UNIVERSITY OF CALIFORNIA SAN DIEGO

Jealousy Responses in Same-Sex Friendship

A dissertation submitted in partial satisfaction of the requirements for
the degree Doctor of Philosophy

in

Experimental Psychology

by

Min-Gi Chung

Committee in charge:

Professor Christine R. Harris, Chair
Professor Gail D. Heyman
Professor Dana Nelkin
Professor Christopher Oveis
Professor Adena Schachner

2021

The dissertation of Min-gi Chung is approved, and it is acceptable in quality and form for publication on microfilm and electronically.

University of California San Diego

2021

DEDICATION

To my son, Leo

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ACKNOWLEDGEMENTS

First and foremost, I would like to thank my advisor, Christine Harris. This dissertation, and all my research projects more generally, would not have been possible without your insight, rigor, and commitment. I am forever grateful for your mentorship and friendship, and I will sorely miss chatting with you in McGill 5129. I promise I will keep sending you cute videos and photos of Leo.

I would like to thank the rest of my committee members – Gail Heyman, Adena Schachner, Chris Oveis, and Dana Nelkin. I appreciate with all my heart the support, encouragement, and constructive feedback you have given me throughout this journey. Additionally, I would like to thank my collaborator Ed Vul for his thoughtful feedback.

I would also like to thank the staff members of the Psychology Department – in particular, Samantha Llanos and Rachael Wellisch. Your invaluable assistance behind-the-scenes allowed me to continue my research and teaching as an international graduate student mom.

My research on friendship and romantic jealousy in real life was possible only with the help of my awesome research assistants over the years: Qiyang (Minnie) Lin, Claire Colinco-tokeshi, Yostina Beshay, Erica Navarro, Wyatt Annala, Madeline Weerts, Nicole Anavim, Kelsey Hagg, Jiayu (Julie) Fu, and Giselle Nunez.

Many thanks to my lab sister, Nicole Henniger, and to all my friends for keeping me sane throughout grad school. To Jungyoung Kim and Riley Taitingfong — thank you for indulging me with chats and drinks on and off Zoom. And to my cohort, especially Lim Leong, Danbi Ahn, and Chaipat Chunharas — thank you for your witty banter and endless willingness to read my drafts and to talk about Game of Thrones (though usually not at the same time).

I cannot express enough appreciation for my family – my parents, my parents-in-law, my brother, my sister-in-law and my brother-in-law. Your love and encouragement propelled me to where I am today. Thank you for always believing in me.

I would like to thank my husband, Heung Yong (Glen) Im, for, well, just about everything he does each day. I am eternally grateful for your immense patience, perceptive advice, creative jokes, and above all, for simply being an amazing dad to Leo. Oh, and also for your obsession with house cleaning!

Finally, I would like to thank my greatest inspiration for all that I do, Leo Im. Not a moment goes by that I do not think about you, including when I was writing this dissertation. (But son, psychology research suggests that people cannot multitask though!) Thank you for being so patient (e.g., not constantly crying) and understanding (e.g., not constantly screaming) whenever I must work late. I promise I will play with you more soon.

Chapter 4, in full, is currently being prepared for submission for publication of the material. Chung, Mingi; Vul, Ed; Harris, Christine R. The dissertation author was the primary investigator and author of this chapter.

VITA

2010 Bachelor of Arts, English Literature and Education, Seoul National University

2014 Master of Arts, Psychology, Seoul National University

2021 Doctor of Philosophy, Experimental Psychology, University of California San Diego

ABSTRACT OF THE DISSERTATION

Jealousy Responses in Same-Sex Friendship

by

Min-gi Chung

Doctor of Philosophy in Experimental Psychology

University of California San Diego, 2021

Professor Christine R. Harris, Chair

From a functional perspective, jealousy may help protect an important relationship against a rival regardless of the types of relationships. This dissertation focuses on a valuable nonromantic relationship—namely, same-sex friendship— and investigates how people try to maintain it in a jealousy situation by examining a wide range of responses, from prosocial to antisocial. While answering this question, I also aim to overcome a major obstacle in the jealousy literature by assessing jealousy via methods reflecting more real-life situations, such as experimental manipulation in the lab and a diary method. Chapter 1, which elicited jealousy via

a recall and hypothetical scenarios, finds that adults often experience friendship jealousy and when they do, they engage in both prosocial and antisocial behaviors. Chapter 2 uses an in-lab manipulation in actual same-sex friends in an ethical manner, and successfully changed self-reported emotions and behaviors. Participants in the jealousy condition were less likely to take risks in their friendships by engaging in less confrontation and acting more nicely towards rivals, most of whom were also friends with participants. Finally, using a 14-day diary method, Chapter 3 examines the early and late processes of friendship jealousy in more naturally occurring situations, and the effects of existing friendship quality as a moderator on each process. Consistent with the previous findings, real-life friendship jealousy increased both prosocial and antisocial behaviors in individuals. Moreover, the study found that better friendship quality provided a buffer against perceiving the presence of rival however, once the rival became threatening, it intensified the motivation to protect their friendships. Together, this dissertation extends the jealousy literature and our understanding of how people react to friendship jealousy and offers new insights on how jealousy unfolds in real life situations.

CHAPTER 1

Introduction

Jealousy is an emotion that arises when an important relationship is threatened by a rival (Parrot, 1991; Parrot & Smith, 1993; White & Mullen, 1989); it differs from envy, which occurs when a person wishes to have what someone else has (Parrot, 1991; Parrot & Smith, 1993; Salovey, 1991). Although jealousy has recently become a more popular topic in scientific research, there are major limitations to the jealousy literature. Prior jealousy research in adults has primarily focused on romantic relationships and the destructive effects of jealousy as manifested in extreme negative consequences such as spousal abuse, divorce, and homicide (Daly, Wilson, & Weghorst, 1982; Harris, 2003). However, from a functional perspective, one would expect that jealousy could serve the function of maintaining important relationships of various types, including nonromantic relationships such as same-sex friendship. Furthermore, while jealousy can certainly produce maladaptive behaviors, it can also motivate more prosocial behaviors (e.g., paying more attention to a loved one) in order to serve its goal of maintaining a relationship. The aim of the current work is to help overcome this literature's limited focus on antisocial responses of jealousy in romantic contexts. The goal is to explore how people try to protect a valuable nonromantic relationship—namely, same-sex friendship—in jealousy-inducing situations by examining a wide range of reactions from more prosocial to antisocial. Moreover, this dissertation aims to further jealousy research by attempting to investigate jealousy via methods more closely approximating or reflecting real life, such as experimentally manipulating jealousy in a lab in an ethical manner and assessing real-life jealousy and its behaviors using a longitudinal diary method.

Functional Account of Jealousy

The present dissertation will apply a functional perspective of emotions that follows Darwinian reasoning. This functional view of emotions assumes that each emotion has its own distinct motivational tendency that may have evolved in our ancestral past to help increase inclusive fitness (Darwin, 1872/1965; Ekman, 1992; Frijda, 1986; Nesse, 1990; Roseman, 2013). In this view, each emotion functions to motivate an organism to engage in certain behaviors that help reduce a particular inclusive fitness risk. This does not mean, however, that emotions produce reflexive responses; rather, it means that emotions increase the likelihood that an organism, when confined by different situations, will engage in multiple behaviors aimed at fulfilling the emotion's motivational state (Ekman, 1992; Frijda, 1986; Harris & Salovey, 2008; Keltner & Haidt, 1999).

Given this functional framework, I posit in this dissertation that jealousy is a specific emotion with its own motivational state that encourages behaviors aimed at breaking up the threatening liaison between a loved one and a rival (Chung & Harris, 2018; Harris, 2003; Harris & Darby, 2010; Harris & Salovey, 2008). Importantly, this motivational state is not reducible to or reproducible by other related emotions, such as anger, fear, and sadness, which are often considered components of jealousy (Chung & Harris, 2018; Harris & Darby, 2010; Harris & Salovey, 2008). This functional approach to jealousy—that it has its own specific motivation—is also supported by developmental and nonhuman animal research. For example, a number of studies of human infants have found that infants as young as 6-month-old exhibited jealous-like behaviors (e.g., negative affect) when their mothers paid attention to another baby but not when their mothers interacted with a nonsocial object, such as a book (Hart & Carrington, 2002; Hart, Carrington, Tronick, & Carroll, 2004; Hart, Field, Del Valle, & Letourneau, 1998; Legerstee, Ellenbogen, Nienhuis, & Marsh, 2010). Using a similar paradigm, researchers have found that

dogs also displayed jealous responses, specifically when they lost their owner's attention to a rival-like item (i.e., a stuffed dog) (Harris & Provoust, 2014). This evidence suggests that the underlying emotional process that is involved in inducing jealousy is likely the same across all types of valued relationships, including nonromantic bonds (e.g., parent-child). Among many important nonromantic relationships, this dissertation will focus on one that few studies have examined: same-sex friendships in adults.

Jealousy in Friendship

Emotion researchers operating from a functional perspective argue that jealousy occurs when the benefits of an important relationship, such as a friendship, are at risk (Henniger & Harris, 2014; Harris, 2003; Parrot, 1991; Salovey & Rodin, 1984). Friends, same-sex friends in particular, play a powerful role in adulthood. Friendships last longer than romantic relationships for many young adults (Lennarz, Lichtwarck-Aschoff, Finkenauer, & Granic, 2017), and friends offer major input on romantic relationships, career decisions, and changing self-concepts (Rawlins, 1992). Importantly, the quality of close friendships strongly predicts adults' well-being, including physical health (House, Landis, & Umberson, 1988), happiness (Demir, Ozdemir, & Weitekamp, 2007; Demir, 2010), and other psychosocial adjustments such as depression and self-esteem (Bagwell, Bender & Andreassi, 2005).

Moreover, adults' friendships can even influence the quality and stability of their romantic lives. A longitudinal study revealed that the strongest predictor of a satisfying romantic relationship in adulthood was an adolescent's ability to establish and maintain friendships with peers of the same gender (Narr, Allen, Tan, & Loeb, 2019). Much of the literature on close relationships has also found that positive support for and approval of a romantic relationship from an individual's friends have been associated with stronger feelings of love and

commitment, increased relationship satisfaction and stability, including a decreased intent to divorce (Bryant & Conger, 1999; Doxey & Holman, 2002; Larson & Holman, 1994; Surra, 1990). Conversely, negative perceptions and disapproval of one's spouse from a person's friends predicted the decreased quality and stability of the marital relationship, including an increased likelihood to divorce (Doxey & Holman, 2002; Fiori, Rauer, Birditt, Marini, Jager, Brown, & Orbuch, 2018; Sprecher & Felmlee, 1992).

Clearly, there are numerous benefits derived from friendships, and these rewards are at stake when a friendship is threatened by a potential rival, and therefore, jealousy in this context can help secure their friendship. However, the vast majority of work on jealousy in adults heavily focuses on romantic relationships. Only a handful of studies have examined jealousy in friendships, some of which only examined it in the context of mate competition. For instance, individuals reported feeling jealous of their romantic partner's opposite-sex friend as a potential usurper (Worley & Samp, 2014; Miller, Denes, Diaz, & Buck, 2014) or of partner's a same-sex friend as someone who shares romantic partner's resources such as time and energy (Gomillion, Gabriel, & Murray, 2014).

More recently, a few studies have documented experiences of jealousy in same-sex friendships in adults. Unlike the common assumption that friendship jealousy rarely occurs in adults, research on late adolescents noted that friendship jealousy increased from 8th to 12th grade (Parker et al., 2005) and research on college students found that about 30% of college students reported friendship jealousy when they were instructed to describe one episode of jealousy in any type of close relationship, from the romantic to an opposite- or same-sex friendship (Blomquist, 2018). Importantly, participants also recalled feeling more jealousy when their close friend formed a new same-sex friendship than when he or she formed a new romantic relationship

(Burkett, 2010; Krems, 2018; Krem, Williams, Aktipis & Kenrick, 2020). This evidence highlights that same-sex friendship jealousy shares the same underlying emotional state of jealousy as jealousy in other types of relationships, such as parent-child relationships and romantic relationships: it occurs not merely because of the loss of attention but because of the loss of attention over a specific rival (Hart, Field, Del Valle, & Letourneau, 1998; Harris & Chung, 2018; Harris & Provoust, 2014; Krem et al., 2020; Masciuch & Kienapple, 1993; Mathes, 1991). Additionally, supporting the functional perspective that jealousy has a distinct motivational state to secure a valued relationship (i.e., friendship), participants also reported engaging in "friend-guarding" behaviors, such as monopolizing their best friend's time in recalled episodes and imagined scenarios of friendship jealousy (Krems, 2018; Krem et al., 2020).

Although mounting evidence described in this section suggests the importance of and need for research on friendship jealousy, little is known about adults' experiences of jealousy in same-sex friendships. The current dissertation aims to fill that gap in the jealousy literature and extend our understanding of how people behave to threats in friendships.

Reactions of Jealousy

While the literature of romantic jealousy reveals a variety of jealous behaviors, from prosocial (i.e., a behavior that benefits another) to antisocial (i.e., a behavior that does not benefit another), the majority of previous jealousy studies have focused on antisocial behaviors and the negative consequences of jealousy (e.g., aggression). However, theorists with the motivational view of emotions suggest that jealousy serves the adaptive function of protecting important relationships from rivals (Henniger & Harris, 2014; Harris & Darby, 2010). While the goal of protecting a relationship could possibly be achieved by a variety of behaviors, from prosocial to

negative, less research has examined prosocial reactions of jealousy (e.g., trying to be a better partner) and their effects on relationships.

Recently, some studies of jealousy in romantic relationships have noted that individuals reported engaging in prosocial responses when feeling jealous. Guerrero, Hannawa, and Babin (2011) developed the Communicative Responses to Jealousy Scale (CRJ) based on recalled jealousy experiences of dating couples. They found that one of the four main responses to jealousy is constructive communication, which consists of direct prosocial behaviors (e.g., trying to talk to one's partner and reaching an understanding) and indirect prosocial behaviors (e.g., spending more time with one's partner than usual). Moreover, married and dating couples also reported engaging in more constructive behaviors (e.g., increasing affection) and less destructive behaviors (e.g., yelling at their partner) when they were more satisfied with their relationships (Buunk, 1982; Guerrero, Hannawa, & Babin, 2011; Kennedy-Lightsey & Booth-Butterfield, 2011).

However, the nature of friendship can be different from that of a romantic relationship because a friendship is not an exclusive relationship like a committed romantic relationship (Fletcher, Hunter, & Eanes, 2006; South & Haynie, 2004; Parker, Kruse, & Aikins, 2010). Due to the greater ambiguity of relational threats and betrayals in friendships, research on friendship jealousy may reveal a wider range of jealous behaviors that people strategically employ, including not only direct and antisocial but also indirect and prosocial. In fact, in a recent study, college students experiencing jealousy in same-sex friendships endorsed engaging in less extreme jealous behaviors overall while reporting both direct and indirect and prosocial and antisocial responses (Blomquist, 2018). Another study on jealousy also found that young adults reported utilizing different types of responses (e.g., prosocial, antisocial, and avoidance/denial)

depending on the specific situations that triggered their jealousy in opposite-sex friendship; of these, prosocial behaviors (e.g., explaining their feelings) were among the most favored responses (Bevan & Sampter, 2004). Additionally, participants in more satisfying, invested, or committed same-sex or opposite-sex friendships were more likely to use prosocial expressions rather than direct aggression, passive aggression, or denial when feeling angry with their friends (Allen, Babin, & McEwan, 2012). Based on this evidence, we may expect a wider range of jealous reactions in friendships than romantic relationships, and therefore, it is necessary to look at the comprehensive range of jealous behaviors in same-sex friendships from prosocial to antisocial and from direct to indirect.

Other overlooked, yet important, aspects of jealous reactions are those directed towards a rival. A number of studies on jealousy have primarily focused on behaviors directed towards a loved one. Although this is a logical first step in investigating jealous responses, it does not sufficiently capture all the possible reactions of jealousy. For example, if we only examine behaviors towards a loved one, individuals with avoidant attachment style and those with secure attachment style may seem to behave very similarly in a jealous situation. People with both avoidant and secure attachment styles generally report low levels of jealousy (e.g., Buunk, 1997; Guerrero, 1998; Rydell & Bringle, 2007; Sharpsteen & Kirkpatrick, 1997). However, when it came to behaviors towards a rival, it was avoidant individuals who expressed the greatest level of aggression (Powers, 2000; Sharpsteen & Kirkpatrick, 1997). This evidence indicates that reactions towards a rival may help shed light on different motivations and consequences of jealousy. Given the different nature of rivalry in friendships compared to romantic relationships, in that a rival can be another friend or a potential friend rather than a competitor, we may expect reactions towards a friendship rival to be more diverse than those towards a romantic rival. One

of the aims of the present dissertation is to provide clarity on this important difference by examining changes in perceptions and behaviors towards a rival when an individual is feeling jealous in a same-sex friendship.

New Methodologies for Eliciting Jealousy

Another major limitation in the jealousy literature is the lack of methods for examining jealousy in more real-time situations. More importantly, to my knowledge, no study has examined the effects of jealousy in nonromantic contexts in real time. Experimentally manipulating jealousy has been particularly challenging given that jealousy requires complex interpersonal interactions. It also imposes an ethical issue as inducing jealousy in existing relationships could have negative repercussions for the relationship. For these reasons, the vast majority of prior research on adult jealousy has relied heavily on either hypothetical scenarios or recall of past experiences of jealousy. Although such approaches certainly provide insights into jealousy, they also have limitations. The next paragraphs will discuss some limitations of each approach.

Reactions to hypothetical scenarios often do not accurately predict people's responses in real emotional situations. For instance, the findings of some jealousy research that used hypothetical scenarios to assess sex differences in infidelity were not supported by the studies that examined people's feelings about actual experiences of infidelity (Grice & Seely, 2000; Harris, 2000, 2002, 2003). Furthermore, numerous reports on emotional forecasting suggest that people are often poor at predicting their own feelings in a variety of situations, including losing a romantic partner (Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998; Kahneman & Snell, 1992; Loewenstein, O'Donoghue, & Rabin, 2003; Mellers & McGraw, 2001; Wilson & Gilbert, 2003, 2005). A recent study developed a 5-stage hypothetical scenario in which participants were

exposed to increasing levels of relationship threat (Heulsnitz, Farrell, Simpson, Griskevicius, & Szepsenwol, 2018). Although this method may replicate the dynamic process of feeling jealous in a more realistic way, it is still subject to the same limitation: individuals may respond differently in real-life situations.

The retrospective recall paradigm also has its drawbacks, such as memory bias. For example, the outcome of a recalled event may bias an individual's feelings about and appraisals of that event when it is recalled (Hawkins & Hastie, 1990). Moreover, because the recalled episode is self-selected, individual differences in self-reported jealousy may be attributable to the different situations they selected or to their recollection of different parts of the situation (Heulsnitz, Farrell, Simpson, Griskevicius, & Szepsenwol, 2018). Thus, the recall approach also has potential validity issues in jealousy research.

To avoid such problems, several studies have attempted to assess jealousy in real-time, using methods ranging from experimental manipulation in the lab to a longitudinal diary method. DeSteno and his colleagues (2006) evoked jealousy through highly sophisticated social encounters in the lab in which a participant was rejected by a partner (i.e., a confederate) in favor of another stranger. Another experiment by Harmon-Jones and his colleagues (2009) utilized a computerized ball-toss game in which a participant was ostracized by two other computerized players. Both paradigms successfully elicited jealousy, clearly demonstrating that specific social rejections triggering jealousy can be produced in the lab. However, a question still remains as to whether or not the reactions would hold true if a participant's existing primary relationship was at stake as opposed to a temporary relationship formed in the lab. In a recent study, another group of researchers tested this by bringing actual couples into the lab and creating a relationship-threatening situation. In their experiment, a participant was led to believe that

according to past research, their partner would possibly experience attraction to a confederate when the confederate shared a secret with their partner (Montoya & Hibbard, 2014). Their paradigm attempted to minimize the potential harm on participants' relationships by designing that their cover story (i.e., past research on attraction) was not real.

Overcoming both logistical and ethical constraints in the lab, Neal and Lemay (2014) employed a dyadic diary method to examine daily experiences of jealousy in established romantic relationships. Using this longitudinal approach, they found that when participants perceived a relationship threat, they were more likely to engage in mate-guarding behaviors, which led to increases in their *partner's* subsequent satisfaction and commitment. The new paradigms described in this section seem promising in that they enable researchers to overcome challenges in jealousy research and investigate the effects of actual emotional experiences of jealousy. However, as discussed previously, the effects of jealousy on friendships have not been examined in real-time situations. Hence, one of the aims of this dissertation will be to investigate same-sex friendship jealousy in real-time interactions.

Dissertation Aims & Outline

The aim of the present dissertation is to explore a more comprehensive range of behaviors associated with jealousy, including those that help serve jealousy's goal of protecting a relationship when an adult's same-sex friendship is threatened by a rival. Past research on jealousy has primarily emphasized destructive reactions towards a loved one, and therefore, this dissertation fills a gap in the research by examining a broader range of responses, including prosocial and antisocial behaviors, as well as responses directed both towards a loved one and towards a rival. A number of different methodologies will be used in this investigation: a recall

of a past experience of jealousy; a hypothetical scenario; a laboratory experiment; and a longitudinal diary.

The outline for the remainder of the dissertation is as follows. Chapter 1 presents data from participants who recalled an actual experience of jealousy and from those who imagined a hypothetical jealousy scenario. Participants who recalled an experience of jealousy in a same-sex friendship reported engaging in both prosocial and antisocial behaviors during the experience. Using lists of prosocial and antisocial behaviors comprised from participants' reported responses to actual experiences of jealousy in friendships, I attempted to replicate and extend the findings in a hypothetical study. Using a hypothetical scenario, I examined how people respond to a friendship-threatening situation with both prosocial and antisocial behaviors.

In Chapter 2 and Chapter 3, I discuss the new methodologies I employed to induce jealousy in more real-time interactions. Chapter 2 explores the reactions of jealous behaviors in an established friendship in a laboratory experiment. In the experiment, a participant's best friend chose another friend over the participant and appeared to exclude the participant from spending time with them. Self-reported emotions, the participant's perceptions about the rival, and prosocial and antisocial behaviors towards both the best friend and the rival were assessed. Chapter 3 examines responses to friendship jealousy in a more real-life setting using the longitudinal diary method. For 14 days, participants reported their daily perceptions of relationship threat, jealous feelings, a variety of jealous behaviors, and friendship outcomes, including satisfaction from and commitment to their best same-sex friendship. The relationship between threat perception, jealous feelings, jealous behaviors, and relational outcomes were examined. The final chapter provides a review of and conclusion to the findings from the previous empirical chapters.

CHAPTER 2

Jealousy in Same-Sex Friendship Elicited via a Recall Experiment and via Hypothetical Scenarios

This chapter will explore adults' jealousy in same-sex friendship and the variety of jealous behaviors that they engage in. Although there has been some previous research on the responses of jealousy in same-sex friendships, it has heavily focused on children and adolescents (e.g., Kraft & Mayeux, 2018; Lavallee & Parker, 2009; Parker, Campbell, Kollat, & Lucas, 2008; Parker, Ebrahimi, & Libber, 2005; Parker et al., 2010; Parker et al., 2005; Parker, Ramich, & Roth, 2009; Roth & Parker, 2009). A few studies have looked at adults' jealousy experiences in non-romantic relationships, but, to date, little research has really delved into the wide range of behaviors that adults engage in to protect their same-sex friendships. The present chapter will investigate a more comprehensive set of behaviors that adults engage in during jealousy in same-sex friendship by 1) examining recalled experiences of jealous behaviors, including both prosocial and antisocial behaviors, and 2) manipulating jealousy with a hypothetical scenario using a list of possible jealous behaviors compiled from the recall study.

The focus on examining a variety of jealous behaviors in this study is based on the functional approach to emotion that was introduced in the previous chapter. The functional view of emotion emphasizes that each emotion is a motivational state that helps resolve a particular inclusive fitness risk and that it can be fulfilled by a number of different ways (Darwin, 1872/1965; Ekman, 1992; Frijda, 1986; Harris & Salovey, 2008; Keltner & Haidt, 1999; Nesse, 1990; Roseman, 2013). From this perspective, jealousy is an emotion that motivates people to engage in various behaviors to achieve the goal of protecting the relationship from a rival. However, the previous literature on jealousy heavily focused on antisocial behaviors because

some of their consequences are extreme, even homicidal (Daly, Wilson, & Weghorst, 1982; Harris, 2003). This study aims to refocus attention on the goal of jealousy and the *variety* of behaviors that people choose to engage in to achieve that goal, ranging from prosocial to antisocial.

The small number of studies that have examined friendship jealousy in any age group indicated that, across adolescents and adults, individuals who experienced same-sex friendship jealousy reported engaging in as wide a range of jealous behaviors as people do when experiencing romantic jealousy. The included behaviors varied on dimensions related to prosociality/antisociality (i.e., whether a behavior benefits another) and directness/indirectness (i.e., whether a behavior explicitly deals with the jealousy situation involving the loved one or not). In hypothetical vignettes, adolescents reported that they would engage in direct prosocial jealous behaviors, such as talking to their best friend to resolve their hurt feelings (Parker, Campbell, & Lucas, 2007, as cited in Parker, Kruse, & Aikins, 2010) and indirect prosocial jealous behaviors, such as making their friend something special to show him/her how much they mean to them (Giltenboth, 2001, as cited in Parker, Kruse, & Aikins, 2010). In the same projects, adolescents also reported direct antisocial behaviors (e.g., physically aggressing against their best friend or rival) and indirect antisocial behaviors (e.g., spreading negative rumors about their best friend or rival to hurt their reputations), as well as surveillance (e.g., spying or snooping to learn more about the threat the rival poses) and avoidance/denial behaviors (e.g., ignoring the issue altogether) (Giltenboth, 2001; Parker, Campbell, & Lucas, 2007, as cited in Parker, Kruse, & Aikins, 2010). Similarly, using a small sample size, Blomquist (2018) focused on college students' recalled experiences of same-sex friendship jealousy and found that young adults also reported engaging in a variety of jealous behaviors, including direct prosocial behaviors (e.g.,

calmly talking with their friend about their feelings), indirect prosocial behaviors (e.g., increasing affection towards their friend), direct antisocial behaviors (e.g., verbally confronting their friend in an aggressive way), indirect antisocial behaviors (e.g., showing their negative feelings through body language), surveillance (e.g., spying, snooping, or keeping tabs on their friend), and avoidance/denial behaviors (i.e., avoiding/decreasing communication). Lastly, a recent study (Krems, Williams, Aktipis, & Kenrick, 2020) that investigated friendship jealousy in college students and community samples documented that jealous adults in friendships endorsed various "friend-guarding" behaviors although the majority of them were antisocial. These findings suggest that, similar to a romantic relationship, individuals may engage in a number of different jealous behaviors, from prosocial to antisocial and from direct to indirect, trying to secure their best same-sex friendship.

