \$80,000  
 \$80,000 - \$100,000  
 \$100,000 <
  
7. What is your education level? (for pupils and students – which type of school do you attend):  
  
 elementary school not completed  
 elementary school completed  
 high school not completed  
 high school completed  
 University degree not completed  
 University degree completed

APPENDIX E

Relationship questionnaire

---

1. Do you currently have a committed relationship? yes no  
If YES, continue with question 2. If NO, skip to question 12.
  
2. What is the type of relationship with your partner?  
dating common-law fiancée marital
  
3. How long have you been with your current partner?: \_\_\_\_\_ years, \_\_\_\_\_ months
  
4. Overall, how much time have you invested in this relationship?  
1 2 3 4 5  
None Average Lots
  
5. Overall, how much money have you invested have you invested in this relationship?  
1 2 3 4 5  
None Average Lots
  
6. How serious do you think this relationship is?  
1 2 3 4 5  
Not Neutral Definitely
  
7. How serious does your partner think this relationship is?  
1 2 3 4 5  
None Average Lots
  
8. In a typical month, how often do you spend time with your partner?  
Hours in a day: \_\_\_\_\_  
Days in a week: \_\_\_\_\_  
Days in a month: \_\_\_\_\_
  
9. In a typical month, how often do you have sexual intercourse with your partner?  
Times in a day: \_\_\_\_\_  
Times in a week: \_\_\_\_\_  
Times in a month: \_\_\_\_\_
  
10. When was the last time you had sexual intercourse with your partner?  
If today: \_\_\_\_\_ hours ago  
If this month: \_\_\_\_\_ days ago Time of day: \_\_\_\_ : \_\_\_\_ am / pm (circle)  
If longer than 1 month: \_\_\_\_\_ months and \_\_\_\_\_ days ago Time of day: \_\_\_\_ : \_\_\_\_ am / pm (circle)



## APPENDIX F

**CR-B** The following questions are for those who are currently in a relationship

---

1. How often has your partner refused to have sex with you?  
1            2            3            4  
Not at all    Once        Sometimes    Often
2. How often do other men flirt with your partner?  
1            2            3            4  
Not at all    Once        Sometimes    Often
3. How often has your partner flirted with other men?  
1            2            3            4  
Not at all    Once        Sometimes    Often
4. How often has your partner threatened to break up with you?  
1            2            3            4  
Not at all    Once        Sometimes    Often
5. How often has your partner broken up with you?  
1            2            3            4  
Not at all    Once        Sometimes    Often
6. How often do you think your partner has cheated on you?  
1            2            3            4  
Not at all    Once        Sometimes    Often
7. How often do you know your partner has cheated on you?  
1            2            3            4  
Not at all    Once        Sometimes    Often
8. How many sexual relationships with other men has your partner had before being with you?  
1            2            3            4  
Not at all    Once        Sometimes    Often
9. How often does your partner spend with other men at school/work?  
1            2            3            4  
Not at all    Once        Sometimes    Often
10. How often does your partner spend with other men socially?  
1            2            3            4  
Not at all    Once        Sometimes    Often
11. How often does your partner smell differently – like unfamiliar cologne?  
1            2            3            4  
Not at all    Once        Sometimes    Often
12. How often does your partner surprise you in wanting to have sex in a new position?  
1            2            3            4  
Not at all    Once        Sometimes    Often

13. Suppose you were with your partner this evening, and she refused to have sex with you: How likely would you try to **verbally** persuade her to have sex with you? Think of **any** verbal statement, from saying sweet things to threatening.

0	1	2	3
Not likely	Maybe	Probably	Definitely

14. Suppose you were with your partner this evening, and she refused to have sex with you: How likely would you try to **physically** persuade her to have sex with you? Think of **any** physical contact, from tickling/massaging to grabbing/holding.

0	1	2	3
Not likely	Maybe	Probably	Definitely

## APPENDIX G

### ASA-Scale (Malamuth, 1989)

---

1. People frequently think about different activities even if they never do them. For each kind of activity listed, please indicate whether or not you have ever thought of trying that activity.

	Have thought of it	Have never thought of it
a. Necking (deep kissing)	<input type="checkbox"/>	<input type="checkbox"/>
b. Petting	<input type="checkbox"/>	<input type="checkbox"/>
c. Oral sex	<input type="checkbox"/>	<input type="checkbox"/>
d. Heterosexual intercourse	<input type="checkbox"/>	<input type="checkbox"/>
e. Anal intercourse	<input type="checkbox"/>	<input type="checkbox"/>
f. Male homosexual acts.	<input type="checkbox"/>	<input type="checkbox"/>
g. Group sex	<input type="checkbox"/>	<input type="checkbox"/>
h. Bondage (e.g., tying up self or sex partner)	<input type="checkbox"/>	<input type="checkbox"/>
i. Whipping, spanking	<input type="checkbox"/>	<input type="checkbox"/>
j. Rape	<input type="checkbox"/>	<input type="checkbox"/>
k. Forcing a female to do something sexual she didn't want to	<input type="checkbox"/>	<input type="checkbox"/>
l. Transvestism (wearing clothes of opposite sex)	<input type="checkbox"/>	<input type="checkbox"/>
m. Pedophilia (sex with a child)	<input type="checkbox"/>	<input type="checkbox"/>

2. Whether or not you had ever thought of it, do you find the idea:

	Very Unattractive	Somewhat Unattractive	Somewhat Attractive	Very Attractive
a. Necking (deep kissing)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Petting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Oral sex	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Heterosexual intercourse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Anal intercourse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Male homosexual acts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Group sex	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Bondage (e.g., tying up self or sex partner)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Whipping, spanking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Rape	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Forcing a female to do something sexual she didn't want to	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. Transvestism (wearing clothes of opposite sex)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m. Pedophilia (sex with a child)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. What percentage of males do you think would find the following activities sexually arousing?

	0%- 10%	11%- 20%	21%- 30%	31%- 40%	41%- 50%	51%- 60%	61%- 70%	71%- 80%	81%- 90%	91%- 100%
a. Necking (deep kissing)	<input type="checkbox"/>									
b. Petting	<input type="checkbox"/>									
c. Oral sex	<input type="checkbox"/>									
d. Heterosexual intercourse	<input type="checkbox"/>									
e. Anal intercourse	<input type="checkbox"/>									
f. Male homosexual acts.	<input type="checkbox"/>									
g. Group sex	<input type="checkbox"/>									
h. Bondage (e.g., tying up self or sex partner)	<input type="checkbox"/>									
i. Whipping, spanking	<input type="checkbox"/>									
j. Rape	<input type="checkbox"/>									
k. Forcing a female to do something sexual she didn't want to	<input type="checkbox"/>									
l. Transvestism (wearing clothes of opposite sex)	<input type="checkbox"/>									
m. Pedophilia (sex with a child)	<input type="checkbox"/>									

