Fort Hays State University
FHSU Scholars Repository

Master's Theses | Graduate School

Spring 2017

An Evolutionary Based Examination Of Sexting Behavior Among College Students

Scott Ploharz
Fort Hays State University, sploharz@mail.fhsu.edu

Follow this and additional works at: https://scholars.fhsu.edu/theses

 Part of the Psychology Commons

Recommended Citation

Ploharz, Scott, "An Evolutionary Based Examination Of Sexting Behavior Among College Students" (2017). *Master's Theses*. 15.
DOI: 10.58809/HOGD5986
Available at: https://scholars.fhsu.edu/theses/15

This Thesis is brought to you for free and open access by the Graduate School at FHSU Scholars Repository. It has been accepted for inclusion in Master's Theses by an authorized administrator of FHSU Scholars Repository. For more information, please contact ScholarsRepository@fhsu.edu.

AN EVOLUTIONARY BASED EXAMINATION OF SEXTING BEHAVIOR AMONG COLLEGE STUDENTS

Being

A Field Study Presented to the Graduate Faculty

Of the Fort Hays State University in

Partial Fulfillment of the Requirements for

The Degree of Masters of Science in Clinical Psychology

by

Scott Ploharz

Date _____ Approved_____
Major Professor

Approved _____
Chair, Graduate Council

ACKNOWLEDGEMENTS

To adequately acknowledge all those who have provided help and support in completing this project would take almost as much time and effort as this thesis itself. Although I don't have the ability to adequately thank all the numerous mentors, faculty, fellow students, friends, and family that have provided the support that allowed this project to be completed, there are individuals whose support was vital. It would be the height of ingratitude to fail to recognize their efforts on my behalf and to thank them for those efforts.

Dr. Carol Patrick, whose mentorship and heroic level of patience and understanding through all stages of this project was a lifesaver. My committee members: Dr. Janet Naylor-Tinknell, Dr. Leo Herrman, and Dr. Kenton Olliff, all of who provided invaluable guidance and insight.

This thesis belongs as much to my wife Julie as much as it does to me. She has sacrificed more than I could have ever reasonably asked for without a complaint. She has been my rock, my anchor, and the light that led the way in the darkest nights. This would not have been possible without her, and I will be forever in her debt. Finally; Collin, Joshua and Isabelle, because of your patience with a missing Dad, understanding of missed playtimes and your constant smiles and hugs, yes Dad is done with his thesis.

ABSTRACT

Previous research has viewed the sending and receiving of sexually natured text and picture messages as risky and dangerous behavior. It is through this lens that previous research has examined the reason individuals choose to engage in sexting, and the possible effects of the behavior. The current study is the first to examine the possible adaptive reasons that individuals may choose to engage in sexting. A total of 218 participants from Fort Hays State University completed measures of their sexting behaviors, attitudes towards sexual activity, and risk tolerance. It was hypothesized that an individual participants' endorsement of a sex consistent mating strategy would be positively related to engagement in sexting behavior. Additionally it was thought that men with greater risk tolerance in the domain of mate attraction would engage in sexting more, and that women with greater risk tolerance in the domain of mate retention would engage in sexting more. It was also thought that participant expectancies regarding the outcome of sexting would interact with risk tolerance and mating strategy so that those with higher expectancies would sext more. Results indicate that both men and women who endorse a short term mating strategy sext more. Also, results suggested that individual risk tolerance in the domain of mate attraction were significant in the decision to engage in sexting. Additionally results showed that participants expectancies regarding the effects of sexting were significant in the decision to engage in sexting. The implications for these findings, the limitations of the current study and the need for further research in these areas are discussed.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF APPENDICES

Introduction

Overview

No one knows for sure when "sexting" officially entered the English vocabulary, but the effects of the behavior on American culture is undeniable (Merriam-Webster, 2015). From numerous thefts and unwanted dissemination of private explicit celebrity photos (Taylor, 2015), to the resignation of US Congressmen Anthony Wiener in 2011, sexting has frequently dominated the news cycle (Hernandez, 2011). These examples not only illustrate the possible negative outcomes of sexting, they are also indicative of the general popular media perception of sexting. Sexting is viewed primarily as a risky, abnormal behavior that needs to be prevented or stopped.

Most of the empirical research regarding sexting has also examined sexting as a risky or negative behavior (Benotsch, Snipes, Martin & Bull, 2012; Delevi & Weisskirch, 2013; Dir, Coskunpinar, Steiner & Cyders, 2013a; Ploharz & Baird, 2012; Weisskirch & Delevi, 2011). Sexting research suggests that most young adults engage in sexting at least once in their lifetime in some form or another (Benotsch et al., 2012; Delevi & Weisskirch, 2013; Dir et al., 2013a; Ploharz & Baird, 2012; Weisskirch & Delevi, 2011). There is less agreement regarding the reasons individuals choose to engage in sexting, and the possible outcomes of that behavior. Suggested motivations behind sexting have included individual factors such as personality and romantic attachment style of those who engage in the behaviors, or relationship factors (e.g., Delevi & Weisskirch, 2013; Dir et al., 2013a; Ploharz & Baird, 2012; Weisskirch & Delevi, 2011). These studies have

resulted in limited and often conflicting findings, suggesting the need for a new approach to investigating sexting behavior (Klettke, Hallford, & Mellor, 2014).

Prior to this current study, there has been no research examining sexting as an adaptive behavior being used by individuals in a strategic way. This study builds on previous research to examine sexting as an adaptive behavior, and describe the relationship between sexting and evolutionary based constructs. The current study suggests that using an evolutionary based approach may provide new insights into the practice of sexting among college students. Although not a theory in the strictest sense; evolutionary psychology has been suggested as a framework for understanding the structure and function of the human mind and resulting behaviors. This framework is of particular value when investigating sexually based behaviors since reproductive success is featured prominently within evolutionary theory.

An evolutionary based approach may allow for not only a greater understanding of why individuals engage in sexting but the possible risks/benefits they gain from the behavior. The current study will examine the relationship between sexting and individual differences in specific domains of risk tolerance, the preferred mating strategy of those who sext and those who choose not to, and the effect of individual expectations regarding the outcome of sexting. The results of the current study may be used to guide further researcher into sexting behavior, and provide greater insight into how college students use technology to fulfill adaptive needs.

Literature Review

Sexting Behavior. The term "sexting" was coined by the news media in the middle part of the 2000's to describe the sending and receiving of sexually-natured text and picture messages among teenagers (Hasinoff, 2012). The term gained much popularity in 2012 it was added to the Merriam-Webster dictionary as "the sending of sexually explicit messages or images by cell phone" (Merriam-Webster, 2015). The creation of a new word and its subsequent acceptance into the English language illustrates how common sexting is, and suggests that it is having an impact on individuals and society. Although Merriam and Webster can agree on the definition of sexting, research into the behavior has suffered from a lack of consensus among researcher on how to address several methodological issues related to sexting (Drouin, Vogel, Surbey & Stills, 2013; Klettke, Hallford & Mellor, 2014).

Methodological Issues Related to Sexting. Empirical studies of sexting have often used varying definitions of sexting (Drouin et al., 2013; Klettke et al., 2014). At first glance the definition of sexting appears straightforward and simple, the sending of "sexually explicit messages" (Merriam-Webster, 2015). The first studies examining sexting behavior used this definition, with some slight variations. For example, Ferguson (2011) asked individuals "how frequently they 'sent erotic or nude photographs of myself (sexting) to another person' and 'received nude/erotic photographs from another person'" (pg. 240).

Henderson and Morgan (2011) asked participants "how many times have you posted/sent nude or semi-nude pictures of yourself using each of these methods?" and "how many times have you posted/sent sexually suggestive messages about yourself using these methods?" (p. 32), whereas others defined sexting as "sending or sexually explicit or suggestive photos via text message" (Benotsch, Snipes, Martin & Bull, 2012, p. 2) or whether "they ever sexted (i.e., sent a sexually suggestive nude or nearly nude photo or video of themselves to someone else)" or if they had ever received a sext message (Gordon-Messer, Bauermeister, Grodzinksi, & Zimmerman, 2012, p. 2).

Using the broad "sexually explicit" definition for sexting has resulted in a wide suggested range of participation rates in sexting behaviors. Prior studies have suggested that anywhere from 48%-89% of young adults (18-30) have engaged in the sending or receiving of sexually natured messages (Benotsch et al., 2012; Delevi & Weisskirch, 2013; Dir, Coskunpinar, Steiner, & Cyders, 2013a; Ploharz & Baird, 2012; Weisskirch, & Delevi, 2011). This wide range of participation rates is likely due to several methodological issues that arise from broadly defining sexting as "sexual explicit messages"; age and individual differences in the samples, differences in message format (picture messages versus word messages), and individual differences in defining what constitutes a "sexually explicit" pictures or message (Drouin et al., 2013; Klettke et al., 2014).

For this study, sexting will be defined as the sending or receiving of sexually natured text (word) and picture messages. This definition will allow for generalizability

to previous studies, while also accurately encompassing a variety of possible sexting behaviors. The methodological issues present in previous studies using this definition can be addressed by assessing the presence of these behaviors individually as opposed to measuring sexting in general.

Before beginning a discussion of the literature regarding sexting, it is important to review some of the other methodological issues related to sexting research. A major division within sexting research occurs based on the age of the population being studied. There are two distinct age groups studied in sexting research (Klettke et al., 2014). Previously conducted sexting studies have typically limited themselves to either adolescents under the age of 18 or adults over the age of 18 (Klettle et al., 2014). This distinction is particularly important when discussing the possible negative legal, behavioral, and emotional outcomes of sexting behaviors (Ahern & Mechling, 2013; Delevi & Weisskirch, 2013; Dir et al., 2013b; Ferguson, 2011; Judge, 2012; Rice, Rhoades, Winetrobe, Sanchez, Montoya, Plant, & Kordic, 2012; Walker et al., 2013).

Teens are more likely to face negative legal repercussions due to the possibility of being charged under child pornography laws when engaging in sexting with boyfriends or girlfriends (Ahern & Mechling, 2013; Judge, 2012). Teens also appear to be more likely to experience negative mental health outcomes than adults, possibly due to an increased risk of cyber-bullying (Ahern & Mechling, 2013; Drouin et al., 2013; Gordon-Messer et al. 2012; Korenis & Billick, 2013). In the current study, college students over the age of

18 will be examined, so the studies discussed in the following literature review will be those that all utilized adult populations, unless otherwise specified.

The current study is limited to examining those over the age of 18 for two reasons. The first is that the vast majority of college students will be over the age of 18, restricting the sample floor. Second, it will be more acceptable ethically to study sexual behaviors if we utilize adults rather than those under the age of 18.

Format related methodological issues. Another methodological issue that has been identified from previous research is the issue of format. The format of a sexting message refers to the content of the message, with the most commonly described types being text or picture messages (Ling, 2010). Studies examining sexting in both picture and text format found significant differences in sexting participation rates based on the message format (Delevi & Weisskirch, 2013, Dir et al., 2013a; Drouin et al., 2013, Drouin & Landgraff, 2012; Henderson & Morgan, 2011; Ploharz, Baird, & Patrick, 2013; Ploharz, Baird, & Patrick, 2014; Weisskirch & Delevi, 2011).

An example that typifies the results of these studies is that of Drouin and Landgraff (2012), where it was found that 67% of individuals reporting sending a text-formatted sext message, but only 54% reported sending a sexual picture message. The degree of difference in participation based on format varied from study to study, but participation in text format always being greater than picture format (Delevi & Weisskirch, 2013; Dir et al., 2013a; Drouin et al., 2013; Henderson & Morgan, 2011; Ploharz & Baird, 2012). Klettke et al. (2014) suggested that, based on the available

research, 53.31% of individuals reported engaging in sexting behavior when the format was not specified. Only 48.56% of individuals reported engaging in sexting when asked specifically about using photo messages (Klettke et al., 2014).

There may also be significant differences in the outcomes of sexting based on the format, but that relationship is still unclear (Dir et al. 2013b; Gordon-Messer et al., 2012; Ploharz & Baird, 2012). Ploharz and Baird (2012) found that individuals reported differences in perceived relationship outcomes of sexting depending on the format of the messages. Individuals reported a greater perceived positive effect on their relationships when using picture formatted messages as opposed to text formatted messages. The suggested negative mental health outcomes among teens and adults from engaging in picture formatted messages (Ahern & Mechling, 2013; Gordon-Messer et al., 2012; Judge, 2012) have yet to be empirically supported in studies using adult samples (Gordon-Messer et al., 2012; Ploharz & Baird, 2012).

Although the findings regarding the differences in the outcomes of sexting behaviors based on the format of the messages remain unclear, there do appear to be clear differences in participation rates (Klettke et al., 2014). Research suggests that individuals are more likely to engage in sexting behaviors that do not include the sending of pictures (Klettke et al., 2014). These differences in participation rates and possible effects based on the format of the message used suggest that the current study should control for the message format by measuring text and picture messages as separate but related behaviors.

Operational definition of sexting. The more difficult methodological issue to resolve is what counts as "sexually explicit". By simply defining sexting as "sexually explicit" messages, researchers may not be talking about the same behaviors. In short, the meaning of and imagery associated with the term "sexually explicit" will vary from person to person and may do so significantly. What then is the best way to operationally define "sexually explicit"?

Justice Potter Stewart of The Supreme Court of the United States may have explained the difficulty of this task best in a ruling on freedom of speech and pornography. In *Jacobellis vs. Ohio*, the question of was what was obscene, and therefore censorable under the law, was considered by the court (Lattman, 2007). In this case, Justice Potter, in issuing the majority opinion of the Supreme Court, provided the vague definition of "I know it when I see it" for obscenity (Lattman, 2007). The idea was that individuals, or in this case society, may not know how to exactly define what pushes the boundaries of normal or moral behavior, and crosses into the explicit, but we know it by our reaction when we see it.

Using similar reasoning, several studies examining sexting did not operationally define the term "sexually explicit" and instead left it up to the participants to define it for themselves (Benostsch et al., 2012; Drouin & Landgraff, 2012; Ferguson, 2011; Gordon-Messer et al., 2012; Ploharz & Baird, 2012). This participant-directed approach likely contributed a high degree of variance in reported participation rates, limited the

generalizability of the results, and may have contributed to conflicting results (Drouin et al., 2013; Klettke et al., 2014).

Other studies have used a categorical approach to operationally define "sexually explicit" and measured sexting behavior based on specific message content. By creating categories for message content such as "sent a picture where wearing only underwear" or "sent a nude/ nearly nude picture", researchers attempted to assess the exact content of the messages and the actual level of explicitness of participants' messages (Delevi & Weisskirch, 2013; Drouin et al., 2013; Parker, Blackburn, Perry & Hawks, 2013 Weisskirch & Delevi, 2011; Wysocki & Childers, 2011). These studies findings suggest that there are significant differences in participation rates based on the contents of the messages with this content ranging from romantic "I want to see u" messages to "Sex with another person" (Drouin et al., 2013; Parker et al., 2013; Wysocki & Childers, 2011).

For example, Drouin et al. (2013) found that young adults most commonly sent "nearly nude" photos of themselves to someone else, but there were a substantial number of individuals who sent other types of "sexually explicit" pictures. Images of self-stimulation were sent by 10% of the participants, whereas 50% reported sending fully clothed but suggestive pictures (Drouin et al., 2013). All of these would fall under the umbrella definition of "sexually explicit", but being on opposite ends of a wide spectrum may result in different outcomes for individuals. For example a message that says "I can't wait to see you" being shared with everyone would not be nearly as embarrassing as a

picture of your genitalia being forwarded to all your peers. These results suggest that using a clear and categorical definition of sexting behavior is vital to accurately measuring sexting and describing the reasons why individuals may choose to send the messages (Drouin et al., 2013; Parker et al., 2013; Wysocki & Childers, 2011).

Methodological summary. Methodological issues regarding format and the operational definitions of sexting are likely a major contributing factor in the wide range of reported participation in sexting behaviors, and conflicting findings (Drouin et al., 2013; Klettke, 2014). Based on previous research this study will examine sexting behaviors in text and picture formats as separate variables (Klettke et al., 2014; Ploharz & Baird, 2012). Research also suggests that using a clearly defined categorical approach to measuring sexting behavior allows for the greatest sensitivity to variations within the behavior (Drouin et al., 2013; Delevi & Weisskirch, 2013; Parker et al., 2013; Weisskirch & Delevi, 2011). The current study will utilize a categorized approach, clearly differentiating between text and picture message, and the content of those messages. Instead of defining sexting as simply sending "sexually explicit messages", this study will assess participation in specific sexting behaviors such as "sending seductive pictures while fully clothed" and "sending seductive pictures while nude", for example.

Gender differences in sexting. Format and definition are not the only issues that may have contributed to the variance in sexting participation rates; demographic variables likely played a role as well (Klettke et al., 2014). Understanding the role of gender differences in sexting behavior has been suggested as an important factor in

several previous studies (Benostsch et al., 2013; Dir et al., 2013a; Dir et al., 2013b; Drouin & Landgraff, 2012; Gordon-Messer et al., 2012; Henderson & Morgan, 2011; Klettke et al., 2014; Ploharz & Baird, 2012; Wysocki & Childers, 2011).

Most studies have found that males and females participate in sexting at relatively equal rates with no significant differences in overall rates of participation (Benostsch et al., 2013; Dir et al., 2013b; Drouin & Landgraff, 2012; Henderson & Morgan, 2011; Ploharz & Baird, 2012). Several studies have suggested differences in specific sexting behaviors based on gender, particularly in which gender is more likely to send or receive messages (Dir et al., 2013a; Gordon-Messer et al., 2012; Ploharz & Baird, 2012; Wysocki & Childers, 2011).

When examining the receiving of sext messages Gordon-Messer et al. (2012) and Dir et al. (2013a) found that men were more likely than women to have received a sext message. Wysocki and Childers (2011) found that females were more likely to send sexts, and Ploharz and Baird (2012) suggested that females sent more sext messages than males and were also more likely to send picture messages. Gordon-Messer et al. (2012) found that there was no significant difference in the sending of sext messages based on gender. Dir et al. (2013a) also found that males were more likely than women to have sent a sext message.

The contradictory results between Dir et al. (2013a) and Ploharz and Baird (2012) may be due to the relationships in which sexting was being examined. Ploharz and Baird (2012) only examined sexting within the context of a current or previous romantic

relationship excluding any message forwarding between males or the sharing of pornographic images that Dir et al.'s (2013a) more open questioning about sexting behavior would have included.

Although overall participation in sexting appears to occur at the same rate in each gender, there may be differences in whether individuals sent or received sext messages based on their gender with men sending more and women more likely to receive messages (Benostsch et al., 2013; Dir et al., 2013a; Dir et al., 2013b; Drouin & Landgraff, 2012; Gordon-Messer et al., 2012; Henderson & Morgan, 2011; Ploharz & Baird, 2012; Wysocki & Childers, 2011). The current study is designed to produce a better understanding of the gender similarities and differences in sexting and why they may occur. By using evolutionary based theories, specifically designed to explain gender differences in human sexuality to examine sexting behavior, these gender differences may be better explained.

Sexting and relationship status. The lack of gender differences in overall participation rates in sexting supports a basic assumption in most sexting research: that sexting is a relationship-based behavior (Benotsch et al., 2013; Dir et al., 2013; Drouin et al., 2013; Drouin & Landgraff, 2012; Ploharz et al., 2013; Weisskirch & Delevi, 2011). The idea of viewing sexting as a dyadic behavior is further supported by the repeated findings that those in a relationship are more likely to engage in sexting than those who are not (Delevi & Weisskirch, 2013; Dir et al., 2013a; Drouin et al., 2013; Drouin, Tobin & Wygant, 2013; Ploharz & Baird, 201; Weisskirch & Delevi, 2011).

Although differences in relationship statuses have been suggested to play a significant role in sexting behavior (Drouin et. al., 2013; Drouin et al., 2014; Weisskirch & Delevi, 2011; Wysocki & Childers, 2011), simply being in relationships or even being in relationships for a long period of time does not appear by itself to predict sexting (Drouin & Landgraff, 2012; Ploharz, 2012; Parker et al., 2013). Instead research has suggested that the perceived level of commitment within romantic relationships may be the important factor in determining sexting behaviors when examining relationship status as a variable (Drouin et al., 2013; Drouin & Landgraff, 2012; Ploharz & Baird, 2012; Weisskirch & Delevi, 2011).

The results of these studies suggest that individuals are more likely to engage in sexting while in relationships where they feel high levels of commitment from their partner (Delevi & Weisskirch, 2013; Drouin et al., 2013; Ploharz & Baird, 2012). This relationship is particularly strong among women, who tend to send sexually explicit messages more often in more highly committed relationships (Weisskirch & Delevi, 2011). Individuals do engage in sexting in "cheating" or "casual sex" (i.e. non-comitted) relationships, but do so less frequently (Drouin et al., 2013; Ploharz & Baird, 2012)

The length of the romantic relationship does not seem to be a predictive factor for sexting behavior (Drouin & Landgraff, 2012). It does not seem to have any relationship with the likelihood of sending a sext (Drouin & Landgraff, 2012; Parker, Blackburn, Perry, & Hawks, 2013). Relationship length does appear to be negatively related to the

explicitness of sent sext messages sext. The longer individuals are in relationships, the less explicit their sexting is likely to be (Drouin & Landgraff, 2012; Parker et al., 2013).

In summary, individuals who are in a dating relationship or cohabitating are more likely to send sext messages than those who are single (Dir & Cyder, 2014). The results of Drouin and Landgraff (2014) and Parker et al. (2013) suggest that sexting is primarily a relationship based behavior, and that it occurs most intensely and frequently in the early stages of relationships, with at least some level of commitment perceived by participants. Although neither relationship length or perceived relationship commitment are being measured in this study these results may indicate that sexting has distinct effect, or serves a specific purpose, in the early stages of relationships that becomes less important as relationships continue. This understanding of sexting behavior provides insight into which evolutionary domains may be involved in sexting, specifically mate attraction and mate retention. It also suggests that sexting may be used in both short term and long term mating strategies.

Possible negative outcomes of sexting behavior. So what is the effect of all this sexting in these relationships? The literature has focused on the suggested possible negative outcomes related to sexting, such as legal consequences (Ahern & Mechling, 2013; Judge, 2012; Rice et al., 2012; Walker et al., 2013), unwanted image dissemination (Dir et al., 2013; Ferguson, 2011), negative mental health effects (Ahern & Mechling, 2013; Bentosch, et al., 2012; Judge, 2012) and bullying (Walker et al., 2013). The previously discussed division of sexting research into studies of those under 18 and those

over 18 becomes very important when discussing possible negative outcomes. For those individuals under the age of 18 who engage in sexting, there is the real possibility of legal consequences (Miller & Hirschkorn 2010), as well as possible unintended dissemination of the image often resulting in more severe negative mental health outcomes (Ahern & Mechling, 2013; Judge, 2012; Korenis & Billick, 2013). Adolescent engagement in sexting has also been associated with engaging in risky sexual behaviors such as unprotected sex (Rice et al., 2012), and has been found to make youth more vulnerable to cyberbullying (Korenis & Billick, 2013).