However, we hypothesize that there may be notable qualitative differences in jealous behaviors between friendships and romantic relationships; specifically, people may be more likely to respond with indirect behaviors in friendships compared to romantic relationships. This hypothesis was based on previous research suggesting that people perceive direct jealous behaviors towards a partner as riskier when there is considerable uncertainty in the relationship (Guerrero, Anderson, Jorgensen, Spitzberg, & Eloy, 1995) and the nature of friendship, which is a relationship that involves greater uncertainty and ambiguity regarding betrayals. Although little research, to our knowledge, has directly compared jealous behaviors in friendships and romantic relationships, some research that has examined conflict behaviors across different types of relationships suggests the possibility that differences in behaviors will arise. Connolly and her colleagues (2015) compared adolescents' behavioral differences in conflict strategies in romantic relationships and friendships. They found that, overall, more aggressive behaviors were observed

in romantic relationships whereas relatively fewer aggressive behaviors and more prosocial behaviors, such as humor and expressions of caring, support, and affection, were reported in same-sex friendship (Connolly et al., 2015). Moreover, when adults felt angry with their same-sex or opposite-sex friends, better friendship qualities (e.g., higher satisfaction and commitment) predicted the greater use of prosocial behaviors rather than aggressive behaviors and denial behaviors (Allen, Babin, & McEwan, 2012). Taken together, we predict that individuals may be more likely to react prosocially and indirectly and use less direct antisocial behaviors in a same-sex friendship jealousy situation than in a romantic one.

Lastly, the current chapter aims to capture a more comprehensive set of jealousy behaviors by including reactions towards rivals. Previous findings in romantic relationships suggest that jealous individuals more often respond indirectly towards rivals (e.g., rival derogation) rather than directly (e.g., rival contact) (e.g., Guerrero, Hannawa, & Babin, 2011). Given that friendship jealousy may motivate individuals to react more indirectly overall than romantic jealousy, as we previously hypothesized, we predict that people may be even more likely to engage in indirect behaviors towards rivals in same-sex friendship jealousy.

Furthermore, the present work will assess jealous cognitions as well as behaviors towards rivals. Argyle and Henderson (1985) noted that adults generally understand that being jealous or critical of a friend's other relationships is against the "rules" of friendship. If this is true, one can expect that jealous adults may show attenuated or fewer behaviors in friendship jealousy than in romantic jealousy, especially towards rivals. However, that does not necessarily mean that adults do not experience any friendship jealousy. Thus, to fully understand how friendship jealousy influences reactions towards rivals, the current study will investigate more covert manifestations

of jealousy — particularly, cognitive assessments about rivals — by measuring jealous individuals' perceptions of a rival's personality traits.

In summary, up to this point, little research has focused on adults' jealousy experiences in same-sex friendship. The current project aims to verify that adults do indeed feel jealous of same-sex rivals and when they do, they may engage in a variety of jealous behaviors to secure their friendship. The second aim of the current project is to examine any qualitative differences between adults' jealous behaviors in same-sex friendships and romantic relationships. Based on the previous findings, we predict that adults may be more likely to engage in indirect behaviors when feeling jealous in same-sex friendships compared to romantic relationships. Moreover, to capture more comprehensive reactions to friendship jealousy, the present work also aims to assess jealous cognitions as well as jealous behaviors towards rivals.

We tested these hypotheses with two studies in which jealousy was elicited with retrospective recall and a hypothetical scenario, respectively. In Study 2.1, participants were asked to recall their most recent jealousy experiences in same-sex friendships in an open-ended survey. They were then asked to specifically recall and describe in detail any positive and negative behaviors that they engaged in at the time of the jealousy episode.

In Study 2.2, using a list of various jealous behaviors compiled from Study 2.1, we manipulated jealousy with a hypothetical scenario. Participants were randomly assigned to a jealous or non-jealous condition in which they imagined reading a conversation between their best friend and another friend of the same sex. After the manipulation, they completed a survey that assessed their emotions, their perceptions of the rival's personality, and their behaviors. Additionally, to explore whether and how the factors known to be associated with romantic

jealousy are related to friendship jealousy, we measured jealousy-related personal and relational factors, such as attachment styles, self-esteem, and friendship satisfaction.

Study 2.1

In the first experiment, we aimed to understand adults' overall jealousy experiences with their best same-sex friends. After answering general information questions about their best same-sex friendship, participants provided information about their overall tendencies towards and experiences of jealousy in same-sex friendships. Then participants were asked to recall the most recent time that they felt jealous of their best same-sex friends' friendships with another person and to describe any positive and negative behaviors in which they engaged in an open-response format. We were specifically interested in 1) whether and to what extent adults report experiencing jealousy in same-sex friendships and 2) the types of behaviors that they engaged in when feeling jealous in same-sex friendships.

Method

Participants. We recruited 290 participants from a subject pool of a large research university. They received a course credit for their participation. Because the focus of the current work is friendship jealousy in a non-romantic context, we excluded 22 participants whose sexual orientation was either homosexual or bisexual due to potential confounding factors. Thus, the final sample size was 268 participants (137 male/131 female; age $M = 20.5$, $SD = 2.5$).

Measures. Participants first answered a short questionnaire on demographic information including age, gender, and ethnicity, and basic information about their best friend. Specifically, participants provided their definition of a best friend, and disclosed whether they currently have a friend whom they consider to be their best friend excluding their current romantic partner, the

number of best friend(s) they have, and the number of best friend(s) whom they regularly hang out with.

Next, participants were shown a short passage on the definition of jealousy in scientific research. The instructions described how jealousy and envy differ in their definitions and provided examples of each emotion. Participants then completed five questions about their general tendencies towards and overall experiences of jealousy. Specifically, we asked whether participants had ever experienced jealousy in same-sex friendship at some point in their life and within the past year. Participants were also asked whether they have suspected or known that a same-sex friend was jealous of their relationship with someone else at some point in their life and within the past year. Lastly, they rated how their propensity towards jealousy has changed since they were younger on a 7-point Likert scale, in which 1 = "Much decreased", 2 = "Moderately decreased", 3 = "Slightly decreased", 4 = "About the same", 5 = "Slightly increased", 6 = "Moderately increased", and 7 = "Much increased".

Then, participants were asked to recall the most recent time that they felt jealous in a same-sex friendship and to respond to questions about that experience. Participants were first asked to describe their jealousy experience in detail in an open-response format ("Please recall the most recent time you have felt jealous of your same-sex friend. Please describe in detail the (1) thoughts, (2) feelings, and (3) behaviors that you engaged in at that situation. This could include anything from when you started feeling worried and jealous, to direct (e.g., talking to your friend about what you felt) or indirect (e.g., stopping talking to your friend) behaviors you engaged in. These are just some examples; please describe what you personally thought, felt and did"). Next, participants were asked to describe any positive behaviors that they engaged in during the jealousy episode that they had just described ("In the jealous episode you just

described, please specifically describe in detail any positive behaviors you engaged in to regain your friend's attention. For example, it can include behaviors such as trying to spend more time with your friend, and trying to be a better friend, etc. These are some examples; please describe what you personally engaged in"). Lastly, participants were asked to describe any negative behaviors that they engaged in during the same episode ("In the jealous episode you just described, please specifically describe in detail any negative behaviors you engaged in. For example, it can include behaviors such as speaking ill of my friend to someone else, going through my friend's Facebook, and stopping talking to my friend, etc. These are some examples; please describe what you personally engaged in"). For the analysis, the author and two independent coders coded the behaviors. The specific coding process will be discussed in more detail in the results section.

Results and Discussion

Descriptives of Best Friends. In order to establish that most adults have experienced best same-sex friendship, we first asked participants whether they currently have any best same-sex friends. The majority of the sample, 231 participants (86.2%), answered that they currently have a best friend who is not their current romantic partner. On average, participants had three best friends, although the most frequent answer was two. There were seven participants (3.0%) who answered that they have more than 10 best friends. The average number of best friends whom participants regularly spent time with was two whereas the mode was one. The maximum number of best friends whom participants regularly hung out with was seven. Table 1.1 shows the descriptive results of best friends.

Next, to understand what best friendship means to participants, we asked for a definition of a best friend. Two independent coders coded the essential content words from participants'

answers. For example, if a participant wrote, “Someone who is always there for you and is trustworthy”, “trust” and “reliability” would be coded. Although the two coders showed high interrater reliability (88.7%), when there were differences between the coders, the author made the final decision. In this way, we found seven core concepts: closeness, trust, reliability, enjoyment of time spent together, loyalty, familial feelings, and longevity. Among these, participants most frequently mentioned closeness (38.0%), trust (23.1%), and reliability (22.3%) as the core concepts of a best friend. The full list of coded words and their frequency are also presented in Table 2.1.

Overall Jealousy Experiences in Same-Sex Friendship. We then asked participants about their overall experiences of and tendency towards jealousy. Out of 268 participants, 60.1% of them reported that they had experienced jealousy in same-sex friendship at some point in their life, and 30.6% said that they had experienced it within the past year. As to being the target of a friend’s jealousy, 49.3% of participants answered that they had suspected or known that a same-sex friend was jealous of them and someone else (i.e., a rival) at some point in their life, and 27.6% of participants said they had been the subject of such jealousy within the past year. Considering the possibility that people may underreport the experience of this socially undesirable emotion, it is noteworthy that more participants reported being the jealous person than being the target of jealousy. This may suggest that jealousy often goes unexpressed and/or undetected, especially in a friendship context.

More than half of the participants (62.3%) reported that their propensity towards jealousy has decreased since they were younger. There were 16.8% of participants who reported their propensity towards jealousy was about the same, and 20.9% who reported increases in their

propensity towards jealousy. Table 2.1 shows a detailed breakdown of the changes in propensity towards jealousy.

Recalled Jealousy and Jealous Behaviors. When asked to recall their most recent jealousy experience in same-sex friendship, 64 participants (23.8%) reported that they could not remember any episodes. Additionally, 83 participants (30.9%) failed to follow the instructions (e.g., by describing an envy episode, by describing romantic jealousy). After excluding these responses, 121 same-sex friendship jealousy episodes were included for further analyses. The majority of the recalled episodes (86%) tapped into a situation in which a participant's best friend hung out with another friend or group of friends without the jealous individual, whereas the rest (14%) discussed instances in which a participant's best friend spent more time with his/her romantic partner or family.

Out of 121 jealousy episodes, 64.6% of them included participants engaging in both prosocial and antisocial jealous behaviors. Twenty-eight episodes (23.1%) included only prosocial behaviors, whereas 12 episodes (9.9%) reported only antisocial behaviors. Three participants (2.4%) reported engaging in neither prosocial nor antisocial behaviors. Interestingly, overall, participants reported a higher number of prosocial behaviors than antisocial behaviors. More details on each type of behavior will be discussed in the following paragraphs.

In coding specific jealous behaviors, we utilized two steps to prevent any biases. The author and two independent coders individually coded the behaviors. When there were inconsistencies, the author made the final decisions after reviewing the results of the independent coders. There was high inter-rater agreement (76.4%) among the two independent coders (not the author), and the final full lists of coded behaviors are presented in Table 2.2.

Most prosocial behaviors reported by participants were indirect behaviors that did not explicitly deal with the jealousy situation. The list of specific behaviors reported by participants in order of highest frequency include the following: trying to hang out first and to spend more time together; trying to talk with or contact the friend more; trying to be a better friend (e.g., being more attentive and more caring); trying to strengthen the friendship or to reaffirm the value of the friendship; talking openly about the situation causing jealousy; trying to understand the friend's point of view; trying to have more fun together and to be funnier; and asking directly for more attention. The top two most frequently reported behaviors tap into the category of "friend-guarding", which is related to dominating a friend's attention and time. These results fit with the functional view of jealousy, which suggests that, even in a non-romantic context, the core motivational state of jealousy is to secure the loved one and the relationship against a rival (Krems et al., 2020).

Putting these findings in the context of the literature, we will compare these behaviors in friendships to those in romantic relationships to get a general impression of how they differ. Studies have consistently found that jealous people in romantic relationships were relatively more likely to engage in direct prosocial behaviors (e.g., discussing the situation with a partner) than indirect prosocial behaviors (e.g., spending more time with a partner) (e.g., Guerrero et al., 2011). However, in same-sex friendships, we found that indirect prosocial behaviors were more frequently mentioned than direct prosocial behaviors. In fact, direct prosocial behaviors (e.g., talking openly about the jealousy situation, asking directly for more attention) were among the least frequently mentioned behaviors in our data. Although both direct and indirect prosocial behaviors were reported across friendship and romantic contexts, our data suggests that different

interpersonal contexts may influence the type of behaviors that people think are the most effective or appropriate in a certain jealousy situation.

Similar to prosocial behaviors, the antisocial behaviors reported by participants were also largely indirect. The greater frequency of indirect behaviors in friendships is interesting in this context given that work on romantic relationships puts a lot of emphasis on (extreme) antisocial behaviors. The most frequently mentioned antisocial behaviors in same-sex friendships were avoidance/distancing behaviors, including stopping talking to the friend and contacting the friend less. Some other notable behaviors involved other friends, such as venting about the friend and/or the situation to other friends and spending more time with other friends. The remaining antisocial behaviors included giving the friend the cold shoulder and acting more passive aggressive, going through the friend's or rival's social media, staying angry or worried, confronting the friend about the situation, doubting oneself and questioning the friendship. Importantly, it is noteworthy that the second most frequently reported behavior in this category was to not engage in any antisocial behaviors at all. This is an interesting finding as it differs from the common assumption that jealousy makes people hastily jump into antisocial behaviors.

Moreover, we found several important differences between the antisocial behaviors we found in our work on friendship jealousy and those reported in the literature on romantic jealousy. As with prosocial behaviors, jealous people in friendships were more likely to endorse indirect antisocial behaviors than direct antisocial behaviors. Direct antisocial behaviors, such as confronting the friend about the situation, were among the least mentioned behaviors. Another important distinction between friendship and romantic jealousy was the lack of reports of direct antisocial behaviors towards a rival. For example, numerous studies of jealousy in romantic relationships have discussed various antisocial jealous behaviors towards a rival, including rival

confrontation, rival derogation to a partner, and showing the rival signs of possession (e.g., Bevan, 2008; Guerrero, 2014; Guerrero & Afifi, 1999; Guerrero et al., 2011, Yoshimura, 2004). However, in our study, participants rarely mentioned similar behaviors and only a few mentioned that they talked badly about the rival to their other friends, which is still not a behavior directed *at* a rival. These results may illustrate one of the most striking differences between romantic relationships and friendships. Unlike in romantic relationships, friends may feel less legitimate about explicitly "warning" or condemning a rival regarding jealous situations due to the less clear exclusivity that exists in friendships (Parker, Campbell, & Lucas, 2007). Furthermore, it may often be the case that the jealous individual is also friends with the rival, with whom they want or need to maintain a positive relationship. These findings might be the first, to our knowledge, that document subtle but important differences in the goals and manifestations of jealousy in friendship.

Table 2.1

Study 2.1 General Information about Best Friends and Overall Jealousy Experiences

Current Best Friendship Status	Yes	86.2%
	No	12.3%
	Other	1.5%
Number of Best Friends	1	16.8%
	2	29.8%
	3	21.6%
	4	10.8%
	5	11.2%
	6	3.4%
	7	2.1%
	8	2.1%
	9	0.4%
	More than 10	3.0%
Number of Best Friends	1	56.7%
Participants Regularly See	2	34.1%
	3	11.6%
	4	6.0%
	5	5.1%
	6	0.4%
	7	0.4%
Core Concepts of a Best Friend	Closeness	38.0%
	Trust	23.1%
	Reliability	22.3%
	Enjoyment of Time Spent Together	7.8%
	Loyalty	3.6%
	Familiar Feelings	3.0%
	Longevity	2.2%
Changes in Propensity Towards Jealousy	Much Decreased	23.9%
With Age	Moderately Decreased	20.9%
	Slightly Decreased	17.5%
	About the Same	16.8%
	Slightly Increased	14.9%
	Moderately Increased	4.1%
	Much Increased	1.9%
Ever Experienced Jealousy in SSF	Yes	60.1%
at Some Point in Life	No	39.9%
Ever Experienced Jealousy in SSF	Yes	30.6%
within the Past Year	No	69.4%
Ever Been a Target of Jealousy in SSF	Yes	49.3%
at Some Point in Life	No	50.7%
Ever Been a Target of Jealousy in SSF	Yes	27.6%
within the Past Year	No	72.4%

Table 2.2

Study 2.1 The Frequency of Recalled Prosocial and Antisocial Jealous Behaviors

Prosocial behaviors		Antisocial behaviors	
Asking to hang out first; Trying to spend more time together	28.0%	Stopping talking or contact for a while; Distancing	29.1%
Trying to talk or contact more	19.8%	Nothing	23.1%
Trying to be a better friend (e.g., more attentive, more caring)	15.7%	Venting about the situation to another friend; Talking badly about the friend or rival to others	14.1%
Nothing	12.3%	Giving the cold shoulder; Acting more passive aggressive	8.2%
Trying to strengthen the friendship or reaffirm the value of the friendship	9.5%	Hanging out or talking more with other friends	7.4%
Talking openly about the jealousy situation	5.4%	Going through the friend's or rival's social media	7.4%
Trying to understand the friend's point of view	4.1%	Staying angry or worried	4.4%
Trying to have more fun together or be funnier	4.1%	Confronting the friend about the situation	2.9%
Asking directly for more attention	0.6%	Doubting oneself	2.2%
		Questioning the friendship	0.7%

Study 2.2

Study 2.1 provided evidence that individuals who experienced same-sex friendship jealousy reported engaging in both positive and negative behaviors. In fact, participants reported more positive behaviors than negative behaviors and, as predicted, they overwhelmingly reported engaging in more indirect behaviors regardless of the type of behaviors. In the next study, we attempted to extend and replicate the results of Study 2.1 in several ways. First, we manipulated jealousy with a hypothetical vignette and examined whether we could replicate the previous findings that individuals report engaging in both positive and negative behaviors when feeling jealous in same-sex friendship. Importantly, in doing so, we composed and provided participants with a comprehensive list of jealous behaviors in same-sex friendship compiled from Study 2.1. This process further ensured the validity of the findings of Study 2.1.

Next, in addition to emotional and behavioral responses, we also examined cognitions regarding how individuals perceive a rival's characteristics. Although having a rival is one of the inherent components of jealousy (Harris & Darby, 2010; Parrott & Smith, 1993; Salovey & Rothman, 1991; White & Mullen, 1989), the majority of jealousy research has only focused on overt behaviors towards rivals. However, in Study 2.1, few participants reported engaging in overt negative behaviors such as rival confrontation or showing signs of possession in front of a rival. Furthermore, considering the nature of friendship, which has less clear-cut rules about the rights and expectations of those in the relationship, and the fact that a rival can also be another friend or a potential friend of the jealous individual, one would predict that jealous people in a friendship context may be less likely to show overt reactions towards a rival than in a romantic context. Therefore, in addition to behaviors, we also examined cognitions towards rivals that may capture covert manifestations of friendship jealousy. Specifically, we assessed the jealous parties' perceptions of rivals' personalities.

We also assessed a variety of personal and relational factors that are known to be associated with romantic jealousy experiences. Despite many inconsistent findings within the previous literature on romantic relationships, an extensive review has reported differential jealous responses as a function of several factors that are theoretically closely related to jealousy, such as attachment style and relational satisfaction and commitment (Chung & Harris, 2018). By examining those predictors in this study, we tested their possible effects in a non-romantic context, namely, in same-sex friendship jealousy.

In the present study, participants were randomly assigned to the jealous or non-jealous condition in which they would imagine reading an excluding or non-excluding chat between their best friend and another friend of the same sex. Following the chat, participants reported

their emotions, their perceptions of the rival, and their behaviors in a survey. By experimentally manipulating jealousy in same-sex friendship, we specifically 1) attempted to replicate the results of Study 2.1 in which adults responded with both positive and negative behaviors, 2) assessed cognitive manifestations of jealousy by examining perceptions about rivals, and 3) explored how the factors that have previously been shown to be associated with jealousy (e.g., attachment style) predict jealous reactions in same-sex friendship.

Method

Participants. A sample of 441 participants was recruited from a subject pool of a large research university, and they received a course credit for their participation (129 male/312 female; age M = 20.4, SD = 1.9). The specific sample size was determined prior to this study based on the effect size from our pilot study and the power analysis with 80% power.

Measures. Participants first completed a demographic questionnaire, including questions regarding gender, age, ethnicity, native language, sexual orientation, year in school, birth order, and number of siblings.

Friendship Information. Participants were then asked about their best same-sex friendship. Participants first wrote down the initials of their best same-sex friend and answered questions on the length, closeness, value, and satisfaction of that friendship. For example, the question on friendship value asked, "How much do you value your friendship with (initials of their best same-sex friend)?" The length of friendship question was answered in the unit of month(s), and the rest of the questions were answered using a 5-point Likert scale, in which 1 = "Not at all" and 5 = "Very much".

Jealousy Manipulation. A hypothetical scenario was used to manipulate jealousy. Participants were shown message exchanges between two people and instructed to imagine a

situation in which their best same-sex friend's laptop was on, and they accidentally read the message conversation that was open. Participants were told that the conversation was between their best friend and another same-sex friend that they also knew.

Two message conversations were created by the author. In the jealousy condition, two friends planned to go to a restaurant together and explicitly excluded the participant from their plan, whereas in the control condition, they only talked about the restaurants they separately visited. The other topics (e.g., class) and the cheerful tone in the conversation were kept the same. The scripts of both conditions are presented in Appendix A (i.e., jealousy condition) and Appendix B (i.e., control condition).

Jealousy Reactions – Self-Reported Emotions. After the chat, participants were asked to respond to the following items as honestly as possible. Participants rated the degree to which they would experience 10 emotions immediately after reading the messages. We included "Jealous" to directly assess jealousy, and "Betrayed", "Hurt", "Angry", "Anxious", and "Sad" to assess jealousy-related emotions (Parrot & Smith, 1993; Sharpsteen & Kirkpatrick, 1997). As distractors, we also included other social emotions (i.e., "Embarrassed" and "Guilty") and a positive emotion (i.e., "Happy"). All emotions were measured on a sliding scale from 0 = "Not at all" to 100 = "Extremely".

Jealousy Reactions – Perceptions of the Rival's Personality. Next, participants reported their perceptions of the rival's personality. Participants were asked to rate as honestly as possible the degree to which they thought each personality adjective in a provided list would be descriptive of the rival. The list of personality adjectives consisted of positive and negative traits: "Nice/Likable", "Good Communicator", "Selfish", "Sociable", "Incompetent", "Successful in

School", "Untrustworthy", "Intelligent", "Sensitive", "Good personality", and "Self-Involved". Each adjective was measured on a sliding scale from 0 = "Not at all" to 100 = "Extremely".

Jealousy Reactions – Behaviors. Lastly, using the comprehensive list of jealous behaviors compiled from Study 2.1, participants rated the degree to which they were likely to engage in each jealous behavior after reading such a conversation. All questions were answered on a sliding scale from 0 = "Not at all" to 100 = "Extremely".

Antisocial Behaviors. We included 10 negative jealous behaviors. The statement "I would confront my best friend about the situation" assesses a direct negative behavior towards the best friend. The statements "I would give the cold shoulder to my best friend and react more passive-aggressively", "I would stay angry and worried", and "I would vent about the situation to others and talk badly about my best friend" capture indirect negative behaviors towards the best friend. "I would vent about the situation to others and talk badly about the other person" assesses an indirect negative behavior towards the rival. Surveillance behaviors were captured with the statements, "I would go through my best friend's social media such as Facebook or Instagram" and "I would go through the other person's social media such as Facebook or Instagram". Distancing and avoidance behaviors were measured by the statements, "I would stop talking to my best friend and distance myself from my best friend", "I would ignore contact from my best friend", and "I would start hanging out more with another friend".

Prosocial Behaviors. We included 7 positive jealous behaviors. Direct positive behavior towards the best friend was captured by "I would calmly talk about the situation and explain my feelings to my best friend". Indirect positive behaviors were measured by "I would try to talk to my best friend more (e.g., call, text)", "I would ask my best friend to hang out more and try to spend more time together", "I would try to be more caring, affectionate, and present in my best

friend's life", "I would try to reaffirm the value of our friendship and what he/she means to me", "I would try harder to understand my best friend without bringing up the situation with him/her", and "I would try to have more fun together and be a funnier person".

Manipulation Checks. To confirm that the jealousy manipulation would prompt participants to perceive the chat conversation differently from the control condition, we asked participants to answer three questions about the chat. Participants rated the degree to which they thought their best friend and the other person seemed to get along in the chat conversation, the degree to which they thought their best friend seemed to enjoy interacting with the other person, and the degree to which they thought the other person seemed to enjoy interacting with their best friend. All three questions were measured on a sliding scale from 0 = "Not at all" to 100 = "Extremely".

Personality Measures. Finally, we also included several factors that have been previously shown to be related to jealousy experiences. The following paragraphs provide detailed information about each measure.

Attachment Style – Categorical Type. We first measured participants' attachment style with their best friend. We used one of the most popular and conventional scales measuring adults' attachment style, developed by Bartholomew and Horowitz (1991). In this scale, participants were asked to choose the style that best describes him/her or is closest to the way he/she is with their best friend out of the four types (i.e., secure, preoccupied, dismissing, and fearful).

Attachment Style – Continuous Type. Due to growing criticism that attachment styles are better captured by continuous measures than by categorical measures (Fraley & Waller, 1998; Brennan, Clark, & Shaver, 1998), we also included a continuous measure of adults' attachment

style. We used the Relationship Structures questionnaire of the Experiences in Close Relationships – Revised (ECR-RS) developed by Fraley, Waller, and Brennan (2000). This scale is known to be particularly useful in assessing individual differences in attachment across various relational contexts, including friendship (Fraley, Waller, & Brennan, 2000; Fraley, Heffernan, Vicary, & Brumbaugh, 2011). Participants responded to nine items about their best friend on a 7-point Likert scale, ranging from 1 = "Strongly disagree" to 7 = "Strongly agree". Some example items include "I usually discuss my problems and concerns with this person", "I talk things over with this person", and "It helps to turn to this person in times of need".