4. What percentage of females do you think would find the following activities sexually arousing?

	0%- 10%	11%- 20%	21%- 30%	31%- 40%	41%- 50%	51%- 60%	61%- 70%	71%- 80%	81%- 90%	91%- 100%
a. Necking (deep kissing)	<input type="checkbox"/>									
b. Petting	<input type="checkbox"/>									
c. Oral sex	<input type="checkbox"/>									
d. Heterosexual intercourse	<input type="checkbox"/>									
e. Anal intercourse	<input type="checkbox"/>									
f. Male homosexual acts.	<input type="checkbox"/>									
g. Group sex	<input type="checkbox"/>									
h. Bondage (e.g., tying up self or sex partner)	<input type="checkbox"/>									
i. Whipping, spanking	<input type="checkbox"/>									
j. Rape	<input type="checkbox"/>									
k. Forcing a female to do something sexual she didn't want to	<input type="checkbox"/>									
l. Transvestism (wearing clothes of opposite sex)	<input type="checkbox"/>									
m. Pedophilia (sex with a child)	<input type="checkbox"/>									

5. How sexually arousing do you think you would find the following sexual activities if you engaged in them (even if you have never engaged in them)?

	Very Unarousing	Somewhat Unarousing	Somewhat Arousing	Very Arousing
a. Necking (deep kissing)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Petting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Oral sex	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Heterosexual intercourse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Anal intercourse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Male homosexual acts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Group sex	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Bondage (e.g., tying up self or sex partner)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Whipping, spanking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Rape	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Forcing a female to do something sexual she didn't want to	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. Transvestism (wearing clothes of opposite sex)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m. Pedophilia (sex with a child)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n. Being forced to do something sexual you didn't want to	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. If you could be assured that no one would know and that you could in no way be punished for engaging in the following acts, how likely, if at all, would you be to commit such acts?

	Very Unlikely	Somewhat Unlikely	Likely	Very Likely
a. Necking (deep kissing)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Petting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Oral sex	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Heterosexual intercourse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Anal intercourse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Male homosexual acts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Group sex	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Bondage (e.g., tying up self or sex partner)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Whipping, spanking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Rape	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Forcing a female to do something sexual she didn't want to	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. Transvestism (wearing clothes of opposite sex)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m. Pedophilia (sex with a child)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



## APPENDIX I

### SRP-III-R (Forth et al., 1996)

---

Instructions: Listed below is a series of statements. Please write a letter next to each statement to indicate the extent to which you disagree or agree with that statement.

---

A	B	C	D	E
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

- \_\_\_\_\_ 1. I enjoy driving at high speed.
  - \_\_\_\_\_ 2. I think I could “beat” a lie detector
  - \_\_\_\_\_ 3. I like to change jobs fairly often
  - \_\_\_\_\_ 4. I am usually very careful about what I say to people
  - \_\_\_\_\_ 5. I have often done something dangerous just for the thrill of it.
  - \_\_\_\_\_ 6. I get a kick out of “conning” someone.
  - \_\_\_\_\_ 7. I get in trouble for the same things time after time.
  - \_\_\_\_\_ 8. I am very good at most things I try to do.
  - \_\_\_\_\_ 9. I enjoy taking chances.
  - \_\_\_\_\_ 10. Rules are made to be broken.
  - \_\_\_\_\_ 11. Not hurting other’s feelings is important to me.
  - \_\_\_\_\_ 12. I would be good at a dangerous job because I like making fast decisions.
  - \_\_\_\_\_ 13. I have sometimes broken an appointment because something more interesting came along.
  - \_\_\_\_\_ 14. I enjoy gambling for large stakes.
  - \_\_\_\_\_ 15. I almost never feel guilty over something I’ve done.
  - \_\_\_\_\_ 16. It’s sometimes fun to see how far you can push someone before they catch on.
  - \_\_\_\_\_ 17. People can usually tell if I am lying.
  - \_\_\_\_\_ 18. Conning people gives me the “shakes” (i.e., I become nervous and jittery)
  - \_\_\_\_\_ 19. When I do something wrong, I feel guilty even though nobody else knows it.
  - \_\_\_\_\_ 20. I enjoy drinking and doing wild things.
  - \_\_\_\_\_ 21. I am the most important person in this world and nobody else matters.
  - \_\_\_\_\_ 22. I have had (or tried to have) sexual relations with someone against their will.
  - \_\_\_\_\_ 23. I have avoided paying for things, such as movies, bus or subway rides, and food.
  - \_\_\_\_\_ 24. I have cheated on school tests.
  - \_\_\_\_\_ 25. I have been arrested.
  - \_\_\_\_\_ 26. I have handed in a school essay that I copied from someone else.
  - \_\_\_\_\_ 27. I have shoplifted.
  - \_\_\_\_\_ 28. I have been involved in gang activity.
  - \_\_\_\_\_ 29. I have stolen (or tried to steal) a motor vehicle, such as a car or motorcycle.
  - \_\_\_\_\_ 30. I have broken into a building or vehicle (or tried to break in) to steal something or just to look around.
  - \_\_\_\_\_ 31. I have attacked someone with the idea of seriously hurting him or her.
-

## APPENDIX J

### RES (Deitz, Blackwell, Daly, & Bently, 1982)

---

1. a) I feel that the situation in which a man compels a woman to submit to sexual intercourse against her will is an unjustifiable act under any circumstances.  
 b) I feel that the situation in which a man compels a woman to submit to sexual intercourse against her will is a justifiable act under certain circumstances
- |                           |   |   |   |         |   |   |                           |
|---------------------------|---|---|---|---------|---|---|---------------------------|
|                           | 1 | 2 | 3 | 4       | 5 | 6 | 7                         |
| Strong preference for (a) |   |   |   | Neutral |   |   | Strong preference for (b) |
2. a) In deciding the matter of guilt or innocence in a rape case, it is more important to know about the past sexual activity of the alleged rape victim than the past sexual activity of the rapist.  
 b) It is more important to know about the past sexual activity of the alleged rapist than the past sexual activity of the alleged rape victim in deciding the matter of guilt or innocence in a rape case.
- |                           |   |   |   |         |   |   |                           |
|---------------------------|---|---|---|---------|---|---|---------------------------|
|                           | 1 | 2 | 3 | 4       | 5 | 6 | 7                         |
| Strong preference for (a) |   |   |   | Neutral |   |   | Strong preference for (b) |
3. a) In general, I feel that rape is an act that is provoked by the rape victim.  
 b) In general, I feel that rape is an act that is not provoked by the rape victim
- |                           |   |   |   |         |   |   |                           |
|---------------------------|---|---|---|---------|---|---|---------------------------|
|                           | 1 | 2 | 3 | 4       | 5 | 6 | 7                         |
| Strong preference for (a) |   |   |   | Neutral |   |   | Strong preference for (b) |
4. a) I would find it easier to imagine how a rapist might feel during an actual rape than how a rape victim might feel.  
 b) I would find it easier to imagine how a rape victim might feel during an actual rape than how a rapist might feel.
- |                           |   |   |   |         |   |   |                           |
|---------------------------|---|---|---|---------|---|---|---------------------------|
|                           | 1 | 2 | 3 | 4       | 5 | 6 | 7                         |
| Strong preference for (a) |   |   |   | Neutral |   |   | Strong preference for (b) |
5. a) Under certain circumstances, I can understand why a man would use force to obtain sexual relations with a woman.  
 b) I cannot understand why a man would use force to obtain sexual relations with a woman under any circumstances.
- |                           |   |   |   |         |   |   |                           |
|---------------------------|---|---|---|---------|---|---|---------------------------|
|                           | 1 | 2 | 3 | 4       | 5 | 6 | 7                         |
| Strong preference for (a) |   |   |   | Neutral |   |   | Strong preference for (b) |
6. a) In a court of law, I feel that the rapist must be held accountable for his behaviour during the rape.  
 b) In a court of law, I feel that the rape victim must be held accountable for her behaviour during the rape.
- |                           |   |   |   |         |   |   |                           |
|---------------------------|---|---|---|---------|---|---|---------------------------|
|                           | 1 | 2 | 3 | 4       | 5 | 6 | 7                         |
| Strong preference for (a) |   |   |   | Neutral |   |   | Strong preference for (b) |
7. a) When a woman dresses in a sexually attractive way, she must be willing to accept the consequences of her behaviour, whatever they are, since she is signalling her interest in having sexual relations.  
 b) A woman has the right to dress in a sexually attractive way whether she is really interested in having sexual relations or not.
- |                           |   |   |   |         |   |   |                           |
|---------------------------|---|---|---|---------|---|---|---------------------------|
|                           | 1 | 2 | 3 | 4       | 5 | 6 | 7                         |
| Strong preference for (a) |   |   |   | Neutral |   |   | Strong preference for (b) |