Some of the risks for negative outcomes experienced by adolescents are not experienced by adults. Individuals over the age of 18 face minimal legal risks when sexting, though those risks have recently increased with the passage of new laws regarding the sharing of sext messages with others (Goldberg, 2015). Although there may not be as many legal risks for adults, the possibility of many negative outcomes is shared by both populations. These risks are well known, yet individuals continue to engage in sexting. It may be that they are more risk tolerant in specific domains thought to be related to sexting, mate attraction and mate retention, or they may just have a higher expectation of positive outcomes.

Sexting and risky behaviors. It has been suggested that sexting is related to high risk sexual behaviors and drug usage among adults, similar to adolescent populations. The possible relationship between sexting negative mental health outcomes has been suggested and studied, as has the possibility of these messages being shared with others.

Several studies have examined the relationship between sexting behaviors and risky sexual practices (Benotsch et al., 2012; Dir et al., 2013b; Ferguson, 2011; Gordon-Messer et al., 2012, Henderson & Morgan, 2011). These studies examined some combination of or all of these risky sexual behaviors: multiple partners, engaging in unprotected sex, engaging in "hooking up", quickly sleeping with a new partner, engaging in sex while under the influence of drugs or alcohol, and unwanted pregnancy.

It has been suggested that sexting is positively related to the number of previous sexual partners (Benotsch et al., 2012; Henderson & Morgan, 2011). Previous sexual partners were measured differently in each of these studies. Benotsch et al. (2012) simply asked participants their total number of partners within the last three months and total lifetime number of partners. Across both these categories those who engaged in sexting reported a significantly higher number of partners. Henderson and Morgan (2011) found that sexting was related to having a higher number of romantic partners, but not to a higher number of casual sexual partners.

A major limitation of Benotsch et al (2012) is that they did not control for the effect of relationship status when examining the number of partners. Henderson and Morgan (2011) suggest that individuals who engage in sexting are more sexually active but not more likely to have casual sex. These findings are consistent with the previously mentioned role of relationship status and perceived level of commitment in sexting behavior (Benotsch et al., 2013; Dir et al., 2013; Drouin et al., 2013; Drouin & Landgraff, 2012; Ploharz et al., 2013; Weisskirch & Delevi, 2011). Together Benotsch et al. (2012)

and Henderson and Morgan (2011) suggest that individuals who engage in sexting are likely to have a higher number of sexual partners than those who do not engage in sexting, and that romantic relationship status likely plays a role in the relationship between sexting and number of sexual partners.

Ferguson (2011) found that participants who reported engaging in sexting were significantly more likely to report engaging in unprotected sex than their non-sexting peers. Ferguson's (2011) findings were supported by Benotsch et al. (2012), which found that individuals who engaged in sexting were significantly more likely to have engaged in unprotected sex within the past 3 months. Benotsch et al. (2012) also found that individuals who engage in sexting are more likely to have reported having an STD. These results offer support for the view of sexting as being related to other sexually risky behaviors with negative outcomes.

Sexting behavior has also been suggested to be linked to high risk sexual encounters (Dir et al., 2013). The relationship between sexting, problematic alcohol usage, and sexual behavior was examined, and it was found that sexting was related to both problematic alcohol usage and "hooking up". Dir et al.(2013) suggested that sexting may be used as a way to facilitate casual sexual encounters, and lead to risky sexual encounters. Benotsch et al. (2012) reported that one third of those who engaged in sexting reported having sex with a new partner for the first time after sexting with that partner. It appears that sexting may be used to facilitate the beginning of sexual relationships, sometimes in dangerous ways.

Dir et al. (2013b) included problematic alcohol usage in their study. This behavior was measured using scores from the Alchol Use Disorders Test (AUDIT) and was significantly associated with sexting behaviors. This finding supports Benotsch et al. (2012) findings that individuals who engaged in sexting were significantly more likely to report the use of alcohol, marijuana, ecstasy, cocaine, other recreational drugs, and any illicit drug use.

Although the majority of sexting studies support the view of sexting as being associated with other risky behaviors, Gordon-Messer et al. (2012) found that sexting was not related to sexual risk behaviors. On Facebook, a snowball recruiting method was used to obtain a sample of N= 3,447, which was reduced to a weighted sample of n=827 to control for clustering resulting from the recruitment method. Gordon-Messer et al. (2012) defined risky behaviors as unprotected sex and number of sexual partners. They found no relationship between these behaviors and sexting.

There are several key differences between Gordon-Messer et al (2012) and the other studies examining sexting and risky behaviors. The majority of these studies used a sample consisting of college undergraduate students. Gordon-Messer et al (2012) used a snowball sampling method which resulted in a sample population where only 66% of respondents had attended at least some college whereas other studies used a sample consisting of exclusively college students. This difference may have contributed to the difference in the observed relationship between sexual risky behaviors and sexting.

Another key difference is the time frames used. Gordon-Messer et al. (2012) asked participants if they had engaged in unprotected sex, and the number of sexual partners in the previous 30 days. This is a much shorter time frame then Bentosch et al. (2012) who used three months and Ferguson (2011) who examined sexual behavior within the previous year and over the individual's lifetime. It may be that a 30 day period was too short to detect the relationship between sexting and risky sexual behaviors.

It seems that individuals who engage in sexting are likely to have a greater number of sexual partners and engage in risky sexual behaviors. There also appears to be a relationship between alcohol and substance abuse and sexting behaviors. Although sexting appears to be related to other risky or sensation seeking behaviors, the exact nature of that relationship is unclear at this time. It may be that sexting is being used adaptively as a way to fulfill an evolutionary need in the specific domains of mate attraction and mate retention with less risk than other, more traditional, sexual behaviors. It may be that individuals that have a higher tolerance for risk in these domains are more likely to engage in sexting than those who are more risk adverse. The current study will examine whether sexting behavior might be used adaptively by individuals in their sexual relationships to find and keep mates, and what amount of risk is associated with the behavior by those who engage in it.

Sexting and mental health outcomes. Gordon-Messer et al. (2012) also examined the relation between sexing and negative psychological outcomes. Negative outcomes were defined as the presence of anxious and depressive symptoms and lower self-esteem.

There was no relationship found between sexing behaviors and negative psychological outcomes measured. These results are partially supported by Ploharz and Baird (2012), who found no relationship between sexting behavior and participants' self-esteem. These results suggest that sexting may not be related to the previously suggested negative mental health outcomes like depression or anxiety for adult college students.

Unintended message dissemination. Although there does not appear to be a relationship between sexting and negative mental health outcomes, there remains the risk of tangible negative outcomes such as the forwarding of messages to other people. When examining the relationship between attitudes towards sexting and individual participation in sexting, Dir and Cyders (2014) found that participants reported very few actual negative outcomes from sexting, though participants still viewed the risk of negative outcomes as a real possibility.

Approximately 95% of Dir and Cyders' (2014) participants reported that they viewed their "sexts being shared with others" as a "major risk", with the possibility of "blackmail" (95%) and "later feelings of regret" (96%) also being viewed as "major risks" stemming from engaging in sexting (p.7). Though these outcomes were rare, with only 12% reporting personal experience with shared messages, and less than 2% reporting experiencing blackmail or regret, individuals still viewed sexting as risky.

One possible explanation for this apparently over-estimation of risk is the rate of second hand knowledge. Dir and Cyders (2014) found that 42% of participants reported that a friend had experienced the unintentional forwarding of a message. It may also be

that participants' estimate of risk have been altered by the coverage of sexting in news media, and so they overestimate the frequency with which these events occur (Manktelow, 2012).

Sexting and risk behaviors summary. Research has suggested that sexting is indeed related to other risky sexual behaviors and drug usage at least among college students (Benotsch et al., 2012; Dir et al., 2013; Ferguson, 2011). That Gordon-Messer et al. (2012) did not find similar results using a shorter time frame and a differing sample suggests that college students are particularly at risk, and that the effects of sexting may take longer than just 30 days to present themselves.

Although there does not appear to be a relationship between sexting and negative mental health outcomes (Gordon-Messer et al., 2012; Ploharz & Baird, 2012), and the risk of unintentional message forwarding is slight, individuals still view sexting as having real risks. The findings of Dir and Cyders (2014) suggest that individuals view unintentional message forwarding and the potential of those messages to be used against them as a real risk. Why then do individuals choose to engage in sexting?

Why individuals engage in sexting. Research into the "why" of sexting behavior has examined the possible role of individual factors like personality, adult attachment styles and expectations towards sexting behaviors (Delevi & Weisskirch, 2013; Drouin & Landgraff, 2012; Ferguson, 2011; Ploharz & Baird, 2012; Ploharz, Baird & Patrick, 2013; Ploharz, Baird & Patrick, 2014; Weisskirch & Delevi, 2011). Many of these studies have attempted to explain differences in sexting behavior as a result of differences in

these individual traits. These studies have resulted in often contradictory results and accounted for only a small amount of the variance in sexting. The small amount of explanatory power of these studies suggests the need for a new theoretical approach to examining sexting behavior.

Self-reported reasons for sexting. Several studies have attempted to explain why individuals choose to engage in sexting, by asking participants to report their reasons for sexting, and why they thought others chose to sext (Drouin et al., 2013; Henderson & Morgan, 2011; Ploharz & Baird, 2012). When participants were asked why they thought other people, not themselves, engaged in sexting, "to be sexy or initiate sexual activity" was the most popular response with 85% of the sample endorsing this reason (Henderson & Morgan, 2011). Individuals thought others engaged in sexting "to be fun and flirtatious" less frequently with approximately 65% of the sample choosing this option, while approximately 30% reported partner pressure as a likely reason (Henderson & Morgan, 2011).

When participants were asked why they had engaged in sexting, there were differences in the given reasons for sexting based on relationship status (Drouin et al., 2013). Individuals in relationships more committed than "casual flings" reported that they sexted for "flirting" reasons most frequently (Drouin et al., 2013).This finding was supported by Ploharz and Baird (2012), who found that flirting was the most popular reason for sexting, regardless of relationship status.

Individuals who reported sexting while in a “casual sex” or a “fling” type relationship reported partner pressure or partner request to send the message as the most popular reason for sexting (Drouin et al., 2013). The idea of sexting under pressure or to fulfill the expectation of a relationship partner was also supported in studies of adolescent sexting behaviors (Walker et al., 2013)

It appears that people think of sexting primarily as a sexual behavior when explaining the reasons others choose to sext (Henderson & Morgan, 2011). When individuals report the reasons for their own sexting behaviors, however, sexting is viewed as flirting or a relationship initiating behavior (Drouin et al., 2013; Ploharz & Baird, 2012). The view of sexting as flirtation or relationship initiation strategy is supported by Bentosch et al. (2012) which found that 1/3rd of sexting individuals reported having sex with a new partner for the first time after sexting that partner.

Sexting may be used as a flirtation or relationship formation strategy. Individuals, especially females, feel pressure to engage in sexting to fulfill the expectations of their partners (Drouin et al., 2013; Henderson & Morgan, 2011; Walker et al., 2012) The findings that these perceived pressures and expectations regarding sexting come more from casual partners than committed ones (Drouin et al., 2013) suggest that sexting may be used to accomplish a variety of purposes in relationships. It may be that sexting is used as a mate attraction strategy. That sexting and the perceived pressure to engage in sexting is present to a lesser degree in committed relationships suggests that sexting may also serve as a mate retention strategy.

These findings also suggest a possible motivation for the engagement in sexting behavior despite the risks. Individuals may be choosing to engage in sexting as a way of pursuing a specific mating strategy or to satisfy a need of potential or current partners. If individuals are more tolerant of risk in mate attraction or mate retention, they may be more likely to engage in sexting as they pursue their preferred mating strategy.

Sexting expectancies. In an effort to understand individual differences in the motivation for sexting, Dir et al. (2013a) examined the role of participants' expectations regarding the outcomes of sexting. Using expectancy theory, they examined the perceived positive and negative outcomes from both sending and receiving sext messages (Dir et al., 2013a). Expectancy theory, as described by Porter and Lawler (1968), suggests that motivated behavior is best viewed as a function of the expected outcomes from that behavior. Within this framework, past learning and behavioral outcomes are less important than the expected future outcomes from the behavior (Porter & Lawler, 1968).

Simply put, individuals chose to act based on what they expect to have happen as a result of their actions (Porter & Lawler, 1968). Behaviors are then expected to be goal-directed or driven, with individuals acting in ways that they expect to result in positive outcomes based on their own assumptions or expectancies about the possible outcomes (Dir et al., 2013; Porter & Lawler, 1968).

Using the expectancy model of motivation, Dir et al. (2013a) created a measure assessing individuals' positive and negative expected outcomes, or expectancies,

regarding the sending and receiving of sext messages. The positive expectancy domain assessed the expected possible positive outcomes of increased attractiveness to the opposite sex, intimacy, sexual arousal, and excitement. The negative expectancies domain assessed the expected possible negative outcomes of increased feelings of shame or disgust, increased vulnerability, and decreased self-esteem. Participants' positive and negative expectancies about sending and receiving sext messages were examined both separately and together to predict overall sexting behavior (Dir et al., 2013a).

Results from the study suggest that participants' engagement in sexting was related to the expectancies about the outcome of the behavior (Dir et al., 2013a). It was found that both negative and positive expectancies were significantly related to sexting behaviors with a medium to large effect size for both positive and negative expectancies. Higher levels of positive expectancies were significantly associated with more frequent sexting, whereas higher levels of negative expectancies were significantly associated with less frequent sexting behavior (Dir et al., 2013a).

Relationship status and gender did have an effect on sexting expectancies. Individuals who were in a relationship were more likely to report higher levels of positive expectancies regarding sexting than those who identified as single. Females reported significantly higher levels of negative expectancies than males regarding receiving sexts, regardless of their relationship status. Males reported significantly higher levels of positive expectancies than females regarding the receiving of sext messages (Dir et al., 2013a).

The Dir et al. (2013a) findings support the idea that engagement in sexting behavior is indeed related to the expected outcomes of the behavior. Their findings also support the idea that though sexting is a dyadic/relationship behavior, males and females perceive it differently. Their results also suggest that individuals choose to engage in sexting despite the recognition of possible negative outcomes.

These results were supported by Ploharz and Baird (2012), who found that males and females perceived sexting as having differing effects on their relationships. Females viewed sexting in picture format within their current and previous relationships as having a mostly positive effect. Males reported sexting as having less of an effect, with the majority of males reporting that sexting had no effect to a slightly positive effect on their relationships. Overall it appears that individuals do view sexting as having both positive and negative possible outcomes, and that gender likely plays a role in expected outcomes from sexting (Dir et al., 2013a; Ploharz & Baird, 2012).

It also seems that individuals choose to engage in sexting in spite of the perceived risks, because they expect positive outcomes from sexting, but do so even when they recognize the possibility of negative outcomes (Dir et al., 2013a; Ploharz & Baird, 2012). Individual participants expectancies regarding the positive and negative outcomes from their engagement in sexting will be measured in this study using the instrument reported in Dir et al. The interaction between these expectancies, both positive and negative, risk tolerance in the specific domains of mate attraction and mate retention on sexting behaviors will be assessed in this study.

Sexting summary. When reviewing the literature on sexting, several important findings for guiding this research emerge. First, sexting appears to be a sexual behavior, most frequently occurring in the early stages of relationships with at least some level or perceived commitment (Benotsch et al., 2013; Dir et al., 2013; Drouin et al., 2013; Drouin & Landgraff, 2012; Parker et al., 2013; Ploharz & Baird, 2012; Weisskirch & Delevi, 2011) narrowing the number evolutionary domains likely to be related to sexting behavior and needing to be discussed in the next section. Second, although males and females both participate in sexting, they do so in different ways and for different reasons (Benotsch et. al., 2012; Dir et al., 2013; Drouin & Landgraff, 2012; Ploharz & Baird, 2012; Weisskirch & Delevi, 2011; Wysocki & Childers, 2011) suggesting that gender difference may play a determining role in why individuals choose to sext. Third, even though individuals perceive sexting as a risky activity they continue to engage in the behavior, perhaps due to perceived positive outcomes (Benotsch et al., 2012; Dir et al., 2013a; Dir et al., 2013b; Dir et al., 2014; Drouin et al., 2012; Gordon-Messer et al., 2012; Ploharz & Baird, 2012).

Neither can individual factors such as attachment style and personality differences fully explain why individuals choose to engage in sexting (Delevi & Weisskirch, 2013; Drouin & Landgraff, 2012; Ferguson, 2011; Ploharz et al., 2013; Ploharz et al., 2014; Weisskirch & Delevi, 2011). It may be that the application of a unique theoretical approach (evolutionary psychology), with the ability to explain gender differences within relationships, is necessary to better understand sexting behavior.

Evolutionary perspective. Evolutionary Psychology has been proposed as a way to bring together differing sub-fields in psychology, a sort of meta-theory for guiding psychological inquiry and research (Buss, 1995; Cosmides, Tooby & Barkow, 1992; Duntley & Buss, 2008). It has been also been suggested as a heuristic tool, or a framework from which to better understand any psychological phenomena previously described, and as a guide for future research (Buss, 1995, Cosmides, & Tooby, 2006). Before discussing how this evolutionary framework of psychology can contribute to understanding sexting, a quick and basic review of evolutionary theory and its principles relevant to sexual behavior will be discussed.

Evolutionary review. Evolutionary science is a massive field that has affected every area of the biological sciences. A full review of even the most basic evolutionary principles is beyond the scope of this study, so this review will focus on evolutionary theory as it applies to the evolution of the human organism. Described by Darwin over 150 years ago, evolutionary theory is widely accepted among the scientific community as the only reasonable explanation for the organic world around us (Buss, 2005; Geary, 2010; Geher, 2013). Evolution is easiest to understand as simply the change of organisms over time due to natural selection (Shackelford & Liddle, 2014).

How this change occurs is a combination of chance, sharing, and natural selection through differential survival (Cosmides & Tooby, 2006; Geary, 2010; Liddle et al., 2011). A basic understanding of each of these parts of evolution is necessary to understand how evolutionary psychology views the human mind. Although an in-depth

review is beyond the scope of this study, each of these concepts will be briefly reviewed before the evolutionary psychological approach, and its proposed relationship to sexting behavior, is described.

Inheritable variation. The chance part of evolutionary change refers to the need for genetic variability within a population (Geary, 2010; Geher, 2013; Liddle, et al., 2013). Within sexually reproducing animals, this variation most commonly stems from the combining of two individuals' DNA into one unique DNA profile (Geary, 2010; Liddle et al., 2011). This usually results in subtle variations between individuals known as traits (Liddle et al., 2011). The resulting variations also may or may not be beneficial to survival, but in any case they give natural selection something with which to work (Geary, 2010; Geher, 2013; Liddle et al., 2011).

The sharing part comes from our DNA's ability to pass on variations from one generation to another (Geary, 2010). This is referred to as heritability, or the fact that genetic traits are often passed along to our offspring (Geary, 2010). Without this ability, any individual variations and the resulting selection of the natural selection process would be pointless. The variation, and its cost or benefit would end with the one individual (Geary, 2010; Geher, 2013).

So if variations occur with each successive generation, and these variations can be passed along, why is there not a larger range of variation observed among humans? The answer to that is differential, or natural selection (Geary, 2010; Geher, 2013; Liddle et al., 2011). Natural selection is made up of two types of selective pressures; survival and

reproductive, which work together to choose only those variations that help organisms survive (Geary, 2010).

Differential selection. Natural selection works in two ways; by killing those individuals with less beneficial adaptations/variations quicker than those individuals who are better suited to their environments, and/or making them less attractive to potential mates (Geary, 2010; Geher, 2013; Liddle et al., 2011). Either approach has the same effect, removing the less fit individuals from the gene pool (Geary, 2010). Survival or ecological selection pressure refers to those elements of nature that are working to end the existence of individuals; this includes things like predation, parasites, illness, or accidents (Geary, 2010). Reproductive selection, or sexual selection, pressures refer to those things that are working against individuals finding mates or engaging in sex specifically competition for a mate from others of the same gender and inability to attract or entice mates (Buss, 1995; Geary, 2010; Liddle et al., 2011).

Anything that threatens the survival or reproductive chances of an individual is called an adaptive problem (Buss, 1995; Cosmides & Tooby, 2006). The random variations that happen to work most efficiently to solve these problems, resulting in longer life and more sex for individuals, are selected for by nature (Cosmides & Tooby, 2006; Geary, 2010). These individuals then pass along the successful adaptations on to their offspring; eventually resulting in a trait seen in the majority of the species, if it is beneficial enough (Shackelford & Liddle, 2014).

This process of weeding out less effective variations or adaptations and selecting the successful ones can take eons of trial and error or can happen in a few generations in isolated populations (Cosmides & Tooby, 2006; Geary, 2010). This process of adaptive problem solving through differential selection has shaped and built the human organism, and evolutionary psychologist argue that human behavior is best understood as a result of this genetic heritage (Buss, 1995; Cosmides & Tooby, 2006).

Evolution review summary. Although this overtly simplistic review of evolutionary theory leaves out many of the nuances that biologists focus on in their research, it does highlight several key principles that evolutionary psychologists use in conducting research. The first is that all organisms are the result of an evolutionary process of natural selections of individual variations (Buss, 1993; Cosmides & Tooby, 2006). These variations are selected for through ecological and sexual selection pressures (Geary, 2010). Those variations that allow organisms to survive or reproduce more effectively, efficiently, or consistently remain in the gene pool to be passed on to succeeding generations (Geary, 2010). Those variations that are not adaptive, or fail to help organisms succeed, are not passed along as frequently and are eventually removed from the gene pool (Geary, 2010). Over millions of iterations we arrive at the biological organism know as *Homo Sapiens* we know today.

Evolutionary psychology. Evolutionary psychology's most basic premise is that humans, like all organisms, are a product of their evolutionary history, and the best way to understand the human mind is by understanding the way that history has shaped our

brains (Buss, 1995; Cosmides & Tooby, 2006; Liddle et al., 2011). Cosmides and Tooby (2006) suggested that "Psychology is that branch of biology that studies (1) brains, (2) how brains process information, and (3) how the brain's information processing programs generate behavior" (p. 4).