Big Five Personality. The Big Five personality traits were assessed with a brief version of the Big Five Personality Inventory by Rammstedt and John (2007). The inventory consists of 10 items rated with a 5-point Likert scale: 1 = "Disagree strongly", 2 = "Disagree a little", 3 = "Neither agree nor disagree", 4 = "Agree a little", and 5 = "Agree strongly".

Results

Sample Checks. Of a total sample of 441 participants, 220 participants were randomly assigned to the jealousy condition and 221 to the control condition. Since many previous studies on jealousy reported gender differences in jealous reactions, we checked the distribution of gender by condition, and there was no significant difference ($\chi^2(1, n = 441) = .49$, p = .48).

Overview of Analyses. We performed one-way ANOVAs by condition on the following dependent variables: manipulation checks; emotions; perceptions of the rival's personality; and antisocial and prosocial behaviors. The results of each dependent variable will be discussed in the following paragraphs.

Manipulation Checks. We confirmed that, overall, participants perceived the interaction between their best friend and the rival as more positive in the jealousy condition. Participants in

the jealousy condition were more likely to think that their best friend and the rival got along ($F(1, 431.52) = 29.98$, $p < .001$), that their best friend enjoyed interacting with the rival ($F(1, 422.50) = 51.23$, $p < .001$), and that the rival enjoyed interacting with their best friend ($F(1, 423.87) = 34.78$, $p < .001$) compared to the control condition.

Jealousy Elicitation. Participants in the jealousy condition were more likely to report feelings of jealousy and related emotions than those in the control condition. The specific emotions include feeling jealous ($F(1, 335.04) = 98.29$, $p < .001$), betrayed ($F(1, 285.58) = 125.93$, $p < .001$), hurt ($F(1, 289.09) = 234.07$, $p < .001$), angry ($F(1, 319.09) = 106.57$, $p < .001$), anxious ($F(1, 331.22) = 68.27$, $p < .001$), and sad ($F(1, 339.20) = 190.00$, $p < .001$) (Figure 2.1). We also found differences by condition in the distractor emotions such that participants in the jealousy condition reported feeling more surprised ($F(1, 385.16) = 170.59$, $p < .001$) and embarrassed ($F(1, 351.51) = 37.83$, $p < .001$) and less happy ($F(1, 438.73) = 78.29$, $p < .001$) compared to the control condition. There was no significant difference in guilt ($F(1, 439) = .39$, $p = .53$).

Jealousy and Changes in the Perception of the Rival's Personality. Participants in the jealousy condition were more likely to say that they perceived the rival more negatively compared to the control condition. Specifically, individuals in the jealousy condition reported that they thought the rival was more untrustworthy ($F(1, 405.12) = 22.51$, $p < .001$), more selfish ($F(1, 424.17) = 12.87$, $p < .001$), less nice/likeable ($F(1, 406.40) = 4.88$, $p < .05$), and had a worse personality ($F(1, 429.27) = 9.97$, $p < .01$) compared to the control condition (Figure 2.2). There were no differences by condition in the traits of being incompetent ($F(1, 439) = 3.79$, $p = .05$), self-involved ($F(1, 439) = 3.13$, $p = .08$), a good communicator ($F(1, 424.74) = 1.26$, $p = .26$), sociable ($F(1, 439) = .03$, $p = .87$), successful in school ($F(1, 439) = 2.47$, $p = .12$), and

intelligent ($F(1, 439) = 1.44$, $p = .23$). This is an interesting finding given that in the script it was their best friend who said no to inviting the participant, not the rival.

Jealousy and Behaviors Towards the Best Friend and the Rival.

Antisocial Behaviors. When feeling jealous, participants were more likely to report engaging in all types of negative behaviors (Figure 2.3). Participants in the jealousy condition reported that they were more likely to stop talking to their best friend ($F(1, 368.08) = 40.91$, $p < .001$), ignore contact from their best friend ($F(1, 411.08) = 20.64$, $p < .001$), act more passive-aggressive ($F(1, 376.64) = 43.18$, $p < .001$), stay angry or worried ($F(1, 354.39) = 48.73$, $p < .001$), surveil their best friend's social media ($F(1, 391.25) = 21.69$, $p < .001$) and the rival's social media ($F(1, 401.97) = 24.57$, $p < .001$), vent to someone else about their best friend ($F(1, 373.04) = 26.34$, $p < .001$) and the rival ($F(1, 373.23) = 17.62$, $p < .001$), try to hang out with another friend ($F(1, 376.03) = 62.55$, $p < .001$), and confront their best friend ($F(1, 324.61) = 120.51$, $p < .001$) compared to the control condition.

Prosocial Behaviors. Similarly, participants in the jealousy condition were also more likely to increase their engagement in all types of positive behaviors compared to the control condition (Figure 2.4). Individuals in the jealousy condition reported that they were more likely to try to contact their best friend more ($F(1, 439) = 22.13$, $p < .001$), ask to hang out first and try to spend more time together ($F(1, 435.45) = 31.87$, $p < .001$), try to become more caring, affectionate, and present in their best friend's life ($F(1, 430.55) = 27.44$, $p < .001$), try to reaffirm or strengthen their friendship ($F(1, 432.19) = 49.53$, $p < .001$), try to be funnier and have more fun together ($F(1, 433.90) = 41.37$, $p < .001$), try to understand their best friend ($F(1, 432.18) = 38.02$, $p < .001$), and calmly talk about the situation ($F(1, 408.63) = 77.01$, $p < .001$).

As a post-hoc analysis, we also examined participants' overall tendency to engage in particular behaviors: whether they endorsed mainly prosocial behaviors versus mainly antisocial behaviors versus both types. For this analysis, we divided participants into four groups depending on their level of endorsement for prosocial and antisocial behaviors and compared it to the average level of each type. For example, if a participant's endorsement for all prosocial behaviors is greater than the average of all participants' endorsement for all prosocial behaviors, and the participant's endorsement for all antisocial behaviors is lower than the average of all participants' endorsement for all antisocial behaviors, then the participant was categorized into the group "Only Prosocial High". With this group categorization, we ran a chi-square test as a function of condition to see whether jealousy really increases willingness to engage in both types of behaviors. Indeed, we found a significant effect ($\chi^2(1, n = 441) = 90.13$, $p < .001$) such that jealousy was associated with the groups that increased both types of behaviors and it mainly increased antisocial behaviors (Figure 2.5). It is also noteworthy that the majority of participants in the control condition belonged to the group "Both Low".

Jealousy and Personal and Relational Factors. To explore what factors predict jealous reactions in same-sex friendship, we next examined the associations between jealous responses and a series of personal and relational factors. However, contrary to our expectations, we did not find interpretable relationships. Therefore, we will not discuss personal and relational factors further in this section but will include the full results in Appendix C (i.e., personal factors) and Appendix D (i.e., relational factors).

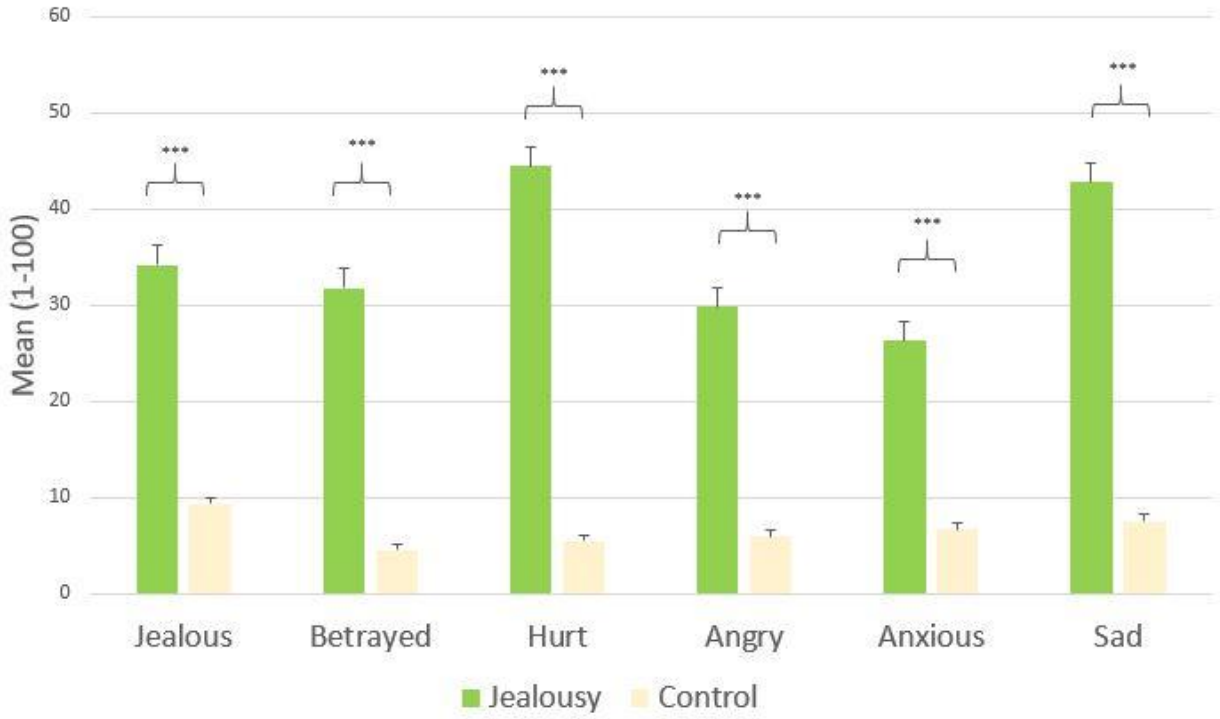


Figure 2.1. Study 2.2 Mean (SE) self-reported emotions.

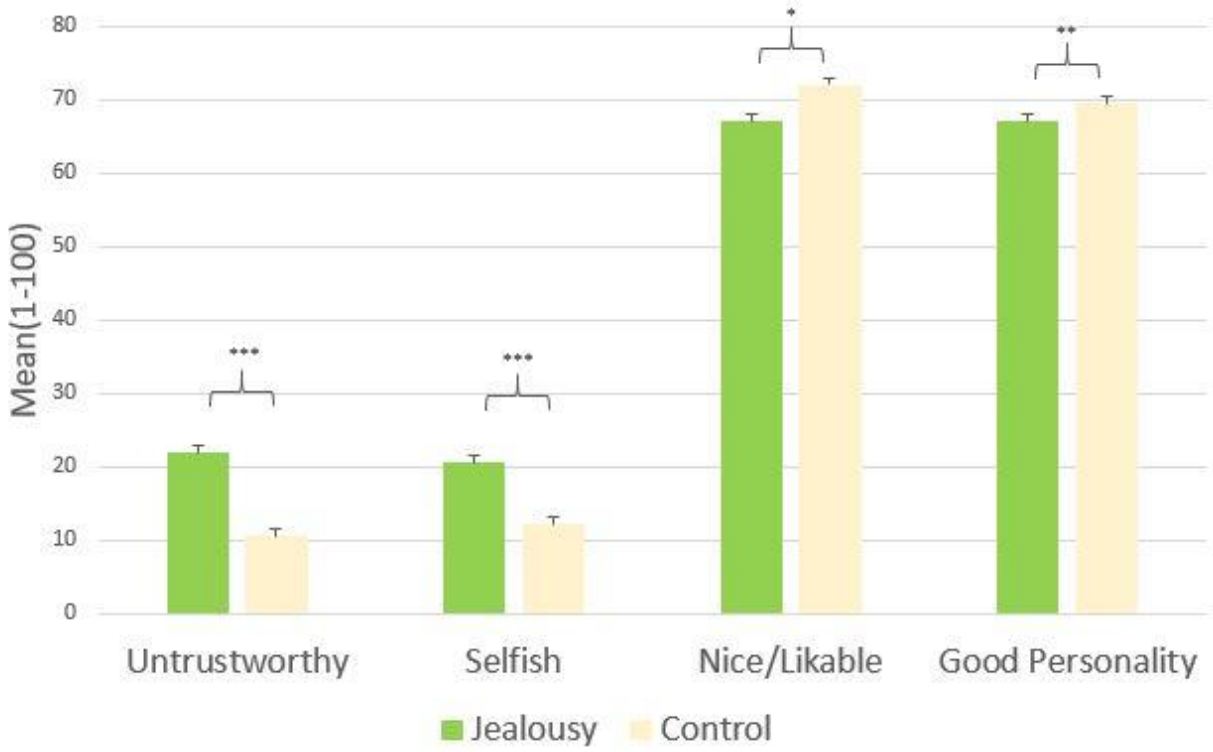


Figure 2.2. Study 2.2 Mean (SE) perceptions of the rival's personality.

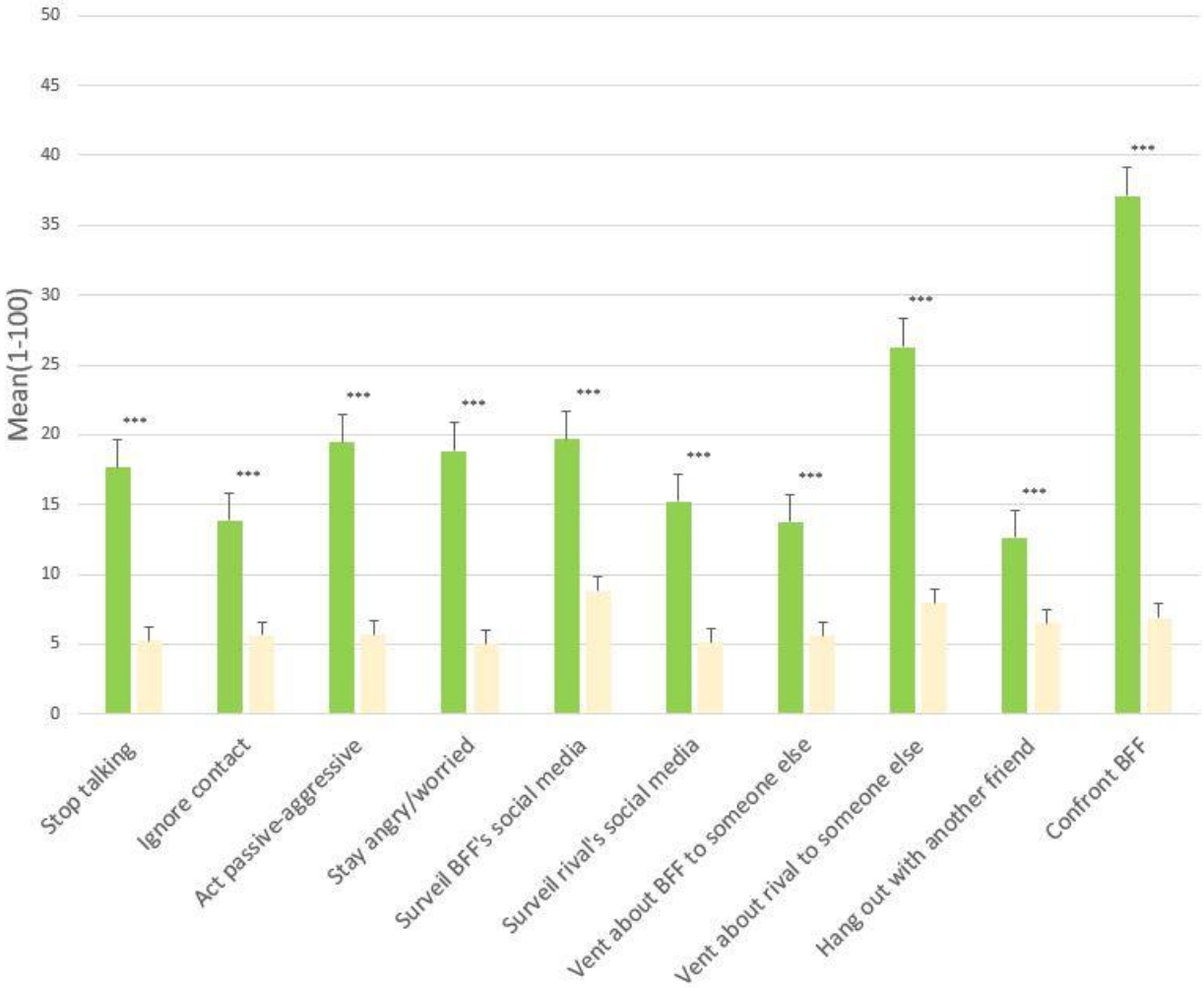


Figure 2.3. Study 2.2 Mean (SE) antisocial behaviors

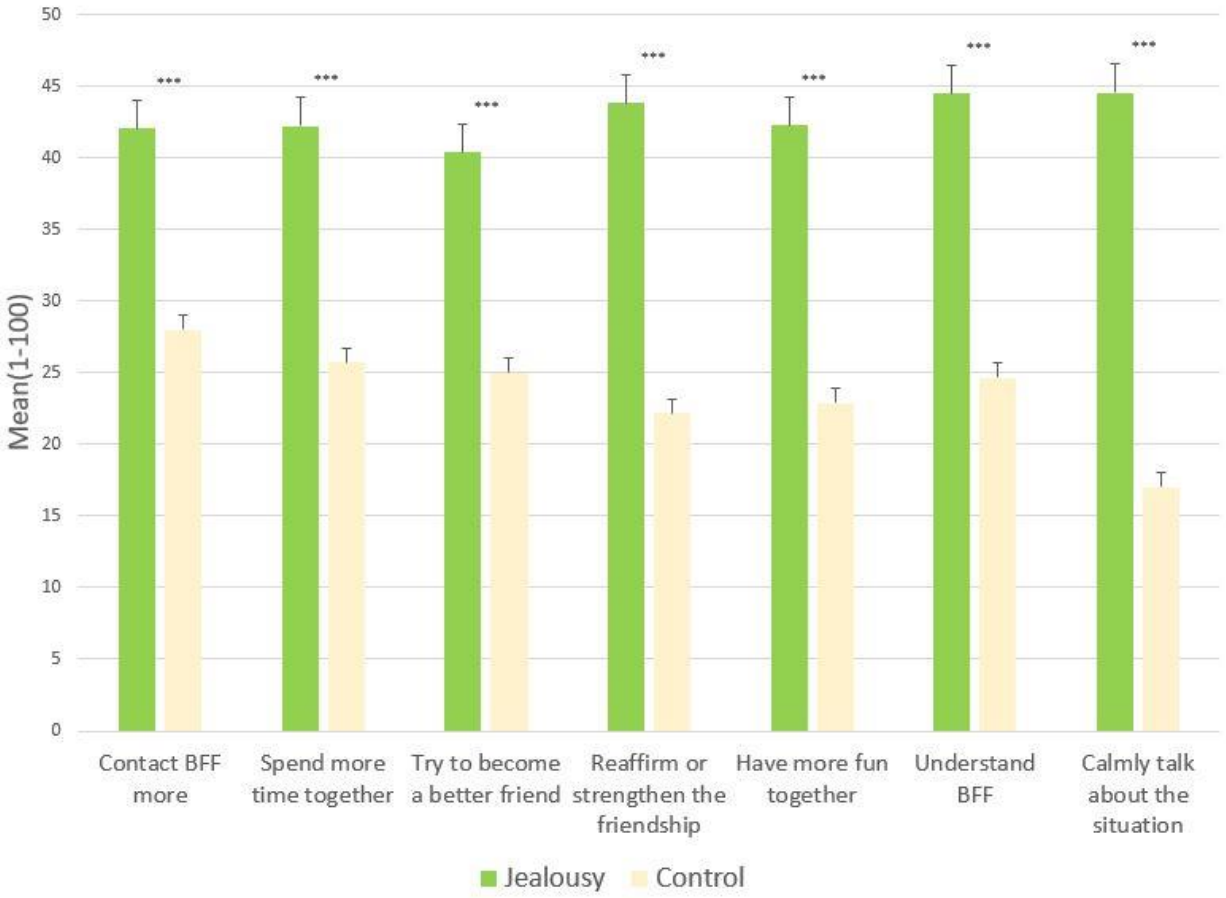


Figure 2.4. Study 2.2 Mean (SE) prosocial behaviors

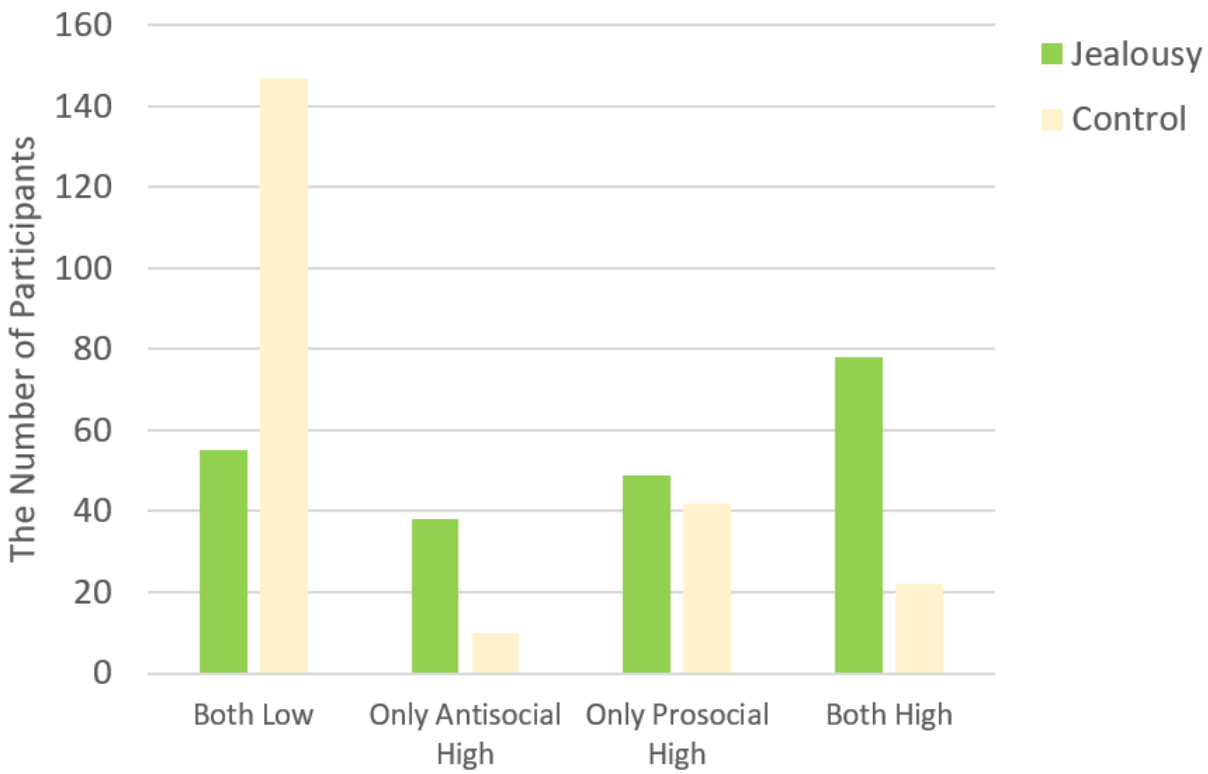


Figure 2.5. Study 2.2 The number of participants for the type of dominant behaviors

Discussion

Using a realistic vignette, we successfully manipulated jealousy in this study, which led to changes in participants' self-reported emotions, cognitions, and behaviors. These results replicate Study 2.1 in several important ways. Participants in the jealousy condition were more likely to report feeling jealous, hurt, betrayed, angry, sad, and anxious compared to the control condition, with hurt being the strongest emotion. These emotions have been reported to be related to jealousy such that both scholars and ordinary people deem the characteristics of jealousy to be feeling hurt, angry, rejected, betrayed, uncertain, insecure, and self-conscious (Parrott, 1991; Smith, Kim, & Parrott, 1988). These findings support that our manipulation induced jealousy and that the cognitive and behavioral changes we saw in this study were reactions stemming from jealousy.

Another aim of this study was to examine cognitions towards a rival in a jealousy situation. We successfully captured how jealousy influences perceptions about a rival's personality. Specifically, jealous individuals were more likely to derogate a rival's characteristics, especially in the dimensions of morality (e.g., trustworthy, selfish) and likeability (e.g., nice/likeable, good personality). This is interesting given that it was the participant's best friend who intentionally excluded the participant, not the rival. These findings also fit well with the definition of jealousy: that jealousy occurs when a rival usurps one's invaluable relationship (Harris & Darby, 2010; Parrott, 1991; Parrott & Smith, 1993; White & Mullen, 1989). Because people may not always engage in overt behaviors when feeling socially undesirable emotions like jealousy, especially in friendship, these results highlight the importance of examining a comprehensive set of possible jealous reactions.

In terms of behaviors, consistent with the findings of Study 2.1, we found that individuals in the jealousy condition were more likely to report engaging in both prosocial and antisocial behaviors. Also consistent with Study 2.1, prosocial behaviors were endorsed more overall than antisocial behaviors in the present study, which suggests that in common jealousy situations, people have a greater motivation to repair their friendship in a constructive manner than to damage it through destructive behaviors. Another interesting finding regarding behaviors was that jealousy motivated some people to increase both their prosocial and antisocial behaviors whereas others were only motivated to increase their antisocial behaviors. Although we did not find any significant relationship between a particular group of people and individual difference factors measured in this study, this finding suggests that there are possible moderators for jealous responses. Further discussion of the overarching findings regarding the behaviors identified across Study 2.1 and Study 2.2 will be included in the general discussion section. In the present

study, we replicated the findings of Study 2.1 that when feeling jealous in same-sex friendships, adults employ a number of different behaviors to secure their friendships.

Finally, the present study attempted to examine what factors predict jealous reactions in same-sex friendship. While past research on romantic relationships has suggested somewhat consistent associations between jealousy and other factors (e.g., attachment styles, relationship satisfaction), this study, to our knowledge, was the first that attempted to explore the relationship of such factors to adults' friendship jealousy. However, the data showed that those factors had very little association with manifestations of jealousy in a friendship context. We will discuss some of the possible explanations for this finding in the next section when examining limitations and future research.