8. a) I would find it easier to empathize with the shame and humiliation a rapist might feel during a trial for rape than with the feelings a rape victim might have during the trial.  
b) I would find it easier to empathize with the shame and humiliation a rape victim might feel during a trial to prove rape than with the feelings a rapist might have during the trial.
- |                           |   |   |   |         |   |   |                           |
|---------------------------|---|---|---|---------|---|---|---------------------------|
|                           | 1 | 2 | 3 | 4       | 5 | 6 | 7                         |
| Strong preference for (a) |   |   |   | Neutral |   |   | Strong preference for (b) |
9. a) If a man rapes a sexually active woman, he would probably be justified in his actions by the fact that she chooses to have sexual relations with other men.  
b) If a man rapes a sexually active woman, his actions would not be justified by the fact that she chooses to have sexual relations with other men.
- |                           |   |   |   |         |   |   |                           |
|---------------------------|---|---|---|---------|---|---|---------------------------|
|                           | 1 | 2 | 3 | 4       | 5 | 6 | 7                         |
| Strong preference for (a) |   |   |   | Neutral |   |   | Strong preference for (b) |
10. a) I believe that all women secretly want to be raped.  
b) I don't believe that any women secretly want to be raped.
- |                           |   |   |   |         |   |   |                           |
|---------------------------|---|---|---|---------|---|---|---------------------------|
|                           | 1 | 2 | 3 | 4       | 5 | 6 | 7                         |
| Strong preference for (a) |   |   |   | Neutral |   |   | Strong preference for (b) |
11. a) In deciding whether a rape has occurred or not, the burden of proof should rest with the woman, who must prove that a rape has actually occurred.  
b) In deciding whether a rape has occurred or not, the burden of proof should rest with the man, who must prove that a rape has not actually occurred.
- |                           |   |   |   |         |   |   |                           |
|---------------------------|---|---|---|---------|---|---|---------------------------|
|                           | 1 | 2 | 3 | 4       | 5 | 6 | 7                         |
| Strong preference for (a) |   |   |   | Neutral |   |   | Strong preference for (b) |
12. a) I believe that it is impossible for a rape victim to enjoy being raped.  
b) I believe that it is possible for a rape victim to enjoy the experience of being raped, whether she admits it or not.
- |                           |   |   |   |         |   |   |                           |
|---------------------------|---|---|---|---------|---|---|---------------------------|
|                           | 1 | 2 | 3 | 4       | 5 | 6 | 7                         |
| Strong preference for (a) |   |   |   | Neutral |   |   | Strong preference for (b) |
13. a) I can really empathize with the helplessness a rapist might feel during a rape, since he's at the mercy of forces beyond his control.  
b) I can really empathize with the helplessness a victim might feel during a rape if all of her attempts to resist the rape have failed.
- |                           |   |   |   |         |   |   |                           |
|---------------------------|---|---|---|---------|---|---|---------------------------|
|                           | 1 | 2 | 3 | 4       | 5 | 6 | 7                         |
| Strong preference for (a) |   |   |   | Neutral |   |   | Strong preference for (b) |
14. a) After a rape has occurred, I think the woman would suffer more emotional torment in dealing with the police than the man would.  
b) After a rape has occurred, I think the man would suffer more emotional torment in dealing with the police than the woman would.
- |                           |   |   |   |         |   |   |                           |
|---------------------------|---|---|---|---------|---|---|---------------------------|
|                           | 1 | 2 | 3 | 4       | 5 | 6 | 7                         |
| Strong preference for (a) |   |   |   | Neutral |   |   | Strong preference for (b) |
15. a) If a rape were interrupted, I think the victim would feel more embarrassment than the rapist.  
b) If a rape were interrupted, I think the rapist would feel more embarrassment than the rape victim.
- |                           |   |   |   |         |   |   |                           |
|---------------------------|---|---|---|---------|---|---|---------------------------|
|                           | 1 | 2 | 3 | 4       | 5 | 6 | 7                         |
| Strong preference for (a) |   |   |   | Neutral |   |   | Strong preference for (b) |
16. a) I feel it is impossible for a man to rape a woman unless she is willing.  
b) I feel it is possible for a man to rape a woman against her will.



## APPENDIX K

### RMAS (Burt, 1980)

---

1. A woman who goes to the home or apartment of a man on their first date implies that she is willing to have sex.

1	2	3	4	5	6	7
Strongly Disagree			Neutral			Strongly Agree

2. Any female can get raped.

1	2	3	4	5	6	7
Strongly Disagree			Neutral			Strongly Agree

3. One reason that women falsely report a rape is that they frequently have a need to call attention to themselves

1	2	3	4	5	6	7
Strongly Disagree			Neutral			Strongly Agree

4. Any healthy woman can successfully resist a rapist if she really wants to.

1	2	3	4	5	6	7
Strongly Disagree			Neutral			Strongly Agree

5. When women go around braless or wearing short skirts and tight tops, they are just asking for trouble.

1	2	3	4	5	6	7
Strongly Disagree			Neutral			Strongly Agree

6. In the majority of rapes, the victim is promiscuous or has a bad reputation

1	2	3	4	5	6	7
Strongly Disagree			Neutral			Strongly Agree

7. If a girl engages in necking or petting and she lets things get out of hand, it is her own fault if her partner forces sex on her.