This view suggests that our brain is best understood as a physical system, governed by the same laws of physics and chemistry that apply to all other systems in the body (Cosmides & Tooby, 2006). Like the skeletal or circulatory system, our brains are a system of neural circuitry and chemical pathways designed over the course of *Homo Sapiens* evolutionary history to resolve adaptive problems faced by our hunter-gather ancestors (Cosmides & Tooby, 2006). In the broadest sense, evolutionary psychology uses biological principles to study both physical and psychological the structure of the mind (Cosmides & Tooby, 2006).

Like other regulatory systems in the body, our neural system developed specific pathways or modules to deal with specific adaptive problems that were encountered repeatedly throughout our evolutionary history (Buss, 1995; Cosmides & Tooby, 2006; Liddle et al., 2011). Evolutionary theory and recent advances in neurology and neuropsychology support the idea of these domain or problem specific regulatory modules within the brain (Cosmides & Tooby, 2006; Liddle et al., 2011; Shackelford & Liddle, 2014).

Proof of these specialized neural networks is seen most easily in our vision, where the brain processes vast amounts of information regarding shape, color, distance, size and

numerous other parts of vision all without us having to think about it (Buss, 1996; Cosmides & Tooby, 2006). Like vision, the majority or our specifically adapted pathways operate outside our awareness but allow us to complete complex tasks with relative ease (Cosmides & Tooby, 2006). Within the evolutionary psychology framework, the brain is best viewed as a collection of these modular systems, operating in concert to solve any number of adaptive problems in a successful manner (Buss, 1995; Cosmides & Tooby, 2006; Shackelford & Liddle, 2014).

Our brains and these domain specific modules have been tuned through our evolutionary history to solve the problems faced for eons by our ancestors (Cosmides & Tooby, 2006; Liddle et al., 2011). The world as we know it, including electronics, massive cities, sedentary lifestyles, and formal social contracts, has only existed for 200 years at most. Our agrarian based ideas of society emerged 10,000 year ago at the earliest. These are miniscule timeframes when compared to the millions of years human ancestors spent as hunter-gatherers, and our brain reflects that (Cosmides & Tooby, 2006; Liddle et al., 2011).

There have been rapid changes in the living environments, and social constructs we are still using a set of psychological tools designed to resolve hunter-gatherer problems. Cosmides and Tooby (2006) referred to this as situation as “our modern skulls housing a Stone Age mind.” This Stone Age mind, selected to solve adaptive problems of 100,000 years ago, is being used to solve today’s adaptive problems, and understanding

how it works to do so is the basis of the evolutionary psychology framework (Buss, 1995; Cosmides & Tooby, 2006; Liddle et al., 2011; Shackelford & Liddle, 2014).

Evolved psychological mechanisms. The view of our brain as a stone-age organ that has evolved domain specific tools over millennia has led to several important insights within the evolutionary perspective. The first is evolved psychological mechanisms (EPM), and the second is environment of evolutionary adaptedness (EEA) (Buss, 1995; Cosmides & Tooby, 2006; Liddle et al., 2011; Shackelford & Liddle, 2014). These two concepts guide the formulation of evolutionary based hypotheses regarding human behavior (Buss & Schmitt, 1995; Cosmides & Tooby, 2006; Liddle et al., 2011, Shackelford & Liddle, 2014).

Evolved psychological mechanisms (EPM's) refer to the neural mechanisms dedicated to the solving of a specific evolutionary adaptive problems (Buss, 1995; Cosmides & Tooby, 2006; Liddle et al. 2011). Similar to the dedicated neural circuitry for vision, all psychological problem-solving mechanisms are thought to have dedicated circuitry and operate in response to input without our conscious awareness (Cosmides & Tooby, 2006). Each EPM is tailored to solve a specific adaptive problem, but all (EPMs) share some common traits that let researchers identify them as unique domain specific tools (Buss, 1995). First they exist in their current form because they reliably solved a specific reproductive or survival problem faced recurrently over evolutionary history (Buss, 1995).

EPM's will attend only to specific environmental and internal inputs, and tells an individual what type of adaptive problem it is facing (Buss, 1995). If the brain and its multitude of EPM's can't distinguish the type of problem it is facing then the appropriate response can't be triggered and survival is hampered not helped. Next, through decision rules this stimulus is turned into output, which can take the form of physical action, communication with another EPM or a physiological response (Buss, 1995).

Lastly the result of the EPM's will be directed towards the solution of a specific adaptive problem (Buss, 1995). For an EPM to be effective and adaptive it needs to solve for the adaptive problem it has recognized and is attempting to resolve. Central to the EPM's functioning is the information-processing view of the human mind evolutionary psychology espouses (Cosmides & Tooby, 2006).

In this view, the mind works as input-output machine, where a certain input always results in a certain output or action (Buss, 1995; Cosmides & Tooby, 2006). The output may result in a variety of behaviors and may not always be the same, since adaptive behavior by its nature has to be appropriate to the situation, but input of type A will always result in output of type B (Buss, 1995). This means that once an EPM recognizes input that prompts its responding it will always respond in the previously adaptive way (Buss, 1995). So how did these EPM's pair a specific input with what is considered an adaptive output and where from did these domain specialized psychological mechanisms come?

Since each EPM evolved in response to a specific problem, researchers have sought to understand the environment in which these mechanisms evolved (Cosmides & Tooby, 2006). This concept is referred to as the environment of evolutionary adaptedness (EEA), or as Buss described them the "statistical composite of the selection pressures that occurred during the period during the adaptation period" (as cited in Shackelford & Liddle, 2014, p. 251). Basically EMP's are the result of the combined survival and reproductive pressures experienced by our ancestors as they experienced new adaptive challenges over multiple generations.

The EEA is not a specific point in time or geographical environment, instead it is the combination of all the pressures that lead to the need for the adaptation, and shaped the form it took (Cosmides, & Tooby, 2006; Shackelford, and Liddle, 2014). This means that each psychological mechanism we study has its own evolutionary environment. Our vision capabilities had a very different EEA than our psychological mechanisms for sexual reproduction (Cosmides, & Tooby, 2006). To understand how an EPM functions, what triggers it and why, we need to also understand where it developed and what circumstance led to its selection.

These ideas of EPM's and EEA's have given the evolutionary psychologist a basis from which to form hypotheses explaining observed human behaviors, and to predict as yet unobserved behaviors. When a behavior is observed a hypothesis regarding the adaptive problem being solved can be made and tested with a firm theoretical basis. In short "Evolutionary analysis provides psychologist with a powerful heuristic, guiding

them to important domains of adaptive problems and the development of hypotheses about adaptive mechanisms heretofore unobserved" (Buss, 1995, p.12). Building off this review of evolutionary principles and how they have been applied to Psychological theory this study will examine sexting behavior as having it's roots in evolutionarily adaptive behavior.

Evolution and sexting. Using the heuristic provided by evolutionary psychology, hypotheses regarding the adaptive role of sexting behaviors can be proposed and tested. Two methods of hypothesis formation using within this heuristic have been proposed; function-to-form and form-to-function (Buss, 1993; Cosmides & Tooby, 2006). The first method involves identifying adaptive problems faced by our ancestors and then empirically searching for those mechanisms that would solve the adaptive problem (Buss, 1993).

In the second method, behaviors are observed and hypotheses are made about its adaptive functions or the advantages it provided in solving adaptive problems face by our ancestors (Buss, 1993). There is a sizable body of data from previous studies of sexting that can be used to form hypotheses about the behavior. To make more accurate predictions regarding the adaptive function of sexting, the domains in which it operates need to be identified.

Since EPM's are domain specific, the first step in the hypothesis formations is to identify possible relevant domains using prior research. It has been suggested that sexting behavior is best viewed as a sexual behavior, occurs in a variety of relationships, is

gender dependent, and is participated in despite perceived risks (Benotsch et al., 2012; Dir et al., 2013a; Dir et al., 2013b; Dir et al., 2014; Drouin et al., 2012; Gordon-Messer et al., 2012; Ploharz & Baird, 2012). These findings regarding sexting suggest that it may be related to reproductive or sexual adaptive pressures.

Because sexting is gender dependent, relationship-based sexual behavior, we can narrow the possible psychological mechanisms down to those programmed to deal with sexual selection, reproductive pressures and the evolved human mating strategies humans resulting from these pressures (Buss, 1995; Buss & Schmitt, 1993; Shackelford et al., 2014). Sexual selection and the associated pressures have been the focus of evolutionary scientists since the time of Darwin (Geary, 2010). Sexual selection can be broken down into two components, intersexual competition (who do I want), and intrasexual competition (beating the other guy/girl) (Geary, 2010). Individuals who are better adapted at choosing and getting the right mate, or at beating out the competition, are more likely to mate, and pass the traits that allowed them to be successful along.

Building on Darwin's idea of sexual selection, Robert Trivers suggested the idea of Parental Care Theory as a primary factor in the sexual selection process (Trivers, 1972). The basic premise was that the sex which invested the most in the parental care of offspring would be more careful about whom they mated with since they would incur greater risks, and harsher possible outcomes of a poorly adapted mate (Trivers, 1972).This intersexual selection pressure, with females typically being more discriminating, led one gender, typically males, to develop sometimes elaborate ways of

displaying their suitableness as a mate to the relatively more selective females (Geary, 2010).

The results of this intersexual pressure are seen throughout the animal kingdom as males put on elaborate mating displays to illustrate to mates their adaptive potential as mates (Geary, 2010). It also results in intrasexual pressures as males seek competitive advantages against rivals. This intrasexual competition for mates has led to some unique adaptations in some species, such as large, resource expensive antlers in deer, to gain an advantage over others and win mating opportunities (Buss & Schmitt, 1993; Geary, 2010). This understanding of mating strategies in the animal kingdom, typically of males competing for picky females against other males, and the strategies that were used led to the formation of an evolutionary based hypothesis of human mating behavior (Buss & Schmitt, 1993)

Sexual strategies theory. In 1993, David M. Buss and David P. Schmitt extended and elaborated on how these evolutionary principles of intersexual and intrasexual competition affect human mating behaviors in their Sexual Strategies Theory. They suggested that individuals would use specific mating strategies, designed to solve specific sexual adaptive problems, depending on the environmental cues and context. In a series of experiments, Buss and Schmitt (1993) tested several hypotheses related to their constructs of long term and short term mating strategies. They also tested the hypothesized gender differences in regards to the hypothesized adaptive problems faced. The results of these studies formed the basis of their Sexual Strategies Theory.

Buss and Schmitt (1993) noted that humans, contrary to idealized social conventions, engage in a variety of mating relationships lasting from mere minutes to a lifetime. They suggested that humans possessed two distinct domains of relationship strategies, long term mating and short term mating. These two domains were thought to be distinct because of the unique adaptive problems they presented. Short term strategies implied minimal requirements of commitment to the mate, and pursuit of maximum variation (Buss & Schmitt, 1993). Long term strategies implied a focus on finding and retaining a single mate for as long as possible in the face of competition (Buss & Schmitt, 1993).

The term "mating strategy" is used to denote a goal directed problem solving behavior; specifically adapted to solve unique adaptive problems related to sexual behaviors (Buss & Schmitt, 1993). These mating strategies are the EPM's of the sexual domain, and like all EPM's they often operate without conscious input or awareness on the part of the individuals employing them (Buss & Schmitt, 1993). Which mating strategies individuals employ is the result of the received environmental, social, cultural and contextual inputs related to the sexual domain (Buss & Schmitt, 1993).

Using Parental Investment Theory as a guide, Buss and Schmitt (1993) suggested that gender would play a role in the mating strategies used. Because women carry more parental burden (gestation, lactation, caring for slowly developing children) they are more likely to be picky in their mates, and employ long term mating strategies. Men would be more likely to employ a short term mating strategy maximizing their chances at

reproductive success. This gender preference for a particular strategy does not mean that individuals do not employ both strategies, since pair-bonding (marriage) still happens, and women still engage in casual or non-committal sexual interactions. Instead, Buss and Schmitt (1993) suggest that men and women use both strategies extensively, but show a preference for a particular style.

Short term mating. Buss and Schmitt (1993) suggested that men would prefer to employ short term mating strategies allowing them to maximize their chances at reproductive success through maximizing the number of females to which they have sexual access. Females were thought to pursue short term mating strategies to gain immediate access to resources, and to evaluate the potential of an individual as a long-term mate. It was also suggested that females may engage in short term mating to gain access to superior genes, though there has yet to be support for that hypothesis.

In pursuing short term mating strategies, our male and female ancestors had to solve several adaptive problems (Buss & Schmitt, 1993). For males these problems were suggested to be: maximizing mating opportunities, identifying sexually accessible females, minimizing the risk and level of commitment, and figuring out which females were fertile. To test the idea of short term mating, several hypotheses consistent with a short term mating strategies in males were tested.

The first hypothesis was that because males had less parental investment, they would be more likely to prefer short term mating strategies than women (Buss & Schmitt, 1993). In testing this hypothesis, Buss and Schmitt (1993) found that males were

significantly more likely than females to report actively seeking a short term sexual mate more than a long term mate. Men were more likely to report desiring a large number of sexual partners and needing to know a person for a shorter period of time before they were willing to engage in sexual intercourse than women. All of these results supported the idea of a short term mating strategy designed to maximize the number of sexual mates.

Second, males were expected to have evolved specific strategies for identifying sexually available short term mates (Buss & Schmitt, 1993). It was suggested that men would value signs of promiscuity or previous sexual activity as a sign of sexual availability more in short term mates than long term mates. The results supported that hypothesis with males reporting to desire these traits in short term mates, but viewing them as undesirable in long-term mates.

Third, males would seek to select mates that require minimal amounts of commitment prior to sexual intercourse (Buss & Schmitt, 1993). Men reported that "wants a commitment" was highly undesirable in a short term mating partner, supporting that aspect of short term mating. Last it was thought that men would have evolved specific mechanisms that allowed them to identify fertile women. This mechanism would allow for males to maximize their reproductive success by mating with those females more likely to conceive and give birth to healthy offspring.

For our hunter-gatherer ancestors, there were clues as to possible health of a potential mate: features of physical appearance (clear skin, eyes, good symmetry, muscle

tone, lack of obvious illness), observable behavior (gait, mannerisms, energy level), and social status or reputation (Buss & Schmitt, 1993). If males had evolved mating strategies, they should value physical appearances of health in both short and long term strategies, and find unattractive (i.e., unhealthy) women less desirable in both contexts. All of these suggestions were supported in the initial studies of sexual strategies theory conducted by Buss and Schmitt. It was also found in these studies that males valued physical appearance more as a short-term strategy than a long term one, perhaps because other traits take precedent when selecting a long term mate.

Females also seek short term mates, though they are less likely to do so because of the greater potential costs and risks involved with this strategy (Buss & Schmitt, 1993).There are potential benefits for females who engage in short term mating specifically: the extraction of immediate resources, the assessment of prospective long term mates, and the potential to acquire better genes to be passed on to offspring. Historical evidence suggests that females do indeed use sex as a way of gaining immediate resources, with Buss and Schmitt (1993) citing prostitution as an example of one possible way women use short term strategies to gain access to resources.

If females evolved short-term mating strategies as a way of extracting resources in a quick way, then women seeking a short-term mate should view males with characteristics suggesting a lack of resources, or unwillingness to share those resources, as less attractive mates (Buss & Schmitt, 1993). This hypothesis was supported with women showing a greater preference for men who “spends a lot of money early on” and

"gives gifts" as short term partners than long term partners, women also "especially disliked" men who were stingy early in the relationship. These results supported the idea that women may have evolved short-term mating strategies as a way of gaining immediate access to resources.

It was also suggested that women may use short-term mating as a way of evaluating the potential of a short term mate to become a long-term mate (Buss & Schmitt, 1993). This hypothesis was first tested by asking women about the desirability of a potential short term mate who was already in a relationship. Females reported viewing that potential mate as being "moderately undesirable", whereas men were only "slightly bothered" by a potential partner's current relationship.

This suggests that women more than men are viewing short term mates as potential long term mates. There was also a strong correlation between women's short term and long term mate preferences, (r= .81) suggesting that short-term mating strategies could be used as a means for evaluation of a long term mate (Buss & Schmitt, 1993).

No sexual strategy is without its risks, and both long term and short term strategies have costs associated with them (Buss & Schmitt, 1993). These costs differ for males and females, and in the case of short term mating strategies, are more likely to be severe for females. For males utilizing short term mating strategies carries the risk of contracting a sexual disease, and damage to their reputation that impairs their ability to find future long term mates.

For females, the risks are more substantial. In addition to possible reproductive consequences (single parenthood) and sexually transmitted diseases, women face a greater mate value reduction to potential long term partners (Buss & Schmitt, 1993). This loss of potential mate is often a result of competitor derogation (female on female violence) by competitors that feel their own mate value threatened and male worries of paternity uncertainty. It was also thought that men may view women who use a short term mating strategy as flawed somehow and being unable to obtain and retain a high value mate leading to a loss of mate value.

These ideas regarding the risks of short term strategies have been supported by other researchers. It has been suggested however that men continue to mainly value "easy sexual access" only in short term partners and not for long term partners (Schmitt, Couden & Baker, 2001). The idea that using short term strategies may also make women the target of indirect aggression or derogation by other women has been supported as well illustrating the risks women face when utilizing a short term mating strategy (Schmitt, 2014).

The potential risks of mate devaluation incurred by women when using a short term mating strategy may not be as severe as once thought, and appear to be heavily culture dependent (Buss, 1982b; 1992). However a primary principle of evolutionary psychology is that many of the mechanisms that underlie human behavior are hardwired into our brains. Although these EMP's are context sensitive, allowing for the effect of culture, we would expect to see an underlying construct consistent with adaptive decision

making. Because of this hardwired mechanism it is likely that the risk of decreased mate value, bullying, and "slut shaming" are real when it comes to sexting.

Long term mating. Short term mating strategies provide males who employ them several powerful reproductive advantages, namely maximizing the chance to reproduce while minimizing the cost (Buss & Schmitt, 1993). Men also employ long term strategies (pair-bonding, mating), suggesting that there must be either some unique benefit or pressure that makes these strategies more likely to result in reproductive success. A key observation is that over time, either through evolutionary or individual development, sexual strategies should be influenced by the preference of the opposite sex (Buss, 1998; Buss & Schmitt, 1993). This means that males may engage in long term mating strategies as a way of fulfilling females' expectations of a long term commitment in mating relationships (Buss & Schmitt, 1993).

It was also indicated that males may be able to attract at higher quality mate by employing long term mating strategies (Buss & Schmitt, 1993). Females may settle for a male that has lower levels of mate desirability if he displays high level of commitment, whereas they may reject a more desirable mate if he rejects a certain level of commitment. A male may also be able to ensure that only he has access to a long term mates reproductive resources, giving him reproductive access without the costly short term strategies and solving the question of paternity of the offspring.

To obtain the potential benefits of long term mating, males have to overcome several adaptive problems; questions regarding the paternity of any offspring and judging

the reproductive value of a female (Buss & Schmitt, 1993). The first adaptive problem, being certain of paternity, relates to the idea that human children are costly to raise from the evolutionary perspective. Since human parents devote such a tremendous amount of resources to their children when compared to other primates, we should expect to see a psychological mechanism that ensures that energy is spent on our own offspring, not on someone else's.

For women this isn't a problem, they know the child is theirs; however for our male Stone Age ancestors there was no way to know for sure the child was their genetic offspring (Buss & Schmitt, 1993). Any male engaging in a long term mating strategy would need to ensure to a reasonable degree they were investing in their offspring.

To test this idea, Buss and Schmitt (1993) examined whether physical or emotional infidelity triggered the strongest sense of jealousy and distress sixty percent of males picked sexual infidelity as the most distressing, whereas 85% of women picked emotional infidelity. These findings were supported in a second study examining the physiological response to the same question; men were more likely to show increased physical signs of distress when asked to imagine their partner engaging in intercourse with another male, than becoming emotionally connected. Females showed the opposite response pattern, with an emotional connection being more distressing.

Buss and Schmitt (1993) suggested that this was likely due to the potential loss it represented. For males, sexual infidelity represented a loss of certainty of paternity of an offspring. Being uncertain in a mates sexual loyalty resulted in an impairment to

maximizing their reproductive potential and so invoked high levels of distress. For females emotional infidelity or the forming of a new relationship signaled the potential loss of resources for herself or her offspring.

To solve for this lack of paternity certainty males should have evolved mechanisms to minimize the chance of their mate seeking outside mating opportunities (Buss & Schmitt, 1993). One way of doing this is to pick a mate high in loyalty and level of commitment. In contrast to their short term mating strategies where "promiscuity" was valued, it was thought that males would value characteristics like "faithfulness" and "sexual loyalty" in long term mates.

It was found that males did indeed value these characteristics more in long term relationships; in fact these traits were near the ceiling of the measured desirable characteristics men sought in long term mates (Buss & Schmitt, 1993). Buss and Schmitt (1993) also found that the characteristics of, "promiscuity", "sleeps around a lot", and "unfaithful" were highly undesirable traits for a females to possess among males seeking long term mates. Males appear to have evolved a preference for "loyal" long term mates in an effort to ensure paternity. This finding supports the idea that women who engage in short term mating strategies incur greater risks of future mate devaluation.

The second adaptive problem that ancestral males had to solve for when using long term mating strategies was judging a female's reproductive value (Buss & Schmitt, 1993). The term reproductive value refers to the total number of possible offspring a female could produce, as opposed to fertility which refers to the ability to produce

offspring right now. This means that men should be adapted to choose attractive (signals health), younger women (more fertile years left). These adaptive preferences were found both in the United States and 36 other countries, it was found that men do indeed prefer young attractive women (Buss, 1989b).

According to Buss and Schmitt (1993), the primary benefit for females employing a long term mating strategy is to secure resources and protection for them and their offspring. Long term mating strategies also ensure access to increased parental care for offspring. Females employing long term mating strategies face the adaptive problem of being able to determine a mate's ability to provide these things.

To test this part of the mating strategies hypothesis, it was suggested that women would value a potential mate's ability to provide and secure resources more than men will (Buss & Schmitt, 1993). When asked about a prospective long term mates potential financial resources, social status and "ambitious-industrious" qualities, females stated that they were more important than males did. Women valued these traits regarding the ability to provide as less important in prospective short term mates than in long term mates. These findings support the hypothesis that women place an emphasis on the ability to ensure access to resources, especially when choosing a long term mate.