General Discussion

The present chapter revealed several important findings regarding how jealousy is manifested in same-sex friendship. First, our findings suggest that adults often report experiencing jealousy in same-sex friendship. Moreover, jealous individuals reported engaging in a wide range of behaviors, from prosocial to antisocial, as a means of protecting their same-sex friendships. In addition to behaviors, our data also indicated that jealousy may alter cognitions, such as making individuals perceive their rivals more negatively. However, contrary to our expectations, our data did not show interpretable associations between same-sex friendship jealousy and the factors that are known to be related to jealousy experiences in a romantic context. Overall, these findings have important implications for making sense of jealousy literature from a motivational lens: 1) jealousy is a distinct motivational state that may occur across all types of valued relationships, and 2) jealousy can yield a wide variety of reactions that can help fulfill its goal. We will discuss these implications further below.

Across the two studies in this chapter, we found that adults often experience and report feeling jealous in a non-romantic context, namely, in same-sex friendship. This is one of the first empirical evidence-based studies that explored friendship jealousy (in addition to Krems, Williams, Aktipis, & Kendrick, 2020). That adults report feeling jealous in same-sex friendship is noteworthy because this demonstrates that jealousy may arise to protect the relational benefits of any type of relationship, not only to secure sexual or romantic benefits. These findings help demonstrate that adults also perceive rivals in friendship contexts and feel threatened about losing their same-sex friend much as they do in romantic relationships even though the rules of exclusivity in friendships differ from those in romantic relationships.

Another contribution of the current work from the motivational lens is that it revealed a wide range of behavioral strategies that people engaged in to fulfill the goal of protecting their friendships. In particular, we found that across both studies, people engaged in more prosocial behaviors than antisocial behaviors and in various indirect behaviors when they felt jealous in their friendships. These findings make sense given the nature of friendship, in which relationship threats and betrayals are far more uncertain and unclear compared to those in romantic relationships. Considering the uncertainty in friendship, prosocial and indirect behaviors may be "safer" moves to improve a friendship compared to other behaviors that could lead to negative reactions from the friend and/or that require an immediate response from the friend (Guerrero et al., 1995). For instance, telling your friend how much your friendship means to you may better help regain your friend's attention than giving your friend the cold shoulder. Even when gathering information to reduce uncertainty, looking through your friend's social media to find out the friend's whereabouts may be a less risky behavior than confronting your friend (Guerrero et al., 1995). These findings highlight the importance of taking various types of jealous reactions

into account, especially in contexts where individuals may feel less legitimacy in experiencing and expressing jealousy.

While participants across the two studies utilized both prosocial and antisocial behaviors in general, we found notable individual differences in their dominant behavior patterns. Particularly, a small percentage of people tended to mainly channel their jealousy into antisocial behaviors. Even in the context of friendship, in which antisocial behaviors may be riskier due to greater uncertainty (Guerrero et al., 1995), 10% of the participants in Study 2.1 reported engaging in only antisocial behaviors and 17% of the participants in Study 2.2 reported increasing mainly antisocial behaviors. Although we did not see any significant associations with possible moderators, such as attachment style and friendship satisfaction and commitment, these findings suggest that some people are more prone to behave in an antisocial manner regardless of the magnitude or the context of jealousy. It is also possible that the extremely antisocial jealous reactions reported in the literature may have come from a small percentage of people, and we may need to consider the factors that represent more "maladaptive" psychological features to better capture these people.

However, we also found a discrepancy in participants' dominant behavior patterns between the two studies, which may reflect the methodological differences of the studies. In Study 2.1, 65% of the participants reported engaging in both types of behaviors while 10% of them reported engaging in only antisocial behaviors and 23% reported engaging in only prosocial behaviors. In Study 2.2, however, only 36% of the participants endorsed increasing both types of behaviors while 17% endorsed increasing mainly antisocial behaviors and 22% endorsed increasing mainly prosocial behaviors. Although the assessments of dominant behaviors were not exactly the same in the two studies, broadly speaking, more people

mentioned using both types of behaviors in Study 2.1 compared to Study 2.2. This discrepancy may be associated with the differences in jealousy induction. It is possible that people in the hypothetical scenario study (Study 2.2) may have underestimated their engagement in prosocial behaviors in a real-life situation due to the negative feelings of jealousy, and that people in the recalled study (Study 2.1) overestimated their engagement in prosocial behaviors because of memory bias. Future research using a more real-time induction of jealousy may help clarify the extent to which friendship jealousy motivates different types of behaviors.

Last but not least, the present work also provides foundational information about how reactions towards a rival may differ in friendship jealousy compared to reactions towards a rival in romantic jealousy, based on what has been reported in the literature. Although previous literature on romantic jealousy has often found antisocial behaviors towards rivals (Bevan, 2008; Guerrero, 2014; Guerrero & Afifi, 1999; Guerrero et al., 2011, Yoshimura, 2004), participants in Study 2.1 rarely reported similar behaviors even though they were given the opportunity to list all the behaviors that they engaged in during their friendship jealousy experience. Instead of engaging in explicit antisocial behaviors, we found in Study 2.2 that participants in the jealousy condition reported thinking the rival was a less ethical and likable person. These findings suggest that jealous people in same-sex friendship may be more hesitant to engage in overt antisocial behaviors towards rivals compared to romantic relationships, yet jealousy still influences their perceptions about the rival in a negative way. These findings not only highlight the importance of investigating various aspects of jealous reactions but also inform the field of jealousy research regarding how the type of valued relationship can greatly influence the way that how specific jealous behaviors may or may not unfold.

Limitations and Future Research

Although this work clearly demonstrated a more comprehensive set of jealous responses in same-sex friendship than other research has, there are limitations to these studies. Because we relied on retrospective recall and a hypothetical scenario, we were subject to the limitations of those methodologies, such as memory bias for the recall study (Hawkins & Hastie, 1990) and unreliable affective forecasting for the hypothetical scenario study (e.g., Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998; Kahneman & Snell, 1992). However, eliciting and manipulating emotions such as jealousy that involve complex situations is challenging for many reasons. Thus, retrospective recall and hypothetical manipulation studies like the present ones may be the most appropriate first step to study these socially undesirable emotions. Furthermore, consistent findings across both studies in this chapter provide a reason to believe that their effects on participants were real, although actual interactions could be even more informative.

In this regard, one direction that deserves future attention is examining jealousy in a real-time situation. To our knowledge, the present research includes one of the first studies to manipulate friendship jealousy, and we consistently found that jealous individuals responded with both prosocial and antisocial behaviors. However, some insignificant findings and inconsistent findings across the two studies suggest that a real-time induction of jealousy, such as in a lab study, would provide helpful clarification. For instance, if we examine real-time jealous responses, we may find that they do in fact relate to personal and relational factors. Given the differences in friendship jealousy that we found in this chapter and the greater uncertainty regarding betrayals in friendship compared to romantic relationships, it is also possible that we may find different types of jealous reactions or may not observe certain responses in an actual situation. Experimentally manipulating jealousy in real time will help elucidate these remaining questions.

Final Thoughts

Although this study is not without limitations, it does provide foundational and unique information about the emotional, cognitive, and behavioral reactions of jealousy in same-sex friendship. This study is one of the first to show distinct and diverse jealous reactions in a non-romantic context. These findings are not only informative for understanding adults' jealous behaviors in different types of interpersonal relationships, but they also further the theoretical understanding of jealousy from a functional perspective.

CHAPTER 3

Experimentally Manipulated Jealousy in the Lab

Chapter 2 presented evidence that individuals experience a wide range of emotional, cognitive, and behavioral reactions when feeling jealous in same-sex friendships. It also presented evidence for some unique jealous reactions in a friendship context, such as few antisocial behaviors towards rivals and indirect behaviors towards both friend and rivals. The present study will attempt to replicate and extend these findings by experimentally manipulating jealousy in a more real-life situation. We created a same-sex friendship jealousy situation in the lab with actual friends and assessed a large number of jealous responses including self-reported emotions, perceptions of the rival's personality, and a variety of behaviors towards the best friend and the rival, as well as whether some personal and relational factors predict jealous responses.

Jealousy Elicitation in the Lab

The present research is one of the first studies, to our knowledge, that aims to experimentally elicit friendship jealousy in a real-life situation with actual friends. Only a few studies have experimentally manipulated jealousy in the lab, and those that have done so focused exclusively on jealousy in romantic couples or among strangers of the opposite sex. Regardless of the type of relationship, however, experimentally manipulating jealousy in the lab has been notably challenging, as discussed in previous chapters, because jealousy inherently requires complex interactions and modern culture discourages people from experiencing and expressing jealousy (Argyle & Henderson, 1985; Parker, Walker, Low, & Gamm, 2005). Moreover, if not done carefully, inducing jealousy in established relationships could raise questions about research ethics for potentially yielding negative repercussions. For these reasons, the vast

majority of jealousy research across both romantic relationships and friendships has largely relied on recalled or hypothetically elicited jealousy in spite of the limitations of these methods (e.g., Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998; Hawkins & Hastie, 1990). Likewise, the two studies in the previous chapter were based on recall and hypothetical methods. Although they successfully provided foundational information about same-sex friendship jealousy, we suspect that our use of a hypothetical scenario may have been one of the reasons that possible mediators did not predict any jealous responses in those studies. Therefore, despite the difficulties of eliciting jealousy in a real-life situation, the present chapter aims to develop an ethically acceptable and well controlled friendship jealousy manipulation in the lab to test the previous findings in a real-time experimental setting.

The Dynamic Functional Model of Jealousy and Responses of Jealousy

Although many theorists argue that jealousy, as a specific emotion, has its own distinct motivational state that is not reducible to other emotions (e.g., Harris & Darby, 2010; Henniger & Harris, 2014; Mathes, 1991; Parrott, 1991), some characteristics of jealousy, such as its longer duration, do not exactly fit with the typical characteristics of specific emotions (e.g., quick onset and short duration) (Roseman, 2011). While jealousy can last for a brief moment, it often develops and dissolves gradually over a longer course of time because a relationship also develops and dissolves over time. To capture this unique characteristics of jealousy, Chung and Harris (2018) proposed the Dynamic Functional Model of Jealousy (DFMJ) and argued that the prolonged state of jealousy makes perfect sense from the functional viewpoint because, from this perspective, an emotion should last as long as is needed to resolve a particular fitness risk, such as a gradually developing bond between a loved one and a rival. Moreover, the DFMJ emphasizes the ongoing process of threat assessment that occurs over a prolonged state as

jealousy produces a lot of uncertainty about the extent and nature of a threat, which requires extensive information gathering. For example, at an earlier stage of jealousy, an individual must find out whether the threat actually exists. Even when the partner's betrayal seems clear, the individual still must assess and determine its magnitude and consequence to their relationship.

According to the DFMJ, the great uncertainty of the threat leads to complex and various jealous behaviors, including prosocial behaviors, and the findings in previous research are consistent with this model. The two studies in the previous chapter consistently indicated that jealous individuals were more likely to increase prosocial behaviors (e.g., trying to spend more time with their partner) as well as antisocial behaviors (e.g., making negative comments about the rival). One recent lab experiment (Montoya & Hibbard, 2014) also found that, under a relationship threat, male participants were more likely to increase nonverbal behaviors towards their partners, such as touching or smiling. These findings support the idea proposed by the DFMJ that jealous individuals will strategically employ a variety of behaviors to secure their relationship. Following this insight into the beneficial role of prosocial jealous responses in romantic relationships, in the present study, we aim to assess both prosocial and antisocial jealous reactions in same-sex friendships in real time.

Another important aim of the current chapter is to examine jealous reactions towards a rival in the lab. Specifically, it will test whether the findings of the previous chapter (i.e., jealous individuals were more likely to derogate the rival's personality but less likely to engage in overt antisocial behaviors towards the rival) can be replicated in a real-time laboratory setting. To date, only one in-lab experiment assessed jealous reactions towards a rival in real time. DeSteno and his colleagues (2006) found that participants in the jealousy condition were more likely to act aggressively towards a rival of the same sex (as well as towards an assigned partner of the

opposite sex) by giving them a greater amount of hot sauce that could potentially inflict pain than were participants in the control condition. However, these findings are inconsistent with the results of the previous chapter, which showed that jealous people in same-sex friendships rarely reported engaging in antisocial behaviors towards a rival when recalling prior jealousy episodes or imagining hypothetical scenarios. By examining how jealous individuals behave towards rivals in same-sex friendships in real life, the experimental manipulation in this chapter will further illuminate how jealous reactions towards rivals unfold. Importantly, the present research builds on the literature by being the first study to manipulate jealousy in established friendships as opposed to temporarily formed relationships in the lab. This procedure, as well as the real-time elicitation of jealousy, will increase the validity of the present work.

Method

Participants. We recruited 159 triads of same-sex friends (N=477 individuals) from the SONA subject pool of a large research university in exchange for course credit for their participation. One individual from each triad was selected to be the main participant and the other two people from the triad unknowingly partook in the jealousy manipulation (see below for more details). This sample size exceeds the required minimum number of participants based on the effect size of the pilot study with 80% power, which was calculated prior to the current study. After excluding 34 participants who suspected the hypothesis or the manipulation of the study (as revealed when participants were debriefed), the final sample included 125 participants (31 males/85 females/9 missing;[1] age M = 19.3, SD = 1.8).

[1] These participants did not indicate their gender in the baseline survey. However, the experimenters confirmed that all groups of participants consisted of same-sex friends, and the distribution of gender, including missing values did not significantly differ by condition ($\chi^2(2, N = 125) = 2.36$, p = .31).

Procedure. All individuals (N=477) first completed a questionnaire that was sent via email two days before they came into the lab. The questionnaire collected personal and friendship information about measures that were identical to those used in Study 2.1, including demographics, big five personality traits, attachment style, and the length, value, closeness, and satisfaction of the friendship.

Jealousy Manipulation.[2] After completing the questionnaire, the recruited individuals who signed up for the study came into the lab with two of their same-sex best friends. The recruited individual was designated as the *best friend* for the purposes of the study and the two friends became either the main participant or the rival, depending on the length of their relationship with the recruited individual. The friend who had the longer relationship with the recruited individual was selected to be the main *participant* and the other friend was selected to be the *rival*. If the friendships between the recruited individual and their two best friends were

[2] A total of four pilot studies were conducted prior to the present study. The first two pilot studies (N_1=18 pairs of friends, N_2=15 pairs of friends) involved two friends and a confederate, and each study tested different types of manipulations to elicit jealousy. For example, the first study had one of the friends and the confederate enjoy getting to know each other more deeply by going through a conversational task while the other friend, designated as the participant, was watching their interaction through a one-way mirror. In the second study, we tested a more physical interaction by having one of the friends and the confederate create their own handshake, also while the participant was watching their interaction through a one-way mirror. However, participants in both studies were highly likely to question one step of the experimental setup: that their best friend would choose a stranger (i.e., the confederate) over themselves as a partner for the pair task. Or, if they believed that their friend had actually chosen the stranger, they did not report feeling much jealousy or being very threatened by the stranger. Therefore, for the remaining pilot studies, we recruited triads of friends and eliminated the involvement of the confederate. Additionally, in the second study, we observed greater individual differences by gender in the participants' attitudes towards the handshake manipulation such that male participants were far more likely to enjoy the handshake task compared to female participants. Thus, for the third pilot study, we proceeded with the conversational task rather than the handshake task (N_3=12 triads of friends). In the fourth pilot study, we created a chat manipulation, which is the same as used in the present chapter. As it became clear that the chat manipulation had better experimental control and elicited greater jealousy than the conversational task, we focused on it in the fourth pilot and tested it on a total of 56 triads of friends. In that study, participants in the jealousy condition were more likely to report feeling jealous, betrayed, hurt, angry, and sad compared to the control condition. Although we did not observe significant differences in perceptions about the rival's traits and behaviors, which is possibly due to the small sample size, we found that some of the trends in the results followed the expected pattern with relatively high effect sizes. For example, participants in the jealousy condition were more likely to derogate the rival as a less trustworthy and more selfish person while also decreasing negative behaviors towards both their best friend and the rival. After finding these results, we finalized the current manipulation and conducted the present study.

the same length, the experimenter then randomly selected one of the friends to be the main participant and the other friend to be the rival. This procedure was to ensure the successful manipulation of jealousy, i.e., the participant being excluded from spending time with their best friend (see below for more details). Figure 3.1 illustrates the process of role assignment described in this paragraph.

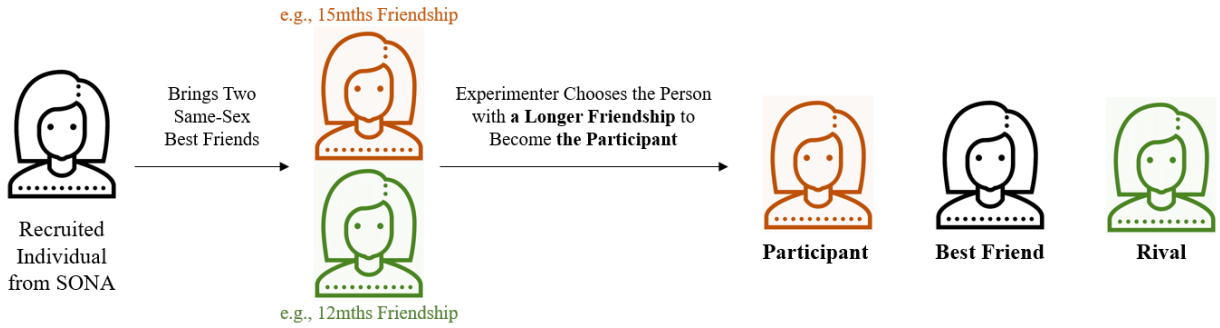


Figure 3.1. Recruiting and role assignment process

After the experimenter decided who would become the participant (by casually asking who had the longer friendship with the recruited individual), all individuals were told the cover story that the study was investigating how online communication between known people affects memory. They were then taken into separate rooms where they completed a baseline survey, and in the jealousy condition, the final question of the survey asked the participant to choose a partner for the next task. When all individuals finished completing the baseline survey, the experimenter went into the participant's room and informed him or her that the other two friends chose each other as partners, and therefore, the participant would participate in an individual task. The participant's individual task was to watch a live online chat between the other two friends and memorize as much of it as possible. In the chat, the two friends discussed eating out together and explicitly excluded the participant from their plans. Specifically, the rival said "no"

when the participant's best friend asked whether they should invite the participant or not.[3] In reality, however, the experimenter's comment to the participant that the other two individuals chose each other as partners for the next task was the first part of the jealousy manipulation. In fact, in both conditions, the participant was always assigned to the individual task, and the other two individuals were never asked to choose a partner for the next task. The online conversation, which was the main part of the jealousy manipulation, was also scripted. The other two friends unknowingly partook in the manipulation only by typing the script provided by the lab in their own styles of chatting.

In the control condition, the participant was not asked to choose a partner for the next task at the end of their baseline survey; instead, they were only informed by the experimenter that they had been randomly assigned by a computer to complete their next task individually. In the script of the control condition, the other two friends casually discussed their favorite restaurants without planning to hang out together or excluding the participant. The chats in both conditions were designed to be highly similar to the hypothetical conversations in Study 2.2. The actual scripts used in each condition are presented in Appendix E (i.e., jealousy condition) and Appendix F (i.e., control condition).

Jealousy Measures. After they finished watching the online chat unfold, the participant completed a comprehensive survey measuring their jealous responses. We used three measures to assess jealous responses: self-reported emotions, perceptions of the rival's personality, and behaviors towards their best friend and the rival.

Self-Reported Emotions. Participants indicated the degree to which they experienced 13 emotions while they were watching the online chat. "Jealous" directly assessed jealousy. We also

[3] Pilot studies revealed that participants were more likely to be suspicious of the experimental design when their best friend refused to invite them than when the rival did so.

included “Betrayed”, “Hurt”, “Angry”, “Fearful”, “Anxious”, and “Sad” to assess jealousy-related emotions that often co-occur with jealousy (Parrot & Smith, 1993; Sharpsteen & Kirkpatrick, 1997). As distractors, we also included other items (i.e., “Embarrassed”, “Guilty”, “Proud”, “Happy”, “Sleepy” and “Excited”). Each item was measured on a sliding scale from 0 = “Not at all” to 100 = “Extremely”.

Perceptions of the Rival’s Personality. Participants also rated the degree to which they thought different personality traits were descriptive of the rival who chatted with their best friend. The list of personality descriptions was identical with that used in Study 2.2. It consisted of “Nice/Likable”, “Good Communicator”, “Selfish”, “Sociable”, “Incompetent”, “Successful in school”, “Untrustworthy”, “Intelligent”, “Sensitive”, “Good personality”, and “Self-involved”. Each adjective was measured on a sliding scale from 0 = “Not at all” to 100 = “Extremely”.

Behaviors. We measured a series of behaviors that may capture participants’ antisocial and prosocial engagement towards both their best friend and the rival when experiencing friendship jealousy. As a cover story, the experimenter explained to the participant that the others (i.e., their best friend and the rival) would listen to a story for their next individual tasks after the chat, and that the participant would help select some stimuli (see below for more details) for them as an independent rater. In reality, there were no further tasks. To reduce the possible effect of social desirability, participants were also assured that their decisions would be completely anonymous to the others except for the open-response message (discussed below), and the experimenter would not know their decisions either.

Antisocial Behavior – Noise Blast Assignment. The first task that participants were asked to select stimuli for was a modified version of the Competitive Reaction Time Task, one of the most commonly used lab-based measures of aggression (McCarthy, Elson, Vazire, & Tullett,

2018). After listening to the experimenter's cover story (described above), participants were told that the noise they selected would be played to the others after the others listened to a story. Then, the experimenter played sample noises at levels 1, 5, and 9 to help them gauge the intensity of the noises. After the experimenter exited the room, participants selected a noise blast intensity using an online survey for their best friend and the rival, respectively, on a 10-point scale from 1 = 60 dB to 10 = 105 dB (about the same volume as a smoke alarm) (Konijn, Bijvank, & Bushman, 2007).

Prosocial Behavior – Humor Assignment. As a measure of prosocial behavior, we examined the level of humor that participants assigned to the others. After the instructions regarding the noise blast assignment, participants were told that they also needed to select how funny the story the others would hear should be. The experimenter explained that the higher the number they selected, the funnier the story would be. Participants chose the level of humor using an online survey for their best friend and the rival, respectively, on a 10-point scale. Although this measure was newly developed in our lab, participants in our pilot studies confirmed that they agreed this assignment was a valid measure of prosocial behavior towards others.

Interactive Behavior – Open-Response Messages. To capture more interactive behavioral aspects of jealousy, we also asked participants to leave a short open-ended message purportedly as part of a communication task for their best friend and the rival, respectively. Participants were told that the others would read the message (knowing that it is from the participant) before they proceeded to their next task. In reality, the others did not actually see these messages.

Approach Behavior – Choice of Next Partner. Some theorists have argued that jealousy is associated with approach motivation and approach-oriented action tendencies (Harmon-Jones, Peterson, & Harris, 2009; Lazarus, 1991). To measure possible approach motivation under a

relationship threat, participants were asked whom they would like to be partnered with for the next task. Participants were able to choose one option among "alone", "with your friend (who signed up for this study)", "with the other friend", and "with both".[4]

Debriefing. Following these measures, the experimenter led participants through a funnel debriefing, in which participants commented on what they thought the purpose of the study was and the degree to which they believed that the online chat between the two friends was real. Participants were marked for exclusion if they suspected that 1) the purpose of the study was to examine jealousy in friendship, or 2) the online chat was fake with more than 95% certainty.[5] The experimenter then debriefed the participants about the deception of the scripted chat and the purpose of the study.

Manipulation Checks. After debriefing, participants completed a final survey about their perceptions of the manipulation of the current study. Participants rated the effectiveness of the jealousy induction in their condition, the successfulness of eliciting hurt feelings in their condition, the successfulness of producing a sense of threat to the friendship in their condition, the degree to which their best friend would feel jealous or hurt in their role, and the degree to which an "average undergraduate" would feel jealous or hurt in their role on a sliding scale from 0 = "Not at all" to 100 = "Very much". Because the questions in the manipulation checks revealed the hypothesis of the study (i.e., jealousy), this procedure took place after debriefing.

[4] In the fourth pilot study, we only utilized two options, "alone" and "with your friend (who signed up for this study)", for this measure. However, because of participants' feedback that only having those two options added suspicion about the hypothesis of the study (i.e., jealousy), we included all possible options for the measure in the present study.

[5] In our pilot studies, participants rarely reported 100% certainty even when they were highly suspicious of the authenticity of the chat. Instead, those participants usually reported between 97% and 99% certainty that the chat was fake. Thus, we decided to cut off at 95% certainty in order to make sure that we excluded all participants who strongly suspected the main manipulation (i.e., the chat).

Results

Sample Checks and Overview of Analyses. Of the 125 participants, 64 were randomly assigned to the jealousy condition and 61 were randomly assigned to the control condition, and 106 participants (84.8%) were also friends with the rival. There were no significant differences in the distribution of gender ($\chi^2(2, N = 125) = 2.36$, p = .31) and being friends with the rival ($\chi^2(1, N = 125) = 2.66$, p = .10) as a function of condition. Therefore, one-way ANOVAs were performed on the majority of the following dependent variables.

Manipulation Checks. After being debriefed, participants answered a series of questions about the manipulation of the study. Across all questions, participants in the jealousy condition were more likely to report that their condition successfully elicited jealousy compared to participants in the control condition. Participants in the jealousy condition were more likely to attest that the experiment was effective in inducing jealousy ($F(1, 121) = 21.12$, $p < .001$), that the experiment was successful in eliciting hurt feelings ($F(1, 117.94) = 18.76$, $p < .001$), that the experiment produced a sense of threat to the friendship ($F(1, 118.03) = 20.43$, $p < .001$), that their best friend would feel jealous or hurt in the participant's role in the experiment ($F(1, 121) = 10.17$, $p < .01$), and that an average undergraduate would feel jealous or hurt in the participant's role in the experiment ($F(1, 116.78) = 6.98$, $p < .01$).