1	2	3	4	5	6	7
Strongly Disagree			Neutral			Strongly Agree

8. Women who get raped while hitchhiking get what they deserve.

1	2	3	4	5	6	7
Strongly Disagree			Neutral			Strongly Agree

9. A woman who is stuck-up and thinks she is too good to talk to guys on the street deserves to be taught a lesson.

1	2	3	4	5	6	7
Strongly Disagree			Neutral			Strongly Agree



## APPENDIX L

### ASB (Burt, 1980)

---

1. A woman will only respect a man who will lay down the law to her  
1 2 3 4 5 6 7  
Strongly Disagree Neutral Strongly Agree
2. Many women are so demanding sexually that a man just can't satisfy them.  
1 2 3 4 5 6 7  
Strongly Disagree Neutral Strongly Agree
3. A man's got to show the woman who's boss right from the start or he'll end up henpecked.  
1 2 3 4 5 6 7  
Strongly Disagree Neutral Strongly Agree
4. Women are usually sweet until they've caught a man, but then they let their true self show.  
1 2 3 4 5 6 7  
Strongly Disagree Neutral Strongly Agree
5. A lot of men talk big, but when it comes down to it, they can't perform well sexually.  
1 2 3 4 5 6 7  
Strongly Disagree Neutral Strongly Agree
6. In a dating relationship a woman is largely out to take advantage of a man.  
1 2 3 4 5 6 7  
Strongly Disagree Neutral Strongly Agree
7. Men are out for only one thing  
1 2 3 4 5 6 7  
Strongly Disagree Neutral Strongly Agree
8. Most women are sly and manipulating when they are out to attract a man.  
1 2 3 4 5 6 7  
Strongly Disagree Neutral Strongly Agree
9. A lot of women seem to get pleasure in putting men down.  
1 2 3 4 5 6 7  
Strongly Disagree Neutral Strongly Agree

## APPENDIX M

### SEJ

---

#1: Please think of a serious or committed romantic relationship that you have had in the past, that you currently have, or that you would like to have.

Imagine that you discover that the person with whom you have been seriously involved became interested in someone else. What would upset or distress you more? (Here and in the following, please only check one.)

Imagining your partner forming a deep emotional attachment to that person.

Imagining your partner enjoying passionate sexual intercourse with that person.

#2: (like above.) Imagine that you discover that the person with whom you have been seriously involved became interested in someone else. What would upset or distress you more?

Imagining your partner trying different sexual positions with that other person.

Imagining your partner falling in love with that other person.

#3: (like above.) Imagine that you discover that the person with whom you have been seriously involved became interested in someone else. What would upset or distress you more?

Imagining your partner buying this person several expensive gifts.

Imagining your partner having sex with this other person.

#4: Imagine that your partner both formed an emotional attachment to another person and had sexual intercourse with that other person. Which aspect of your partner's involvement would upset you more?

The sexual intercourse with that other person.

The emotional attachment to that other person.

#5: Which would upset or distress you more?

Imagining your partner having sexual intercourse with that person, but you are certain that they will not form a deep emotional attachment.

Imagining your partner forming a deep emotional attachment to that person, but you are certain that they will not have sexual intercourse.

#6: Which would upset or distress you more?

Imagining that your partner is still sexually interested in the former lover, but is no longer in love with this person.

Imagining that your partner is still emotionally involved with the former lover, but is no longer sexually interested in this person.

#7: Which would upset or distress you more?

Imagining your partner having sexual intercourse for just one night with another person, with no chance of any further involvement.

Imagining your partner becoming emotionally involved with another person, with no chance of any sexual involvement.

## APPENDIX N

*You are invited to participate in a study entitled Sexual behaviour and characteristics of men and their partner in dating, common-law and marital relationships. Please read this form carefully, and feel free to ask questions you might have.*

**Researcher:** Joseph A. Camilleri, Department of Psychology, University of Saskatchewan, (306) 966-6657, joseph.camilleri@usask.ca

**Purpose and Procedure:** The purpose of this study is to examine the relationship between personality characteristics, attitudes, and environmental situations on sexual behaviour. We hope to learn that some of these items are more related to certain sexual behaviours than others. Inevitably, this line of research will help scientists and practitioners understand the potentially dynamic relationship between these factors. The study involves filling out a series of surveys and questionnaires about your personality, attitudes and beliefs towards various sexual behaviours, and will ask you about certain characteristics of yourself and partner, if applicable. This survey should take no longer than 30 minutes to complete. All participants are being asked to complete the same survey.

**Potential Benefits:** There are two benefits in participating in this study. First, you will be debriefed following completion of the survey, at which time you will be provided the most current understanding on sexual behaviour in dating, common-law, and marital relationships. Also, references will be provided to give you additional sources of information on the type of work being done in this area. Second, your participation will expose you to research methods using survey design, and you will learn first hand what is done to test psychological theories.

It is anticipated that your participation in this study will benefit scientists in understanding the complexities of sexual behaviour in various relationships, and that psychologists and other professionals will be better equipped to work with their clientele.

**Potential Risk:** There is a risk that you may feel uncomfortable in answering some of the questions because of their personal nature. Please feel free to skip any questions you do not feel comfortable in answering. Also, you may stop participating at any time if you wish to do so. Your decision to stop participating will have no effect on your academic standing. If any of the questions makes you feel uncomfortable, you may contact the researcher, and a counsellor will be referred to you. If you decide to withdraw you will still receive your course credit, or \$10 honorarium when applicable.

**Confidentiality:** Your data will be stored in a locked office (Arts, 69a) by Dr. J. S. Wormith for a minimum of five years. Although the data from this study will be published and presented at conferences, the data will be reported in aggregate form, so that it will not be possible to identify individuals. Moreover, the consent forms will be stored separately from the surveys so that it will not be possible to associate a name with any given set of responses. Please do not put your name or other identifying information on the survey.

**Right to Withdraw:** You may withdraw from the study for any reason, at any time, without academic penalty of any sort. If you withdraw from the study at any time, data that you have contributed will be destroyed.

**Questions:** If you have any questions concerning the study, please feel free to ask at any point; you are also free to contact the researchers at the numbers provided above if you have questions at a later time. This study has been approved on ethical grounds by the University of Saskatchewan Behavioural Sciences Research Ethics Board on January 15<sup>th</sup>, 2004 (BSC 03-1342). Any questions regarding your rights as a participant may be addressed to that committee through the Office of Research Services (966-2084). Out of town participants may call collect.

**Consent to Participate:** I have read and understood the description provided above; I have been provided with an opportunity to ask questions and my questions have been answered satisfactorily. I consent to participate in the study described above, understanding that I may withdraw this consent at any time. A copy of this consent form has been given to me for my records.

\_\_\_\_\_  
(Signature of Participant)

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
(Signature of Researcher)

## APPENDIX O

### PH

---

We would like to know about events that sometimes occur during pregnancy, delivery, or infancy.