There are costs associated with long-term mating as well (Buss & Schmitt, 1993). Males using a long term mating strategy face a decreased number of sexual partners, a lack of opportunities to mate with a variety of females, and the possibility of wasted reproductive energy. Females choosing a long term strategy face uncertainty regarding

the ability of their long term mate to provide. If females choose a long term mate who is unable to ensure access to resources or leaves the relationship they are likely to incur a heavy cost, such as the loss of offspring or a reduction in reproductive success.

Sexual strategies summary. Buss and Schmitt's (1993) Sexual Strategies Theory proposes two types of adaptive mating strategies for individuals. These short and long term strategies and their associated preference are suggested to be the result of evolutionary pressure and selection. These strategies are hardwired into our brain and individuals use them without any conscious thought or intent.

Males are thought to prefer short term strategies, leading to the maximizing of reproductive potential (Buss & Schmitt, 1993). Females are thought to prefer a long term strategy resulting in greater access to resources, parental care and survival of her offspring. Both males and females are capable and adept at using both strategies, and which they use is dependent of social, environmental, cultural and contextual inputs.

There is a large body of research supporting the Sexual Strategies Theory of human mating (Bleske-Rechek & Buss, 2006; Buss, 1988a; Buss, 1988b; Buss, 1989b; Buss, 2013; Confer, Carin & Buss, 2010; Miner & Shackelford, 2010; Schmitt, 2014). The constructs of long term vs. short term mating, gender specific predictions, and an evolutionary basis of sexting behavior make the theory a useful framework in explaining sexting behaviors. It also provides a basis for more domain specific examinations of sexting behaviors.

Sexting and sexual strategies. Sexual Strategies theory uses evolutionary principles to describe and provide an explanation for sexual behaviors. Buss and Schmitt (1993) suggest that humans use both short term and long term strategies to overcome problems faced repeatedly by our evolutionary ancestors. Research has supported these domains of mating behaviors and the suggested gender preferences. This makes the theory a solid foundation from which to make predictions about sexting behaviors.

Sexual Strategies theory suggests that women are more likely to use long term mating strategies, incorporating high levels of commitment, or if they employ short term strategies it is frequently a way of evaluating long term mates (Buss & Schmitt, 1993). In relation to sexting behavior women are more likely to engage in sexting when there is a perceived level of commitment (Delevi & Wiesskirch, 2013; Drouin et al., 2013; Ploharz & Baird, 2012; Wiesskirch & Delevi, 2011). Women are also less likely to send sext messages to initiate sex than men are and are more likely to report having negative expectations regarding sexting (Dir et al., 2013a). These findings regarding sexting suggest that for women the behavior is indeed a sexual behavior that is primarily used in long term relationships consistent with the suggested preferred mating strategy for females.

Sexting also appears to be used as a short term mating strategy by women. As evidenced by the findings that women will engage in sexting in non-committed relationships, that they engage in sexting in response to perceived mate pressures, and that they do so to be "flirty" (Drouin et al., 2014; Drouin et al., 2013; Klettke et al., 2014;

Ploharz & Baird, 2012) . These findings are consistent with Sexual Strategies theory, which states that females will use short term strategies but prefer long ones (Buss & Schmitt, 1993).

Sexual Strategies theory suggests that men are more likely to utilize short term mating strategies designed to quickly maximize sexual opportunities (Buss & Schmitt, 1993). These strategies are also designed to maximize the number of partners and minimize the commitment to each sexual partner (Buss & Schmitt, 1993). Men report sexting more frequently and report engaging in sexting to initiate sexual contact more than women (Delevi & Wiesskirch, 2013; Dir et al., 2013a). They also are more willing to engage in sexting in non-committed relationships. The application of Sexual Strategies theory using the findings of previous sexting research it seems that sexting is likely to be best viewed as short term mating strategy when used by men.

Intrasexual and intersexual competition. The pressures to strategically meet the needs of the opposite sex are not the only ones thought to drive sexual behaviors. Darwin (1871) suggested two types of selective pressures when describing the role of sexual selection in human evolution, intersexual and intrasexual pressures. Parental Investment Theory (Trivers, 1972), and Sexual Strategies Theory (Buss & Schmitt, 1993) attempt to describe the role of intersexual selection pressures in human evolution and sexuality (Buss,1992). It has been suggested that intrasexual competition has also exerted a significant effect on human sexuality, and mating strategies (Darwin, 1871). Where intersexual (male vs. female) selection pressure refers to the role of a potential mates'

preferences in determining mating strategies, intrasexual (male vs. male) competition refers to the strategies used to appear more desirable than same sex peers, and to retain a mate once one is obtained (Buss, 1988; Buss, 1992; Fisher & Cox, 2010; Schmitt & Buss, 1996).

Intersexual selection and intrasexual competition are necessarily highly related (Buss, 1988). For example, we would expect males to display their resources and willingness to commit those resources to mates in an effort to attract mates, and females to display signs of fertility by emphasizing certain physical traits or signs of health (Buss, 1988; Buss & Schmitt, 1993). In fact we see that not only do individuals emphasize these traits in themselves (intersexual competition) (Bleske-Rechek & Buss, 2006; Buss, 1988; Fisher & Cox, 2011), but they work to minimize how those traits are perceived in competitors (intrasexual competition) (Buss & Dedden, 1990; Fisher & Cox, 2010 Fisher, Shaw, Worth, Smith & Reeve, 2010; Schmitt & Buss, 1996; Vallincourt & Sharma, 2011). The term competitor derogation is used to describe the efforts individuals make to minimize attractive or desired traits in others, or to magnify undesirable traits or behaviors (Schmidt & Buss, 2014).

By working to reduce the perceived mate value of competitors, individuals may increase their chances of obtaining a mate (Schmitt & Buss, 1996). In this way individuals who may be at a disadvantage in intersexual competition are able to find mates by lower their competitors to their level. The tactic of reducing competitors' mate

value through derogations or attacks has been shown to be effective. Anecdotal evidence of this tactic is easy to come by in stories of bullying and the behavior of "slut shaming".

It has been suggested that these intersexual and intrasexual competitive strategies can thought of as mate attraction and mate retention strategies (Buss, 1988a; Buss, 1988b; Buss, 1992). These strategies will vary from females to males, and depending on the mating strategy (long vs. short) being used (Buss, 1992; Schmitt, 2014). These specific domains of human sexuality contain unique psychological mechanisms designed to attract and keep the most desirable mate possible. Both mate attraction and mate retention mechanisms may also provide unique and valuable insight into sexting behavior.

Mate attraction. A major adaptive problem in reproduction by individuals of most species is attracting individuals willing to mate with them (Buss, 1988b; Geary, 2010). This need to attract mates has been tied to the development ornamental plumage of the peacock, the red posterior of female baboons in estrus, and direct physical combat between males in a wide variety of species to show dominance and superiority (Geary, 2010).

In humans, this competition to attract mates rarely involves direct combat between males; instead the competition is thought to be more indirect, centered on displaying the ability and willingness to fulfill the opposite sex's sexual preferences (Buss, 1988b). Trivers (1972) suggested the idea of female choice in humans, that women because of their heavier investment in offspring would, be choosier when picking

mates. Although women do invest a great deal in offspring, human babies require large amounts of resources and time to reach maturity, so men have a large investment as well (Buss, 1988b). This substantial paternal investment would suggested that men would be selective in whom they choose as mates, and as a result women would likely compete intersexually for the best mate as well (Buss, 1988b).

Using evolutionary principles, Buss (1988b) examined the hypothesized mate attraction strategies used by college students in a series of four studies, also assessing the differences between men and women in tactics used. The core concept was that individuals would compete for mates by seeking to fulfill their sexual selection mate preferences. The better individuals were able to fulfill these criteria the more likely they would be to attract mates.

In testing this hypothesis, it was thought that males would intrasexually compete for females in ways centered on acquiring and displaying resources to fulfill the female preference for resources and access to future resources (Buss, 1988b) Females were thought to compete for mates by displaying or enhancing physical cues of health and beauty along with cues suggesting sexual access and future fidelity, all fulfilling suggested male sexual preferences for these traits. It was also suggested that the frequency with which a tactic was used would be related to how effective it was; the less effective the tactic, the less it would be used.

The results of these studies supported the suggestion that intrasexual competition is not limited exclusively to men, but that women compete for mates as well (Buss,

1988b). Although men and women appear to look for different cues in a potential mate, it was suggested that there was a large degree of similarity between the sexes in what tactics were employed in mate attraction efforts. Things like being "kind" and "understanding" were used frequently and rated as among the most effective tactic in mate attraction regardless of sex.

There were differences found between males and females, with several key findings supporting an evolutionary perspective for human mate attraction. Males were more likely to use displays of physical resources such as cars, fancy dates, and displays of wealth (Buss, 1988b). Females were more likely to take steps to enhance their physical appearance, such as using make up or wearing attractive clothing.

When examining specific behaviors thought to be related to mate attraction, Buss (1988b) found mixed support for the theorized mate attraction tactics. When "acting provocative" was examined as a mate attraction behavior, it was found that males and females performed the behavior relatively equally. Use of this tactic was expected for female intrasexual competition, but not for males.

"Acting provocative" was reported to be effective for females in mate attraction, but was reported to be used infrequently. This is in direct contrast to the idea that they more effective the act, the more frequently it would be used. Buss (1988b) suggested that this may be due to the difference between long term and short term mating, with acting provocatively being more likely to attract a short term mate instead of the often preferred long term mate.

In the second of his four intersexual attraction studies, Buss (1988b) examined the self-reported mate attraction tactics used by newly married couples, women reported using the mate attraction tactics of wearing sexy clothes and acting coy to attract their mate more than men. This was in contrast to a sample of undergraduate students who reported no gender difference in frequency of usage for these tactics. Although Buss (1988b) does not address this difference in his paper, these results may suggest that individuals use differing mate attraction strategies depending on their desire for long-term vs. short-term mating. Given that the use of these tactics were judged to be very effective in mate attraction, it may be that women are more likely to use these tactics when they are unwilling to risk losing a high value potential mate or view the risk of abandonment or an aborted relationship as unlikely.

The idea of mate attraction strategies being aimed at the sexual selection criteria of the desired mate has been supported in multiple studies examining the frequency and efficacy of mate retention strategies (Bleske-Rechek & Buss, 2006; Buss & Schmitt, 1993; Fisher & Cox, 2011; Schmitt & Buss, 1996; Walters & Crawford, 1994). Buss' (1988b) findings regarding the sex differences in how individuals work to attract mates has also been largely supported, with men using displays of resources and potential resources and women using various appearance enhancement techniques to attract a mate (Fisher & Cox, 2011; Schmitt & Buss, 1996; Walters & Crawford, 1994).

Research regarding mate attraction has largely divided the range of mate attraction strategies into two domains, self-promotion or appearance enhancement and

competitor derogation (Bleske-Rechek & Buss 2006; Buss & Dedden, 1990; Schmitt & Buss, 1996; Vailancourt & Sharma, 2011). In addition to the self-promotion techniques found to be effective in mate attraction, competitor derogation or tactics designed to decrease competitors mate value, thereby increasing the relative mate value of individuals, have also been suggested as possible intrasexual competitive strategies. (Buss, 1988b; Buss & Dedden, 1990; Fisher & Cox, 2011; Schmitt & Buss, 1996). These tactics were also expected to focus on the cues and traits used evaluate individuals as a potential mate, namely reproductive value for women and resources and ability to gain future resources in men (Bleske-Rechek & Buss, 2006; Buss 1988b; Buss & Dedden, 1990; Buss & Schmitt, 1993; Schmitt & Buss, 1996; Vaillancourt & Sharma, 2011).

When studying competitor derogation, Buss and Dedden (1990) found that men were more likely than women to derogate a potential rival's social and financial standing. Women were more likely to derogate a competitor's sexual history, availability, and appearance. These preferences are consistent with predictions based in sexual selection criteria. The perceived effectiveness of these tactics was also largely consistent with predictions based on selection criteria with men reporting greater effectiveness in disparaging the resources and abilities of a rival and women derogating competitors appearance.

Both men and women reported engaging in derogating rival's sexual history, which was not predicted based on sexual selection theory (Buss & Dedden, 1990). This tactic was not reported to be effective when used by women, especially in the context of a

man looking for short term mating. This inefficacy may be due to the preference of men for sexual accessibility in a short term mate as opposed to the exclusive access desired in a long term mate. It was reported to be more effective for men, however, possibly due to the greater implied risk of mate defection and to associated cost to any potential offspring.

The unexpected findings in Buss (1988b) was that women used the effective tactic of acting provocatively relatively infrequently, and that male derogation of fidelity was more effective than women reported in Buss and Dedden (1990) suggested that there was another factor in the choosing of mate attraction strategies. Using Sexual Selection Theory and its descriptions of differences between long term and short term mating strategies (Buss & Schmitt, 1993), Schmitt and Buss (1996) examined the interaction between mate attraction tactics used and the type of relationship strategy being pursued. The perceived effectiveness of both self-promotion and competitor derogation techniques were assessed for each context by asking undergraduate students how effective they thought a list of strategies would be at attracting a mate.

Schmitt and Buss (1996) found that mate attraction tactics were indeed affected by the temporal context of the relationship. Individuals who were seeking a short term mate employed different attraction tactics than those seeking a long term mate. There were also sex differences in the reported effectiveness of specific tactics. For men attempting to attract a potential partner strategies that enhanced or presented cues to their ability and willingness to devote resources immediately were judged most effective in

short term mating, whereas attraction tactics that suggested the ability and willingness to devote future resources were judged most effective in long term mating Displays of dominance and status were judged to be most effective for men in attracting a short mate, whereas tactics that suggested commitment were most effective in long term mate seeking.

For women attempting to attract a short term mate, cues to sexual accessibility and physical attractiveness were reported to be effective in short term mate attraction, and cues of sexual exclusiveness in long term mate attraction (Schmitt & Buss, 1996). It was also found that derogating a competing women's sexual history, calling her "easy" was rated as less effective in short term mate seeking, since men seeking a short term mate value sexual accessibility. This supports the findings of Buss and Dedden (1990) that while common derogation of a competitors sexual history is likely not effective in manipulating a competitors mate value especially in short term mating.

Although there are significant sex differences in the tactics used to attract a mate there are several tactics are used by both genders (Bleske-Rechel & Buss, 2006; Schmitt & Buss, 1996). Displaying signs of kindness and understanding were judged to be effective for both men and women in the context of a long term mating strategy (Schmitt & Buss, 1996). Displaying physical attractiveness was effective in attracting short term mate, than a long term mate for both men and women. Physical attractiveness while thought by participants to be effective in mate attraction for both genders was reported to be more effective for women than men (Schmitt & Buss, 1996). This is likely a reflection

of the evolved preferences for attractiveness as a sign of health and high reproductive value.

Schmitt and Buss (1996) provide support for mate attraction tactics which vary based on sex differences and the type of relationship strategy being pursued. These differences are likely due to the various mate preferences of men and women. Individuals are likely to use tactics designed to illustrate how they best fulfill the mate requirements of a potential partner (Bleske-Rechek & Buss, 2006; Buss, 1988b; Schmitt & Buss, 1996; Walters & Crawford, 1994), the choice of mate attraction tactic is influenced by the mating strategy being pursued (Bleske-Rechek & Buss, 2006; Fisher & Cox, 2011; Schmitt & Buss, 1996).

Sexting and mate attraction. The research regarding sexting suggests that individuals choose to engage in sexting to be "flirty", "to initiate sex", "to be sexy", or to fulfill a partner's request (Bentosch et al. 2012; Drouin et al., 2013; Henderson & Morgan, 2011; Ploharz & Baird, 2012; Walker, et al., 2012). In casual sexual relationships, or those with less commitment, individuals reported sexting to fulfill a partners request more frequently than those in more committed relationships (Drouin et al., 2013; Henderson & Morgan, 2011; Walker et al., 2012). It may be that both men and women engage in sexting as a way of self-promotion, specifically advertising their sexual availability. It may also be that women do so looking to implement a long term mating strategy whereas men are likely to use sexting as a tool to short term mating. Sexting may

also provide individuals with a powerful new tool to use in appearance enhancement, especially in picture format.

The domain of mate attraction also provides insight into the nature of the risk associated with sexting by describing competitor derogation. Research has suggested that unwanted image dissemination and the resulting embarrassment and loss of social status is a major risk of sexting (Dir et al., 2013a). Similar to the suggested risk of mate devaluation as a result of short term mating strategies (Buss & Schmitt, 1993), it has been suggested that sexting may result in the loss of mate value and expose an individual to bullying.

Although disparaging a potential rivals' sexual history was found to be less effective than other tactics in short term mating, individuals still engage in the behavior (Fisher, Shaw, Worth, Smith & Reeve, 2010; Vaillincourt & Sharma, 2011). When confronted with an overtly "sexy peer", women overwhelmingly engage in social behaviors designed to minimize and exclude the individual. In fact, women engage in a variety of covert behaviors from rumor spreading to avoidance of "sexy competitors. (Vaillincourt & Sharma, 2011).

Vaillincourt and Sharma (2011) found that it was not the level of attractiveness of the peer, but whether she was provocatively dressed or not that determined the indirect aggression. That the women who were viewed as overly sexually available were targeted for indirect aggression by their peers suggests that overt sexuality may be viewed as threat to the relative mate value of other women (Vallincourt and Sharma, 2011). If

sexting does strongly signal sexual availability, then a shared picture or message could expose the sender, especially a female, to increased indirect aggression or derogation from peers. The risk of competitor derogation is expected to be less for males, given that males compete primarily using resources not sexual availability.

Mate retention. The successful and efficient use of psychological mechanisms to attract a mate is not enough to guarantee reproductive success. Even after an individual has attracted a mate, the possibility of infidelity, mate defection or a competitor enticing that mate away (mate poaching) remains (Buss, 1988a; Schmitt & Buss, 2001). Given that attracting a mate often involves a considerable investment of resources the guarding of that mate becomes a vital part of reproductive success (Buss, 1988a). The need to protect the investment made when attracting a mate resulted in a set of specialized evolved psychological mechanisms and behaviors designed to prevent mate poaching and defection (Buss, 1988a; Buss & Shackelford, 1997; Buss, Shackelford & McKibbin, 2008; Sela, Shackelford, Pham & Euler, 2015).

To better understand mate retention strategies in humans, David Buss (1988a) created and tested a taxonomic structure of specific mate retention behaviors thought to represent the range of possible strategies. This proposed taxonomy consisted of 19 separate tactics comprised of 104 separate acts individuals might employ to retain a mate. These tactics were then grouped into five categories: Direct Guarding, Intersexual Negative Inducements, Intrasexual Negative Inducements, Positive Inducements, and Public Signals of Possession. This taxonomic structure has been tested multiple times,

and has been used to produce measures of mate retention behaviors that have high levels of reliability and validity in testing (Buss, 1988a; Buss et al., 2008; Buss & Shackelford, 1997; Miguel & Buss, 2011).

Researchers later grouped Buss's original mate retention tactics into two larger domains, Cost-inflicting and Benefit-provisioning. The Cost-inflicting domain consists of the Direct Guarding, and both Intersexual, and Intrasexual Negative Inducements. Cost-inflicting behaviors are thought to facilitate mate retention by either making an individual's mate appear less attractive to competitors or lower the mates self- perceived mate value, making them less likely to defect (Miner, Starrat & Shackelford, 2009). The Benefit-provisioning domain consists of Positive Inducements and Public Signals of Possession (Miner et al., 2009) Benefit-provisioning tactics are used to lessen the risk of a mate's defection from the relationship through the increasing of their satisfaction within the relationship, or by raising one's own mate value making defection a less attractive option (Buss, 1988a; Miner et al., 2009).

Though men and women both appear to use mate retention tactics with similar frequency, the tactics they employ appear to differ (Buss, 1988a; Buss & Shackelford, 1997; Buss et al., 2008; Kaighobadi, Shackelford & Weekes-Shackelford, 2012). The variation between men and women in mate attraction strategies used is thought to be a response to differing sexual selection criteria (Buss, 1988a; Buss & Shackelford, 1997). Similar to mate attraction, effective mate retention strategies are likely to be those that

meet the specific reproductive needs of their mate (Buss, 1988a; Buss & Shackelford, 1997; Sela, Shackelford, Pham, & Euler, 2015).

Buss (1988a) examined which of the mate retention tactics would be used most frequently by each sex. It was suggested that women would be more likely than men to use benefit-provisioning in the form of providing reproductive opportunities to their mate, while also attempting to appear as reproductively valuable as possible through appearance modification. Men were suggested to be more likely to attempt to retain a mate through the display of resources and the provision of those physical resources upon their mate. These strategies were suggested as the most likely to be used since they would respectively fulfill the selection criteria of the opposite sex.

Buss (1988a) did find partial support for the hypothesis of sex differences in the preferred mate retention strategy. Males were more likely to use displays of resources and the giving of those resources than women were. Women were more likely to report engaging in appearance enhancement, and were more likely to use the threat or suggested threat of infidelity than men were partially supporting the hypothesis of using sexual availability as a mate retention strategy. There were also significant similarities in the mate retention tactics used, both men and women reporting frequent use of public displays of affection or possession and "being nice".

Buss (1988a) hypothesis of greater female sexual inducements in mate retention was only partially supported. Instead it was found that males were significantly more likely to use sexual inducements, or offering sex, in attempting to retain a mate. In short,

women are more likely to use the threat of defection or infidelity and men are more likely to offer sex as a perceived benefit. Though there were sex differences in the mate retention tactics used, there were many similarities between them, suggesting that there is a high degree of flexibility in the use of these tactics. This flexibility may have developed in response to the large number of contextual factors in relationship.

A defining trait of all evolved psychological mechanisms is that they are sensitive to the variations in context that require their use (Buss, 1995; Cosmides & Tooby, 1992). Several different contextual variables have been suggested to have an effect on the use of mate retention strategies (Buss 1988a; Buss & Shackelford, 1997). The seriousness of the relationship (Buss 1988a), the mate value of the mate, the degree of discrepancy in the mate value of the relationship partners and the perceived probability of infidelity have all been examined as contextual factors in the use of mate retention strategies (Buss, 1988a; Buss & Shackelford, 1997; Miguel & Buss, 2011).

Relationship seriousness, measured as a combination of the length of the current relationship, the predicted length of the relationship, and the participant reported closeness was positively associated with most retention strategies (Buss, 1988a). Of the nine mate retention categories, only derogation of a mate was negatively associated with relationship seriousness, whereas sexual inducements and appearance enhancement was not significantly associated with the relationship seriousness construct (Buss, 1988a).