Jealousy Elicitation. As can be seen in Figure 3.2, the jealousy manipulation successfully elicited jealousy and related emotions. Particularly, participants in the jealousy condition were more likely to report feeling jealous ($F(1, 77.75) = 4.06$, $p < .05$; $d = 0.35$), betrayed ($F(1, 64.25) = 9.62$, $p < .01$; $d = 0.54$), and hurt ($F(1, 85.47) = 4.69$, $p < .05$; $d = 0.38$) compared to participants in the control condition. Although the reported levels of emotions in the jealousy condition were low, their effect sizes were close to medium effect. There were no

significant differences in feeling anxious ($F(1, 123) = .48$, $p = .49$), angry ($F(1, 112.09) = 1.43$, $p = .24$), and sad ($F(1, 123) = .01$, $p = .91$). However, we did observe significant differences in feeling fearful, but in a way that was contrary to our expectations. Participants in the control condition were more likely to report feeling fearful compared to participants in the jealousy condition ($F(1, 68.33) = 7.58$, $p < .01$). Nonetheless, since the other emotions that are closely tied to the experience of jealousy, including feeling jealous, betrayed, and hurt, demonstrated the expected patterns, we believe the overall manipulation was successful. It is possible that feeling fearful may reflect the nervousness of being in a lab experiment for participants in the control condition while participants in the jealousy condition were more likely to be distracted by the manipulation and as a result, less fearful. We did not find any significant differences in the distractor items, including feeling happy ($F(1, 123) = 2.93$, $p = .09$), embarrassed ($F(1, 123) = .27$, $p = .61$), guilty ($F(1, 123) = .08$, $p = .78$), sleepy ($F(1, 123) = .01$, $p = .94$), excited ($F(1, 123) = .74$, $p = .39$), and proud ($F(1, 123) = 1.20$, $p = .28$).

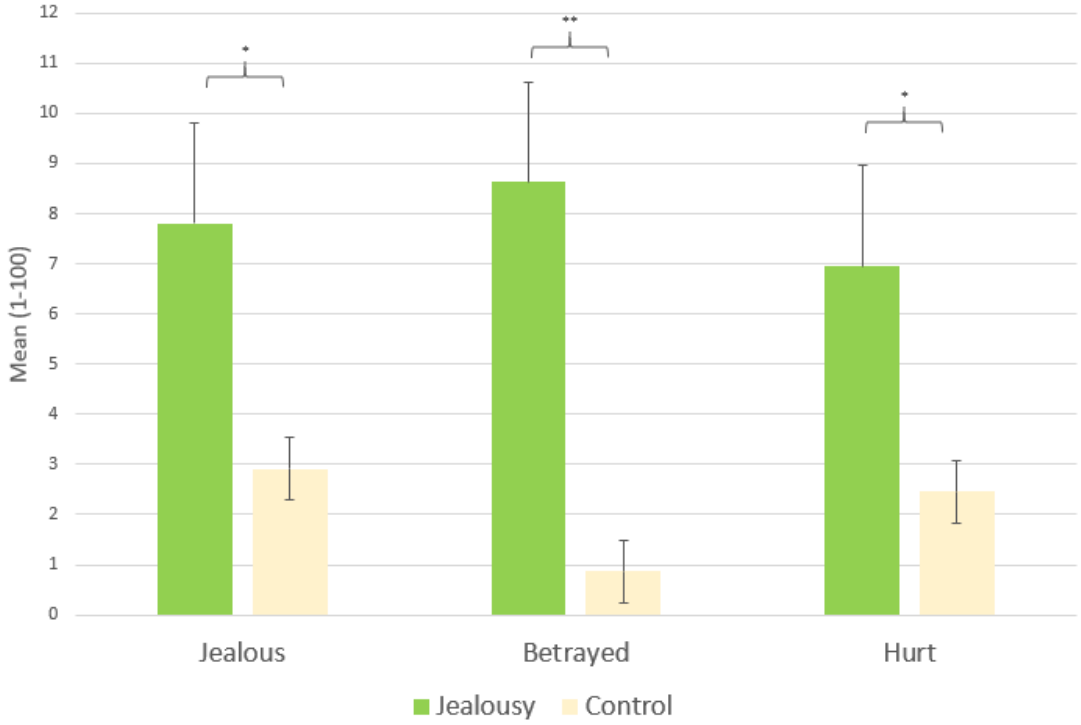


Figure 3.2. Mean (SE) self-reported emotions.

Jealousy and Changes in Perception of the Rival's Personality. Despite the success of the jealousy elicitation, participants did not significantly differ by condition in their perceptions of the rivals' personality. Table 3.1 contains the mean ratings of the perceived traits of the rival by condition. The lack of significant differences in perceptions of rivals by condition could possibly be because about 85% of the time, participants were also friends with the rivals and people usually perceive personality as a set of highly stable traits over a long period of time (Costa & McCrae, 1989; Roberts & Del Vecchio, 2000). The short manipulation that occurred in the lab may not have been strong enough to change participants' established perceptions of the rivals.

Moreover, we tend to have a self-serving bias towards ourselves and our friends such that we want to believe that they and we are good people (Hess, Cossette, & Hareli, 2016). Therefore, it may have been difficult for participants to judge their friends in a negative way after this short manipulation of jealousy. To test this idea, we ran a post-hoc analysis on how participants perceived the rival's personality depending on if the participants were already friends with the rival or not. Although the findings were not statistically significant, the overall patterns of the results seemed to support the idea that participants would judge rivals more favorably if they were friends than if they were strangers. For those who were strangers to the rival, we found patterns of results that were similar to our findings in the previous chapter: participants were more likely to derogate the rival's personality (e.g., less trustworthy, more selfish) in the jealousy condition compared to the control condition. In contrast, for participants who were already friends with the rival, the patterns revealed the opposite tendency. Those participants were more likely to think that the rival, who was their friend, was more trustworthy and a good person in the

jealousy condition compared to the control condition. We will discuss these findings further in the discussion section.

Table 3.1.

Mean (SD) Ratings of Perceived Rival's Personality by Condition.

	Jealousy	Control	*Test Statistic*
Untrustworthy	3.70 (12.76)	4.49 (13.66)	$F(1, 123) = .11$, $p = .74$
Selfish	10.66 (22.50)	8.80 (15.55)	$F(1, 123) = .28$, $p = .60$
Self-Involved	30.31 (29.15)	35.79 (31.18)	$F(1, 123) = 1.03$, $p = .31$
Sensitive	46.59 (29.97)	41.49 (30.23)	$F(1, 123) = .90$, $p = .35$
Nice/Likable	82.31 (17.46)	83.46 (20.02)	$F(1, 123) = .12$, $p = .73$
Good Personality	84.05 (19.73)	80.89 (19.73)	$F(1, 123) = .69$, $p = .41$
Good Communicator	75.77 (17.98)	76.93 (18.54)	$F(1, 123) = .13$, $p = .72$
Sociable	65.17 (22.88)	67.54 (26.25)	$F(1, 118.96) = .29$, $p = .59$
Intelligent	78.18 (19.83)	76.64 (23.53)	$F(1, 123) = .16$, $p = .70$
Incompetent	6.5 (16.07)	3.08 (10.36)	$F(1, 108.28) = 2.02$, $p = .16$
Successful in School	74.38 (22.15)	74.54 (23.66)	$F(1, 123) = .00$, $p = .97$

Jealousy and Behaviors Towards the Best Friend and the Rival. Next, we analyzed behavioral outcomes. Table 3.2 presents the mean ratings of behaviors by condition. Contrary to our expectations, we did not observe significant differences in participants' engagement in antisocial behavior towards their best friend ($F(1, 123) = 1.41$, $p = .24$), antisocial behavior towards the rival ($F(1, 123) = .01$, $p = .94$), prosocial behavior towards their best friend ($F(1, 123) = 1.33$, $p = .25$), and prosocial behavior towards the rival ($F(1, 123) = .43$, $p = .51$). Despite having no effect, the overall pattern appears to be consistent with increases in prosocial behaviors in the control condition and decreases in antisocial behaviors in the jealousy condition.

Therefore, we performed an exploratory analysis by collapsing these behaviors into prosocial versus antisocial behaviors towards either the best friend or the rival. However, we did not observe significant differences in either prosocial behavior ($F(1, 123) = 1.52$, $p = .22$) or antisocial behavior ($F(1, 123) = .37$, $p = .54$). Participants also did not differ in their choice of a partner for the next task ($\chi^2(3, N = 125) = 4.20$, p = .24).[6]

Table 3.2.

Mean (SD) Ratings of Behaviors by Condition.

	Jealousy	Control	*Test Statistic*
Positive Behavior Towards Best Friend	7.88 (2.61)	8.39 (2.40)	$F(1, 123) = 1.33$, $p = .25$
Positive Behavior Towards Rival	7.88 (2.85)	8.21 (2.89)	$F(1, 123) = .43$, $p = .51$
Negative Behavior Towards Best Friend	6.45 (3.15)	5.77 (3.28)	$F(1, 123) = 1.41$, $p = .24$
Negative Behavior Towards Rival	5.59 (3.15)	5.64 (3.36)	$F(1, 123) = .01$, $p = .94$

Open-Response Messages. The open-response messages that participants separately wrote to their best friend and the rival were coded for two aspects. We coded disclosure about the chat (i.e., whether participants disclosed that they had watched the chat between their best friend and the rival as part of the experimental setup) and the valence of the messages (i.e., whether the messages were negative, neutral, or positive).

[6] As an exploratory analysis, we ran an additional chi-square test on a new dependent variable of next partner choice. We grouped the original four next partner choices into two categories "alone" versus "together" as all three choices other than "alone" (i.e., "with your friend (who signed up for this study)", "with the other friend", and "with both") can be interpreted as approach behaviors. However, we still did not observe significant differences by condition (χ^2 (1, $N = 125$) = .16, p = .44)

The disclosure factor was coded by the author. In most cases, disclosure was clear because participants explicitly mentioned the chat or referenced some parts of it (e.g., asking to join the outing, mentioning that the participant also liked the discussed restaurant). When it was not apparent, however, the author reviewed the chat that the participant read and coded disclosure. Figure 3.3 contains the distribution of disclosure to the best friend and the rival, respectively, as a function of condition. Participants in the jealousy condition were less likely to reveal that they secretly watched the chat to either their best friend ($\chi^2(1, N = 125) = 6.73$, $p < .01$; $d = .48$) or the rival ($\chi^2(1, N = 125) = 11.65$, $p = .001$; $d = .64$) compared to participants in the control condition. In other words, participants in the control condition, not feeling any threat to their friendship, were more likely to be comfortable enough to let the others know that they had read their "private" conversation. In contrast, participants in the jealousy condition, feeling jealous, betrayed, and hurt, were rather conservative about expressing possible emotion or rushing into any action by choosing not to disclose their knowledge of the chat to protect their friendship. Other factors, such as being privy of a private conversation, could have affected the decision to disclose the conversation or not, however, only in the jealousy condition, participants were less likely to disclose while participants in both conditions watched private conversations.

As a post-hoc analysis, we separately examined the disclosure factor depending on whether participants were already friends with the rival. Our interpretation regarding the disclosure finding was that participants in the jealousy condition were less likely to tell the others that they secretly watched the chat because they wanted to protect their friendship by not exhibiting any expressions that may harm the friendship. If this is correct, then, in the jealousy condition, participants who were also friends with the rival should be even more likely to hide their knowledge of the chat from the rival because they too had an established friendship that the

participant wanted to protect. Indeed, this is the precisely what we found when we compared the effect sizes of the two groups. Participants who were friends with the rival in the jealousy condition were less likely to reveal the experimental setup to the rival ($\chi^2(1, N = 106) = 13.10$, $p < .001$; $d = .75$) as well as to their best friend ($\chi^2(1, N = 106) = 8.86$, $p < .01$; $d = .60$) with stronger effect sizes compared to the entire sample. This finding suggests that the motivation to maintain their friendship may have driven participants to be less confrontational.

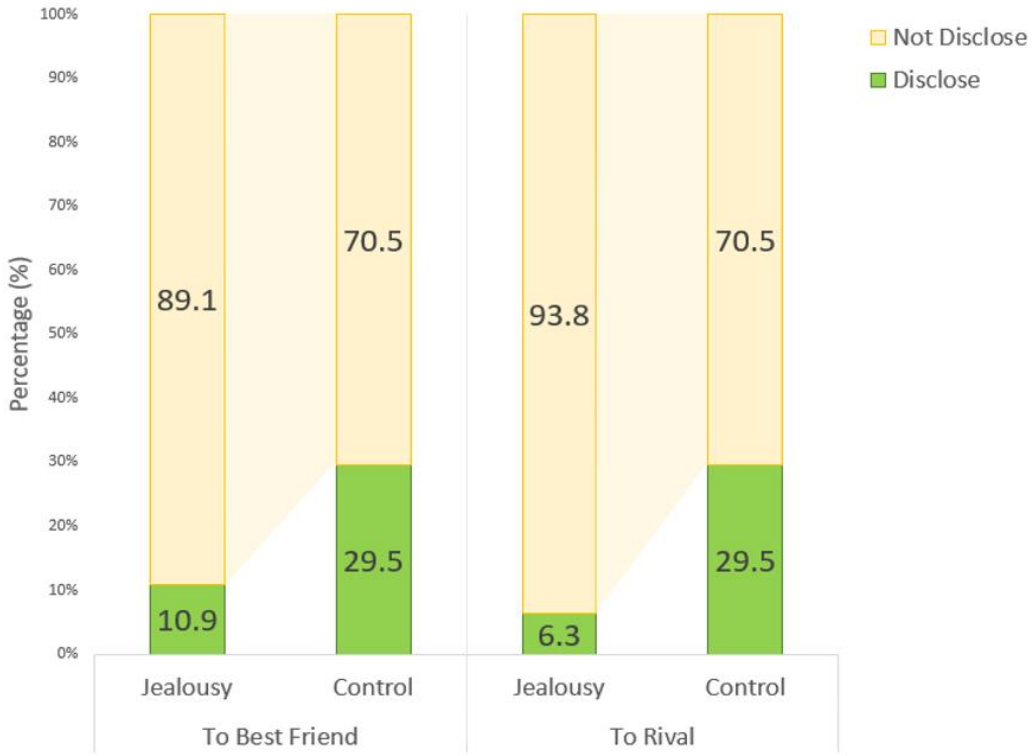


Figure 3.3. Disclosure in the open-ended message.

For the valence of the messages, three independent coders coded whether each message was negative, neutral, or positive. The final valence was determined when two or more coders agreed. When there was inconsistency among the three coders, the author made the final decision. The results of the coding showed very high inter-coder reliability (97.4%). Figure 3.4 represents the distribution of the valence of the messages to the best friend and the rival,

respectively, as a function of condition. For the messages to the best friend, chi-square analyses showed no significant differences by condition ($\chi^2(2, N = 125) = 2.83$, p = .24). However, we observed significant differences in the messages to the rival. Participants in the jealousy condition were more likely to leave a positive message to the rival compared to participants in the control condition ($\chi^2(2, N = 125) = 9.04$, p = .011; $d = .56$). Similar to disclosure, one of the possible explanations for this result is that given the friendship context, participants in the jealousy condition may need to maintain good relationships with the rival even in a jealousy situation. An additional post-hoc analysis supported this argument. When the effect sizes were compared, participants who were already friends with the rival in the jealousy condition were much more likely to send a positive message to the rival ($\chi^2(2, N = 106) = 11.52$, p < .01; $d = .70$) than the entire sample. This evidence bolsters our arguments that what individuals consider the most effective strategies to protect their relationships may include a wide range of behaviors and depend on specific relationship contexts.

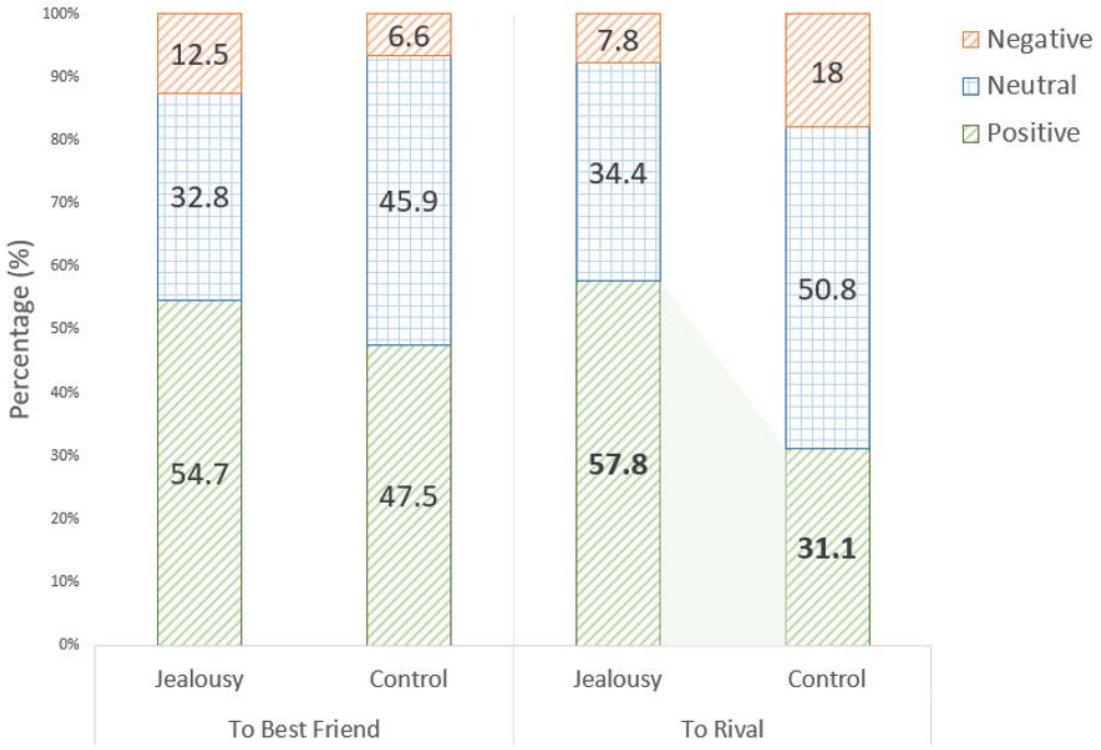


Figure 3.4. Valence of the open-ended message.

Jealousy and Personal and Relational Factors. To examine whether and what factors predict real-time jealous reactions, we investigated the relationships between jealous reactions and personal and relational factors. However, similar to Study 2.2, the results did not indicate interpretable associations. Thus, instead of detailing them in this section, the full results of the zero-order Pearson's correlations are contained in Appendix G and Appendix H.

Discussion

The aim of the present study was to experimentally manipulate jealousy in actual friends in an ethical manner and examine behavioral changes from prosocial to antisocial. We successfully manipulated participants' sense that their friendship was being threatened and induced feelings of jealousy in the lab. When participants believed that their best friend chose another friend over themselves and agreed to exclude the participant from spending time with

them, participants were less likely to reveal the manipulation setup – that participants had secretly watched their chat – to their best friend and the rival. Furthermore, in the same situation, participants were more likely to be nice towards the rival when they had the chance to interact with the rival by sending a message. However, despite this effective manipulation, jealousy did not appear to have immediately changed participants' perceptions about the rivals' personalities nor did it affect some of the participants' behaviors. The following sections will examine implications of each significant finding and provide possible interpretations of the insignificant findings that may actually reflect jealous reactions in a real-life situation.

The Real-World Manipulation of Jealousy

The current project overcame one of the major obstacles in jealousy research: experimentally manipulating jealousy in the lab in established relationships within the boundaries of ethical research. We successfully elicited jealousy in the lab, which resulted in changes in self-reported emotions and behaviors. Despite the relatively low intensity of the emotions, this work serves as a well-controlled and psychologically meaningful experiment given the social undesirability of jealousy and the ethical constraints of experimental manipulation in the lab. Because this work is, to our knowledge, the first in-lab experiment that manipulated jealousy in actual friendships as opposed to in romantic partners, it provides evidence of real-life jealous behaviors in a non-romantic context. This project also serves as an important comparison work when examining the differences between hypothetical and real-world jealous responses, which will be discussed in the following paragraphs.

Less Confrontation and More Niceness towards Rivals

One of the most important findings in the present work is participants' prosocial jealous responses. Jealous participants in the present study were less likely to confront their best friend

and the rival about the uncomfortable situation (i.e., secretly watching the chat that excluded the participant) and more likely to act nicely towards the rival by sending a more positive message. Considering that the jealous participants did not react more prosocially towards their best friend and that previous literature on jealousy has almost exclusively discussed antisocial behaviors towards rivals, these findings are surprising. Nonetheless, these results fit well with the findings from Study 2.1 that, in contrast with romantic situations, people rarely reported engaging in antisocial behaviors towards rivals in their recalled experiences of friendship jealousy. These findings highlight the wide range of behaviors people may engage in to fulfill the desired goal state of an emotion and how different contexts (e.g., friendship) can influence those strategies. The following paragraphs will examine each of the jealousy reactions focusing on the context of same-sex friendship.

Considering that people feel less "legitimacy" in demanding relational exclusivity in friendships compared to romantic relationships (Parker, Campbell, & Lucas, 2007), participants' less confrontational behaviors regarding the jealousy situation may well reflect how people would behave in a real-life situation of friendship jealousy. This finding may at first seem contradictory to previous literature, most of which has heavily focused on antisocial jealousy responses. However, given that jealousy involves great uncertainty, less confrontation can be a "safer" move, at least initially, than hastily engaging in actions that require an immediate response from a friend (Guerrero et al., 1995). These results also align with the previous findings in this dissertation that people in a friendship jealousy situation were less likely to engage in direct behaviors, such as confronting their best friend and/or the rival about the jealousy situation. Furthermore, this fits with the DFMJ, described in the introduction, that at least initially, people may engage in prolonged processes of threat assessment and information

gathering by trying to figure out whether the threat actually exists and then determining its magnitude and possible consequences instead of rushing into any behaviors. It is also possible that participants might have used other means outside the lab if available, such as gossiping or complaining to others to react to the jealousy situation.

Another important contribution of the present study is capturing that jealousy in a friendship context can lead to prosocial behaviors towards a rival, the very person threatening the relationship. Indeed, in the chat manipulation in the jealousy condition of the present study, it was the rival who explicitly mentioned not including the participant. However, participants in that condition were more likely to act nicely towards the rival, whereas they did not act much differently towards their best friend compared to participants in the control condition. This finding may only make sense when we examine the differences between the meaning of a rival in friendships and in romantic relationships. For most romantic relationships, a rival in a jealousy situation is the jealous party's competitor. As a romantic relationship typically involves two people exclusively, there should be little motivation for the jealous party to want or need to be nice towards a rival. However, in many cases of friendship, a rival may be another friend of the jealous party or a potential friend. Despite uncomfortable situations, the jealous individual may still need to maintain a good relationship with the rival. Moreover, after feeling betrayed by their best friend, the jealous individual may even try to curry favor with the rival. For example, the jealous individual may try to become closer friends with the rival as a potential new best friend to replace their current best friend, which in a long run can be an indirect antisocial behavior towards their best friend. Considering these aspects of how a rival might factor into same-sex friendship jealousy, the finding that jealous individuals act more positively towards rivals makes sense. Indeed, our post-hoc analysis also confirmed that participants who were friends with the

rival were much more likely to behave nicely towards the rival compared to those who were not friends with the rival. This evidence illustrates how context-specific factors can affect a wide range of jealous responses in a real-life jealousy situation. Overall, these results provide important evidence that 1) adults employ a variety of strategies to achieve the goal of securing an important relationship, and 2) in doing so, they take into account the specific context and its broader consequences to their other interpersonal relationships.

The Lack of Behavioral Changes and the Prolonged State of Jealousy

Although the findings described in the previous paragraphs provide unique insights into jealous responses in same-sex friendship, we did not observe significant conditional differences in participants' perceptions about their rivals' personality traits or other behavioral measures (i.e., white noise blast and humor assignments). Contrary to our initial expectations, these results do not replicate the findings in Study 2.2. However, as proposed by the DFMJ, given that jealousy can develop over a longer period of time with a lot of uncertainty, we argue that these insignificant findings may result from capturing the earliest stage of jealousy in a real-life situation. The next paragraphs will discuss some possible explanations for the inconsistent findings between Study 2.2 and the current study.

Unlike Study 2.2, participants in the jealousy condition discussed in this chapter were not more likely to derogate the rival's characteristics compared to participants in the control condition. In the present study, as the majority of participants (about 85%) were also friends with the rival and the average length of their friendship was 12.3 months, it is safe to assume that they generally understood the rival friend's personality quite well. Also, because people usually consider personality traits highly stable over a long course of time (Costa & McCrae, 1989;

Roberts & DelVecchio, 2000), the temporary manipulation in the lab may not have been long or strong enough to alter participants' long-established perceptions about people they already knew.

Moreover, the fact that we did not replicate the findings on rival derogation from Study 2.2 may highlight the differences between hypothetical and real-world experiments. In Study 2.2, participants in the jealousy condition were more likely to report that they would view the rival as a less trustworthy and less nice person even though one of the assumptions of the study was that participants were also friends with the rival. However, in this study in which the majority of participants were in actuality confirmed to be friends with the rival, participants did not report such differences in their perceptions of the rival. Since we successfully manipulated jealousy in both studies, this inconsistency is most likely a reflection of the difference between hypothetical and actual responses: it is difficult to accurately predict one's responses to emotional events. People often mistake the impact of an emotional event on their judgments (Wilson & Gilbert, 2005). According to our findings, people thought that, when jealousy occurred, they would see the rival differently, particularly in a more negative way. However, the results of the current study indicate that this prediction may not reflect actual behavior, at least not at the beginning of the jealous state. In fact, our additional post-hoc analyses seemed to be consistent with the idea that individuals tend to have a self-serving bias towards their friends by judging them more positively despite their incivility (Hess, Cossette, & Hareli, 2016). Participants who were friends with the rival were still more likely to judge the rival in a more positive way (e.g., more trustworthy) in the jealousy condition, whereas those who were strangers to the rival tended to derogate the rival in a more negative way (e.g., less trustworthy) in the jealousy condition. Given the general lack of real-time experiments in the field of jealousy research, these differences in the

findings underscore the importance of continuing to manipulate jealousy in actual relationships. Experiments in the lab can re-shape our thinking of how jealous reactions unfold in real time.

Another inconsistency between Study 2.2 and the current study is that jealous participants in the current study were not more likely to increase prosocial and antisocial behaviors, measured by the humor assignment and the noise blast assignment, respectively. There are at least two possible explanations for these results. First, one may argue that the measurements used do not have high external validity such that they do not accurately represent and predict real-life responses. Although a number of previous studies confirmed the validity of the noise blast assignment as a way of measuring aggression towards strangers (Anderson & Dill, 2000; Ferguson, 2013; McCarthy, Elson, Vazire, & Tullett, 2018), this particular measurement may have lower validity in the context of friendships. It is also possible that the noise blast assignment only works to measure aggression against strangers but not against someone the participant knows.