First, we would like to know about events that might have occurred when your mother delivered you. Please check all that apply.

- Use of forceps or other instruments
- Cesarean section
- Prolonged labour/delivery
- Abnormal fetal posture
- Umbilical or placental abnormality
- Asphyxia or anoxia
- Fetal distress
- Rh problems
- Infections
- Low birth weight
- Prematurity

How old was your mother when you were born? \_\_\_\_\_

Second, we would like to know about events that might have occurred during infancy. Please check all that apply.

- Colic
- Neurological impairment
- Head injury
- Malnutrition

Finally, have you ever had learning problems in preschool or elementary school? \_\_\_\_\_

Have you ever had major coordination problems (for example, difficulty with motor control with regard to walking, crawling, sitting, dropping things, poor performance in sports, poor handwriting)? \_\_\_\_\_

APPENDIX P

**Table P.1.** Summary of skewness and kurtosis for raw and transformed data.

		Males		Females	
		TIME	PROP	TIME	PROP
Raw Data	Skewness	3.307	1.034	6.865	0.810
	SE Skewness	0.269	0.269	0.266	0.266
	$z_s$	12.29	3.84	25.8	3.045
	Kurtosis	10.723	-0.391	54.416	-0.855
	SE Kurtosis	0.532	0.532	0.526	0.526
	$z_k$	20.15	-0.735*	103.452	-1.625
	Outliers	8	0	7	0
Square Root	Skewness	1.357	0.475	2.986	0.263
	SE Skewness	0.269	0.269	0.266	0.266
	$z_s$	5.044	1.766*	11.226*	0.989
	Kurtosis	2.575	-1.048	14.459	-1.268
	SE Kurtosis	0.532	0.532	0.526	0.526
	$z_k$	4.84	1.969*	27.489*	-2.411
	Outliers	5	0	3	0
Log 10	Skewness	-0.482	-0.974	-0.119	-0.171
	SE Skewness	0.269	0.269	0.266	0.266
	$z_s$	-1.792*	-3.62	-0.447	-0.643
	Kurtosis	0.108	1.112	-0.08	-0.016
	SE Kurtosis	0.532	0.532	0.526	0.526
	$z_k$	0.203*	2.09*	-0.152	-0.03
	Outliers	0	1	2	0

\* z-score significantly differs from 0, indicating skewness or kurtosis in the distribution

**Table P.2.** Correlation matrix of transformed independent and dependent variables.

		Independent Variables			Dependent Variables		
		SEX	LgTIME	SqPROP	Total	Verbal	Physical
IVs	SEX	1	0.000	0.01	0.111	-0.051	0.253**
	LgTIME		1	-0.076	-0.108	-0.112	-0.082
	SqPROP			1	-0.068	-0.113	-0.009
DVs	Total				1	0.905**	0.904**
	Verbal					1	0.637**
	Physical						1

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

**Table P.3.** Correlation matrix of raw independent and dependent variables.

		Independent Variables			Dependent Variables		
		SEX	TIME	PROP	Total	Verbal	Physical
IVs	SEX	1	0.046	0.041	0.111	-0.051	0.253**
	TIME		1	0.078	-0.019	-0.052	0.018
	PROP			1	-0.052	-0.118	0.025
DVs	Total				1	0.905**	0.904**
	Verbal					1	0.637**
	Physical						1

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

**Table P.4.** Summary of hierarchical regression analyses for transformed variables predicting verbal persuasion ( $N = 158$ ).

		<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$\Delta R^2$
Step 1	LgTIME	-0.188	0.124	-0.121		
	SqPROP	-0.311	0.22	-0.112		
	SEX	-0.12	0.14	-0.068	0.03	0.03
Step 2	LgTIME	-0.271	0.394	-0.175		
	SqPROP	0.375	0.705	0.135		
	SEX	-0.122	0.139	-0.069		
	LgTIME *	0.693	0.399	0.142		
	SqPROP					
	LgTIME * SEX	0.033	0.246	0.033		
	SEX * SqPROP	-0.508	0.439	-0.294	0.058	0.28
Step 3	LgTIME	-0.545	0.377	-0.351		
	SqPROP	-0.306	0.683	-0.11		
	SEX	-0.169	0.132	-0.096		
	LgTIME *	5.984	1.248	1.23***		
	SqPROP					
	LgTIME * SEX	0.208	0.236	0.214		
	SEX * SqPROP	-0.082	0.425	-0.047		
	LgTIME *	-3.373	0.759	-1.14***	0.168	0.11***
SqPROP * SEX						

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

**Table P.5.** Summary of hierarchical regression analyses for transformed variables predicting physical persuasion ( $N = 158$ ).

		<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$\Delta R^2$
Step 1	LgTIME	-0.129	0.12	-0.084		
	SqPROP	-0.05	0.214	-0.019		
	SEX	0.406	0.136	0.233**	0.061	0.061*
Step 2	LgTIME	-0.316	0.384	-0.206		
	SqPROP	0.897	0.688	0.327		
	SEX	0.405	0.136	0.232**		
	LgTIME *	0.412	0.388	0.086		
	SqPROP					
	LgTIME * SEX	0.111	0.24	0.115		
	SEX * SqPROP	-0.658	0.428	-0.384		
Step 3	LgTIME	-0.499	0.38	-0.325	0.085	0.023
	SqPROP	0.44	0.688	0.161		
	SEX	0.373	0.133	0.214		
	LgTIME *	3.956	1.258	0.822		
	SqPROP					
	LgTIME * SEX	0.228	0.238	0.237		
	SEX * SqPROP	-3.72	0.429	-0.217		
	LgTIME *	-2.259	0.765	-0.77	0.135	0.05**
SqPROP * SEX						

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

**Table P.6.** Summary of hierarchical regression analyses for raw variables predicting total persuasion ( $N = 160$ ).

		<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$\Delta R^2$
Total						
Step 1	TIME	-0.0002	0.001	-0.019		
	PROP	-0.241	0.352	-0.055		
	SEX	0.335	0.253	0.105	0.014	0.014
Step 2	TIME	-0.002	0.002	-0.245		
	PROP	1.217	1.14	0.276		
	SEX	0.597	0.393	0.188		
	TIME * PROP	0.001	0.002	0.111		
	TIME * SEX	0.0009	0.001	0.167		
	SEX * PROP	-1.114	0.705	-0.424	0.034	0.02
Step 3	TIME	-0.011	0.004	-1.17**		
	PROP	-1.465	1.444	-0.332		
	SEX	-0.152	0.462	-0.048		
	TIME * PROP	0.019	0.006	1.525**		
	TIME * SEX	0.006	0.002	1.144**		
	SEX * PROP	0.579	0.901	0.22		
	TIME * PROP * SEX	-0.01	0.004	-1.483**	0.085	0.051**