Buss and Shackelford (1997) hypothesized that there would be a relationship between mate value and mate retention behaviors. Their results suggested that the

younger and more physically attractive a women is, the more likely their husband is to employ mate retention tactics. Women were more likely to employ mate retention behaviors as their husband's income increased or if they viewed their husband as actively trying to "get ahead". The strategies participants reported using were consistent with previously reported findings (Buss 1988a) with men using resource displays and signals of possession and women reporting using appearance enhancement and punishment of infidelity threats. It was also suggested that there was a positive relationship between the use of appearance enhancement for men when attempting to retain an attractive wife.

The difference in the perceived mate value of relationship partners was thought to affect the performance of mate retention behaviors (Buss & Shackelford, 1997). Buss and Shackelford (1997) suggested that as the differential in age and perceived attractiveness between husband and wife increased; men were more likely to engage in mate retention behaviors. This relationship was not supported for women, instead women who are older than their husband engage in less mate retention behaviors.

The threat of possible infidelity within the marriage was suggested to affect the frequency of mate retention behaviors (Buss & Shackelford, 1997). A positive relationship between the perceived likelihood of infidelity and frequency of mate retention behaviors was found for men only (Buss & Shackelford, 1997). In contrast women's efforts at mate retention were not related to the perceived threat of infidelity (Buss & Shackelford, 1997). Supporting Buss's (1988a) findings regarding the strategies employed, men were more likely to use displays of resources and women were more

likely to use appearance enhancement as mate retention strategies (Buss & Shackelford, 1997).

Similar to mate attraction strategies, mate retention efforts are aimed at fulfilling the sexual selection criteria of their partner (Buss, 1988a; Buss & Shackelford, 1997, Shackelford, Goetz & Buss, 2005). Although men and women both engage in mate retention behaviors with relatively equal frequency, how they attempt to retain a mate differs and is context dependent. Males are more likely than females to use displays of resources as a mate retention strategy, thereby fulfilling female mate selection criteria. Females are more likely to engage in appearance enhancement strategies to retain a mate, in efforts to better meet the male mate selection criteria of a young, healthy looking mate (Buss, 1988a; Buss & Shackelford, 1997). These findings regarding the preferred mate retention strategies are consistent with the theorized sexual selection criteria men and women are thought to favor in both long term and short term mating strategies (Buss & Schmitt, 1993).

Sexting and mate retention. It has been suggested that sexting is primarily a dyadic behavior occurring within romantic relationships. Although unintended message dissemination does occur, the majority of messages appear to be sent to romantic partners. That sexting occurs primarily in this context suggests that it may be a novel form of mate retention behavior.

Sexting might be used as benefit-provisioning tactic, as a way to signal sexual availability, or as an appearance enhancement tactic. The relatively equal sexting

participation rates between men and women are consistent with the findings that men and women both use sexual access or propositioning as mate retention tool. The view of sexting as a mate retention strategy might also offer insight into the risky nature of sexting since forwarding and sharing of sext messages might be viewed as competitor derogation.

Viewing sexting as a mate attraction or mate retention behavior may explain the purpose or goal of the behavior, but it fails to provide a probable explanation for why individuals choose to sext despite the high levels of actual and perceived risk when other options are available. To understand why individuals engage in risky sexting behaviors it may be that a different aspect of human behavior needs to be examined, specifically the evolved mechanisms that related to decision making under risk, or making decisions when there is a high degree of variability in expected outcomes is involved.

Decision making under risk. The first theories of human decision making thought that individuals were guided in their decision making by the desire to maximize the expected returns or utility (Barrett & Fiddick, 1999; Manktelow, 2012). Known as Expected Utility (EU) theory, this assumption guided research into both human and animal decision making (Barrett & Fiddick, 1999; Rode & Wang, 2000). In this theory, risky behavior was viewed as choosing course of action that was less likely to result in a maximized desired outcome than other available choices (Manktelow, 2012).

How likely or prone to choosing risky options individuals are has been known as a "risk attitude" (Weber, Blais & Betz, 2002). Within the EU construct an individual's

risk attitude was thought to describe a generalized and stable trait, present in all decision making (Kruger, Wang & Wilke, 2007; Manktelow, 2012; Weber et al, 2002). Individuals were thought to be either risk seeking or risk adverse meaning they were consistently more or less likely to take risks in decision making (Weber et al., 2002; Manktelow, 2012).

Observations and testing of decision making using EU theory resulted in the discovery of a wealth of inconsistencies, biases, and deficits in human decision making (Blais & Weber, 2006; Kruger et al. 2007; Manketlow, 2012; Rode & Wang, 2000; Weber, 2002). Researchers were also unable to make accurate predictions about human decision making using this theory, with individuals consistently making decisions that were unlikely to result in the greatest chance of beneficial or desired outcome (Manketlow, 2012; Rode & Wang, 2000). Two well known "errors" in decision making according to the Expected Utility model are ambiguity avoidance and the framing effect (Manktelow, 2012; Rode & Wang, 2000).

Ambiguity avoidance refers to the observed decision making behavior where individuals avoid options where there is uncertainty about the probability it will result in a desired outcome. The framing effect refers to the ability of researchers to manipulate participant's choices by how the choices were worded (Manktelow, 2012; Rode, Cosmides, Hell & Tooby, 1999; Rode & Wang, 2000). Observed inconsistencies in decision making and others have been replicated numerous times but are not explainable by EU theory (Manktelow, 2012; Rode & Wang, 2000; Weber et al, 2002).

The inconsistencies in decision making led psychologists to view human decision making as being guided by attempts to maximize utility but being plagued by reliably observable deficits (Kruger et al. 2007; Manktelow, 2012; Rode & Wang, 2000). The framework of Expected Utility theory appeared to explain the process of how individuals consciously thought about decision making, but failed to accurately predict the decisions they would actually make. This discrepancy between the theory and application of the EU model was accredited to deficiencies in human abilities to accurately assess probability. In short, the model and theory was good and correct, humans just lacked the cognitive ability to accurately assess the probabilities of a desired associated with each available choice.

Evolutionary domain specific decision making. These inconsistencies were also observed in animal decision making, specifically in the foraging behavior of animals (Rode et al, 1999). According to EU theory, animals should stick to the "sure thing" option and avoid the riskier options since those would result in a slim chance of survival. It was observed that animals alternated between certain foraging options and risky ones as they searched for food. These observations were unexplainable using the existing EU model, and would even be maladaptive within the EU model. In seeking an explanation of animal behavior that was adaptive, biologists developed one that allowed for adaptive decision making that was adaptive.

To better predict and explain adaptive decision making while experiencing uncertainty a new theory of how the evolved mechanism of foraging was proposed. Risk

sensitive foraging theory (RSFT) was proposed as a way of understanding why animals would choose a risky option over a sure one (Rode et al, 1999). RSFT has as its core assumption that animals are trying to maximize the possibility of reaching a goal, not just an outcome. This distinction means that animals are not seeking just some food, they are seeking enough food to survive. This is as key distinction because if the sure thing only provides 75% of the needed food and the risky option has even a small chance of providing 100% of the food, than the risky choice should be chosen. In that case the risky choice is adaptive because it provides a chance for survival while the sure thing is maladaptive.

RSFT was applied to human decision making in an effort to explain the ambiguity avoidance seen in previous studies of human decision making utilizing EU theory. Rode et al., (1999) used RSFT as a theoretical basis to study ambiguity avoidance and make predictions about when individuals would avoid options with ambiguous probabilities and when they would chose them. Rode et al., (1999) suggested the individuals were not avoiding ambiguity but that they were sensitive to the high level of variance in "risky" choices. This and subsequent research suggested that humans decision instead of being full of flaws was adaptive and sensitive to a variety of domain specific and contextual factors (Blais & Weber, 2006; Kruger, 2007; Rode & Wang, 2000; Weber et al., 2002; Wilke, Sherman, Curdt, Mondal, Fitzgerald & Kruger, 2014; Weber et al., 2002).

A domain specific view of risk attitudes, or likelihood of taking a risk, was used to create a measure assessing how individuals viewed risks within specific domains

(Blais & Weber, 2006; Weber et al., 2002). The Domain Specific Risk Taking scale (DOSPERT) described 5 domains within which risk taking was thought to vary; Financial, Health/Safety, Recreational, Ethical and Social, with Financial risk further divided into Investment and Gambling sub-domains (Weber et al., 2002). This measure and its subsequent shorter version have been translated into multiple languages, used on various age groups with the results suggesting the DOSPERT is methodological sound and produces reliable results (Blais & Weber, 2006).

The success of the DOSPERT and its related measures suggested that risk attitude may best be viewed as domain specific instead of a general personality trait (Blais & Weber, 2006; Kruger et al., 2007). Though the DOSPERT had success in measuring risk and was better able to predicted risk taking behaviors it lacked a clear a priori theoretical basis for defining the domain in which risk attitudes varied (Kruger et al., 2007; Wilke et al., 2014). Evolutionary psychology provided a theoretical basis for defining risk taking domains, namely looking for recurring evolutionary problems and their modern analogs (Kruger et al., 2007; Rode & Wang, 2000).

Using an evolutionary perspective, risk can be thought of as the variations in payoffs within specific domains, or the differences in the chances of successfully resolving an evolutionary problem using a specific tactic (Wilke et al., 2014). RSFT suggests that seemingly risky decisions are adaptive in that they provide the greatest chance for meeting a survival requirement (Rode et al., 1999). If humans utilize evolved mechanisms operating based on the principles of RSFT then when faced with a decision

involving a high degree of variability a “irrational” or “risky” decision may be the most adaptive choice (Rode & Wang, 2000; Wilke et al., 2014).

In creating a measure of risk taking that was based on evolutionary principles five broad domains of adaptive problems were originally suggested (Kruger et al., 2007). These domains were thought to be within group and between group competition, mating and resource allocation for mate attraction, fertility and environmental risks (Kruger et al., 2007). This five factor model of domain specific, $\chi^2(80) = 174.17$, GFI = .95, RSEMA = 0.050, risk taking was shown to be a much better fit of the data than a one factor model of general risk taking, $\Delta\chi^2(10) = 723.17$, $p < .001$ (Kruger et al., 2007). This initial study provided support for the idea that risk taking is best viewed in the context of the adaptive problem it evolved to solve (Kruger et al., 2007).

Building on these initial results, Wilke et al., (2014) developed a measure of risk taking that more clearly defined the specific domains in which individuals varied in their risk attitudes. Using a model of domain specific risk taking that consists of ten domains instead of five resulted in greater sensitivity while still being reliable and demonstrating distinct domains. In a series of studies Wilke et al., (2014) replicated the finding that the evolutionary domains selected and the measure created using them was valid and reliable. These results also provided further support for a domain specific view of risk.

Wilke et al., (2014) suggested two categories of domains of risk taking Survival and Reproductive. In relation to sexting behavior those domains dealing with reproductive risk taking are likely to be of the most interest. Based on the adaptive

problems they were suggested to solve, differences in behaviors in the domains of mate attraction, mate retention, and kinship may play a role in who chooses to sext and who does not (Kruger et al., 2007; Rode & Wang, 2000; Wilke et al., 2014).

Risk taking summary. Until recently humans were thought to make decisions with the objective of maximizing utility or the expected outcome (Manktelow, 2012; Rode & Wang, 2000). This view resulted in human decision making being viewed as full of errors and inconsistencies (Rode & Wang, 2000; Wilke, 2000). When these same inconsistencies were observed in the animal kingdom a new view of decision making was suggested (Rode et al., 1999). RSFT suggested that animals were sensitive to a multitude of factors and that instead of trying to maximize utility they were trying to maximize the chance of meeting their needs (Rode et al., 1999).

Recent studies regarding how humans make decisions when faced with options that vary in their expected payoffs has suggested that a domain specific approach to understanding risk may be best (Blais & Weber, 2006; Kruger et al., 2007; Rode & Wang, 2000; Weber et al., 2002; Wilke, 2014). This domain specific approach seems to be best facilitated through an evolutionary viewpoint (Kruger, 2007). The idea of specificity inherent to the evolutionary perspective provides a framework for differentiating the domains in which risk is assessed (Kruger et al., 2007; Rode & Wang, 2000; Wilke, 2014).

Risk taking and sexting behavior. Individuals who engage in sexting behavior appear to do so despite the perception of risk inherent to the behavior (Dir & Cyder,

2014). Although individuals who engage in sexting are more likely to view the behavior as having a positive outcome, they also viewed it as exposing them to possible negative outcomes (Dir et. al., 2013a). This variance in the outcome of the behavior makes it the definition of a risky behavior within the evolutionary perspective.

Give the relationship based nature of sexting and the reasons individuals have reported for engaging in the behavior it seems likely that sexting falls in the reproductive category of behaviors (Drouin et al., 2013; Henderson & Morgan, 2011; Ploharz & Baird, 2012, Wilke et al., 2014). Research using the Evolutionary Domain-Specific Risk scale suggested that men increase their risk activities in specific domains to display their potential suitability to a mate, and that women could be more risk-seeking than men in the family relationship domains (Wilke et al., 2014) This may mean that men who are more risk-seeking in mate attraction and mate retention domains would be more likely to engage in sexting, and women who are more risk-seeking in the mate retention and kinship domains would be more likely to engage in sexting.

Purpose

The purpose of this study was to explore the possible relationship between sexting and specific evolutionary domains of human behavior. Specifically this study is designed to more fully describe the possible adaptive nature of sexting, by examining its potential use as a mating strategy for both sexes, and as both a mate attraction and mate retention behavior. The current study will also use evolutionary principles to more fully describe

individual differences in domain specific risk tolerance and expected outcomes among those who chose to engage in sexting and those who do not.

Hypotheses

Hypothesis One*:* Sexting is a flexible behavior that is utilized to fulfill both long term and short term mating strategy needs as hypothesized by Buss and Schmitt (1993).

Hypothesis one A. It was hypothesized that men who reported utilizing higher levels of short-term mating strategies (as measured by the Sociosexual Orientation Inventory) would also report a higher frequency of sending and receiving sexts in all formats (as measured by the Sexting Inventory). Buss and Schmitt (1993) suggested that men would choose to pursue a variety of sexual partners chosen based on biological indicators of reproductive health (attractiveness). It may be that sexting provides a convenient way to search for and assess the reproductive health of potential short term mates, especially in picture format.

Hypothesis one B. It was hypothesized that women who reported utilizing higher levels of long-term mating strategies (as measured by the Sociosexual Orientation Inventory) would also report a higher frequency of sending and receiving sexts in all formats (as measured by the Sexting Inventory). Sexting may be being used as a lower risk method than actual sexual intercourse (no risk of pregnancy or sexually transmitted disease) of fulfilling the short-term needs of a partner while assessing their long-term mate potential. The view of sexting as a transitional strategy, working to change a short term mating to a long term mating, behavior among women is further supported by the

findings that women report using sexting as a way to fulfill a partners expectations or request or because of a partners pressure (Drouin et al., 2013; Henderson & Morgan, 2011; Walker et al., 2012), and to be flirty or initiate a relationship (Drouin et al., 2013; Ploharz & Baird, 2012).

Hypothesis Two: An individual's domain specific risk tolerance would positively relate to their engagement in sexting behaviors.

Hypothesis two A. It was hypothesized that both men and women would display a positive relationship between risk tolerance in the domains of both mate attraction, and mate retention (as measured by the Evolutionary Domain-Specific Risk Scale), and the engagement in sexting behaviors across all formats (measured by the Sexting Inventory). Sexting appears to be primarily a sexual behavior (Drouin et al., 2013; Henderson & Morgan, 2011; Ploharz & Baird, 2012; Walker et al., 2012) with some inherent risks (Dir et al., 2013b; Dir & Cyders, 2014). It may be that individuals who are more risk tolerant in the domain of sexual decision making are more likely to sext, then those who are more sensitive to risks in these domains.

Hypothesis two B. A statistically significant relationship between the other domains of risk taking (as measured by the Domain-Specific Risk Scale) and sexting behavior across all formats (measured by the sexting inventory) was not expected to be found for either men or women. Since sexting is thought to be primarily a sexual behavior (Drouin et al., 2013; Henderson & Morgan, 2011; Ploharz & Baird, 2012; Walker et al., 2012), it was expected to only be related to the sexual domain of risk

assessment consistent with the evolutionary principle of domains specificity (Wilke et al., 2014).

Hypothesis two C. It was hypothesized that men who have ever engaged in sexting (as measured by overall participation) would have less risk tolerance in the specific domain of mate attraction (as measured by the Evolutionary Domain-Specific Risk Scale) than women who engaged in sexting. Mate attraction is an important part of any mating strategy but is even more important when using a short term strategy, which men prefer, where an individual is seeking as many mating opportunities as possible (Buss & Schmitt, 1993). Since men are expected to invest more energy into attracting potential mates, and feel more evolutionary pressure to successfully do so, it was expected that men would be more willing to engage in sexting, while possessing less risk tolerance in the specific domain of mate attraction than women who sext.

Hypothesis two D. It was hypothesized that women who engaged in sexting (measured by overall sexting participation rates) would have less risk tolerance in the specific domain of mate retention (measured by the Evolutionary Domain-Specific Risk Scale) than men who engaged in sexting (measured by the Sexting Inventory). Sexual Strategies Theory suggests that individuals will tailor their mating strategies to meet the needs, or likes of the opposite sex (Buss & Schmitt, 1993). According to evolutionary theory men value sexual access in a partner, and women working to retain a mate should attempt to maximize either the real or perceived access they are able to provide to reproductive resources (Buss & Schmitt, 1993). Women thought to prefer a long term

mating strategy, focused on mate retention, were expected to engage in sexting even when they are more risk adverse in the domain of mate retention than men who engage in sexting.

Hypothesis Three*:* Individuals' expectancies regarding sexting would relate to their engagement in sexting behaviors.

Hypothesis three A. It was hypothesized that individuals who had higher positive expectancies (as measured by the Sexpectancies measure) regarding sexting would engage sexting behavior more frequently (as measured by Sexting Inventory) regardless of their sex. It was also hypothesized that individuals who had higher negative expectancies (as measured by the Sexpectancies measure) regarding sexting would engage in sexting more frequently (as measured by Sexting Inventory) regardless of their sex. The Sexpectancies measure has only been validated in a single study so further validation of the measure is needed to provide support to the results of previous studies. (Dir et al., 2013a).

Hypothesis three B. It was hypothesized that there would be a statistically significant interaction between positive sexting expectancies (as measured by the Sexpectancies measure), domain specific risk tolerance (as measured by the Evolutionary Domain-Specific Risk scale) and sexting behaviors (as measured by overall participation). As the level of positive expectancies regarding sexting increases the mate attraction and mate retention domain specific risk tolerance of those who engage in sexting was predicted to decrease. Dir et al, (2013a) suggested that individual's positive

expectations regarding sexting positively related to their participation in the behavior. This increased willingness to participate in sexting based on the expected outcomes may lessen the perceived amount of risk associated with sexting behavior, or make the behavior itself seem less risky. This lowered perception of risk may allow those with less domain specific risk tolerance to engage in sexting.

Hypothesis three C. It was hypothesized that there would also be a significant interaction between negative expectancies regarding sexting (as measured by the Sexpectancies measure), domain specific risk tolerance (as measured by the Evolutionary Domain-Specific Risk scale) and the sexting behaviors of those who sext. It was thought that as the level of negative expectancies regarding the outcome of sexting increases the amount of domain specific risk tolerance of those who engage in sexting will also increase. If individuals perceived a greater likelihood of negative outcomes from sexting behavior, then they are also likely to view the behavior as more risky, and would need to have a higher degree of domain specific risk tolerance to sext.

Method

Participants

Participants 18 and older were recruited from undergraduate psychology classes at Fort Hays State University. Participants were recruited through announcements made in class by the instructor directing them to a link posted in Blackboard. The survey was available online through the service Survey Monkey. There were a total of 218 participants obtained for this sample. Ten participants were excluded due to incomplete responses and one was removed as an outlier. Participant demographics are discussed further in the results section.

Measures

Demographic collection instrument. Participants completed a questionnaire that contained questions regarding basic identifying data such as age, ethnicity, sex, relationship status, and their current year in school. Participants were asked to select which Ethnicity they most identify with, ("American Indian/Alaska Native", "Asian, Black or African American", "Hispanic/Latino", "Pacific Islander" or "White") or to choose the "other" option with an open ended response. These questions are included in Appendix B.

Sexting Behaviors Inventory. Based on previous research regarding sexting, individuals were asked to report their participation in a variety of sexting behaviors within the context of past year. Individuals asked about their lifetime participation in

sexting behaviors. Similar to previous studies and using the recommendation of Klettke et al. (2014), participants were asked about their participation in five distinct sexting behaviors in two separate formats. Participants' lifetime and overall participation in sexting will be determined by calculating the average of their responses (Dir et al., 2013; Drouin et al., 2013; Klettke et al., 2014; Wiesskirch & Delevi, 2011). This approach is consistent with recommendations made as a result of the most recent research regarding sexting behaviors. This approach will also address a methodological weakness resulting from an overly broad and unclear definition of sexting (Klettke et al., 2014).

The Sexting Behaviors Inventory (SBI) consists of 10 researcher designed questions created specifically for this study. Participants were asked to describe how frequently they participate in these specific sexting behaviors. Participants were asked to report the frequency with which they both send and receive a variety of sext messages using an 8 point Likert scale ranging from never(1) to daily(8). This inventory is included in Appendix B.

Sexpectancy Measure. The sexpectancy measure was adapted from a measure created by Dir et al. (2013a) to measure individuals' expectations about the possible outcomes of sexting behavior. Participants are asked to rate 49 statements regarding possible outcomes of sexting behaviors using a 1(not true at all) to 4 (extremely true). Participants were given instructions regarding the definition of sexting and the scale to use as they reported their sexting behavior. (see Appendix C). These items were randomized when they were presented to participants.

The measure consists of 4 subscales; positive and negative expectancies regarding sending sexts, and positive and negative expectancies regarding receiving sexts (Dir et al., 2013a). The "sending positive subscale" consists of 18 items describing the fun or flirtatious nature of sexting. It also contains items describing physical arousal and increasing the likelihood of having sex. The "sending negative subscale" consists of 10 items describing negative emotions or views of self that might result from sexting. The "receiving positive subscale" consists of 10 items describing positive emotional outcomes and increased attraction and arousal to a partner. The "receiving negative subscale" contains 11 items describing negative emotional results such as feeling "guilty", "dirty", "embarrassed". All four of these scales showed good internal consistency, $\alpha = 0.89$ to .93.

Individuals were asked to rate how much they agree with 51 statements regarding possible outcomes of sexting using a 4 point likert scale ranging from "Strongly disagree" to "Strongly agree". Participant's responses were totaled and then averaged within each subscale to describe individual expectations regarding sexting. This measure will be used in the current study to measure participant's expectancies regarding their sexting behaviors. This measure was used with written permission from the author.