Despite the above possibilities, several factors also indicate that the inconsistencies did not arise because of the potential poor validity of the measures. In fact, several key findings suggest that the results in the present study may better resemble and reflect jealous responses in real-life situations than the hypothetical responses from Study 2.2 do, consequently resulting in a discrepancy between the two studies. Although participants in Study 2.2 recalled engaging in more prosocial and antisocial behaviors when feeling jealous, one of the other frequently chosen responses was “no behaviors at all” when participants were asked separately about their prosocial and antisocial behaviors. Moreover, another finding in this study showed that participants in the jealousy condition were likely to not disclose what was happening to their best friend and the rival compared to participants in the control condition. These findings seem to

support that it is not that the behavioral measures used in the current study were not valid but that in a more real-life situation, individuals in the jealousy condition may act similarly to those in the control condition, at least at the beginning of a jealousy situation. In fact, it was also suggested that jealous people may often remain silent and act as usual while they are in the process of threat assessment (Guerrero, Hannawa, & Babin, 2011). In short, given that jealousy occurs over a longer course of time, we may not have observed any immediate changes in some behaviors in the lab because we were only capturing the earliest moments of the jealousy experience. Given that many participants were friends with both the best friend and the rival, they may not have wanted to risk losing two friends just yet. Overall, these results may reflect the amount of uncertainty that jealousy evokes in real life, which requires extensive time for jealous individuals to gather information, assess the extent and magnitude of the threat, and determine their strategies.

In summary, the inconsistent findings between Study 2.2 and the present study seem to be reflective of the differences between hypothetical responses and actual responses in a real-life situation. That participants showed no immediate changes in their thoughts about the rival or in some of their behaviors may well capture the beginning stage of a longer lasting emotion, namely, jealousy, in which individuals may first engage in an on-going process of threat assessment rather than hasty actions. Given that friends have less "legitimacy" in claiming exclusivity in a relationship compared to romantic partners, people may be more cautious in acting out in a real-life jealousy situation, especially at its beginning stages.

Limitations and Future Directions

Although we created a friendship jealousy manipulation that seemed the most implementable in the lab with medium effect sizes, some aspects of the manipulation could be

altered to elicit stronger responses. Feeling replaced is important in producing same-sex friendship jealousy (Burkett, 2010), and participants may not have been feeling replaced enough to take more actions in response to the manipulation used in this study. To more strongly elicit the feeling of jealousy, the participant's best friend, rather than the rival, could refuse to invite the participant, which may consequently lead to stronger reactions in the participant. However, in the pilot study in which we tested a similar exclusion situation, participants were more likely to suspect the authenticity of the chat when the suggestion to exclude the participant originated from their best friend. Although participants still reported feeling jealous and betrayed with the current manipulation, future research may need to sacrifice more of the authenticity of the manipulation in order to evoke a stronger sense of friendship threat.

This study also could only measure a limited range of prosocial and antisocial behaviors because it was conducted in the lab in a limited time. Although participants in our pilot study reported that the employed measures seemed to be good representatives of prosocial and antisocial behaviors in the lab, we failed to find differences in some of them (i.e., the humor assignment and the noise blast assignment). It is possible that those measures were not sensitive to the spectrum of real-life jealous behaviors. Future research should continue to clarify the effects of friendship jealousy on other potential jealous responses than those used in the present study in a more real-life situation.

Conclusions

Despite a few limitations, the present work provides valuable contributions to the field of jealousy research in several important ways. First, we overcame a major obstacle in jealousy research by successfully manipulating jealousy in established friendships in the lab. Future research on jealousy may benefit greatly from examining real-life manifestations of jealousy and

how they may differ from recalled or hypothetical responses. The findings of this project also provide foundational and unique evidence to the development of jealousy theories in a non-romantic context. Not only does it extend the range of potential jealous responses to include not responding immediately to threats, but it also underscores the importance of examining the interconnections between jealousy and the type of relationship in which jealousy occurs.

CHAPTER 4

Real-Life Responses of Jealousy: A Diary Study

The previous chapters showed how friendship jealousy is associated with a variety of behaviors, some of which were better understood with the characteristics of friendships. One important aspect that requires further investigation is how those jealousy responses manifest in a more real-life situation with real-life behaviors. Furthermore, by exploring real-life responses, we may also find associations with the factors that have been suggested to the related to jealousy in the literature (e.g., relationship satisfaction and commitment). In this chapter, using a diary method, we investigate how same-sex friendship jealousy unfolds in a real-life situation and how existing friendship quality may influence the jealousy process. To our knowledge, this is the first study that examines real-life friendship jealousy responses, including a wide range of behaviors. Furthermore, to date, no research has investigated jealousy as a prolonged state with early and late processes, and their effects on relationship outcomes.

The Dynamic Functional Model of Jealousy

We examine jealousy experiences through the lens of the Dynamic Functional Model of Jealousy (DFMJ; Chung & Harris, 2018) in this study. The DFMJ proposes that jealousy can be a prolonged state of early process (i.e., threat appraisal) and late process (i.e., manifestations of responses) and that different factors (e.g., relationship quality) may differentially influence those processes. Figure 4.1 illustrates the involved processes that occur as jealousy unfolds in a simplified version (see Chung & Harris (2018) for the detailed version). The early phase involves evaluating whether a perceived rival is actually threatening to one's relationship or not. Once the rival is appraised as a threat, jealousy is manifested with a variety of responses, including feelings, motivations, cognitions, and behaviors. Importantly, the DFMJ emphasizes

that the goal of jealousy, i.e., protecting one's relationship, can be accomplished by various behaviors, ranging from prosocial to antisocial. Individuals may choose different behaviors over time depending on what they perceive to be most likely to be effective. The final phase involves the impact of jealousy on securing one's relationship in terms of length and quality.

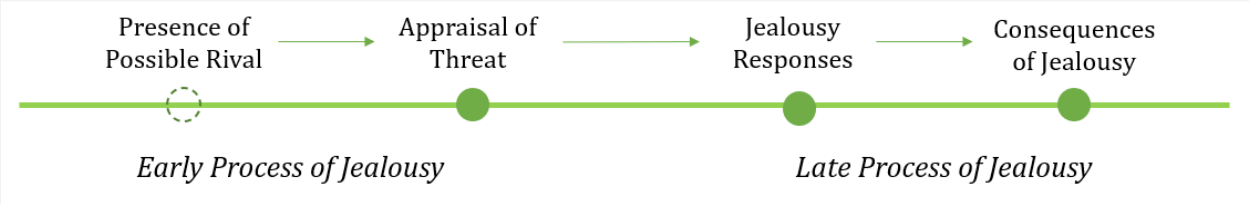


Figure 4.1. The simplified Dynamic Functional Model of Jealousy

A number of factors, such as relationship variables (e.g., satisfaction, commitment) and individual differences (e.g., attachment style), may influence these processes because they can impact the judgments underlying the jealousy process (e.g., beliefs about self, loved one, and rival). In this study, we focus on the relationship quality factor (i.e., relationship satisfaction and commitment) and examine how it is related to real-life jealousy responses in same-sex friendships. We discuss further in the next section how pre-existing relationship quality may differentially impact the early and late processes and base our predictions on the model and previous findings.

Relationship Quality and the Early Process of Jealousy

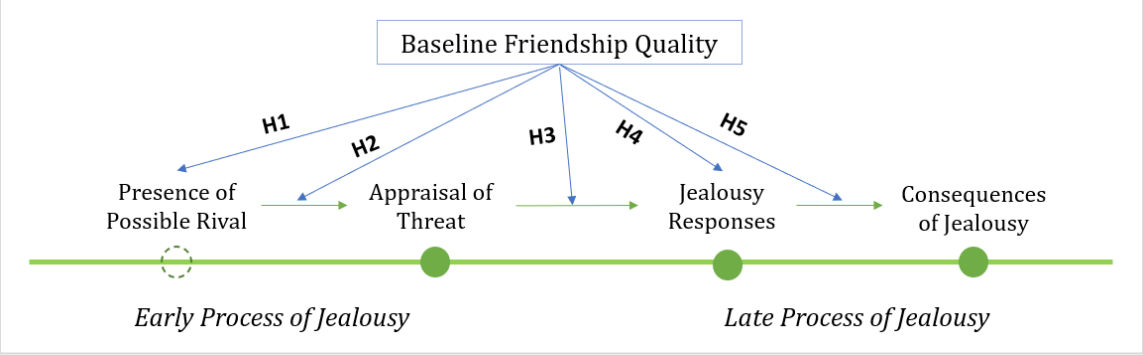


Figure 4.2. The influence of friendship quality on jealousy process

Relational satisfaction generally refers to the degree to which individuals are content with their relationships (Bevan, 2013; Guerrero & Eloy, 1992; Rusbult, 1980), and commitment generally refers to individuals' intention to maintain their relationships in a long run with high satisfaction and investment, and low interest in alternative partners (Le & Agnew, 2003; Rusbult, 1983; Stanley & Markman, 1992). These qualities of relationship may differentially impact different phases of jealousy and Figure 4.2 demonstrates the specific processes in which friendship quality may work as a moderator. At the early process, the DFMJ proposes that relational satisfaction and commitment serve as buffers against concerns about mistrust in their relationships and the possibility of rivals. Previous studies that explored the frequency of suspicious concerns over possible betrayal supported this argument overall. People in more satisfied relationships were less likely to report such episodes, as were people in committed relationships (Andersen, Eloy, Guerrero, & Spitzberg, 1995; Bevan, 2008; Dandurand & Lafontaine, 2014; Demirtaş & Dönmez, 2006; DiBello, Rodriguez, Hadden, & Neighbors, 2015; Guerrero & Eloy, 1992; Kennedy-Lightsey & Booth-Butterfield, 2011; Sidelinger & Booth-Butterfield, 2007).

However, within the early phase, there are a number of ways in which this buffering effect of relationship quality can occur. In this study, we look at three specific processes in the early phase to see where it has its impact. First, relationship quality can provide a higher threshold for perceiving potential rivals to individuals who are in more satisfied and committed friendships (**Hypothesis 1**). Perceiving few rivals as a result of better relationship quality can serve as a fundamental barrier against jealousy because then, the essential component of jealousy (i.e., rival) does not exist at all. Second, it is also possible that relationship quality helps individuals from feeling threatened over the perceived rivals. People in more satisfied and

committed friendships may feel less threatened by rivals because they have higher trust and faith in their friendships (**Hypothesis 2**).

The last process in the early phase is about how the appraisal of threat leads to jealousy. Once a rival is considered threatening, that could lead to the feelings of jealousy. However, existing relationship quality could either intensify or attenuate those experiences. Previous findings found that relationship satisfaction and commitment were associated with magnified reactions of jealousy, such as heightened negative feelings, over more clear threats (Barelds & Barelds-Dijkstra, 2007; Barelds & Dijkstra, 2006; Dandurand & Lafontaine, 2014). For example, when married and cohabiting couples were asked to imagine more certain infidelity (e.g., sexual intercourse), participants with higher relationship satisfaction were more likely to report feeling jealous compared to those in less satisfying relationships (Barelds & Barelds-Dijkstra, 2007). The effect was similar for commitment such that when participants imagined hypothetical jealousy situations, individuals with higher commitment reported that they would feel more jealous than less committed individuals (Buunk, 1991; DiBello et al., 2015). This makes sense because people who put more value on their relationships have greater potential loss, which then could lead to greater feelings of betrayal. Based on these findings, we predict that individuals in more satisfied and committed friendship are more likely to experience jealous feelings over the appraised threats (**Hypothesis 3**).

Relationship Quality and the Late Process of Jealousy

The late process of jealousy deals with how individuals' responses change as a function of jealousy experiences. Previous evidence in the literature and in this dissertation have consistently found that jealousy increases both prosocial and antisocial behaviors (e.g., Bevan, 2008; Guerrero, Hannawa, & Babin, 2011). In relation to relationship quality, previous findings

suggest that despite eliciting stronger jealous feelings (related to Hypothesis 3), satisfaction and commitment are associated with more prosocial behaviors in a jealousy situation. For example, when married and seriously dating couples recalled their recent jealousy experiences, individuals in more satisfying relationships were more likely to report engaging in more prosocial (e.g., increasing affection) and less antisocial behaviors (e.g., avoiding partner or yelling) than less satisfied individuals (Buunk, 1982; Guerrero, Hannawa, & Babin, 2011; Kennedy-Lightsey & Booth-Butterfield, 2011). Moreover, when jealousy was elicited via hypothetical scenarios, dating couples with higher relationship satisfaction were more likely to report engaging in prosocial behaviors (Guerrero, 2014). Likewise, in hypothetical studies, commitment was also positively related to more prosocial behaviors and less antisocial behaviors (Bevan, 2008; Slotter et al., 2012; Timmerman, 2001). Based on these findings, we predict that jealousy increases both prosocial and antisocial behaviors. However, this will be moderated by friendship quality. Individuals with better friendship quality may be more likely to increase prosocial behaviors when they are in a state of jealousy (**Hypothesis 4**). In contrast, we predict the opposite regarding antisocial behaviors. Individuals with better friendship quality will channel their jealousy less into antisocial behaviors (**Hypothesis 5**).

Finally, we move to the consequence phase of jealousy. There is little evidence on the outcomes of jealousy in both the short-term and the long-term, but it seems fair to assume that jealousy experiences may decrease immediate relational outcomes, such as satisfaction, at least temporarily. We examine this as well as whether having better relationship quality prior to jealousy episodes provides a buffer against the negative impact of jealousy. Despite some intensified reactions of jealousy, individuals with better relationship quality may experience less reduction in the quality of their relationships. Based on these reasons, we predict that jealousy

may reduce relationship quality overall however, its magnitude may be smaller for individuals with higher baseline friendship quality. (**Hypothesis 6**).

Methods

Participants

A sample of 153 participants from a large research university was recruited with an exchange of course credit for their participation. We excluded 8 participants who missed all 14 days, and additional 22 participants who failed to pass the attention check question (i.e., the definition of envy vs. jealousy) in their baseline survey. The final sample included 123 participants (20 males; age M = 20.41, SD = 2.33, range 18-33 years).

Procedures

The present research involved two parts. For the first part, participants visited the lab to listen to the instructions. When participants signed up for the study, they did not know that the purpose of the study relates to jealousy. After the experimenter described the study, if participants consent to participate, they received a subject number and completed the baseline survey, which measured a series of questions regarding their best same-sex friendships. All recruited individuals agreed to participate in the study after learning that the study measures their jealousy experiences.

The second part consisted of daily online surveys for 14 consecutive days beginning from the day that they visited the lab. The survey asked about daily jealousy experience in their best same-sex friendship, including emotions, behaviors, and relationship quality, such as friendship satisfaction and commitment. During this period, participants received a daily survey link to their email at 7 pm every evening. Participants were instructed to complete the survey any time before bed that day. The following morning, they received a reminder text with the survey link of the

previous day in case they had not completed it. If participants were unable to complete the survey by noon the next day, they were instructed to skip it and move on to the next day. For the purpose of anonymity, all participants completed surveys only with their subject number and all the emails and text messages were sent out via automatic online programs and settings.

Measures

Rival Perception. To measure whether participants perceived any potential rivals, they answered the question "Today, to what extent was your same-sex best friend interested in another friend besides you (e.g., bonding, hanging out, talking extensively about that friend, texting a lot with that friend)?" on a 9-point scale, from 1 = "Not at all interested" to 9 = "Extremely interested".

Threat Appraisal. To assess the level of threat appraisal about the perceived rivals, participants answered "To what extent did that negatively impact your friendship with your best friend (i.e., bonding or closeness)? (Examples of impact may include that you might feel replaced by that person or that your friendship is threatened by that person)" on a 9-point scale, from 1 = "Not at all interested" to 9 = "Extremely interested".

Jealousy and Related Emotions. Participants rated the extent to which they felt jealous in their same-sex best friendship that day on a 9-point scale, from 1 = "Not at all jealous" to 9 = "Extremely jealous". Participants also rated the feelings of other emotions that often co-occurr with jealousy, including betrayal, anxiety/fear, hurt, anger, and sadness on the same 9-point scale.

Behaviors. We asked 8 yes/no questions to assess whether participants engaged in a certain behavior each day. The following behaviors were selected based on the findings of the literature and Study 2.1, which represent each type of jealous behaviors in same-sex friendship.

Initially, we planned to examine the effects of specific behavior, separately. However, due to the high correlations and communalities among them, we aggregated them into the two categories of prosocial and antisocial behaviors for further analysis. We present them within those categories as follows.

Prosocial Behaviors. To measure a direct prosocial behavior, participants answered "Today, I calmly discussed my feelings with my same-sex best friend, and tried to reach an understanding". For an indirect prosocial behavior, they answered "Today, I tried to spend more time with my same-sex best friend than usual, and/or showed my same-sex best friend that I like him/her".

Antisocial Behaviors. Participants answered one item assessing direct antisocial behavior towards their best friend, "Today, I argued with my same-sex best friend and/or made mean comments to my same-sex best friend". We included two items for indirect antisocial behaviors towards best friend, including "Today, I acted passive-aggressive towards my same-sex best friend, and gave him/her the cold shoulder." and "Today, I vented or complained about my same-sex best friend to someone else". We measured negativity towards rivals with "Today, I made negative comments about the other friend that my same-sex best friend was interested in or pointed out that friend's bad qualities", and surveillance behavior with "Today, I checked up on my same-sex best friend more than usual to find out what my same-sex best friend was doing when s/he wasn't with me". Lastly, "Today, I pretended nothing was wrong, and acted like I was not feeling any negative emotions." tapped on avoidance behavior.

Friendship Satisfaction and Commitment. We asked participants' daily satisfaction and commitment in friendships to gauge the quality of friendship each day. Participants separately rated the extent to which they felt satisfied with and committed to their friendship

with their best same-sex friend that day on a 9-point scale, from 1 = "Not at all" to 9 = "Extremely".

General Friendship Information. In the baseline survey, participants provided general information about their best same-sex friendship. Participants first wrote the initials of their best same-sex friend and answered additional questions on the length, closeness, value, friendship satisfaction, and commitment. Specifically, the average responses to friendship satisfaction and commitment in this survey served as a baseline level of friendship quality in the analysis. Participants separately answered, "How much are you satisfied with your friendship with (initials of best same-sex friend)?" and "How much are you committed to your friendship with (initials of best same-sex friend)?" on a 5-point scale, in which 1 = "Not at all" and 5 = "Very much". To match the scale that was used in the daily survey for the analysis, the initial responses on a 5-point scale were re-scaled to a 9-point scale.

Results

Overview of the Analysis

We tested our predictions using regression and repeated-measures ANOVAs with participants as the unit of analysis. Because of low frequency of jealousy reports, we averaged across days of jealousy versus days non-jealousy. For the same reason, we also simplified the variables of behaviors with two categories of prosocial and antisocial behaviors, as previously described in the methods section. For the relationship quality measure, friendship satisfaction and commitment were averaged. The detailed aggregation processes for each variable are presented in Table 4.1.

Participants' average number of completing daily surveys was 12.16 out of 14 days. For about half of the time that participants completed daily surveys, they reported perceiving rivals.

About twenty percent of the time, participants reported feeling jealous and when they did, the average intensity was 3.2 on a 9-point scale. Because of the low frequency and variability of jealousy on average, as described above, we focused on the variable that captured the proportion of the days that participants reported feeling jealous as the main jealousy variable in the current study. Regarding the consequence of jealousy, we examined the average friendship quality on the days that participants reported feeling jealous, then calculated the difference from their baseline friendship quality.[7] Table 4.2 presents the descriptives of demographics and aggregated variables.

[7]Initially, we planned to examine friendship quality in three separate segments as pre-jealousy, during-jealousy, and post-jealousy. However, the patterns of reporting jealousy within the 14-day window varied extremely by participants. For example, some people reported several punctuated episodes of jealousy at random points of time whereas some others more constantly reported jealousy. Due to this issue, we decided to focus on the average friendship quality on the days that participants reported feeling jealous, and its change from baseline friendship quality.

Table 4.1.

Aggregated Variables and Calculation Processes.

Variable	Calculation
Rival Presence	# of days Ps reported best friend's interest in another friend / # of days Ps completed the daily survey
Threat Perception	# of days Ps reported negative impact of rival / # of days Ps completed the daily survey
Jealousy (days)	# of days Ps reported feeling jealous at all / # of days Ps completed the daily survey
Jealousy (intensity; 9-point scale)	Sum of all jealousy ratings / # of jealous days
Prosocial Behaviors on Jealous Days	# of all prosocial behaviors on jealous days / # of jealous days
Prosocial Behaviors on Non-Jealous Days	# of all prosocial behaviors on non-jealous days / # of non-jealous days
Antisocial Behaviors on Jealous Days	# of all antisocial behaviors on jealous days / # of jealous days
Antisocial Behaviors on Non-Jealous Days	# of all antisocial behaviors on non-jealous days / # of non-jealous days
Baseline Friendship Quality (1)	The average rating of friendship satisfaction and commitment in the baseline survey
Friendship Quality on Jealous Days (2)	The average rating of friendship satisfaction and commitment on jealous days
Friendship Quality on Non-Jealous Days (3)	The average rating of friendship satisfaction and commitment on non-jealous days
Change in Friendship Quality on Jealous Days	(2) – (1); Subtract (1) from (2)
Change in Friendship Quality on Non-Jealous Days	(3) – (1); Subtract (1) from (3)

Table 4.2.

Descriptives of Demographics and Aggregated Variables.

Variable	Mean	SD	Observed range
Age (years)	20.41	2.33	18-33
Friendship Length (months)	34.25	18.22	2-50
Baseline Friendship Quality (9-point scale)	7.47	1.53	3-9
Rival Presence	.53	.33	0-1
Threat Perception	.17	.23	0-1
Jealousy (days)	.18	.23	0-1
Jealousy (intensity; 9-point scale)	3.20	1.10	2-6.5
Prosocial Behaviors (on Jealous Days)	.44	.41	0-1
Antisocial Behaviors (on Jealous Days)	.48	.42	0-1
Antisocial Communication	.19	.32	0-1
Avoidance	.30	.38	0-1
Surveillance	.17	.30	0-1
Change in Friendship Quality on Jealous Days	-1.30	1.87	-5.55-2.50
Change in Friendship Quality on Non-Jealous Days	-.77	1.58	-7.39-3.65

Friendship Quality and the Early Process of Jealousy

We first examined the early processes of jealousy that involve threat assessment and jealousy elicitation, as well as the effects of existing friendship quality on them. Regression analysis was used for all tests in this section. We first predicted that for individuals in more satisfied and committed friendships, friendship quality would provide a higher threshold for perceiving potential rivals (H1). Consistent with the prediction, we found that participants with higher baseline friendship quality were less likely to perceive the potential rivals for their friendships (b = -.04, t = -2.09, p < .05).

Next, we explored the effect of friendship quality on the link between the presence of a rival and the appraisal of threat. It was hypothesized that people in better friendships may feel less threatened by rivals because of high trust and faith in their friendships (H2). We tested this

hypothesis among participants who reported perceiving a rival at least once (*N*=112). Perceiving potential rivals predicted threat appraisal (b = .07, t = 3.17, p < .01). However, contrary to our prediction, the level of baseline friendship quality did not moderate the relationship between them (b = .01, t = .37, p = .71).

As the last process of the early phase, we examined whether individuals in more satisfied and committed friendships are more likely to experience jealous feelings over the appraised threats (H3). Participants who ever reported feeling threatened over rivals were included for this analysis (*N*=73). Both main effects of threat appraisal and baseline friendship quality were significant. Threat appraisal increased jealousy experiences (b = .17, t = 6.05, p < .001) whereas better baseline friendship quality was related to fewer jealousy experiences (b = -.06, t = -2.04, p < .05). The interaction effect between threat appraisal and baseline friendship quality was also significant (Figure 4.3). Participants with higher baseline quality were more likely to experience jealousy over the perceived threats (b = .04, t = 2.43, p < .05).

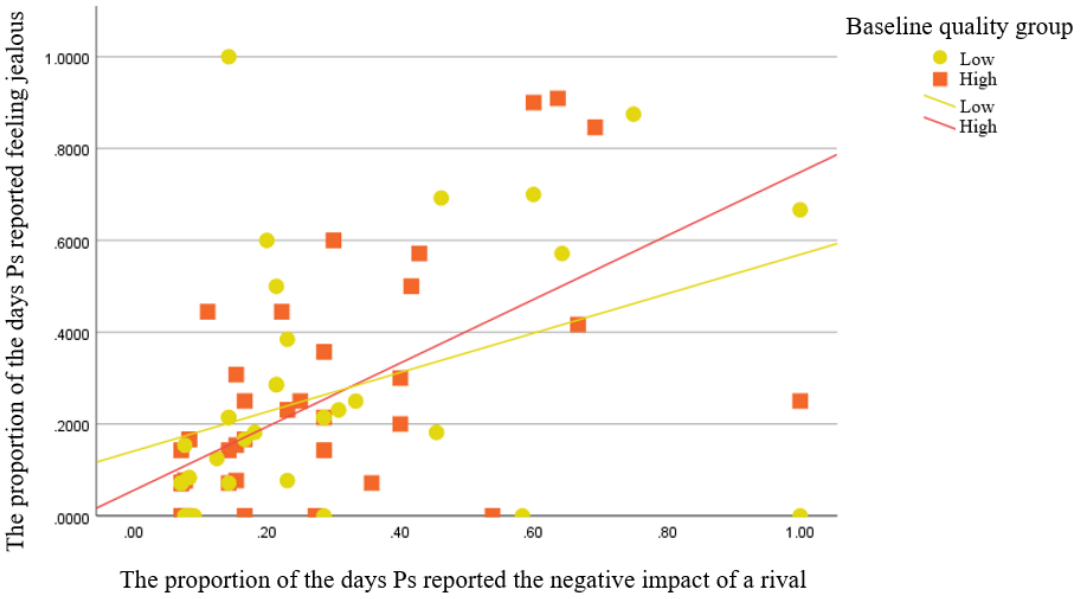


Figure 4.3. The moderation effect of baseline friendship quality on the relationship between threat appraisal and jealousy.

Friendship Quality and the Late Process of Jealousy

As we move to the second phase, we now focus on different questions of how jealousy is manifested in individuals. Thus, throughout this section, we only included participants who ever reported experiencing jealousy during the study (N=74). We used repeated-measures ANOVA with a within-subject factor with 2 levels of jealousy (i.e., whether it was a jealous day or not) and a between-subject factor of baseline friendship quality as a possible moderator.