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

**Table P.7.** Summary of hierarchical regression analyses for raw variables predicting verbal persuasion ( $N = 160$ ).

		<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$\Delta R^2$
Total						
Step 1	TIME	-0.0002	0.000	-0.041		
	PROP	-0.277	0.195	-0.113		
	SEX	-0.082	0.141	-0.047	0.018	0.018
Step 2	TIME	-0.0007	0.001	-0.147		
	PROP	0.21	0.635	0.086		
	SEX	0.054	0.219	0.03		
	TIME * PROP	0.0009	0.001	0.131		
	TIME * SEX	0.00006	0.001	0.021		
	SEX * PROP	-0.419	0.393	-0.287	0.029	0.011
Step 3	TIME	-0.006	0.002	-1.188**		
	PROP	-1.466	0.799	-0.598		
	SEX	-0.415	0.256	-0.234		
	TIME * PROP	0.012	0.003	1.172***		
	TIME * SEX	0.0035	0.001	1.12**		
	SEX * PROP	0.639	0.498	0.437		
	TIME * PROP * SEX	-0.0067	0.002	-1.67***	0.094	0.065***

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

**Table P.8.** Summary of hierarchical regression analyses for raw variables predicting physical persuasion ( $N = 160$ ).

		<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$\Delta R^2$
Total						
Step 1	TIME	0.00003	0.000	0.006		
	PROP	0.037	0.188	0.015		
	SEX	0.417	0.136	0.239**	0.058	0.058*
Step 2	TIME	-0.0015	0.001	-0.298		
	PROP	1.007	0.608	0.417		
	SEX	0.543	0.209	0.312**		
	TIME * PROP	0.00046	0.001	0.069		
	TIME * SEX	0.00084	0.001	0.283		
	SEX * PROP	-0.695	0.376	-0.482	0.085	0.027
Step 3	TIME	-0.0046	0.002	-0.932*		
	PROP	0.0013	0.781	0.001		
	SEX	0.262	0.25	0.15		
	TIME * PROP	0.007	0.003	1.037*		
	TIME * SEX	0.003	0.001	0.953*		
	SEX * PROP	-0.06	0.487	-0.041		
	TIME * PROP * SEX	-0.004	0.002	-1.016*	0.109	0.024*

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

**Table P.9.** Summary of hierarchical regression analyses for raw variables predicting total, verbal, and physical persuasion among males ( $n = 80$ ).

		<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$\Delta R^2$
Total						
Step 1	TIME	-0.0007	0.001	-0.078		
	PROP	0.304	0.466	0.074	0.011	0.011
Step 2	TIME	-0.004	0.002	-0.507**		
	PROP	-0.886	0.59	-0.216		
	TIME*PROP	0.008	0.003	0.625**	0.119	0.108**
Verbal						
Step 1	TIME	0.0003	0.001	-0.051		
	PROP	0.076	0.269	-0.032	0.004	0.004
Step 2	TIME	0.003	0.001	-0.522**		
	PROP	-0.827	0.336	-0.35**		
	TIME*PROP	0.005	0.001	0.686***	0.134	0.131***
Physical						
Step 1	TIME	0.0004	0.001	-0.088		
	PROP	0.381	0.253	0.169	0.035	0.035
Step 2	TIME	-0.002	0.001	-0.377*		
	PROP	-0.059	0.33	-0.026		
	TIME*PROP	0.003	0.001	0.42*	0.084	0.049

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

**Table P.10.** Summary of hierarchical regression analyses for raw variables predicting total, verbal, and physical persuasion among females ( $n = 80$ ).

		<i>B</i>	<i>SE B</i>	$\beta$	$R^2$	$\Delta R^2$
Total						
Step 1	TIME	0.0003	0.001	0.031		
	PROP	-0.775	0.524	-0.167	0.028	0.028
Step 2	TIME	0.0017	0.002	0.184		
	PROP	-0.307	0.676	-0.066		
	TIME*PROP	-0.0027	0.002	-0.227	0.043	0.015
Verbal						
Step 1	TIME	-0.0001	0.001	-0.029		
	PROP	-0.473	0.284	-0.187	0.037	0.037
Step 2	TIME	0.0007	0.001	0.141		
	PROP	-0.188	0.366	-0.074		
	TIME*PROP	-0.002	0.001	-0.253	0.055	0.019
Physical						
Step 1	TIME	0.0004	0.001	0.09		
	PROP	-0.302	0.275	-0.124	0.021	0.021
Step 2	TIME	0.001	0.001	0.205		
	PROP	-0.118	0.356	-0.049		
	TIME*PROP	-0.001	0.001	-0.17	0.03	0.009

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

**Table P.11.** ANOVA for dichotomized cuckoldry risk variables and SEX predicting verbal persuasion.

Source	<i>df</i>	<i>F</i>	$\eta^2_p$	<i>p</i>
TIME	1	0.587	0.004	0.445
PROP	1	0.278	0.002	0.599
SEX	1	1.449	0.009	0.231
TIME*PROP	1	3.654	0.023	0.058
TIME*SEX	1	0.471	0.003	0.494
SEX*PROP	1	0.368	0.002	0.545
TIME*PROP*SEX	1	12.342	0.074	0.001***
Error	154	(0.74)		

*Note.* Values enclosed in parentheses represent mean square errors.

**Table P.12.** ANOVA for cuckoldry risk variables by SEX predicting verbal persuasion.

	Source	<i>df</i>	<i>F</i>	$\eta^2_p$	<i>p</i>
Males	TIME	1	1.295	0.017	0.259
	PROP	1	0.789	0.01	0.377
	TIME*PROP	1	18.065	0.192	<0.001***
	Error	76	(0.593)		
Females	TIME	1	0.003	0.000	0.959
	PROP	1	0.003	0.000	0.959
	TIME*PROP	1	1.092	0.014	0.299
	Error	78	(0.883)		

**Table P.13.** Simple main effects for TIME over levels of PROP for verbal persuasion.

		Source	<i>df</i>	<i>F</i>	$\eta_p^2$	<i>p</i>
Males	Low PROP	TIME	1	14.633	0.278	<0.001***
		Error	38	(0.589)		
	High PROP	TIME	1	4.805	0.112	0.035***
		Error	38	(0.598)		
Females	PROP Low	TIME	1	0.52	0.013	0.475
		Error	39	(0.837)		
	PROP High	TIME	1	0.572	0.014	0.454
		Error	39	(0.929)		

\**p* < 0.05, \*\**p* < 0.01, \*\*\**p* < 0.001

**Table P.14.** ANOVA for dichotomized cuckoldry risk variables and SEX predicting physical persuasion.

Source	<i>df</i>	<i>F</i>	$\eta^2_p$	<i>p</i>
TIME	1	0.379	0.002	0.539
PROP	1	0.364	0.002	0.547
SEX	1	7.181	0.045	0.008**
TIME*PROP	1	1.942	0.012	0.165
TIME*SEX	1	0.174	0.001	0.677
SEX*PROP	1	0.000	0.000	0.992
TIME*PROP*SEX	1	10.589	0.064	0.001***
Error	154	(0.71)		

*Note.* Values enclosed in parentheses represent mean square errors.