Sociosexuality Orientation Inventory. The Sociosexual Orientation Inventory (SOI) was developed to measure individual willingness to engage in uncommitted sexual relations (Simpson & Gangestad, 1991; see Appendix D). Individuals' who tend to engage in sex with more than one partner at a time, are quicker to engage in sex in their relationships, and have relationships characterized by less commitment, investment, and

dependency were referred to as having an “unrestricted sociosexual orientation.” These characteristics were similar to the short-term mating strategy described by Buss and Schmitt (1993).

Individuals’ who tend to be slower to engage in sex in relationships, are more monogamous, and have relationships characterized by higher levels of commitment, investment and dependency are referred to as having a “restricted sociosexual orientation” (Simpson & Gangestad, 1991). These characteristics are similar to the long-term mating strategy by Buss and Schmitt (1993). It is thought that the large degree of similarity between the long-term and short-term strategies described by Buss and Schmitt and the strategies detailed in the SOI, make this measure a good way to assess the mating strategy being used by individuals.

The SOI was created to measure the bipolar construct of sociosexuality, or short-term vs. long-term mating (Simpson and Gangestad, 1991). The inventory consists of seven questions that ask individuals about their sexual history and how they foresee their future sexual activity. These questions are a mixture of open ended response numerical responses, and likert scaled items (See Appendix D). The measure was shown to have good internal consistency ($\alpha = .73$). This measure will be used to assess participant’s current mating strategy.

Individual items in the inventory are weighted and then used to create a composite score. This creates a continuous variable with restricted (long-term) orientation at the low end of the scale and unrestricted (short-term) at the high end. An participants score on

this measure indicates what type of mating strategies they report using and are likely to continue to use. In previous studies scores ranged from 10-216 for men and 10-172 for women, with the means of 68.51 for men and 38.90 for women. By using this simple weighted formula, "SOI= 5x(Item 1) + 1x(Item 2)+ 5x(Item 3) + 4x(Item 4) + 2x(aggregate of 5-7). Item seven should be reverse keyed prior to aggregation." results in scores that approximate those obtained when transforming responses to z scores and aggregating them (Simpson & Gangestad, 1991).

Evolutionary Domain-Specific Risk Scale. The Evolutionary Domain-Specific Risk (EDSR) scale was created to assess risk taking propensity in a domain specific way (Wilke et al., 2014; see Appendix E). The measure was designed to more accurately assess how tolerant individuals are of risk when making decisions that involve some degree of uncertainty. Two broad categories (Survival and Reproduction) and 10 specific domains were suggested. The survival category consists of the domains: Between-Group Competition, Within-Group Competition, Status/Power, Environmental Exploration, Food Selection, Food Acquisition, were suggested as adaptive domains. The reproduction category consists of: Parent-Offspring Conflict, Kinship, Mate Attraction, and Mate Retention.

From the original 137 items created to describe adaptive problems faced by individuals today 30 were retained to create the measure, resulting in 3 items per domain measured (Wilke et al., 2014). This low number of items per domain likely contributed to the moderate internal reliability scores of the individual domains (α= .52 to .68). The

correlation between domains was generally low, with only four of the 45 inter-domain items showing a moderate relationship, with the remainder demonstrating a weak, too no relationship. These results support the idea that risk attitudes do not generalize across domains, and that risk tolerance is a domain specific construct.

The EDSR asks participants to use a 1 (Extremely Unlikely) to 7 (Extremely Likely) point likert scale to answer how likely they would be to "engage in the described behavior or activity if you were to find yourself in that situation". The response for each domain (3 questions) are aggregated and used to form the domain specific risk tolerance score. The higher an individuals' score the more risk tolerant they are thought to be in that domain (Wilke et al., 2014). Average scores in previous studies have varied for each domain, but ranged from 1.45 (power/status risks)- 6.00 (kinship risks) for women and 2.00 (power/status risks) – 5.72 (kinship risks) for men. Standard deviations for the all the domains measured by Wilke et al., (2014) ranged from .74, female status and power risk taking, and 1.56, female mate attraction.

This measure was used to assess participants' tolerance of risk in specific evolutionary based domains of behavior thought to relate to sexting behavior. An analysis of the relationship between sexting and all domains of risk attitude will be performed to confirm the domain specificity of sexting behaviors. This measure is being used with written permission from Dr. Wilke.

Results

A total of 218 individuals participated in this study. Participants were recruited through introductory psychology classes at Fort Hays State University and asked to complete an online survey. Ten participants' responses were excluded from the study due to incomplete data sets and one individual's responses were excluded as outliers due to their responses being over three standard deviations from the norm on multiple questions regarding sexual behaviors. This resulted in a total sample size of $n = 207$. Participants were 18 to 32 years old ($M = 19.73$, $SD = 1.93$) and predominately White (77.3%) and female (68.1%). The majority of participants reported that they were not currently in a romantic relationship (48.8%), though a substantial minority reported being in either a dating relationship (22.7%) or a committed relationship (26.6%). A large majority of participants reported engaging in some sexting behavior (85%).

Sexting Behaviors Inventory

The researcher constructed Sexting Behaviors Inventory (Appendix B) consists of 10 questions assessing individual sexting behaviors and the frequency with which participants engage in those behaviors. For several analyses in this study individuals were spilt into two groups, those who had engaged in sexting (sexters) and those who had not (non-sexters). If individuals endorsed sexting behaviors on any of the items they were included in the sexters group.

A large majority of participants in this study reported having previously engaging in sexting behaviors. Overall 85% of participants reported that they had either sent or received a sext message, with male participants being less likely to report ever engaging

in sexting behaviors (78.8%) than female (87.9%) participants. There were differences reported in how males and females participated in sexting behaviors as well, these differences in the sending and receiving sext messages are detailed in Tables 1 and 2.

Table 1
Gender Differences in Sending of Sext Messages

	Male (*n*=66)		Female (*n*= 141)	
Sexting Behavior	*N*	% of participants	*n*	% of participants
Text requesting or describing sex acts	43	65.2	84	59.6
Picture of self in revealing clothing	15	37.9	72	51.1
Picture of self in underwear /lingerie	27	40.9	69	48.9
Picture of self partially naked	35	53.0	60	42.6
Picture of self fully nude	27	40.9	36	25.5

Table 2
Gender Differences in Receiving of Sext Messages

	Male (*n*=66)		Female (*n*=141)	
Sexting Behavior	*N*	% of participants	*n*	% of participants
Text requesting or describing sex acts	46	69.7	107	75.9
Picture of self in revealing clothing	45	68.2	68	51.8
Picture of self in underwear /lingerie	45	68.2	60	42.6
Picture of self partially naked	44	66.7	75	53.2
Picture of self fully nude	37	56.1	52	36.9

The frequency with which individuals engaged in the measured sexting behaviors also varied by gender within this sample. Participants were asked to report how frequently they engaged in a particular sexting behavior using a 9 point likert scale ranging from "never" to "daily". The averaged frequency for the total sample is reported in Table 3.

Table 3
Gender Differences in Frequency of Sexting

	Male (*n*=66)	Female (*n*=141)
Sexting Behavior	*M* (*SD*)	*M* (*SD*)
Sending		
Sending a text requesting sex	3.36 (2.23)	2.93 (2.12)
Sending picture in revealing clothes	2.41 (2.18)	2.42 (1.84)
Sending picture in underwear	2.26 (1.97)	2.28 (1.76)
Sending picture while partially clothed	2.62 (2.05)	2.16 (1.69)
Sending picture while nude	2.27 (1.93)	1.67 (1.44)
Receiving		
Receiving a text requesting sex	3.74 (2.48)	3.50 (2.21)
Receiving picture of someone in revealing clothes	3.76 (2.48)	2.45 (1.95)
Receiving picture of someone in underwear	3.77 (2.58)	2.28 (1.89)
Receiving picture while partially clothed	3.65 (2.53)	2.55 (1.95)
Receiving picture of someone nude	3.12 (2.41)	2.04 (1.74)

Note. A score of 2 represents participating in sexting once a year, a score of 3 is representative of participating in sexting once every 6 months and a score of 4 is participating in sexting once every 3 months

Sexting Expectancy Measure

The Sexpectancy measure was adapted from the Sexting Expectancy Measure created by Dir et. al (2013a). This 49 item measure consists of 4 subscales measuring both the positive and negative expectancies regarding the sending and receiving of sext messages. Participants responded to questions using a 4 point likert scale. Participant responses to individual items are aggregated and then averaged to provide a score

reflecting their expectations regarding sexting. Higher scores indicate higher positive or negative expectations regarding the outcomes of sexting behavior. The mean sub-scale scores of participants' responses to this measure are reported in Table 4.

Table 4
Participants Mean Scores on the Sexpectancies Measure

	Male (*n*=66)	Female (*n*=141)
Sexpectancy Subscale	*M* (SD)	*M* (SD)
Positive Sending Expectancies	2.61 (.69)	2.26 (.63)
Positive Receiving Expectancies	2.73 (.72)	2.33 (.61)
Negative Sending Expectancies	2.15 (.59)	2.46 (.68)
Negative Receiving Expectancies	1.97 (.48)	2.41 (.66)

The complete Sexpectancies measure displayed high internal reliability for this administration with a Cronbach Alpha ranging from α= .83 - .93 (*n*=207).

Sociosexual Orientation Inventory

The Sociosexual Orientation Inventory (SOI) consists of 7 items related to individuals' attitudes towards sexual relationships (Simpson, & Gangestad, 1991). The higher an individuals' score the more likely they are to endorse an unrestricted sociosexual orientation, or a short term mating strategy. Lower scores indicate a restricted sociosexual orientation or a preference for a long term mating strategy. For this study the SOI displayed an internal reliability of α= .58. Participants scores ranged from 9 to 268 with a mean score of 46.08 (*SD*=36.29). The average score for male participants (*M*=65.23, *SD*= 43.43) with a range of 10 to 268, was higher than the average score for female participants (*M*= 36.92, *SD*=28.20) with a range of 9-136. The differences in

scores based on gender are consistent with the theoretical understanding of sociosexual orientation and evolutionary psychology regarding sex differences and mating strategy.

Evolutionary Domain Specific Risk Assessment

The Evolutionary Domain Specific Risk (EDSR) scale includes 30 items separated into 10 subscales designed to assess risk tolerance in specific domains of behavior (Wilke et. al, 2014) . This measure displayed good overall internal consistency with a Cronbach's alpha α= .84 when examining all 10 subscales together. The individual subscales of the EDSR displayed lower levels of internal consistency as shown by Table 5 and are similar to those reported by Wilke et al. (2014) with a range of α = .40 - .73.

Table 5
Reliability scores and Means for Evolutionary Domain Specific Risk Subscales

	A	*M*
Between Groups Competition	0.55	3.43
Within Groups Competition	0.66	3.55
Status/Power	0.73	5.80
Environmental Exploration	0.61	5.10
Food Selection	0.53	2.45
Food Acquisition	0.40	4.17
Parent-Offspring	0.68	2.92
Kinship	0.54	3.41
Mate Attraction	0.61	4.72
Mate Retention	0.60	4.93

Note. Lower scores indicate higher levels of risk tolerance

Hypothesis One A. It was hypothesized that men who endorsed higher levels of short term mating strategies (as measured by the Sociosexual Orientation Inventory) would report higher frequencies of sending and receiving sext messages in text and

picture format (as measured by the Sexting Behaviors Inventory) than men who endorsed lower levels of short term mating strategies. A correlational analysis was performed using male participants' (*n*=66) sociosexual orientation score and their reported frequency of engagement in sexting behaviors. The results of this analysis support the proposed positive relationship between sexting and the endorsement of an unrestricted orientation and by extension short term mating strategy for men. The higher the short term mating scores the more sexting individuals reported. These correlations are reported in Table 6.

Table 6
Sexting Behaviors and Mating Strategy Correlations for Men

Sending	
Sending a text requesting sex	0.27*
Sending picture in revealing clothes	0.35**
Sending picture in underwear	0.27*
Sending picture while partially clothed	0.37**
Sending picture while nude	0.34**
Receiving	
Receiving a text requesting sex	0.30**
Receiving picture of someone in revealing clothes	0.40**
Receiving picture of someone in underwear	0.41**
Receiving picture while partially clothed	0.40**
Receiving picture of someone nude	0.46**

Note. 1 tailed significance **p<.01; * p<.05

Hypothesis One B. It was hypothesized that women who reported endorsing a higher level of long-term mating strategies (as measured by the Sociosexual Orientation Inventory) would report greater frequencies of both sending and receiving sext messages (as measured by the Sexting Behaviors Inventory). A correlational analysis was

performed using female participants' (n = 141) scores on the sociosexual orientation inventory (SOI) and their reported frequency of engagement in sexting behaviors. The results of this analysis did not support the hypothesis. Since higher scores on the SOI are indicative of an unrestricted or short-term strategy negative correlations were expected. Instead a positive relationship was found suggesting the sexting behavior of women may be related to their endorsement of short-term mating strategies not long term. The results of this analysis are found in Table 7.

Table 7
Sexting Behaviors and Mating Strategy Correlations for Women

Sending	
Sending a text requesting sex	0.25**
Sending picture in revealing clothes	0.30**
Sending picture in underwear	0.29**
Sending picture while partially clothed	0.29**
Sending picture while nude	0.17*
Receiving	
Receiving a text requesting sex	0.26**
Receiving picture of someone in revealing clothes	0.32*
Receiving picture of someone in underwear	0.26**
Receiving picture while partially clothed	0.20**
Receiving picture of someone nude	0.20**

Note. 1 tailed significance **p<.01; * p<.05

Hypothesis Two A. It was hypothesized that there would be a positive relationship between risk tolerance in the specific domains of mate attraction, and mate retention, with sexting frequency for all participants. This was tested using a correlational analysis of the mate attraction and mate retention subscales of the Evolutionary Domains Specific

Risk scale (EDRS) and participant responses to the Sexting Behaviors Inventory (SBI). Higher scores on the EDRS indicate less tolerance of risk within that domain, and so negative correlations between the EDRS variables and sexting variables indicate a positive relationship. The results of this analysis partially supported the hypothesis for the domain of mate attraction only. Higher levels of risk tolerance was related to higher levels of sexting engagement for the for mate attraction. There was no statistically significant relationship found between the domain of mate retention and sexting behaviors. The results for this analysis are presented in Table 8.

Table 8
Correlations between Sexting and Specific Risk Tolerance Domains

	Mate Attraction		Mate Retention	
	Male (n=65)	Female (n=138)	Male (n=65)	Female (n=138)
Sending				
Sending a text requesting sex	-0.09	-0.21*	-0.05	0.04
Sending a picture in revealing clothing	-0.16	-0.26**	-0.09	-0.02
Sending a picture in underwear	-0.09	-0.20*	-0.11	-0.02
Sending a picture while partially clothed	-0.26*	-0.19*	-0.09	-0.02
Sending a picture while nude	-0.26*	-0.11	-0.16	0.01
Received				
Received a text requesting sex	-0.32*	-0.26*	-0.19	-0.01
Received a picture in revealing clothing	-0.43**	-0.20*	-0.15	0.03
Received a picture in underwear	-0.44**	-0.22*	-0.11	0.01
Received a picture while partially clothed	-0.44**	-0.22*	-0.14	0.05
Received a nude picture	-0.45*	-0.15	-0.12	0.09

Note: 2 tailed significance ** p< .01; * p< .05

Hypothesis Two B. It was thought that there would be no significant relationship found between sexting behaviors and the other domains of the EDSR scale. This hypothesis was tested using a correlational analysis of the SBI and the eight previously untested subscales of the EDSR scale. Higher scores on the EDSR scale indicate less risk tolerance, meaning negative correlations with sexting variables indicate a positive relationship. The results of this analysis do not support the hypothesis, statistically significant relationships were found.

There were positive relationships found between the sending of nude pictures and the environmental exploration risk subscale $r = -.17$, $p < .05$. There were also positive significant relationships found for the domain of environmental exploration risk and receiving messages of others who were wearing sexy clothes ($r = -.20$, $p < .01$), in their underwear ($r = -.20$, $p < .01$), while partially clothed ($r = -.15$, $p < .05$), and while nude ($r = -.15$, $p < .05$). Positive relationships, indicated by a negative correlation, were also found for risk tolerance in the domain of food acquisition and participants sending message of themselves wearing sexy clothing ($r = -.15$, $p < .05$), in their underwear ($r = -.15$, $p < .05$), and while nude ($r = -.18$, $p < .01$).

The domain of between group competition and the sending of messages requesting sexual activity ($r = -.15$, $p < .05$), receiving texts requesting sexual activity ($r = -.15$, $p < .05$), receiving pictures of individuals in underwear or lingerie ($r = -.15$, $p < .05$) also displayed a statistically significant positive relationship. There were statistically significant relationships between kinship risk and the sending of nude picture messages ($r = -.16$, $p < .05$), receiving texts requesting sex ($r = -.18$, $p < .05$), receiving messages of

individuals wearing sexy or revealing clothing (r = -.24, p <.01), their underwear (r = -.23, p <.01), while partially clothed (r = -.24, p < .01), and while nude (r = -.21, p <.01).

Hypothesis Two C. It was hypothesized that men who engaged in sexting (as measured by lifetime participation) would report less risk tolerance in the domain of mate attraction then women who engaged in sexting (also measured by lifetime participation). For this analysis, only participants who reported engaging in sexting behaviors (sexters) were included. An independent t-test was conducted using the dependent variable of mate attraction risk tolerance and the independent variable of gender.

The results of this t-test supported the hypothesis that males (M = 4.14, SD = 1.26, n = 51) would possess less risk tolerance than females (M = 4.85, SD = 1.25, n = 121) within the domain of mate attraction while engaging in sexting, but the opposite, t(170) = -3.43, p < .01, n = 172. Higher scores on the EDRS indicate lower levels of risk tolerance, therefore these results suggest that men who report engaging in sexting have higher levels of mate attraction risk tolerance than women who sext.

Hypothesis Two D. It was hypothesized that women who engage in sexting (as measured by lifetime participation) will report less risk tolerance in the specific domain of mate retention then men who engage in sexting (as measured by lifetime participation). This hypothesis was tested using an independent t-test with the dependent variable of mate retention risk tolerance and an independent variable of gender. Only the responses of sexters were used in this analysis.

The hypothesis was not supported for this sample. Males who sext (M =5.00, SD = 1.19, n = 51) reported levels within the mate retention domain that were not statistically different than females (M = 4.95, SD = 1.27, n= 121), $t(170) = .275$, p = .784.

Hypothesis Three A. It was hypothesized that participants who reported greater levels of positive expectancies (as measured by the Sexpectancy measure) about sexting would engage in sexting behaviors more frequently. It was also hypothesized that those participants who reported higher levels of negative expectancies would engage in sexting less frequently. This relationship was expected to occur for both men and women. This hypothesis was tested using correlational analysis and was supported for all relationships examined. These correlations are presented in Table 9.

Table 9
Correlation of Sexting Behaviors and Positive Expectancies

	Positive Expectancies		Negative Expectancies	
	Send	Receive	Send	Receive
Sending				
Sending a text requesting sex	.37**	.38**	-.28**	-.25**
Sending picture in revealing clothes	.30**	.26**	-.30**	-.25**
Sending picture in underwear	.30**	.26**	-.32**	-.28**
Sending picture while partially clothed	.38**	.35**	-.35**	-.33**
Sending picture while nude	.35**	.32**	-.29**	-.30**
Receiving				
Receiving a text requesting sex	.36**	.33**	-.23**	-.14**
Receiving picture of someone in revealing clothes	.39**	.38**	-.26**	-.21**
Receiving picture of someone in underwear	.43**	.42**	-.32**	-.29**
Receiving picture while partially clothed	.41**	.38**	-.30**	-.25**
Receiving picture of someone nude	.40**	.37**	-.30**	-.26**

Note. 2 tailed significance **p<.01

Hypothesis Three B. It was hypothesized that there would be a statistically significant difference between high and low positive sexting expectancies, high and low domain specific risk tolerance and sexting (as measured by lifetime participation in sexting). A factorial ANOVA was conducted to compare the main effects of mate attraction, mate retention, positive sexting expectancies, and the interactions between the three independent variables on lifetime sexting behaviors. Each independent variable was divided at the median to create high and low groups. The dependent variable for this analysis was participant lifetime sexting behavior with the independent variables of Mate Attraction, Mate Retention and Positive Expectancies.

The assumption of homogeneity of variance was violated for this analysis, $F(7,194) = 10.59$, $p<.001$, indicating that there were not equal variance of the groups within the ANOVA, and thus caution should be used when drawing conclusions based on these results. The main effect for mate attraction was significant $F(1,194) = 17.34$, $<$ .001, meaning individuals with high risk tolerance in the domain of mate attraction (M = 31.31, SD = 18.19) reported significantly more sexting than individuals who reported low levels of risk tolerance in mate attraction (M = 21.55, SD= 15.00). The main effect for positive expectancies regarding sexting was also significant $F(1,194) = 38.02$, $p<.001$, with individuals who reported high levels of positive sexting expectancies (M = 34.76, SD = 11.76) engaging in sexting more frequently than those with low levels of positive expectancies (M = 34.76, SD = 18.23). No two way interactions were found to be statistically significant. The three-way interaction between mate attraction, mate retention and positive expectancies was statistically significant $F(1,194) = 4.38$, $p<.05$. The results

for this analysis are reported in Table 10 and the means and standard deviations are reported in Table 11.

Table 10
Positive Expectancies ANOVA Results Table

	Df	Mean Square	*F*	Sig. Level
Mate Attraction	1	3819.66	17.34	0.000
Mate Retention	1	656.17	2.98	0.086
Positive Expectancies	1	8372.12	38.02	0.000
Mate Attraction*Mate Retention	1	24.42	0.11	0.739
Mate Attraction*Positive Expectancies	1	226.59	1.03	0.312
Mate Retention*Positive Expectancies	1	358.89	1.63	0.203
Mate Attraction*Mate Retention* Positive Expectancies	1	964.82	4.38	0.038

Simple main effects were run to help understand where the differences between groups occurred. The following data were found: Among those who have low positive expectancies of sexting, those who show high levels of mate retention risk tolerance (*M*=20.13, *SD*=14.31) sext more than those who show low levels of mate retention risk tolerance (*M*=17.04, *SD*=9.32). Also, those who show low mate attraction risk tolerance (*M*=23.70, *SD*=15.70) use more sexting behaviors than those with a high level of mate attraction risk tolerance (*M*=14.51, *SD*=5.40). There were no significant differences in mate retention and mate attraction related to sexting behaviors for those with high positive expectancies of sexting.