We first examined the number of prosocial behaviors as a function of jealousy. We predicted that jealousy would increase prosocial behaviors overall, and this will be enhanced in individuals with better baseline friendship quality (H4). The main effect of jealousy was significant ($F(1, 68) = 5.75$, $p < .05$), suggesting that regardless of the level of baseline quality, participants who experienced friendship jealousy indeed increased prosocial behaviors on the days that they felt jealous. However, existing friendship quality did not moderate the association between jealousy and prosocial behaviors ($F(5, 68) = .23$, $p < .95$).

Similar for antisocial behaviors, we hypothesized that jealousy would increase antisocial behaviors overall, but this will be attenuated in individuals with better friendship quality (H5). Consistent with the prediction, the main effect of jealousy was significant with antisocial behaviors ($F(1, 68) = 17.77$, $p < .001$). This shows that people do increase engagement in antisocial behaviors on the days that they felt jealous. However, the interaction effect was not significant ($F(5, 68) = .67$, $p = .65$), such that an individual's baseline friendship quality did not affect the amount of antisocial behaviors on a jealous day.

Additionally, we further separated the antisocial behaviors into three sub-categories: antisocial communication, avoidance, and surveillance. This categorization was based on both theoretical background and the results of principal component analysis in this study. Guerrero,

Hannawa, and Babin (2011), who developed the Communicative Responses to Jealousy Scale, showed that avoidance and surveillance behaviors were qualitatively different from other antisocial communicative behaviors. Indeed, in this study, a principal component analysis also revealed the highest uniqueness for avoidance and surveillance behaviors among all behaviors. This suggests that participants in this study also considered those behaviors qualitatively more different compared to other behaviors. For these reasons, we performed additional analyses on how the engagement in antisocial communication, avoidance, and surveillance differs as a function of jealousy or its interaction with baseline friendship quality. As a result, we found that jealousy specifically increased avoidance behavior ($F(1, 68) = 25.27$, $p < .001$) and antisocial communication ($F(1, 68) = 6.95$, $p = .01$), but not surveillance behavior ($F(1, 68) = .02$, $p = .90$). None of the interaction effects between jealousy and baseline friendship quality were significant.

The very last phase of the jealousy process attends to the relationship consequences as a result of jealousy experience. We expected that jealousy will reduce perceptions of friendship quality, but its magnitude may be smaller for individuals with better baseline friendship quality (H6). The main effect of jealousy was significant ($F(1, 64) = 8.61$, $p < .01$), suggesting that individuals' perceptions of friendship quality decreased on the days that they felt jealous. However, individuals' baseline friendship quality did not necessarily provide a buffer against this effect ($F(5, 64) = 1.54$, $p = .19$).

Discussion

This study is the first, to our knowledge, to examine numerous important aspects of jealousy. It is the first study that longitudinally explored same-sex friendship jealousy. It is also the first to examine both prosocial and antisocial responses of same-sex friendship jealousy in real life situations. Moreover, the current study examined friendship quality as a moderator for

same-sex friendship jealousy for the first time. Importantly, this study also provided the first evidence on the change (i.e., increases) of prosocial and antisocial behaviors as a function of jealousy within individuals. Across friendship and romantic contexts, it has been difficult to capture the within-individuals effects on jealousy behaviors because most previous studies relied on recall and hypothetical methods. This evidence supports the functional perspective of jealousy in which jealousy is indeed a motivational state that encourages individuals to take a variety of actions against relationship threats. In the following sections, we will discuss the findings of each phase of jealousy in more detail.

Baseline Friendship Quality and Threat Appraisal

In this study, we found evidence that people with better baseline friendship quality detected fewer potential rivals. That is, better friendship quality protected them from worrying about the possibilities of friendship rivals. However, there are two possible mechanisms that may explain this finding. One possibility is that more satisfied and committed friendships actually do not have as many threats. The other is that threats similarly exist but people in more satisfying and committed friendships just do not perceive them. These are empirical questions that future research should explore. Regardless, our findings extend the jealousy literature by showing how a moderator, prior friendship quality, can specifically influence the rival perception process in naturally occurring jealousy situations.

Better baseline friendship quality was associated with fewer jealousy incidents in general however, as threats increased, people with higher satisfaction and commitment experienced greater jealousy. This reversed pattern underscores how potential loss as a function of existing relational rewards can influence the motivational state of jealousy in complex ways. Higher satisfaction and commitment helped individuals become more motivated to secure their

relationships only when threats passed an alarming point. Previous studies have reported the associations between relationship quality and concerns about relationship threats (e.g., Andersen, Eloy, Guerrero, & Spitzberg, 1995; Bevan, 2008; Dandurand & Lafontaine, 2014; DiBello, Rodriguez, Hadden, & Neighbors, 2015; Guerrero & Eloy, 1992), and between relationship quality and greater jealousy (e.g., Barelds & Barelds-Dijkstra, 2007; Barelds & Dijkstra, 2006; Buunk, 1991; Dandurand & Lafontaine, 2014), respectively. However, this study is one of the first to provide evidence that encompasses these processes beyond correlational findings, especially in friendship jealousy.

Behaviors and Outcomes of Jealousy

While individuals employed more prosocial and antisocial behaviors altogether in a jealousy situation, it is noteworthy that the most often endorsed behavior in this study was avoidance behavior, i.e., pretending nothing was wrong. This finding is consistent with the previous results in this dissertation that people seem to remain silent or act "normal" when the magnitude of friendship threats are not extreme. Several researchers pointed out that this kind of avoidance behavior may often occur in jealousy situations and reflect an ongoing process of threat assessment in which people try to gather information and decide how to best deal with the situation (Chung & Harris, 2018; Guerrero, Hannawa, & Babin, 2011). Because jealousy inherently and continuously requires this process, avoidance behaviors may be considered neutral rather than destructive in the context of jealousy. In fact, one study reported no significant association between avoidance behaviors and relationship satisfaction (Guerrero, Hannawa, & Babin, 2011).

Given that jealousy requires extensive information gathering process, the finding that jealousy did not significantly predict surveillance behavior in this study is puzzling. Among

many jealous behaviors, surveillance is related to the core aspects of threat detection and mate-guarding behaviors system (Neal & Lemay, 2014). One of the explanations for this result can be the actual item used in the study. In the current study, because of the restrictions on length of the daily survey, one item was used to assess surveillance behavior. Participants answered whether they checked up on their best same-sex friend more than usual to find out what their friend was doing when he or she was not with them. Although the item is highly representative of the surveillance behavior based on the previous studies on romantic jealousy, participants in this study could have interpreted this particular question as a very "active" surveillance behavior. However, in a context of friendship especially with low intensity of threats and jealousy, people may prefer more passive surveillance, such as going through their friend's or rival's social media, as was reported in Study 2.1. Future research that examines more diverse aspects of surveillance as a function of the magnitude of threat will provide helpful insights on monitoring behaviors especially in the friendship context.

As for the consequences of jealousy, it seems to make sense that jealousy produces worse friendship quality in the short term. Because evidence on outcomes of jealousy is limited, this finding extends the jealousy literature in an important way. However, this piece of information on immediate outcomes of jealousy only reveals a small part of the picture. In the current study, jealous individuals increased their engagement in prosocial and antisocial behaviors. When we examine partner's reactions to one's jealousy, some studies reported that various jealous behaviors, ranging from prosocial to antisocial, actually elicited positive reactions from a partner, including positive emotions, and increased commitment (Neal & Lemay, 2014; Yoshimura, 2004). These results suggest that the jealous party's decreased satisfaction and commitment in the short term may not necessarily decrease those of their best friend's or

partner's in the relationships. One possible mechanism that could explain this is the partner's interpretation of jealousy. Jealous behaviors, even those which are antisocial, may signal to partners that jealous individuals care to maintain their relationships. In fact, one unpublished study by the author suggested that people judged others who experience and express jealousy as having more affection and commitment towards the partner compared to those who do not. These findings highlight the inherently dyadic and dynamic nature of jealousy.

Limitations and Future Directions

Although participants reported perceiving the presence of rivals for about half of the time, a 2-week period may have been too short to capture strong jealousy experiences in same-sex friendships. People only reported feeling threatened by the rivals and feeling jealous about twenty percent of the time, and the average intensities of those ratings were low. The low variance on these measures may have decreased the probabilities to detect relationships between variables in the study. Future research should explore jealousy with a longer timeframe or with the focus on a certain period when jealousy is more likely to occur, for example, at the beginning of the academic year when people meet a lot of new friends, i.e., rivals. Additionally, the baseline friendship quality used in the current study was assessed on the same day of the first diary survey, only at an earlier time. Future research should have a similar gap between the baseline assessment and the first diary survey to that between the first and the second diary reports.

Future research should also examine long-term effects of jealousy in terms of both relationship quality and length. Despite feeling worse about their relationships in the short term, jealousy may provide an opportunity to re-examine and improve their relationships. Several studies documented that people recalled having beneficial effects of jealousy instances, such as

open conversations that might strengthen their relationships, and even increase passion, lust, and sexual arousal (Bevan, 2013; Ellis & Weinstein, 1986; Pines, 1998; White & Mullen, 1989). As a result, these experiences after jealousy may contribute to keeping relationships intact for a longer period of time. Although evidence on long-term effects of jealousy is limited, one longitudinal study reported that jealousy was associated with longer relationships after 7 years (Mathes, 1986). This evidence calls for more longitudinal studies to explore the long-term effects of jealousy.

Conclusion

The present study provides important evidence in understanding a prolonged process of jealousy and how relationship satisfaction and commitment can differentially influence each phase of the process. Better relationship quality protected individuals from the worries of the interlopers however, once threats became clearer, it helped them have more motivation to secure their relationships. Moreover, in jealousy situations, individuals increased engagement in various behaviors, from prosocial to antisocial, compared to when in ordinary situations. Although jealousy decreased the perceptions of immediate relationship quality, the increased behaviors, including antisocial behaviors, may reflect people's intention to resolve and cope with the challenges in their relationships. This study extends the jealousy literature by examining jealousy as a gradually developed and longer lasting emotion with real life responses and provides ecologically valid evidence on a wide range of behaviors that people employ to protect their same-sex friendships.

Chapter 4, in full, is currently being prepared for submission for publication of the material. Chung, Mingi; Vul, Ed; Harris, Christine R. The dissertation author was the primary investigator and author of this chapter.

CHAPTER 5

Conclusions

The goal of this dissertation was to understand how individuals try to achieve the goal of friendship jealousy, i.e., protecting their friendships against rivals, and examine a wide variety of strategies, from prosocial to antisocial. Using diverse methodologies, including a recall, hypothetical scenarios, an experimental manipulation in the lab, and a longitudinal diary, we explored individuals' various responses to same-sex friendship jealousy. When friendship jealousy was elicited via a recall and hypothetical scenarios, we found evidence that jealous individuals engaged in a variety of prosocial and antisocial behaviors (Chapter 2). By successfully manipulating jealousy in actual friends in the lab, we were able to capture more real-life responses at the beginning of friendship jealousy process. People in the jealousy condition were less likely to engage in the behaviors that may harm their friendships, such as less confrontation about the conflict situation, and were more likely to behave nicely towards rivals, most of whom were also friends with participants (Chapter 3). When friendship jealousy was examined in more naturally occurring situations via longitudinal diary method, we found further evidence that individuals increase prosocial and antisocial behaviors in a jealousy situation and how baseline friendship quality can moderate the jealousy reactions (Chapter 4).

This dissertation provides a number of prominent findings through examination of jealousy as a prolonged state with the continuous process of threat assessment, and by capturing jealousy responses that align with this view in real-life situations. Using the framework of the Dynamic Functional Model of Jealousy (Chung & Harris, 2018), we proposed that jealousy involves ongoing threat assessment and motivates individuals to employ various behaviors along with the assessment process. This perspective differs from the majority of previous findings in

the jealousy literature that heavily focus on antisocial behaviors and their destructive effects as if they almost always occur immediately following jealousy incidents. However, the overall findings in this dissertation suggest that people choose their actions carefully and do not hastily engage in any behaviors in real life. People seem to take time to assess the situation, especially at the beginning of the jealousy process. For example, in Chapter 3, people in the jealousy condition were more likely to remain quiet and avoid a topic that may inflict harm in their friendships. Moreover, in Chapter 4, people avoided confronting the jealousy situations by pretending nothing was wrong on the days that they felt jealous. Even when jealous individuals choose to act, they seem to prefer indirect behaviors across prosocial and antisocial behaviors (Study 2.1 in Chapter 2). This makes sense because indirect behaviors could be "safer moves" in that they are less likely to require immediate response from their friends or elicit instant negative reactions from their friends (Guerrero et al., 1995). Given that same-sex friendships characteristically entail greater uncertainty regarding betrayals in relationships and less legitimacy to claim exclusive relationships, the tendency for prudence and indirectness may be particularly strong in a friendship context.

Furthermore, this dissertation has consistently provided evidence that same-sex friendship jealousy led to prosocial behaviors as well as antisocial behaviors. Across two studies in Chapter 2, people endorsed engaging in prosocial behaviors when feeling jealous in same-sex friendships, even more so than they did for antisocial behaviors. Importantly, Chapter 4 showed that individuals engaged in more prosocial behaviors towards their best same-sex friend when feeling jealous compared to when in ordinary situations. These findings highlight the motivational aspects of jealousy such that despite subjectively feeling negative, the goal of the jealous state is to secure and promote important relationships. By responding to jealousy in a

prosocial manner, people may be able to attenuate any destructive effects of antisocial jealous behaviors that they engaged in or regain their friend's attention with few conflicts, which in turn will lead to a better chance to achieve the goal of jealousy.

Another pattern of findings that deserve attention in this dissertation are responses towards rivals. These findings are interesting yet unexpected because of the lack of research in same-sex friendship jealousy in the literature. Participants forecasted that they would derogate the rival's personality after jealousy incidents (Study 2.2 in Chapter 2). However, in a lab setting where jealousy occurred in real time, people did not change their perceptions about the rival as a function of jealousy (Chapter 3). In fact, people held more positive views towards rivals even when they believed that the rivals secretly tried to abandon them. Moreover, in the same situation, people were more likely to act nicely towards rivals. This overall positivity towards rivals makes sense when we consider the unique nature of same-sex friendships. That is, one may have a reason to maintain good relationships with rivals. For example, one may be already friends with rivals or have overlapping social circles. Future research should further explore how this aspect of friendship jealousy may interact with other jealousy responses and outcomes.

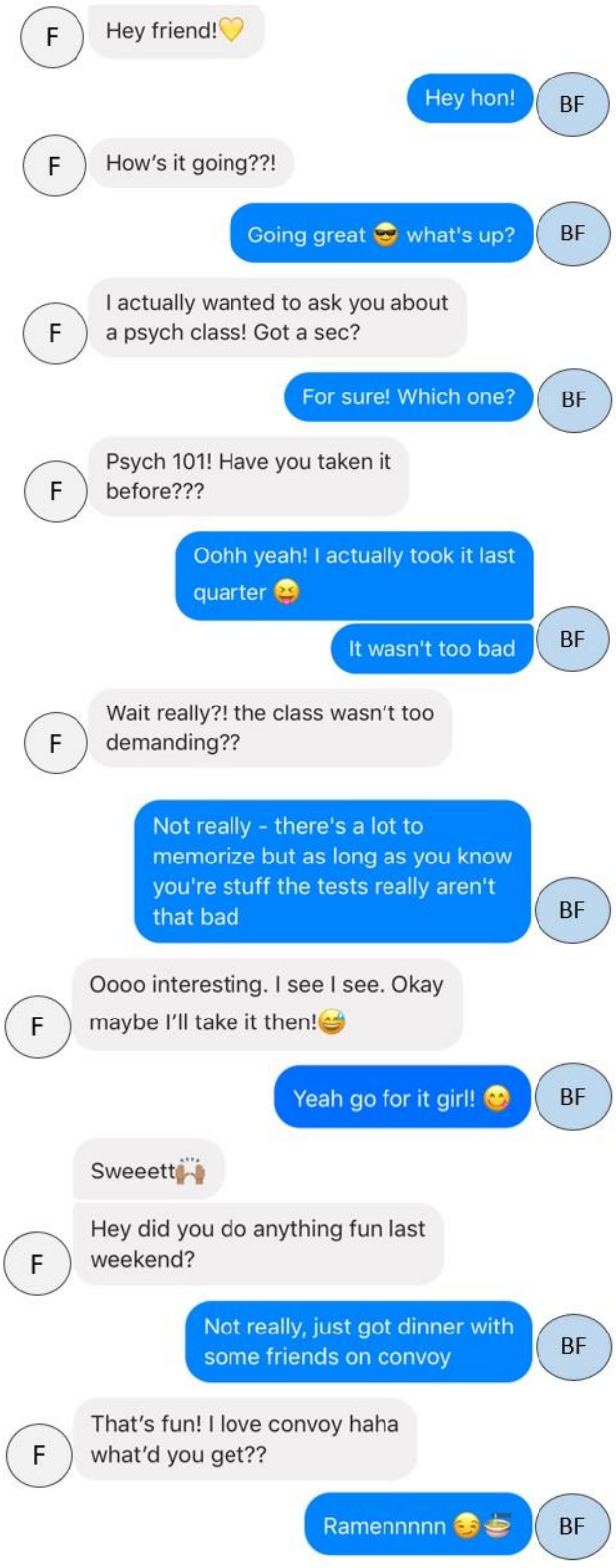
Lastly, we successfully examined the moderation effects of baseline friendship quality in this dissertation. Individuals with better friendship quality were less likely to notice the presence of rivals but once they felt threatened by rivals, they were more likely to feel motivated to protect their friendships (Chapter 4). This research extends the literature on jealousy in an important way because it helps us understand how a moderator can affect specific processes of jealousy with real-life responses. Despite these successful findings, however, we have consistently failed to find meaningful associations between possible moderators and various jealous responses in Chapter 2 and Chapter 3. In fact, other research on jealousy has also reported no effects of

potential moderators (e.g., Krems, 2018; Guerrero, Hannawa, & Babin, 2011). These "failures" seem to resonate well with many inconsistent, mixed findings between jealousy and potential moderators in previous research. Future investigation should more comprehensively review associations between jealousy and potential moderators, for example, a meta-analysis that includes both published and unpublished data, to help elucidate clearer patterns of their relationships.

Beyond children and adolescents, adults also care to protect their same-sex friendships from interlopers. When doing so, they often behave in a careful manner and channel their jealousy into prosocial behaviors as well as antisocial behaviors. Although friendship jealousy experiences could temporarily decrease perceived friendship quality, increased behaviors may signal one's long-term intention to reconcile and improve their friendships. This dissertation provides valuable insights in how jealousy manifests in real life situations and demonstrates the importance of examining the context and dynamic nature of relationship in understanding friendship jealousy.

Appendix A

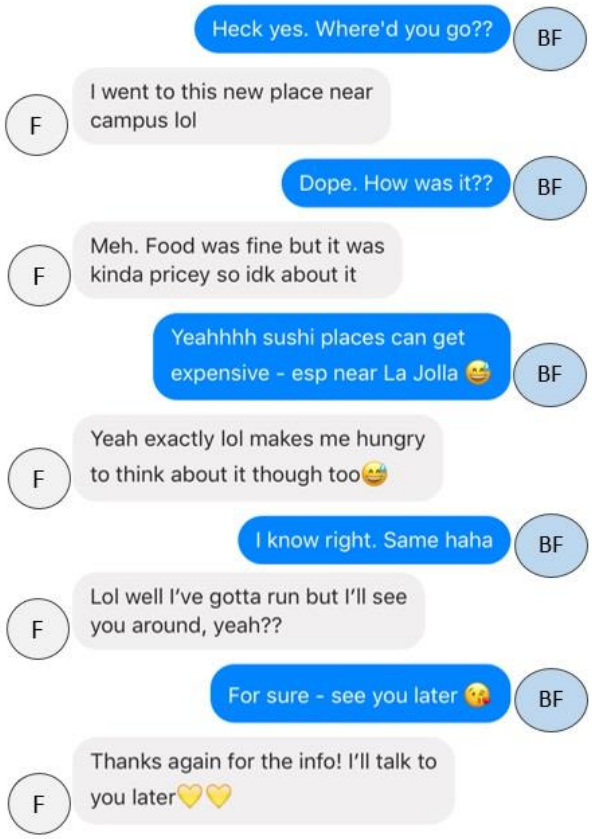
Study 2.2 Jealousy Chat Script




Dude I love Japanese food!!😍😍
F
Omg guess what!!
What???
BF
F
I got an email for 20% off dinner at a new sushi place! I wanna try it!!
Hahaha score 😂 dude sushi is expensive
BF
F
I know!! Lol it's great😅 wanna go with me this weekend???😏
Heck yes! So. Down.
BF
F
YES🙌🏽🙌🏽 should we also invite (your name)???😅
Mmmmm maybe not... let's just go you and me 😘
BF
F
Alrighty! Sounds fab - I'm excited for it!🎉
Me too 😊😊
Aight text you later b!
BF
F
Sounds good haha I'll talk to you later friend💛💛

Appendix B

Study 2.2 Control Chat Script


Heck yes. Where'd you go??
BF
I went to this new place near campus lol
F
Dope. How was it??
BF
Meh. Food was fine but it was kinda pricey so idk about it
F
Yeahhhh sushi places can get expensive - esp near La Jolla 😅
BF
Yeah exactly lol makes me hungry to think about it though too😅
F
I know right. Same haha
BF
Lol well I've gotta run but I'll see you around, yeah??
F
For sure - see you later 😘
BF
Thanks again for the info! I'll talk to you later💛💛
F

Appendix C

Study 2.2 Full Results of the Associations between Jealous Responses and Personal Factors

I. Attachment Style (Categorical Type)

	Categorical Type															
	Secure				Preoccupied				Dismissive				Fearful			
Mean, SD	**Jealousy (n=170)**		**Control (n=171)**		**Jealousy (n=9)**		**Control (n=12)**		**Jealousy (n=24)**		**Control (n=23)**		**Jealousy (n=17)**		**Fearful (n=15)**	
Emotions	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Jealous	34.06	32.05	7.17	14.70	60.33	40.15	26.58	34.57	19.83	31.13	11.61	16.26	41.53	30.56	16.07	22.79
Betrayed	30.28	32.73	3.10	9.58	54.56	41.29	12.58	20.64	26.75	30.54	4.17	10.91	41.59	37.69	14.40	30.67
Surprised	50.80	34.12	11.50	20.40	61.78	31.18	28.33	31.40	40.58	31.29	19.96	25.10	51.06	31.01	29.67	27.07
Hurt	43.21	34.74	3.94	10.00	78.67	25.57	15.50	28.64	35.21	34.01	5.04	12.67	51.53	35.09	14.53	29.56
Angry	29.99	30.71	4.60	12.77	34.22	28.38	17.92	29.97	19.38	27.34	4.96	11.25	39.94	35.23	12.73	23.06
Sad	42.99	33.47	5.76	15.71	64.67	29.36	16.75	27.75	32.25	32.74	6.30	13.08	43.35	30.08	21.93	31.72
Anxious	26.04	30.66	5.21	14.17	47.11	36.42	17.42	28.14	16.79	28.81	5.39	12.66	30.94	34.05	16.00	26.59
Happy	33.72	30.75	54.89	29.91	7.44	13.09	50.92	29.20	23.79	27.40	60.22	28.18	23.12	25.13	62.93	26.11
Guilty	7.78	16.66	4.96	14.31	7.78	13.45	22.50	33.98	2.42	4.48	8.61	15.72	10.53	15.31	7.13	19.16
Embarrassed	17.12	25.02	4.80	13.08	24.67	33.75	15.42	27.53	21.46	29.52	8.83	16.00	28.18	29.45	10.13	21.64
Rival Trait Perceptions	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Nice/Likable	68.20	27.22	72.54	20.50	63.67	31.67	71.25	21.55	65.92	20.53	71.26	17.91	59.06	25.65	67.67	16.45
Good Communicator	67.94	25.29	69.43	21.70	71.00	28.20	68.75	22.11	61.71	23.60	70.70	19.25	63.29	24.44	68.93	14.56
Sociable	75.34	20.69	73.97	19.25	78.56	16.97	72.83	17.07	65.79	27.41	75.00	17.82	73.12	21.03	72.93	15.38
Good Personality	58.99	27.47	66.60	24.80	51.11	30.80	56.42	25.00	56.04	24.86	65.04	17.57	58.35	30.51	68.40	16.74
Untrustworthy	22.01	28.38	8.39	18.96	33.00	35.38	21.00	28.17	15.04	24.57	11.87	25.31	23.76	30.91	23.73	27.60
Selfish	19.96	26.42	10.80	21.29	31.11	38.34	21.17	24.12	17.63	24.58	8.83	19.56	23.76	25.55	24.47	29.58
Self-Involved	32.19	31.40	27.96	30.73	34.78	34.51	23.08	25.68	40.42	28.54	28.30	28.45	45.59	29.74	46.80	34.62
Sensitive	39.87	28.39	36.80	30.51	42.56	43.76	32.42	26.13	42.50	25.60	38.91	29.50	39.12	24.74	53.93	20.16
Incompetent	13.42	21.36	7.37	15.84	6.67	8.19	24.83	26.33	13.08	24.63	3.52	9.12	11.00	9.98	27.27	33.54
Successful in School	47.14	26.33	53.20	27.68	59.22	28.60	47.33	19.95	46.83	30.11	39.74	25.94	51.76	23.28	60.40	22.13
Intelligent	46.59	27.72	51.07	28.46	49.11	37.27	41.08	24.82	45.92	24.06	44.91	25.93	49.71	27.56	53.20	24.97
Antisocial Behaviors	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Stop Talking	13.79	20.25	3.13	10.99	36.33	31.62	20.00	29.38	24.42	30.04	2.96	10.33	36.53	34.66	20.73	29.29
Ignore Contacts	11.15	17.59	3.74	12.77	29.33	25.62	25.08	34.08	14.79	24.02	3.65	10.28	31.29	35.23	14.67	26.36
Confront Partner	38.77	37.05	4.70	13.80	58.22	35.35	27.58	37.98	22.58	30.40	4.39	12.28	29.88	32.28	19.40	32.95
Act Passive-Aggressive	17.97	24.19	3.67	12.72	36.00	25.94	26.08	33.04	15.21	27.85	3.17	10.31	31.53	35.37	16.67	31.35
Stay Angry or Worried	16.25	22.49	3.23	10.31	40.78	31.61	20.17	30.80	17.83	28.93	3.57	10.67	34.47	33.67	15.33	30.54
Partner's Social Media	18.53	27.86	7.25	17.71	51.00	40.96	28.58	32.04	17.38	27.89	6.65	13.56	17.82	17.07	14.20	29.25
Rival's Social Media	25.76	30.76	11.36	20.87	58.78	43.81	35.75	34.70	19.88	28.09	11.61	20.40	25.41	28.92	21.40	31.16
Vent about Partner	13.65	22.74	3.32	11.36	35.78	37.22	22.33	34.26	12.50	21.36	3.43	10.54	23.71	33.07	14.40	29.17
Vent about Rival	13.04	23.06	3.33	10.57	39.78	42.46	23.67	33.09	8.88	19.12	6.39	14.52	13.71	24.51	15.40	28.80
Hang out with another friend	24.32	27.38	6.04	15.75	40.89	36.58	18.25	31.39	24.08	28.42	8.39	17.89	41.18	35.06	20.73	30.53
Prosocial Behaviors	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Try to Talk More	43.01	32.16	26.41	30.05	56.44	41.13	39.25	34.34	33.21	32.14	25.70	23.61	37.65	30.40	41.13	34.95
First Ask to Hang Out	43.23	31.62	24.14	29.34	61.89	33.20	31.08	30.56	29.96	31.54	27.30	26.22	39.29	32.38	36.80	33.62
Be More Caring	40.91	32.66	23.50	28.52	53.11	40.67	29.50	31.06	30.96	31.74	22.17	22.56	41.65	31.72	42.80	32.89
Try to Reaffirm the Relt'p	44.94	33.87	20.13	29.32	63.56	33.86	39.42	36.33	23.58	30.49	16.74	22.78	50.71	32.11	40.33	36.98
Calmly Talk about the Situation	46.88	37.20	15.31	27.35	61.89	32.91	31.00	33.61	25.83	33.09	13.26	22.24	38.76	36.63	31.00	36.25
Try to Have More Fun Together	42.63	32.72	21.60	29.94	55.78	42.74	35.58	31.57	38.83	34.01	16.74	22.39	36.71	33.80	36.73	35.58
Try to Understand	43.66	35.36	21.63	30.33	49.22	34.56	38.42	40.16	38.83	38.21	24.22	26.87	58.12	35.97	49.00	35.05