**Table P.15.** ANOVA for TIME and PROP by SEX predicting physical persuasion.

	Source	<i>df</i>	<i>F</i>	$\eta^2_p$	<i>p</i>
Males	TIME	1	0.647	0.008	0.424
	PROP	1	0.213	0.003	0.646
	TIME*PROP	1	13.094	0.147	0.001***
	Error	76	(0.577)		
Females	TIME	1	0.017	0.000	0.897
	PROP	1	0.162	0.002	0.688
	TIME*PROP	1	1.487	0.019	0.226
	Error	78	(0.841)		

**Table P.16.** Simple main effects for TIME over levels of PROP on physical persuasion.

		Source	<i>df</i>	<i>F</i>	$\eta^2_p$	<i>p</i>
Males	Low PROP	TIME	1	11.084	0.226	0.002**
		Error	38	(0.509)		
	High PROP	TIME	1	3.544	0.085	0.067 <sup>†</sup>
		Error	38	(0.645)		
Females	PROP Low	TIME	1	0.606	0.015	0.441
		Error	39	(0.823)		
	PROP High	TIME	1	0.892	0.022	0.351
		Error	39	(0.858)		

*Note.* Using omnibus ANOVA results in marginally significant result,  $F(1, 76) = 3.54$ ,  
Critical  $F(1, 76) = 3.95$

**Table P.17.** Simple main effects for TIME over levels of PROP on RES.

		Source	<i>df</i>	<i>F</i>	$\eta^2_p$	<i>p</i>	
Males	Low PROP	TIME	1	0.193	0.005	0.663	
		Error	38	(139.178)			
	High PROP	TIME	1	7.988	0.174	0.007	
		Error	38	(84.913)			
	Low TIME	PROP	1	9.592	0.202	0.004	
		Error	38	(100.251)			
	High TIME	PROP	1	0.000	0.000	0.985	
		Error	38	(123.84)			
	Females	PROP Low	TIME	1	0.273	0.007	0.604
			Error	39	(77.319)		
		PROP High	TIME	1	0.046	0.001	0.831
			Error	39	(81.751)		
Low TIME		PROP	1	0.27	0.007	0.606	
		Error	39	(78.011)			
High TIME		PROP	1	0.648	0.016	0.426	
		Error	39	(81.058)			

**Table P.18.** Simple main effects for TIME over levels of PROP on RMAS.

		Source	<i>df</i>	<i>F</i>	$\eta^2_p$	<i>p</i>	
Males	Low PROP	TIME	1	0.966	0.025	0.332	
		Error	38	(102.612)			
	High PROP	TIME	1				
		Error	38	(109.755)	0.094	0.055	
	Low TIME	PROP	1	0.977	0.024	0.329	
		Error	39	(52.149)			
	High TIME	PROP	1	1.533	0.038	0.223	
		Error	39	(54.419)			
	Females	PROP Low	TIME	1	2.355	0.057	0.133
			Error	39	(52.095)		
		PROP High	TIME	1	0.496	0.013	0.486
			Error	39	(54.473)		
Low TIME		PROP	1	0.977	0.024	0.329	
		Error	39	(52.149)			
High TIME		PROP	1	1.533	0.038	0.223	
		Error	39	(54.419)			

**Table P.19.** Simple main effects for TIME over levels of PROP on ASB.

		Source	<i>df</i>	<i>F</i>	$\eta^2_p$	<i>p</i>	
Males	Low PROP	TIME	1	0.006	0.000	0.94	
		Error	38	(63.948)			
	High PROP	TIME	1	4.265	0.101	0.046	
		Error	38	(76.777)			
	Low TIME	PROP	1	3.739	0.09	0.061	
		Error	38	(61.415)			
	High TIME	PROP	1	0.159	0.004	0.692	
		Error	38	(79.31)			
	Females	PROP Low	TIME	1	1.701	0.042	0.2
			Error	39	(39.808)		
		PROP High	TIME	1	0.506	0.013	0.481
			Error	39	(56.599)		
Low TIME		PROP	1	4.493	0.103	0.04	
		Error	39	(42.531)			
High TIME		PROP	1	0.001	0.000	0.973	
		Error	39	(53.877)			

**Table P.20.** Simple main effects for TIME and PROP on ASA.

		Source	<i>df</i>	<i>F</i>	$\eta^2_p$	<i>p</i>	
Males	Low PROP	TIME	1	0.319	0.008	0.576	
		Error	38	(31.762)			
	High PROP	TIME	1	2.437	0.06	0.127	
		Error	38	(25.347)			
	Low TIME	PROP	1	1.868	0.047	0.18	
		Error	38	(17.106)			
	High TIME	PROP	1	0.024	0.001	0.878	
		Error	38	(40.004)			
	Females	PROP Low	TIME	1	0.003	0.000	0.96
			Error	39	(44.71)		
		PROP High	TIME	1	0.103	0.003	0.75
			Error	39	(39.116)		
Low TIME		PROP	1	0.081	0.002	0.778	
		Error	39	(43.424)			
High TIME		PROP	1	0.441	0.011	0.511	
		Error	39	(40.402)			

## APPENDIX Q

### Items Measuring Jealousy Provocation

#### Cuckoldry Risk Variables

2. How often do other men flirt with your partner?
3. How often has your partner flirted with other men?
4. How often has your partner threatened to break up with you?
6. How often do you think your partner has cheated on you?
7. How often do you know your partner has cheated on you?
9. How often does your partner spend with other men at school/work?
10. How often does your partner spend with other men socially?
11. How often does your partner smell differently – like unfamiliar cologne?

#### Questions from the Partner Specific Investment Inventory (Ellis, 1998)

What is the extent to which you agree or disagree with each one?