Among those who have low mate retention risk tolerance, those who have low levels of mate attraction risk tolerance (*M*=29.76, *SD*=18.50) sext more than those who

show high levels of mate attraction risk tolerance (*M*=19.03, *SD*=12.83). Also, those who show high positive expectancies of sexting (*M*=35.13, *SD*=19.12) use more sexting behaviors than those with show low positive expectancies of sexting (*M*=17.04, *SD*=9.33).

Among those who have high mate retention risk tolerance, those who have low levels of mate attraction risk tolerance (*M*=34.25, *SD*=17.47) sext more than those who show high levels of mate attraction risk tolerance (*M*=23.23, *SD*=16.17). Also, those who show high positive expectancies of sexting (*M*=34.04, *SD*=17.50) use more sexting behaviors than those with show low positive expectancies of sexting (*M*=20.13, *SD*=14.31).

Among those who have low mate attraction behaviors, those who show high levels of mate retention risk tolerance (*M*=37.22, *SD*=17.80) sext more than those who show low levels of mate retention risk tolerance (*M*=23.70, *SD*=15.70). There were no significant differences in positive expectancies related to sexting behaviors and sexting for those with low mate retention.

Among those who have high mate attraction risk tolerance, those who show high levels of positive expectancies related to sexting (*M*=30.88, *SD*=18.30) sext more than those who show low levels of positive expectancies related to sexting (*M*=14.51, *SD*=5.40). There were no significant differences in positive expectancies related to sexting behaviors and sexting for those with high mate retention risk tolerance.

Table 11
Means and Standard Deviations of Positive Sexting Expectancies ANOVA

Mate Attraction	Mate Retention	Positive Expect.	*M*	*SD*	*N*
Low	Low	Low	19.83	11.38	29
		High	38.48	19.27	33
		Total	29.76	18.51	62
	High	Low	31.71	20.38	14
		High	35.62	15.95	26
		Total	34.25	17.47	40
	Total	Low	23.70	15.70	43
		High	37.22	17.80	59
		Total	31.52	18.15	102
High	Low	Low	13.80	4.54	25
		High	27.73	17.12	15
		Total	19.03	12.83	40
	High	Low	15.06	5.99	32
		High	32.57	18.99	28
		Total	23.23	16.17	60
	Total	Low	14.51	5.40	57
		High	30.88	18.30	43
		Total	21.55	15.00	100
Total	Low	Low	17.04	9.33	54
		High	35.13	19.12	48
		Total	25.55	17.27	102
	High	Low	20.13	14.31	46
		High	34.04	17.50	54
		Total	27.64	17.48	100
	Total	Low	18.46	11.92	100
		High	34.55	18.20	102
		Total	26.58	17.36	202

Hypothesis Three C. It was also hypothesized that there would be a statistically significant difference between high and low negative sexting expectancies, high and low domain specific risk tolerance and sexting (as measured by lifetime participation in

sexting). A factorial ANOVA was conducted to compare the main effect of mate attraction, mate retention and negative sexting expectancies, and the interactions among the three independent variables on lifetime sexting behaviors. A median split was done on all the independent variables to create high and low groups. The dependent variable being tested was total sexting participation, with the independent variables of mate attraction risk tolerance, mate retention risk tolerance, and negative expectancies regarding sexting all split into high and low groups based on a median split.

The assumption of homogeneity of variance was violated for this test analysis $F(7,194) = 3.58$, $p < .01$ indicating that there were not equal groups within the ANOVA, and that caution should be used when drawing conclusions based on these results. The main effect for mate attraction was significant $F(7, 194) = 12.71$, $p < .001$, as was the main effect for negative expectancies regarding sexting $F(7, 194) = 11.78$, $p < .001$. This indicates that higher levels of mate attraction risk tolerance and lower levels of negative expectancies regarding sexting were associated with greater sexting participation. None of the interactions among these variables was significant. The results for this analysis are reported in Table 12 and the means and standard deviations are reported in Table 13.

Table 12

Negative Expectancies ANOVA Results Table

	Df	Mean Square	*F*	Sig. Level
Mate Attraction	1	3342.90	12.71	0.000
Mate Retention	1	876.65	3.33	0.069
Negative Expectancies	1	3098.50	11.78	0.001
Mate Attraction*Mate Retention	1	24.38	0.09	0.761
Mate Attraction*Negative Expectancies	1	175.24	0.67	0.415
Mate Retention*Negative Expectancies	1	3.70	0.01	0.906
Mate Attraction*Mate Retention* Negative Expectancies	1	109.03	0.41	0.520

Table 13

Means and Standard Deviations of Negative Sexting Expectancies ANOVA

Mate Attraction	Mate Retention	Negative Expect.	*M*	*SD*	*N*
Low	Low	Low	34.10	19.33	39
		High	21.88	14.53	24
		Total	29.44	18.52	63
	High	Low	37.44	18.27	25
		High	28.93	15.14	15
		Total	34.25	17.47	40
	Total	Low	35.41	18.85	64
		High	24.59	14.98	39
		Total	31.31	18.19	103
High	Low	Low	22.58	18.67	12
		High	17.48	9.54	27
		Total	19.05	12.99	39
	High	Low	27.58	17.78	26
		High	19.91	14.21	34
		Total	23.23	16.17	60
	Total	Low	26.00	17.97	38
		High	18.84	12.33	61
		Total	21.59	15.07	99
Total	Low	Low	31.39	19.62	51
		High	19.55	12.22	51
		Total	25.47	17.32	102
	High	Low	32.41	18.52	51
		High	22.67	14.94	49
		Total	27.64	17.48	100
	Total	Low	31.90	18.99	102
		High	21.08	13.64	100
		Total	26.54	17.39	202

Discussion

The objective of the present study was to examine sexting behaviors from an evolutionary perspective, with the goal being to provide additional insight into why some individuals choose to engage in sexting and others do not. Consistent with previous studies the majority of participants in this study reported sending a sext message at least once. This finding provides further support for the suggestion that sexting is common among young adults and is an important area for further study, and may provide important insights into understanding sexuality among young adults.

It was hypothesized that sexting is a flexible behavior used to fulfill both long term mating strategies preferred by women and the short term strategies preferred by men (Buss & Schmidt, 1993; Ploharz & Baird, 2012). The results of the present study provide partial support for this hypothesis. Consistent with predictions based on Buss and Schmitt (1993) men who endorsed using a higher level or short term mating strategies engaged in sexting more frequently than those who endorsed a lower level of short term mating strategies. The results of this study suggest that the men who participated in this study do indeed use sexting as a short term mating strategy.

The present study did not find support however for the suggested relationship between the endorsement of a long term mating strategy and more sexting behavior among women participants. There are several possible interpretations of this result. Buss and Schmitt (1993) suggested that women may use short term mating strategies in an effort to attract a potential partner or fulfill a partners' perceived need. The presented

results may reflect that flexibility in mating strategy, but women should still endorse a preferred long term mating strategy if sexting usage was only a temporary deviation from the norm, and that was not found.

It may be that the results of the present study reflect a lack of actual differences in preferred sexual activity between men and women. It is also possible that new cultural, social, and technological norms are shifting the boundaries of acceptable behavior. Further research is needed to fully understand the relationship between sexting, mate attraction, relationship formations, and mate retention especially for women.

The way men and women who engage in sexting view the risks associated with sexting and are tolerant of those risks was also examined in the present study. It was hypothesized that risk tolerance in specific domains would be significantly related to sexting behavior for both men and women. In the present study these hypothesized relationships were partially supported.

In the present study it was expected that for both men and women there would be a significant relationship between the domains of mate attraction and mate retention and sexting behavior for both men and women (Buss, 1989a; Buss & Schmidt, 1993; Dir et al., 2013; Drouin, & Landgraff, 2012). The predicted relationship was found only for the domain of mate attraction for both men and women. There was no statistically significant relationship found for the domain of mate retention for either men or women. It may be that sexting behaviors are being used by both men and women in the beginning stages of relationships. Sexting may be a relatively evolutionarily inexpensive way to fulfill the

needs of a potential partner. It may also be a means by which women can easily signal their sexual availability to potential partners, or fulfill the sexual needs of a partner. These specific needs are lessened during mate retention, or replaced by other behaviors, lessening the need for the engagement in sexting behavior. All of these possible explanations would be consistent with both sexual strategies theory and previous sexting research (Buss and Schmidt, 1993; Confer et al., 2010; Dir et al., 2013a; Ploharz & Baird, 2012). Further research is needed to understand the exact nature of the relationship between sexting and mating strategy, particularly within the context of the transition from mate attraction to mate retention.

It was hypothesized that men would require less risk tolerance within the domain of mate attraction than women to engage in sexting (Barrett, & Fiddick, 2000; Buss, 1988b; Dir et al., 2014; Drouin et al., 2013). The results of the present study supported that hypothesis. This result suggests that men are indeed less sensitive to risks, in the domain of mate attraction, that are associated with sexting. These results also provide support and emphasis for the need to better understand the reasons and potential benefits of sexting for women who engage in the behavior despite being sensitive to risks in this domain. Within the domain of mate retention the hypothesized difference between men and women, with women requiring less risk tolerance than men to engage in sexting was not found. There were no significant differences between men and women within this domain. This finding provides additional support to the view of sexting as a behavior occurring primarily as a mate attraction behavior being used as a short term mating strategy by both men and women.

Consistent with Dir et al (2013a), it was hypothesized that individual expectations regarding the outcome of sexting would be significantly related to sexting behavior. The results of the present study supported this hypothesis for both men and women, with positive expectancies regarding sexting being positively related to sexting behaviors. The presence of negative expectancies regarding the outcome of sexting behavior was negatively related to sexting behaviors. These results suggest that individuals who choose to sext are not only sensitive to the risks of sexting but the potential positive outcomes of sexting.

The present study examined the effect of individual expectancies and domain specific risk tolerance and sexting behaviors. Those who had low levels of positive expectancies regarding sexting, and still engaged in the behavior, had higher levels of mate retention risk tolerance. It may be that these individuals are in committed relationship and so don't expect to see the same potential positive outcomes of those who are just beginning a relationship or trying to attract a mate. This would be consistent with the view of sexting as being primarily a short term, mate attraction behavior. These individuals appear willing to take risks to maintain their relationship even though they doubt the likelihood of a beneficial outcome.

Among participants in the current study who reported low levels of positive expectancies regarding sexting, individuals reporting lower levels of mate attraction risk tolerance engaged in sexting more than those who reported high levels of mate attraction risk tolerance. This result suggests that participants who have low positive expectancies

regarding sexting may not perceive risks associated with sexting. It may also be that these individuals are less sensitive to the potential risks. Further research, examining the differences between men and women, may provide a clearer understanding of these differences.

There were no significant differences or interactions between risk tolerance and positive expectancies among those whose reported high levels of positive expectancies regarding sexting. These results support the view that the expected outcome of sexting behavior plays a significant role in the decision to sext. It may be that higher expectations of sexting having a positive effect may outweigh other individual differences, and that even lower levels of positive expectancies can outweigh the potential risks.

The present study also examined the role of negative expectancies in sexting behavior. The results suggest that lower levels of negative expectancies and higher levels of mate attraction risk tolerance are associated with more sexting behavior. This lends support to the previously described findings suggesting that the decision to engage in sexting is influenced by the expected outcome and the level of risk tolerance in the domain of mate attraction (Dir, et al., 2013a; Dir et al. 2014).

The results of the present study suggest that sexting is indeed a flexible behavior used by both men and women. These results suggest that both men and women use sexting as primarily a short term mating strategy, as a way to attract a mate. The relationship between sexting and the domain of mate retention appears to be weak and is less clear based on the results of the current study. In total it appears that the expected

outcome of sexting, the willingness to engage in a short term mating strategy, and the tolerance of risk in the effort to attract a mate all play a significant role in sexting behavior.

The current study is limited in its ability to fully describe these relationships by several factors. The high percentage of participants who reported engaging in sexting led to unequal groups in many of the analysis. The sample also suffered from an unequal distribution of men and women consistent with most college samples. The sensitive nature of the study may have also limited the responses of some participants. Though the study was conducted online to ensure privacy individuals may have felt uncomfortable answering questions or may have answered in ways that they deemed more socially acceptable. It is also important to note the demographics of the area the study was conducted in; more research is needed using diverse populations is needed to fully describe the behavior.

The present study was also limited by the nature of the measures used. The Sexpectancy measure (Dir et. al 2013a) and the Evolutionary Domain Specific Risk (EDSR) (Wilke et. al, 2014) inventory are both relatively new measures with limited usage in published research. The Sexpectancy measure performed as expected, but the EDSR suffered from a high level of inter-correlations between the domain sub-scales that may have affected the results regarding risk tolerance. This measure however still had acceptable reliability and provides enough evidence to suggest that sexting is domain

specific when it comes to risk. Future research should seek to utilize more discriminative methods of assessing domain specific risk tolerance.

Future research may wish to focus on more fully describing the role of mate attraction and relationship formation in the sexting behavior of women. It would be especially valuable to more fully understand the role of perceived partner expectations and perceived social pressure to engage in sexting. Future research may also be focused on more fully understanding and describing the perceived potential positive outcomes stemming from sexting behavior.

Additionally future research could examine the differences in sexting behavior longitudinally, both throughout the lifespan and through individual relationships. It may be that sexting is the vanguard of a new type of human sexuality making understanding it an area of importance to clinicians, teachers, parents, and young adults. A key step in this process will be the development of a standardized and validated measure of sexting behaviors allowing for the comparison and compilation of results across studies. Previous research into this topic has been hindered by the lack of a clear and concise definition of sexting and how to measure it. The relationship between sexting and the formation of long term relationships has yet to be studied and could provide valuable support for the view of sexting as a transitional mate attraction behavior when used by women.

In conclusion the present study, although limited by the relatively new nature of sexting and the nature of several instruments, was successful in providing valuable information regarding sexting among college students at Fort Hays State University. The

results of the present study suggest that sexting is likely best viewed as a mate attraction behavior, used by individuals utilizing a short term mating strategy, and expecting a positive outcome from the behavior. Given that sexting is a relatively new behavior and that many of the measures used are new as well limitations were expected. However the results of this study may provide valuable direction for future research. The present study is the first to examine sexting behavior using an evolutionary lens and provided promising results. It is suggested that future research focus on more fully describing the way sexting is being used by both men and women to meet evolutionary goals in adaptive ways.

References

Ahern, N. R., & Mechling, B. (2013). Sexting serious problems for youth. *Journal of Psychosocial Nursing, 51*(7), 23-30. doi: 10.3928/02793695-20130503-02

Barrett, H. C., & Fiddick, L. (2000). Evolution and risky decisions. *Trends in Cognitive Sciences 47*(7), 251-252. doi: 2048/10.1016/S1364-6613(00)01495-9

Benotsch, E. G., Snipes, D. J., Martin, A. M., & Bull, S. S. (2013). Sexting, substance use and sexual risk behaviors in young adults. *Journal of Adolescent Health*, *52*(3), 307-313. doi:10.1016/j.adolhealth.2012.06.011.

Blais, A., & Weber, E, U. (2006). A Domain-Specific Risk-Taking (DOSPERT) scale for adult populations. *Judgment and Decision Making, 1*(1), 33-47.

Bleske-Rechek, A., & Buss, D. M. (2006). Sexual strategies pursued and mate attraction tactics deployed. *Personality and Individual Differences, 40.* 1299-1311. doi:10.1016/j.paid.2005.11.014

Buss, M. D. (1988a). From vigilance to violence tactics of mate retention in American undergraduates. *Ethology and Sociobiology, 9,* 291-217.

Buss, M. D. (1988b). The evolution of human intrasexual competition: Tactics of mate attraction.*Journal of Personality and Social Psychology, 54*(4), 616-628

Buss, M. D. (1989a). Conflict between the sexes: Strategic interference and the evocation of anger and upset. *Journal of Personality and Social Psychology, 56,* 735-747. doi:10.1037/0022-3514.56.5.735

Buss, M. D. (1989b). Sex differences in human mate preferences: Evolutionary hypotheses tested in 37 different cultures. *Behavioral and Brain Sciences, 12,* 1-49

Buss, M. D. (1992). Mate preference mechanisms. In J. H. Barkow, L. Cosmides, & J. Tooby (Eds.), *The adapted mind: Evolutionary psychology and the generation of culture* (pp.249-266). New York; Oxford University Press

Buss, M. D. (1995). Evolutionary psychology: A new paradigm for psychological science. *Psychological Inquiry, 6*(1),1-30

Buss, M. D., & Dedden, L. A. (1990). Derogation of competitors. *Journal of Social and Personal Relationships, 7,* 395-422.

Buss, M. D., & Schmitt, D. P. (1993). Sexual strategies theory: An evolutionary perspective on human mating. *Psychological Review, 100*(2), 204-232. doi:10.1037/0033-295X.100.2.204

Buss, M. D., & Schmitt, D. P. (2011). Evolutionary psychology and feminism. *Sex Roles, 64* 768-787. doi:10.1007/s11199-011-9987-3

Buss, M. D., & Shackelford, T. K. (1997). From vigilance to violence: Mate retention tactics in married couples. *Journal of Personality and Social Psychology, 72*(2), 346-361. doi:10.1037/0022-3514.72.2.346

Buss, M. D., Shackelford, T. K., & McKibbin, W. F. (2008). The mate retention inventory-short form (MRI-SF). *Personality and Individual Differences, 44*, 322-334. doi: 10.1016/j.paid.2007.08.013

Confer, J. C., Perilloux, C., & Buss, D. M. (2010.) More than just a pretty face: Men's priority shifts toward bodily attractiveness in short-term versus long term mating contexts. *Evolution and Human Behavior, 31,* 348-353. doi: 10.1016/j.evolhumbehav.2010.04.002

Cosmides, L., & Tooby, J. (2006). Evolutionary psychology: A primer. Center for Evolutionary Psychology, University of California, Santa Barbara. Human Behavior and Evolution Society (HBES), available at http://www.psych.uscb.edu/research/cep/primer.html.

Cosmides, L., Tooby, J., & Barkow, J. H. (1992). Introduction: Evolutionary psychology and conceptual integration. In J.H. Barkow, L. Cosmides, & J. Tooby (Eds.), *The adapted mind: Evolutionary psychology and the generation of culture* (pp. 3-15). New York; Oxford University Press

Delevi, R., & Weisskirch, R. S. (2013). Personality factors as predictors of sexting. *Computers in Human Behavior,* 29, 2589-2594. doi: 10.1016/j.chb.2013.06.003

Dir, A. L., Coskunpinar, A., Steiner, J. L., & Cyders, M. A. (2013a). Understanding differences in sexting behaviors across gender, relationship status, and sexual identity, and the role of expectancies in sexting. *Cyberpsychology, Behavior, and Social Networking, 16*, 568-574. doi:10.1089/cyber.2012.0545

Dir, A. L., Cyders, M. A., & Coskunpinar, A. (2013b). From the bar to the bed via mobile phone: A first test of the role of problematic alcohol use, sexting and impulsivity-related traits in sexual hookups. *Computers in Human Behavior*, *29*, 166-1670 doi:10.1016/j.chb.2013.01.039

Dir, A. L., & Cyders, M.A. (2014). Risks, risk factors, and outcomes associated with phone and internet sexting among university students in the United States. *Archives of Sexual Behavior, 44*(6), 1675-1684. doi: http://dx.doi.org.ezproxy.fhsu.edu:2048/10.1007/s10508-014-0370-7

Drouin, M., & Landgraff, C. (2012). Texting, sexting and attachment in college students romantic relationships. *Computers in Human Behavior, 28*, 444-449 doi:10.1016/j.chb.2011/10.015

Drouin, M., Tobin, E., & Wygant, K. (2014). 'Love the way you lie': Sexting deception in romantic relationships. *Computers in Human Behavior, 35,* 542-547 doi:10.1016/j.chb.2014.02.047

Droin, M.. Vogel, K. N., Surbey, A., & Stills, J. R. (2013). Let's talk about sexting baby: Computer- mediated sexual behaviors among young adults. *Computers in Human Behavior, 29*, A25-A30. doi: 10.1016/j.chb.2012.12.013.

Duntley, J. D., & Buss, D. M. (2008) Evolutionary psychology is a metatheory for psychology. *Psychological Inquiry, 19*(1), 30-34. doi: 10.1080/10478400701774105

Ferguson, C. J. (2011). Sexting behaviors among young Hispanic women: Incidence and association with other high-risk sexual behaviors. *Psychiatric Quarterly, 82*, 239-243. doi: 10.1007/s11126-010-9165-8

Fisher, M., & Cox, A. (2011). Four strategies used during intrasexual competition for mates. *Personal Relationships, 18,* 20-38. doi:10.111/j.1475-6811.2010.01307.x

Fisher, M., Shaw, S., Worth, K., Smith, L., & Reeve, C. (2010.) How we view those that derogate: Perceptions of female competitor derogators. *Journal of Social, Evolutionary, and Cultural psychology, 4*(4)*,* 245-276.

Geary, D. C. (2010). Male, female: The evolution of human sex differences. Washington D.C.: American Psychological Association

Gordon-Messer, D., Bauermeister, J. A., Grodzinski, A., & Zimmerman, M. (2012). Sexting among young adults. *Journal of Adolescent Health, 52*, 301-306 doi: 10.1016/j.jadohealth.2012.03.013

Hasinoff, A. A. (2012). Sexting as media production: Rethinking social media and sexuality. *New Media and Society, 15*(4), 449-465. doi: 10.1177/1461444812459171.

Henderson, L., & Morgan, E. (2011). Sexting and sexual relationships among teens and young adults. *McNair Scholars Research Journal,* 7. 31-39. doi:http://scholarworks.boisestate.edu/mcnair_journal/vol7/iss1/9

Hernandez, R. (06/16/2011). *Weiner Resigns in a Chaotic Final Scene*. Retrived from http://www.nytimes.com/2011/06/17/nyregion/anthony-d-weiner-tells-friends-he-will-resign.html?_r=0

Kaighobadi, F., Shackelford, T. K., & Weekes-Shackelford, V. A. (2012). Do women pretend to orgasm to retain a mate? *Archive of Sexual Behavior, 41*. 1121-1125. doi: 10.1007/s10508-611-9874-6

Klettke, B., Hallford, D. J., & Mellor, D. J. (2014). Sexting prevalence and correlates: A systematic literature review. *Clinical Psychology Review, 34*, 44-53. doi: 10.1016/j.cpr.2013.10.007

Kruger, D. J., Wang, T. X., Wilke, A. (2007). Towards the development of an evolutionary valid domain-specific risk-taking scale. *Evolutionary Psyhcology, 5*(3). 555-568. doi:10.1177/147470490700500306

Lattman, P. (September 27, 2007). The Origins of Justice Stewart's 'I know it when I see it'. *LawBlog at The Wall Street Journal Online.* Retrieved from http://blogs.wsj.com/law/2007/09/27/the-origins-of-justice-stewarts-i-know-it-when-i-see-it/

Liddle, J. R., Bush, L. S., & Shackelford, T. K. (2011). An introduction to evolutionary psychology and its application to suicide terrorism. *Behavioral Sciences of Terrorism and Political Aggression, 3*(3), 176-197. doi:10.1089/19434472.2010.512157

Ling, R. (2010). Texting as a life phase medium. *Journal of Computer Mediated Communication, 15*(2), 277-292. doi: 10.1111/j.1083-6101.2010.01520.x .

Manktelow, K. (2012). Thinking and reasoning: An introduction to the psychology of reason, judgment, and decision making. New York, N.Y. :Psychology Press

Miguel, A., & Buss, D. M. (2011). Mate retention tactics in Spain: Personality, sex differences and relationship status. *Journal of Personality, 79*(3), 563-585. doi: 10.1111/j.1467-6494.2011.00698.

Miner, E. J., Starratt, V. G., Shackelford, T. K. (2009). It's not all about her: Men's mate value and mate retention, *Personality and Individual Differences 47*(3), 214-218. doi: 2048/10.1016/j.paid.2009.03.002

Parker, T. S., Blackburn, K. M., Perry, M. S., & Hawks, J. M. (2013). Sexting as an intervention: Relationship satisfaction and motivational considerations. *The American Journal of Family Therapy, 41,* 1-12. doi:10.1080/01926187.2011.635134

Ploharz, S., & Baird, T. (2012, February). *Sexting: Its effects and description.* Poster session presented at Utah Conference of Undergraduate Research, Logan UT.

Ploharz, S. & Baird, T. (2012, April). *Sexting: Individual differences and its effects.* Poster session presented at Rocky Mountain Psychological Association, Denver, CO.

Ploharz, S., Baird, T., & Patrick, C. (2013, November). *Attachment and "sexting" among college students*. Oral presentation at Psychological and Educational Conference of Kansas, Baldwin City, KS.

Ploharz, S., Baird, T., & Patrick, C. (2014, April). *Does narcissistic personality predict sexting.* Poster presentation at Southwestern Psychological Association, San Antonio, TX.

Porter, L. W., & Lawler, E. E. (1968). *Managerial attitudes and performance*. Homewood Ill: Richard D. Irwin

Rice, E., Rhoades, H., Winetrobe, H., Sanchez, M., Montoya, J., Plant, A., & Kordic, T. (2012). Sexually explicit cell phone messaging associated with sexual risk among adolescents. *Pediatrics, 130*(4), 667-673. doi: 10.1542/peds.2012-0021

Rode, C., Cosmides, L., Hell, W., & Tooby, J. (1999). When and why do people avoid unknown probabilities in decisions under uncertainty? Testing some predictions from optimal foraging theory. *Cognition, 70,* 269-304. doi:10.1016/S0010-0277(99)00041-4

Rode, C., & Wang, X. (2000). Risk-sensitive decision making examined within an evolutionary framework. *American Behavioral Scientist, 43*(6), 926-939. doi: 10.1177/00027640021955676

Rosvall, K. A. (2011). Intrasexual competition in females: Evidence for sexual selection? *Behavior Ecology, 22,* 1131-1140. doi:10.1093/beheco/arr106

Schmitt, D. P. (2014). Evaluating evidence of mate preference adaptations: How do we really know what *Homo sapiens sapiens* really want? In Weekes-Shackelford, V.A., & Shackelford, T.K. (Eds.) *Evolutionary perspectives on human sexual psychology and behavior.* (pp. 3-39) New York, NY: Springer

Schmitt, D. P., & Buss, D. M. (1996). Strategic self-promotion and competitor derogation: sex and context effects on the perceived effectiveness of mate attraction tactics. *Journal of Personality and Social Psychology, 70*(6), 1185-1204. doi:0022-3314/96

Schmitt, D. P., & Buss, D. M. (2001). Human mate poaching: tactics and temptations for infiltrating existing mateships. *Interpersonal Relations and Group Processes, 8,* 894-917. doi:10.1037//0022-3514.80.6.894

Schmitt, D. P., Couden, A., & Baker, M. (2001). Sex, temporal context, and romantic desire: An experimental evaluation of sexual strategies theory. *Personality and Social Psychology Bulletin, 27*, 833-847

Sela, Y., Shackelford, T. K., Pham, M. N., & Euler, H. A. (2015). Do women perform fellatio as a mate retention behavior? *Personality and Individual Differences, 73,* 61-66. doi: 10.1016/j.paid.2014.09.020

Sexting (n.d). In *Merriam-Webster online dictionary*. Retrieved from http://www.merriam-webster.com/dictionary/sexting

Shackelford, T. K., Goetz, A. T., & Buss, D. M. (2005). Mate retention in marriage: Further evidence of the reliability of the Mate Retention Inventory. *Personality and Individual Differences, 39,* 415-425. doi: 0.1016/j.paid.2005.01.018

Shackelford, T. K., & Liddle, J. R. (2014). Understanding the mind from an evolutionary perspective: and overview of evolutionary psychology. *WIREs Cogn Sci, 5,* 247-260. doi:10.1002/wcs.1281

Simpson, J. A., Gangestad, S. W. (1991). Individual differences in sociosexuality: Evidence for convergent and discriminant validity. *Journal of Personality and Social Psychology, 60*(6) 870-883. doi: 2048/10.1037/0022-3514.60.6.870

Trivers, R. L. (1972). Parental investment and sexual selection. In B. Campbell (Ed.),*Sexual selection and the descent of man*. (pp.136-179) Chicago, IL; Aldene Publishing Company

Vaillincourt, T., & Sharma, A. (2011). Intolerance of sexy peers: Intersexual competition among women. *Aggressive Behavior, 37,* 569-577. doi:10.1002/ab.20413

Walker, S., Sanci, L., & Temple-Smith, M. (2013). Sexting: Young women's views on its nature and origins. *Journal of Adolescent Health, 52*, 697-701. doi:10.1016/j.jadohealth.2013.01.026

Walters S., & Crawford C. B. (1994). The importance of mate attraction for intrasexual competition in men and women. *Ethology and Sociobiology, 1,* 5-30. doi: 10.1016/0162-3095(94)90025-6

Weber, E. U., Blais, A., & Betz, N. E. (2002). A Domian-specific Risk-attitude Scale: Measuring risk perceptions and risk behaviors. *Journal of Behavioral Decision Making, 15,* 263-290. doi:10.1002/bdm.414

Weisskirch, R. S., &, Delevi, R. (2011). "Sexting" and adult romantic attachment. *Computers in Human Behavior, 27*, 1697-1701. doi:10.1016/j.chb.2011.02.008

Wilke, A., Sherman, A., Curdt, B., Mondal, S., Fitzgerald, C., Kruger, D. J.(2014). An evolutionary domain-specific risk scale. *Evolutionary Behavioral Sciences, 8*(3), 123-141. doi:10.1037/ebs0000011

Appendix A

Informed Consent

Department of Psychology

Fort Hays State University

Hays, KS

(785)628-4405

Informed Consent

Study Name: An Evolutionary Based Evaluation of Sexting Behavior among College Students.

Student Researcher: Scott Ploharz

E-mail: s_ploharz@mail.fhsu.edu

Faculty Researcher: Dr. Carol Patrick

Telephone: (785)628-4405

E-mail: clpatrick@fhsu.edu

You are being asked to participate in a research study. It is your choice whether or not to participate.

Your decision whether or not to participate will have no effect on your academic standing in this course, the Department of Psychology, or Fort Hays State University. Please ask questions if there is anything you do not understand.

What is the purpose of this study? The project's purpose is to study the relationship between the sending and receiving of sexually natured text and picture messages, or sexting, and individual relationship strategy. The project will also study the relationship between choosing to sext and individual differences in risk tolerance and expected outcomes of engaging in sexting.

What does this study involve? If you agree to participate, you will be asked to complete surveys about your previous sexting behavior. You will also be asked to complete several questionnaires designed to measure your expectations about sexting, how likely you are to take risks in certain situations. We will also be

asking you to answer questions about your thoughts, attitudes, and participation in certain sexual acts.

If you decide to participate in this research study, you will be asked to sign this consent form after you have had all your questions answered and understand what will happen to you. The length of time of your participation in this study is 20 minutes. Approximately 200 participants will take part in this study.

Are there any benefits from participating in this study? Your participation will help us to gain a better understanding of sexting behavior. It is unlikely that you will gain any personal benefit from participating in this study.

Will you be paid or receive anything to participate in this study? Extra credit or class participation points may be offered by the instructor as partial compensation for your time and effort.

What are the risks involved with being enrolled in this study? It is unlikely that participation in this project will result in harm to you. Talking and thinking about sexual behaviors and relationships can cause people to become upset. You may stop participating in this study at any time, with no penalty and you will not lose any extra credit or class points. If you feel distressed or become upset by participating contact the Kelly Center, the Psychology Department Ethics Chair, or the researchers.

Your survey responses will not be linked to you in any way. No personally identifying information will be collected, and the online data collection is secured through survey monkey using SSL encryption

How will your privacy be protected? Data are collected only for research purposes and your data will be identified by ID number, not name. This project will utilize data collection services through Survey Monkey an online company that secures there data using SSL encryption. The IP address you use while completing this survey will not be collected or stored. All information will be stored electronically and will be password protected. Electronic records will be kept on a password protected medium for up to 5 years or until the study ends and will be destroyed at that time. Access to all data will be limited to the researchers listed above.

The information collected for this study will be used only for the purposes of conducting this study. What we find from this study may be presented at meetings

or published in papers but your name will not ever be used in these presentations or papers. Data will only be presented in aggregate form in any publication or presentation.

Other important items you should know:

• **Withdrawal from the study:** You may choose to stop your participation in this study at any time. Your decision to stop your participation will have no effect on your academic standing within this course, the Department of Psychology or Fort Hays State University.

• **Funding:** There is no outside funding for this research project.

Whom should you call with questions about this study? Questions about this study may be directed to the Ethics Chairperson in Psychology: Dr. W. Trey Hill at wthill@fhsu.edu or the researchers in charge of this study:. Carol Patrick at cpatrick@fhsu.edu or Scott Ploharz at s_ploharz@mail.fhsu.edu.

If you have questions, concerns, or suggestions about human research at FHSU, you may call the Office of Scholarship and Sponsored Projects at FHSU (785) 628-4349 during normal business hours.

CONSENT

I have read the above information about **An Evolutionary Based Evaluation of Sexting** and have been given an opportunity to ask questions. By signing this I agree to participate in this study and I have been given a copy of this signed consent document for my own records. I understand that I can change my mind and withdraw my consent at any time. By acknowledging this consent form I understand that I am not giving up any legal rights. I am 18 years or older.

__Yes I wish to participate ___ No I do not want to participate

Appendix B

Demographic Questions

Demographic Questions

Age:___

Sex: Male:_____ Female:_____

Ethnicity: Please select which ethnicity you most identify with (this information is being collected for descriptive purposes only. If you do not want to provide this information please continue to the next question.)

American Indian/Alaska Native:_____ Asian_____

Black or African American:_____ Hispanic/Latino:_____

Pacific Islander: _____ White:_____ Mixed Race:_____

Other:_____

Class: Senior____ Junior____ Sophmore____ Freshman____

Romantic Relationship Status: Married____ Committed Relationship____ Dating____ Not in a relationship___

Relationship Length (to the nearest week)_____

Appendix C

Sexting Behavioral Inventory

Sexting Behavioral Inventory

Sexting or the sending and receiving of a sexual text or picture message is thought to be common among college students. The following questions describe a variety of possible ways individuals choose to sext.

Please answer the following questions regarding your participation in sexting.

Please use this scale to answer the following questions:

1= Never

2= Once a year

3=Once every 6 months

4=Once every 3 months

5=Once a month

6=Every other week

7=Every week

8= 2 to 3 times per week

8=Daily

Please select the frequency that most closely resembles your sexting behaviors using the scale provided.

1. I have sent text messages suggesting, asking for, or describing sexual acts:

1_____2_____3_____4_____5_____6_____7_____8_____9

2. I have sent sexually suggestive pictures of myself in revealing clothing (i.e. extra tight):

1_____2_____3_____4_____5_____6_____7_____8_____9

3. I have sent sexually suggestive pictures of myself in my underwear or lingerie:

1_____2_____3_____4_____5_____6_____7_____8_____9

4. I have sent sexually suggestive pictures of myself partially naked:

1_____2_____3_____4_____5_____6_____7_____8_____9

5. I have sent pictures of myself while fully naked:

1_____2_____3_____4_____5_____6_____7_____8_____9

1= Never
2= Once a year
3=Once every 6 months
4=Once every 3 months
5=Once a month
6=Every other week
7=Every week
8=2 to 3 times per week
9=Daily

Please select the frequency that most closely resembles your sexting behaviors using the scale provided.

6. I have received text messages suggesting, asking for, or describing sexual acts:

1_____2_____3_____4_____5_____6_____7_____8_____9

7. I have received sexually suggestive pictures of someone else who was wearing revealing clothing (i.e. extra tight):

1_____2_____3_____4_____5_____6_____7_____8_____9

8. I have received sexually suggestive pictures of someone else who was in underwear or lingerie:

1_____2_____3_____4_____5_____6_____7_____8_____9

9. I have received sexually suggestive pictures of someone else who was partially naked:

1_____2_____3_____4_____5_____6_____7_____8_____9

10. I have received pictures of someone else showing them fully naked:

1_____2_____3_____4_____5_____6_____7_____8_____9

Appendix D

Sexpectancy Measure

Instructions: Please answer the following questions about how sexting affects you or how you think sexting affects others. Please use this scale to rate all the following statements.

1 (not true at all) 2 3 4 (extremely true)

1. Sexting makes one adventurous.	1 2 3 4
2. Sexting makes one more open with others.	1 2 3 4
3. Sexting makes relationships more interesting.	1 2 3 4
4. Sexting makes one more intimate with the recipient.	1 2 3 4
5. Sexting makes one more affectionate.	1 2 3 4
6. Sexting makes one playful.	1 2 3 4
7. Sexting makes one fearless.	1 2 3 4
8. Sexting makes on excited.	1 2 3 4
9. Sexting makes one feel attractive.	1 2 3 4
10. Sexting makes one attracted to others.	1 2 3 4
11. Sexting makes one feel sexy.	1 2 3 4
12. Sexting makes one likeable.	1 2 3 4
13. Sexting makes it easier to flirt.	1 2 3 4
14. Sexting makes it more likely for one to have sex.	1 2 3 4
15. Sexting makes it more likely for one want to "hook-up".	1 2 3 4
16. Sexting makes one horny.	1 2 3 4

1 (not true at all)	**2**	**3**	**4 (extremely true)**

17. Sexting makes one happy.	1 2 3 4
18. Sexting makes one aroused.	1 2 3 4
19. Sexting makes one immature.	1 2 3 4
20. Sexting makes one inappropriate.	1 2 3 4
21. Sexting makes one desperate.	1 2 3 4
22. Sexting makes one vulnerable.	1 2 3 4
23. Sexting makes one embarrassed.	1 2 3 4
24. Sexting makes one ashamed.	1 2 3 4
25. Sexting makes one feel dirty.	1 2 3 4
26. Sexting lowers one's self-esteem.	1 2 3 4
27. Sexting makes one feel awkward.	1 2 3 4
28. Sexting makes one foolish.	1 2 3 4
29. Receiving sexts makes one attracted to the sender.	1 2 3 4
30. Receiving sexts makes one feel more attractive.	1 2 3 4
31. Receiving sexts makes one feel sexy.	1 2 3 4
32. Receiving sexts gives one confidence.	1 2 3 4
33. Receiving sexts makes one excited.	1 2 3 4

34. Receiving sexts makes one feel admired. 1 2 3 4

35. Receiving sexts raises one's self-esteem 1 2 3 4

1 (not true at all) 2 3 4 (extremely true)

36. Receiving sexts makes one horny. 1 2 3 4

37. Receiving sexts makes one want to have sex. 1 2 3 4

38. Receiving sexts makes one feel wanted. 1 2 3 4

39. Receiving sexts makes one feel uncomfortable. 1 2 3 4

40. Receiving sexts makes one feel disgusted. 1 2 3 4

41. Receiving sexts turns one off. 1 2 3 4

42. Receiving sexts makes one feel awkward. 1 2 3 4

43. Receiving sexts makes one avoid the sender. 1 2 3 4

44. Receiving sexts makes one feel insulted. . 1 2 3 4

45. Receiving sexts makes one feel vulnerable. 1 2 3 4

46. Receiving sexts makes one feel embarrassed. 1 2 3 4

47. Receiving sexts makes one feel ashamed. 1 2 3 4

48. Receiving sexts makes one feel dirty. 1 2 3 4

49. Receiving sexts makes one feel promiscuous. 1 2 3 4

Appendix E

Sociosexual Orientation Inventory

Please answer all of the following questions honestly. For the questions dealing with behavior, write your answers in the blank spaces provided. For the questions dealing with thoughts and attitudes, select the appropriate number on the scales provided.

1. With how many different partners have you had sex (sexual intercourse) within the past year?_____

2. How many different partners do you foresee yourself having sex with during the next five years? (Please give a *specific, realistic* estimate)_____

3. With how many different partners have you had sex on *one and only one* occasion?_____

4. How often do you fantasize about having sex with someone other than your current dating partner? (Select one)

1. Never _____

2. once every two or three months _____

3. Once a month _____

4. Once every two weeks_____

5. Once a week\ _____

6. A few times each week _____

7. Nearly every day _____

8. At least once a day _____

5. Sex without love is OK.

1 2 3 4 5 6 7 8 9

I strongly disagree I strongly agree

6. I can imagine myself being comfortable and enjoying casual sex with different partners.

1 2 3 4 5 6 7 8 9

I strongly disagree I strongly agree

7. I would have to be closely attached to someone (both emotionally and psychologically) before I could feel comfortable and fully enjoy having sex with him or her.

1 2 3 4 5 6 7 8 9

I strongly disagree I strongly agree

Appendix F

Evolutionary Domain-Specific Risk Scale

For each of the following statements, please indicate how risky you perceive each situation to be. Provide a rating from *not risky at all* to *extremely risky,* using the following scale:

1	2	3	4	5	6	7
Not Risky At All	A Little Risky	Somewhat Risky	Moderately Risky	More or Less Risky	Very Risky	Extremely Risky

1. Sitting in the section for fans of the opposite team with a group of friends while wearing your team's colors	1 2 3 4 5 6 7
2. Adamantly defending the honor of your local team against a fan from a different sporting team, even if it may cause a fight.	1 2 3 4 5 6 7
3. Starting a rivalry with students from another school in one of your extracurricular activities.	1 2 3 4 5 6 7
4. Trying to take a leadership role in any peer group you join.	1 2 3 4 5 6 7
5 Arguing with members of a group project	1 2 3 4 5 6 7

over what should be done.

1	2	3	4	5	6	7
Not Risky At All	A Little Risky	Somewhat Risky	Moderately Risky	More or Less Risky	Very Risky	Extremely Risky

6. Attempting to influence people in your social group to advance your own agenda. 1 2 3 4 5 6 7

7. Blackmailing your opponent to win an election. 1 2 3 4 5 6 7

8. Carrying around a weapon to appear strong and in control of your peers. 1 2 3 4 5 6 7

9. Telling lies to the leader about a teammate to appear more trustworthy than the other person (i.e. lie to get ahead). 1 2 3 4 5 6 7

10. Swimming far out from shore to reach a diving platform 1 2 3 4 5 6 7

11. Hiking on a mountain trail with a beautiful 1 2 3 4 5 6 7

view but with a high chance of a landslide.

12. Going on an expedition into the desert 1 2 3 4 5 6 7
where there will be no one else around.

1	2	3	4	5	6	7
Not Risky At All	A Little Risky	Somewhat Risky	Moderately Risky	More or Less Risky	Very Risky	Extremely Risky

13. Planting your own garden to grow your 1 2 3 4 5 6 7
own fruits and vegetables.

14. Only eating meat from a local farm that does 1 2 3 4 5 6 7
not use hormone injections or any unnatural processes.

15. Significantly increasing your weekly food bill to 1 2 3 4 5 6 7
buy healthy organic food.

16. Not boiling or filtering water from a questionable 1 2 3 4 5 6 7
source before drinking it.

17. Eating at a restaurant where your friend 1 2 3 4 5 6 7

got food poisoning.

18. Eating a piece of food that has fallen on the floor. 1 2 3 4 5 6 7

19. Talking your parents into giving you 1 2 3 4 5 6 7
weekly allowance money

1	2	3	4	5	6	7
Not Risky At All	A Little Risky	Somewhat Risky	Moderately Risky	More or Less Risky	Very Risky	Extremely Risky

20. Bugging your parents for money to go out with 1 2 3 4 5 6 7
friends until they finally give in

21. Asking your parents to get their old car when 1 2 3 4 5 6 7
they get a new one (instead of giving it to a sibling).

22. Risking your life to drag your parents 1 2 3 4 5 6 7
away from a burning building.

23. Staying up all night to help your sibling 1 2 3 4 5 6 7
with a difficult school project.

24. Donating a kidney to your sibling. 1 2 3 4 5 6 7

25. Taking part in sexual acts that you may not usually do to look more sexually appealing to the opposite sex. 1 2 3 4 5 6 7

26. Casually dating more than one person at a time. 1 2 3 4 5 6 7

1	2	3	4	5	6	7
Not Risky At All	A Little Risky	Somewhat Risky	Moderately Risky	More or Less Risky	Very Risky	Extremely Risky

27. Having a consistent sexual partner with whom you are not romantically involved. 1 2 3 4 5 6 7

28. Not putting in the effort to fulfill the requests of your significant other, such as remembering to call them when they ask you to. 1 2 3 4 5 6 7

29. Dumping the person you have been seeing when they mention commitment. 1 2 3 4 5 6 7

30. Spending the night with an attractive person while vacationing without your significant other. 1 2 3 4 5 6 7

Appendix G

Ethics Committee Page

ETHICS COMMITTEE PAGE

The research described in this thesis utilized human subjects. The thesis prospectus was therefore examined by the Institutional Review Board of Fort Hays State University, and found to comply with Title 45, Subtitle A- Department of Health, Education and Welfare, General Administration; Part 46- Protection of Human Subjects.

_____

Date

_____

Ethics Committee Chairman