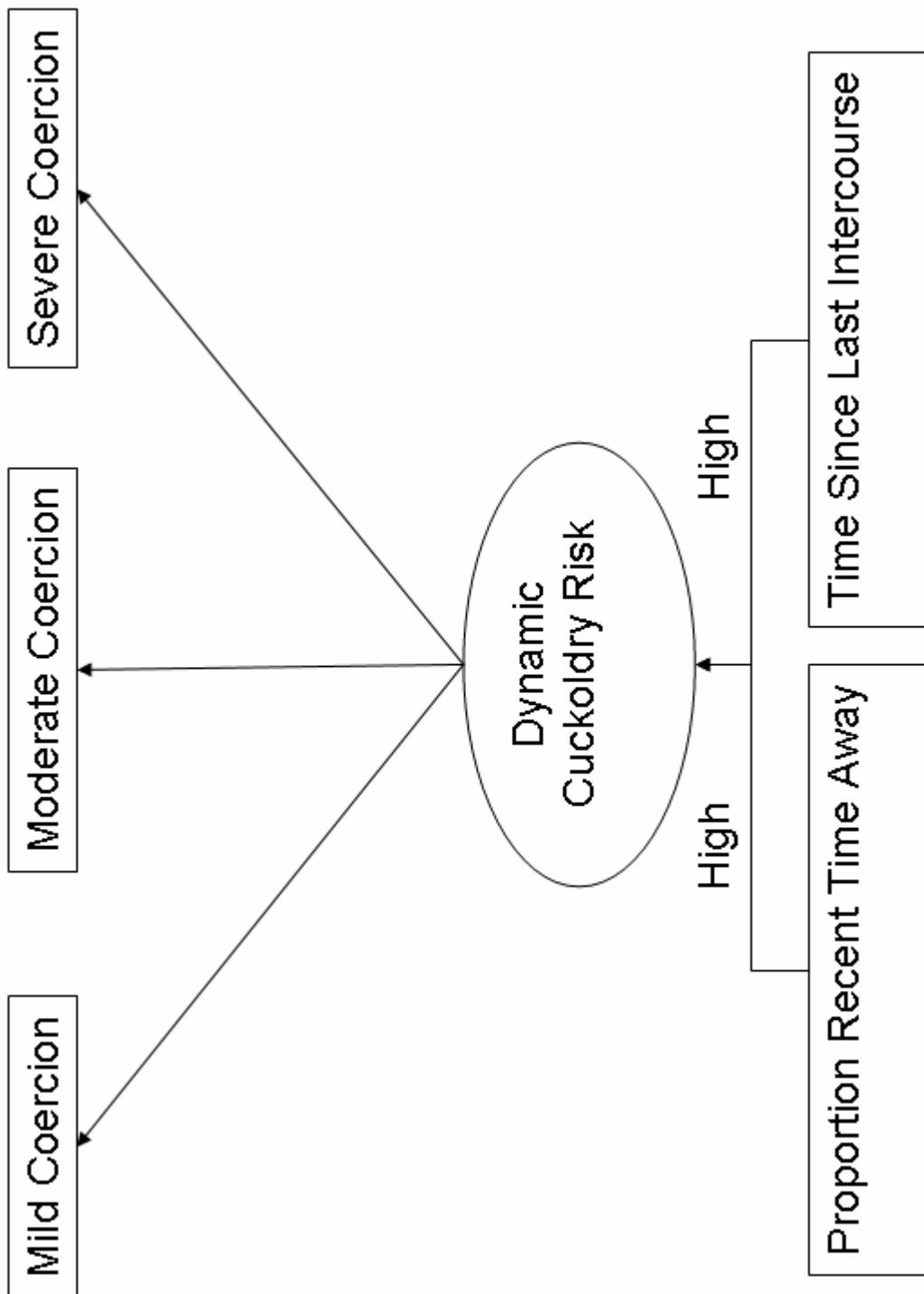
##### Section I

3. She wants to have sex with me.
21. She tries to please me sexually.
22. She ignores me in social settings.
24. She tries to deceive me.
28. She has sexual intercourse with me.
29. She breaks plans with me to go out with her friends.
32. She looks at other men when we go out together.

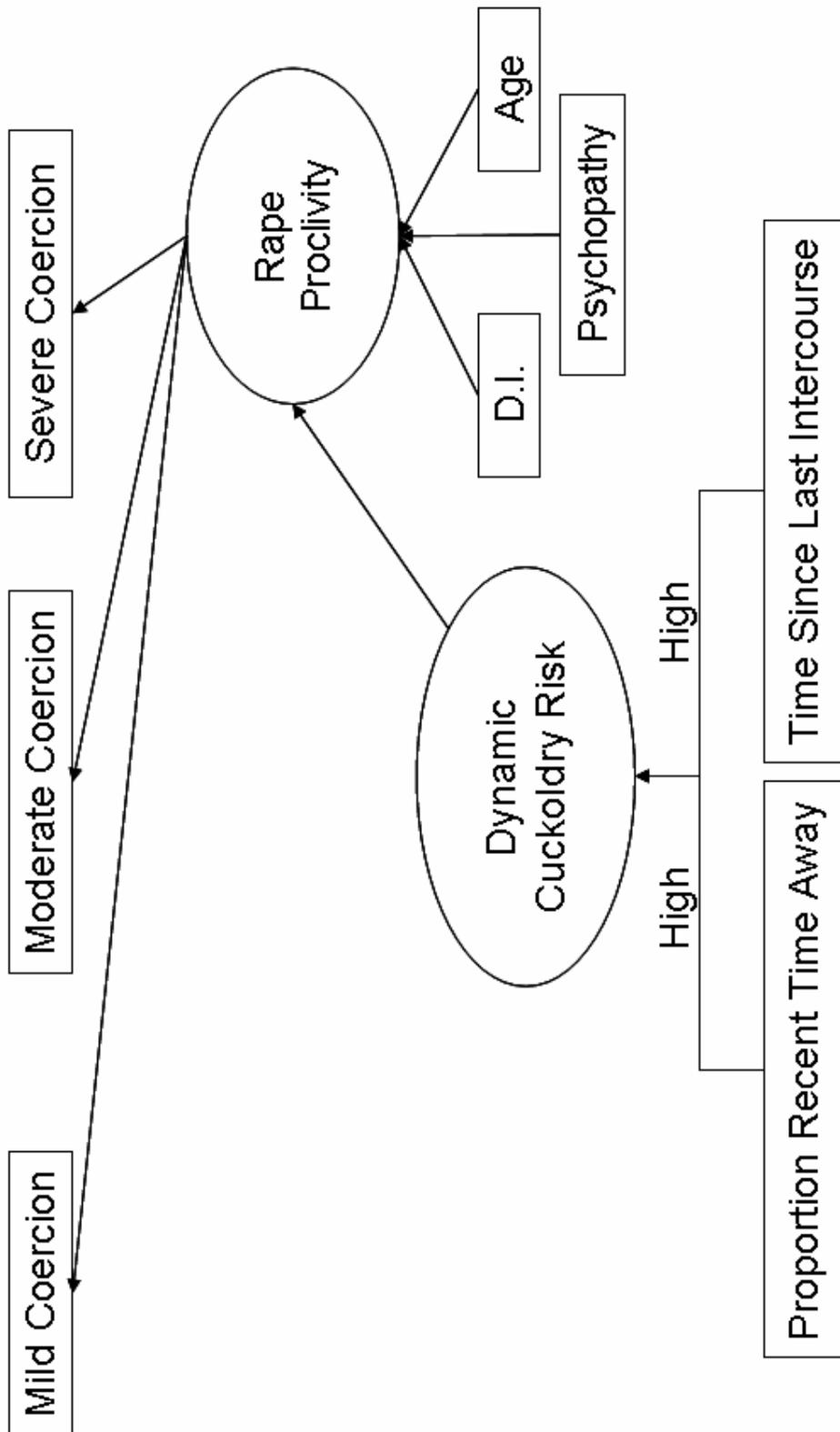
##### Section II

2. She is not sexually responsive to me.
7. She is a willing and enthusiastic sex partner

APPENDIX R



APPENDIX S



APPENDIX T