II. Big Five Personality & Attachment Style (Continuous Type)

	Big Five Personality										Continuous Attachment Style			
	Extrovertion		Agreeableness		Conscientiousness		Neuroticism		Openness		Avoidance		Anxiety	
Correlation	Jealousy	Control	Jealousy	Control	Jealousy	Control	Jealousy	Control	Jealousy	Control	Jealousy	Control	Jealousy	Control
Emotions														
Jealous	0.059	0.011	-0.028	0.046	-0.02	-0.042	0.036	0.025	-0.008	0.074	-0.096	0.128	.192**	.379**
Betrayed	0.021	0.07	-0.064	0.063	0.02	-0.054	.231**	-0.044	0.054	0.012	-0.040	.144*	0.023	.361**
Surprised	0.073	-0.023	0.044	0.103	0.085	0.022	0.049	0.062	-0.026	0.003	-.208**	.150*	.148*	.285**
Hurt	0.045	0.017	0.026	0.031	0.072	-0.066	.177**	0.043	-0.029	0.035	-0.119	0.116	0.021	.357**
Angry	0.029	-0.03	0.029	-0.018	-0.038	-0.064	0.094	0.005	0.064	0.012	-0.088	.171*	-0.046	.373**
Sad	0.037	-0.004	0.067	-0.006	0.058	-0.082	.17*	0.011	0.017	0.024	-.164*	.211**	-0.008	.330**
Anxious	0.031	0.048	-0.071	0.028	-0.035	-0.04	.166*	0.058	0.047	0.112	-0.028	0.093	0.089	.330**
Happy	0.031	-0.009	0.061	0.032	0.049	0.107	*-.165	0.012	-0.026	0.087	-0.112	-.138*	-0.075	0.041
Guilty	0	0.071	0.032	0.026	0.049	0.018	0.01	-0.027	-0.051	0.008	-0.055	0.125	-0.031	.272**
Embarrassed	-0.042	-0.005	-0.06	-0.054	-0.091	-0.048	.155*	-0.006	0.068	0.11	0.075	.163*	0.042	.362**
Rival Trait Perceptions														
Nice/Likable	0.027	-0.061	0.007	0.078	0.047	0.119	-0.012	0.05	-0.007	0.035	-0.040	-.162*	-0.071	-0.117
Good Communicator	0.004	-0.114	0.013	0.044	0.098	0.023	-0.078	0.018	-0.003	0.057	-0.063	-0.12	-0.083	-0.114
Sociable	0.036	-0.118	-0.002	0.116	.169*	0.094	-0.106	0.099	-0.02	0.037	-0.112	-.138*	-0.103	-0.103
Good Personality	0.031	-0.046	0.085	0.095	0.103	0.067	-0.117	0.099	-0.022	0.109	-0.079	-.183**	-0.052	-.188**
Untrustworthy	0.012	-0.048	-0.09	-0.067	0.044	0.006	0.05	-0.109	0.002	0.113	0.017	.156*	0.127	.325**
Selfish	*-.137	0.06	-0.126	-0.063	0.02	-0.039	0.058	**-.181	-0.012	0.05	0.095	.173**	0.080	.270**
Self-Involved	-0.008	0.025	0.036	0.018	0.054	0.109	-0.032	-0.001	0.033	0.096	0.110	-0.01	.179**	0.074
Sensitive	0.012	-0.095	0.001	0.058	-0.011	0.07	-0.038	-0.085	0.038	0.067	0.110	0.00	.141*	0.077
Incompetent	-0.064	-0.018	-0.097	-0.044	-0.026	-0.002	-0.08	-0.123	-0.055	0.07	0.075	.216**	-0.039	.368**
Successful in School	-0.013	0.008	0.004	.177**	-0.049	-0.02	-0.049	-0.032	-0.038	-0.076	-0.008	-.189**	0.055	-0.028
Intelligent	-0.027	0.004	0.056	.143*	-0.013	0.05	0.077	0.001	-0.014	0.061	-0.032	-.214**	0.031	-0.071
Antisocial Behaviors														
Stop Talking	-.179**	0.066	-.154*	0.011	-0.035	-0.063	0.068	-0.094	-0.094	0.107	.170*	.221**	.190**	.410**
Ignore Contacts	-.144*	0.065	-0.13	0.055	-0.082	-0.072	0.047	-0.09	-0.077	0.065	0.107	.149*	0.108	.367**
Confront Partner	.148*	0.058	-0.02	0.033	0.065	-0.068	.151*	-0.1	0.066	0.086	-.195**	0.106	-0.045	.349**
Act Passive-Aggressive	-0.074	0.057	-0.11	0.078	-.138*	-0.065	0.124	-0.113	0.018	0.113	0.005	.147*	0.128	.436**
Stay Angry or Worried	-.146*	0.075	-0.09	0.052	-0.057	-0.09	0.103	-0.12	0.000	.14*	0.054	.158*	0.125	.470**
Partner's Social Media	0.114	0.088	-0.08	0.118	-0.019	-0.122	0.007	-0.104	0.053	0.067	0.028	0.072	0.076	.404**
Rival's Social Media	0.131	0.064	-0.10	0.121	-0.036	-0.09	0.053	-0.075	0.056	0.006	-0.024	0.057	0.070	.325**
Vent about Partner	.152*	0.071	-0.03	0.002	-0.003	-0.009	0.015	-0.121	0.050	0.103	-0.045	.152*	0.117	.396**
Vent about Rival	0.110	0.085	-0.11	-0.006	-0.021	-0.035	-0.011	*-.167	-0.005	0.068	-0.102	.159*	0.077	.422**
Hang Out with Another Friend	-0.014	0.081	-0.10	0.059	0.038	-0.086	-0.022	-0.081	-.177**	.133*	0.108	0.102	0.070	.295**
Prosocial Behaviors														
Try to Talk More	0.111	-0.091	0.029	-0.042	0.071	0.056	0.059	.143*	0.123	-0.006	-.240**	0.017	0.080	.241**
First Ask to Hang Out	0.070	-0.022	0.103	-0.011	0.085	0.029	0.082	0.084	0.022	0.021	-.261**	0.016	0.097	.196**
Be More Caring	0.090	-0.007	0.105	0.022	0.081	-0.020	0.056	0.099	0.052	0.031	-.248**	0.001	0.092	.201**
Try to Reaffirm the Relt'p	.135*	0.036	0.089	0.038	0.080	-0.045	0.110	0.104	-0.018	0.034	-.210**	0.012	.221**	.265**
Calmly Talk about the Situation	0.081	0.002	0.025	0.032	0.107	-0.003	0.086	-0.044	0.085	0.053	-.261**	-0.003	0.023	.190**
Try to Have More Fun Together	.178**	0.016	0.081	0.047	0.051	-0.019	0.083	0.058	0.047	0.035	-.194**	-0.017	0.095	.242**
Try to Understand	0.096	0.029	0.031	0.000	0.078	-0.015	0.090	0.063	0.091	0.115	-0.096	0.088	.135*	.240**

Appendix D

Study 2.2 Full Results of the Associations between Jealous Responses and Relational Factors

	Relationship Value		Satisfaction		Closeness		Length	
Correlation	**Jealousy**	**Control**	**Jealousy**	**Control**	**Jealousy**	**Control**	**Jealousy**	**Control**
Emotions								
Jealous	0.090	-0.095	-0.065	-0.076	0.010	-0.109	-0.027	0.023
Betrayed	0.027	-0.024	-0.049	-0.003	0.024	0.005	-0.035	-0.082
Surprised	**.151***	-0.089	0.093	-0.062	**.165***	-0.042	0.056	0.034
Hurt	0.024	-0.047	-0.088	0.000	0.038	0.012	-0.060	-0.044
Angry	-0.003	-0.037	-0.028	**-.147***	0.061	0.040	-0.051	-0.055
Sad	0.070	-0.069	-0.028	**-.137***	0.081	-0.012	-0.018	**-.137***
Anxious	0.007	0.026	-0.097	0.067	-0.024	0.048	0.004	0.045
Happy	0.065	0.079	0.072	0.041	-0.019	-0.012	-0.001	**.173****
Guilty	0.070	0.049	-0.046	-0.043	0.014	0.089	0.006	0.096
Embarrassed	-0.089	-0.078	**-.182****	0.050	-0.053	0.048	0.047	0.022
Rival Trait Perceptions								
Nice/Likable	0.050	**.136***	0.031	0.059	-0.011	0.004	0.057	0.104
Good Communicator	0.071	0.119	0.074	0.101	0.033	0.000	0.066	0.083
Sociable	**.183****	0.099	**.174****	0.100	**.141***	-0.033	0.117	0.123
Good Personality	0.098	0.109	0.080	**.153***	0.041	0.016	-0.023	0.113
Untrustworthy	-0.031	-0.013	-0.057	0.029	-0.085	0.016	0.049	0.010
Selfish	-0.098	-0.033	-0.107	**-.163***	**-.147***	0.002	-0.002	-0.049
Self-Involved	-0.057	0.059	-0.038	0.067	-0.074	0.101	-0.032	-0.013
Sensitive	0.004	-0.003	-0.116	0.004	-0.042	-0.015	-0.014	0.037
Incompetent	-0.061	-0.036	-0.062	-0.088	-0.084	0.060	-0.058	-0.027
Successful in School	0.031	0.104	-0.026	0.121	-0.044	0.130	-0.078	0.051
Intelligent	0.075	**.152***	0.044	**.221****	0.011	0.099	-0.017	0.080
Antisocial Behaviors								
Stop Talking	**-.204****	-0.077	**-.205****	-0.028	-0.121	-0.020	-0.118	-0.011
Ignore Contacts	**-.157***	0.000	**-.142***	0.044	-0.064	0.043	-0.096	0.010
Confront Partner	0.130	-0.068	0.050	0.009	**.142***	0.003	-0.041	0.022
Act Passive-Aggressive	0.024	0.031	-0.074	0.044	-0.011	0.073	0.001	0.026
Stay Angry or Worried	-0.065	0.050	-0.097	0.080	-0.056	0.075	-0.036	-0.009
Partner's Social Media	0.034	0.029	-0.049	0.054	0.025	0.106	0.064	0.038
Rival's Social Media	0.109	0.003	0.006	0.063	0.091	0.104	0.022	0.018
Vent about Partner	-0.002	0.056	-0.101	0.100	-0.011	0.087	0.047	0.049
Vent about Rival	0.074	-0.029	-0.062	0.039	0.044	0.051	0.024	0.012
Hang Out with Another Friend	-0.060	-0.015	-0.094	0.014	-0.049	0.038	0.059	-0.024
Prosocial Behaviors								
Try to Talk More	**.160***	-0.025	0.128	-0.004	0.120	-0.019	0.005	-0.020
First Ask to Hang Out	**.214****	-0.020	0.091	0.030	0.116	-0.036	0.004	-0.051
Be More Caring	**.159***	-0.027	0.078	0.002	0.073	-0.040	-0.019	-0.035
Try to Reaffirm the Relt'p	**.155***	-0.070	0.021	-0.032	0.024	-0.019	-0.013	-0.064
Calmly Talk about the Situation	**.166***	-0.035	0.103	-0.010	**.196****	-0.030	-0.049	-0.022
Try to Have More Fun Together	0.097	-0.004	0.067	0.022	0.041	0.017	-0.034	-0.044
Try to Understand	0.077	-0.067	0.020	-0.064	0.066	-0.101	0.091	-0.051

Appendix E

Study 3 Jealousy Chat Script

Use the script as a guideline for your conversation but please change the dialogue to match your usual pattern of speech used during messages. This includes abbreviations, smiley faces, slang, etc. Additionally, fill in the blanks as instructed.

Friend: hey

Other: hello

Friend: cool it's working

Other: yeah lol

Friend: so which question do you want to do?

Other: uhh let's do number 7! I wanna tell you something lol

Friend: uhh okay haha. That's the future weekend plans one right?

Other: yup, I just found something pretty cool to do

Other: But what are you doing this weekend?

Friend: lol. This weekend Im gonna _____(insert your actual plan for this weekend)_____

Other: nice, nice.

Friend: you??? spit it out

Other: okay I got this email for 20% off your entire dinner for this restaurant I want to try

Friend: what kind of restaurant is it?

Other: it's __(a food that you both like a lot)__

Friend: oh yesss I am so down!! this weekend?

Other: yeah let's go! I saw it and thought of you lol

Friend: hehe nice. should we invite __(Insert 3rd friend not in chat's name)___?

Other: Uhh I don't know. lets just go you and me.

Friend: alright sounds good. we can think about inviting her/him. Yay i'm so excited!

Other: Cool! I think the instructor just knocked I guess we're done with this. lets figure out more after this

Friend: okay, see you after

Appendix F

Study 3 Control Chat Script

Use the script as a guideline for your conversation but please change the dialogue to match your usual pattern of speech used during messages. This includes abbreviations, smiley faces, slang, etc. Additionally, fill in the blanks as instructed.

Friend: hey

Other: hello

Friend: cool it's working

Other: yeah lol

Friend: so which question do you want to do?

Other: uhh let's do number 7! That looks easy lol

Friend: uhh okay haha. That's the favorite restaurant one right?

Other: yup. so whats your favorite restaurant in town?

Friend: I like _____(insert your actual favorite restaurant in town)_____

Other: [oh yeah that place is nice] OR [hah ive never heard of that place]

Friend: yeah they're good. they sometimes give out some discount coupons too

Other: sweeeeeet. I didn't know about that

Friend: yeah I'll keep you posted next time!

Other: awesome! Thanks :)

Friend: no problem. what about you???

Other: well I like __(insert your favorite restaurant that is different from your friend's answer)___

Friend: [Oh that's a nice place too] OR [hm don't know that place]. What do you usually get there?

Other: I like their ___(insert what you like)___

Friend: ohhhh that sounds really good right now

Other: Yeah I really like it. Makes me hungry to think about that lol

Friend: haha yeah me too

Other: Okay, I guess we're done?? im gonna open my door for the experimenter now

Friend: Alright see you later

Appendix G

Study 3 Full Results of the Associations between Jealous Responses and Personal Factors

I. Attachment Style (Categorical Type)

	Categorical Type															
	Secure				Preoccupied				Dismissive				Fearful			
Mean, SD	Jealousy (n=23)		Control (n=13)		Jealousy (n=19)		Control (n=7)		Jealousy (n=11)		Control (n=6)		Jealousy (n=7)		Fearful (n=30)	
Emotions	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Jealous	5.22	16.83	2.00	4.34	14.00	31.88	5.29	7.63	1.43	2.57	0.50	0.84	10.84	14.21	3.37	7.45
Betrayed	9.30	24.78	0.92	2.78	12.18	21.65	1.00	2.65	1.00	1.83	0.67	1.21	9.79	18.19	0.73	1.57
Hurt	4.26	12.19	0.69	1.70	10.55	25.04	3.43	7.46	3.00	3.92	0.67	1.21	10.74	15.25	3.43	8.26
Angry	3.61	14.52	7.46	17.69	13.36	26.26	7.29	15.33	10.43	17.05	0.67	0.82	6.79	10.43	3.00	7.88
Fearful	0.74	1.45	9.38	17.62	6.64	10.23	3.71	5.96	0.43	0.79	0.50	0.55	3.68	6.25	13.20	26.55
Anxious	8.78	14.86	18.00	20.63	27.27	28.54	14.57	9.95	35.29	22.40	20.33	20.38	25.53	27.07	28.77	28.94
Sad	5.13	9.38	8.08	11.76	21.00	29.36	21.14	29.89	14.71	18.66	8.33	11.41	18.32	24.27	14.73	20.83
Embarrassed	4.96	12.27	4.08	6.49	8.27	22.03	12.00	19.14	16.86	26.67	0.50	0.55	5.63	8.50	5.83	10.91
Guilty	2.74	7.56	1.54	4.96	4.09	9.07	5.71	7.87	6.00	10.00	0.67	1.21	3.58	8.87	5.40	16.15
Proud	18.52	29.61	14.23	21.05	2.91	5.36	21.57	24.00	25.71	28.11	0.67	1.21	18.63	27.00	9.83	21.99
Happy	67.00	28.34	67.31	21.83	54.36	28.95	49.00	24.70	59.00	20.19	48.50	37.57	53.58	22.24	48.70	24.17
Sleepy	49.13	31.86	48.15	27.56	50.45	25.77	50.43	28.53	41.86	29.23	42.50	38.07	50.26	29.40	48.80	30.99
Excited	29.91	33.09	30.69	34.15	23.18	19.00	38.00	34.06	46.29	36.08	30.33	43.33	28.58	31.70	18.50	25.08
Rival Trait Perceptions	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Nice/Likable	81.43	23.67	81.00	17.56	82.64	11.29	87.71	11.03	83.29	14.72	81.17	20.19	81.63	14.07	86.17	18.19
Good Communicator	77.09	18.29	75.85	16.06	75.45	15.10	76.00	16.68	66.71	27.74	76.83	15.99	75.58	14.55	78.10	20.97
Sociable	67.00	25.45	65.00	23.29	62.00	28.65	72.00	30.19	62.43	30.67	68.83	28.92	64.00	11.81	69.77	27.46
Good Personality	85.39	20.67	74.38	25.09	85.09	12.68	81.14	11.64	86.29	13.60	74.83	35.56	78.95	25.09	83.97	21.79
Untrustworthy	6.22	20.13	4.77	11.61	2.18	5.08	4.00	6.08	0.29	0.76	8.33	20.41	2.79	5.96	3.73	15.38
Selfish	16.74	34.08	10.92	18.50	8.09	8.26	16.43	20.75	4.71	9.43	3.33	8.16	7.63	13.05	7.17	14.49
Self-Involved	23.30	29.21	46.15	28.12	30.73	30.19	46.00	35.16	19.00	22.32	31.50	38.63	46.32	27.69	31.33	30.69
Sensitive	45.22	32.65	37.31	27.17	45.45	28.80	39.57	40.91	60.14	22.63	31.50	28.95	47.95	28.52	49.37	29.69
Incompetent	9.35	22.29	0.92	2.29	6.09	10.95	1.43	3.78	4.86	7.65	8.50	20.82	4.47	13.55	3.53	11.43
Successful in School	79.70	13.60	66.92	25.49	69.18	27.00	69.29	32.20	62.86	20.53	79.17	26.63	72.42	28.09	75.90	21.80
Intelligent	78.39	19.45	72.62	21.20	69.09	27.15	68.57	33.59	80.43	12.74	53.83	31.15	80.68	19.03	82.73	18.61
Behaviors	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Prosocial Behahavior to Friend	7.09	3.19	7.46	2.54	7.64	2.73	9.71	0.76	9.14	1.57	9.33	1.63	8.47	2.04	8.17	2.71
Antisocial Behavior to Friend	6.57	2.87	6.77	3.06	6.27	3.10	5.00	3.32	6.43	3.26	6.67	3.78	6.58	3.66	5.30	3.30
Prosocial Behahavior to Rival	7.65	3.16	8.69	2.06	8.27	2.87	7.43	3.36	7.29	3.68	8.50	3.67	8.11	2.45	8.40	2.67
Antisocial Behavior to Rival	5.09	2.70	6.69	3.09	5.45	3.62	5.00	3.06	4.57	2.94	7.50	3.89	6.68	3.37	5.03	3.30
Next Partner Choice	3.57	0.95	3.31	1.11	2.82	1.40	3.14	1.46	3.57	1.13	3.17	1.33	3.26	1.24	3.17	1.18
Message Disclosure to Friend	0.09	0.29	0.31	0.48	0.09	0.30	0.43	0.54	0.14	0.38	0.50	0.55	0.11	0.32	0.27	0.45
Message Disclosure to Rival	0.04	0.21	0.15	0.38	0.09	0.30	0.43	0.54	0.14	0.38	0.50	0.55	0.05	0.23	0.27	0.45
Message Valence to Friend	1.43	0.59	1.31	0.63	1.36	0.81	1.71	0.49	1.36	0.81	1.33	0.82	1.58	0.61	1.33	0.61
Message Valence to Rival	1.35	0.83	1.31	0.63	1.45	0.52	1.43	0.79	2.00	0.00	1.17	0.75	1.42	0.69	1.00	0.70

II. Big Five Personality & Attachment Style (Continuous Type)

	Big Five Personality										Continuous Attachment Style			
Correlation	**Extrovertion**		**Agreeableness**		**Conscientiousness**		**Neuroticism**		**Openness**		**Avoidance**		**Anxiety**	
Emotions	**Jealousy**	**Control**	**Jealousy**	**Control**	**Jealousy**	**Control**	**Jealousy**	**Control**	**Jealousy**	**Control**	**Jealousy**	**Control**	**Jealousy**	**Control**
Jealous	-0.166	0.077	-0.064	-0.123	-0.132	0.113	0.145	0.035	-0.034	-0.165	-0.024	-0.043	0.191	**.313***
Betrayed	0.068	0.244	-0.159	-0.074	-0.031	0.113	-0.04	0.123	0.082	-0.067	0.022	-0.048	0.136	-0.015
Hurt	0.141	0.049	-0.196	0.046	***-0.294**	0.114	-0.14	0.087	0.019	-0.068	0.151	-0.152	0.187	0.127
Angry	0.059	0.227	***-0.309**	**-.382****	****-0.377**	**.356****	-0.191	-0.035	0.12	0.187	**.254***	-0.188	0.219	0.085
Fearful	0.103	0.002	-0.136	-0.148	-0.166	0.081	0.186	0.149	-0.006	0.095	-0.11	***-0.264**	**.274***	0.023
Anxious	-0.2	-0.103	****-0.438**	-0.226	-0.218	0.042	0.22	**.390****	**.270***	0.058	**.282***	-0.104	**0.468****	0.101
Sad	-0.131	0.159	****-0.502**	-0.200	-0.235	**.352****	-0.003	**.296***	0.111	0.002	0.164	***-0.339**	0.204	0.254
Embarrassed	-0.273	0.073	-0.172	-0.077	-0.144	-0.026	-0.031	0.185	0.106	**-.296***	0.237	-0.056	0.094	0.176
Guilty	-0.016	0.048	-0.151	-0.046	****-0.355**	0.130	**.266***	0.149	-0.125	0.022	0.031	-0.156	0.039	-0.009
Proud	0.244	-0.013	0.042	0.000	0.15	0.092	***-0.26**	-0.014	0.054	0.104	-0.048	-0.015	0.031	-0.002
Happy	**0.412****	0.150	0.231	**.373****	**.340****	0.012	-0.094	-0.008	0.041	0.082	-0.174	0.022	-0.073	-0.207
Sleepy	-0.02	-0.230	-0.126	0.056	***-0.289**	-0.211	**0.327***	0.074	-0.075	-0.247	-0.168	-0.079	-0.006	-0.113
Excited	0.2	0.062	0	0.221	**0.294***	0.118	-0.122	0.000	0.019	0.212	-0.057	0.017	0.008	-0.056
Rival Trait Perceptions														
Nice/Likable	-0.1	-0.179	0.061	0.139	***-0.258**	-0.209	0.155	0.067	-0.131	-0.107	-0.107	-0.1	0.003	-0.031
Good Communicator	-0.188	-0.148	0.195	0.103	-0.037	-0.182	**.339****	0.066	0.019	-0.133	***-0.289**	-0.231	-0.053	-0.146
Sociable	-0.009	-0.118	0.201	-0.098	0.128	-0.01	-0.159	0.218	0.143	0.068	-0.029	-0.13	-0.178	0.106
Good Personality	-0.058	***-0.305**	0.067	-0.051	-0.141	-0.256	0.107	0.196	-0.113	-0.105	-0.143	-0.117	-0.033	0.067
Untrustworthy	0.147	0.136	-0.115	0.06	0.176	0.056	0.061	0.019	0.083	0.029	-0.11	-0.063	-0.006	0.006
Selfish	**.263***	**.288***	-0.168	***-0.27**	-0.051	0.242	-0.155	-0.13	-0.005	0.086	-0.249	0.115	0.052	-0.092
Self-Involved	-0.152	0.057	-0.048	0.111	-0.057	0.203	0.149	0.132	0.133	0.169	**.307***	0.049	**.337****	-0.063
Sensitive	0.016	-0.189	-0.109	-0.241	-0.099	0.125	0.024	0.197	-0.064	-0.064	0.041	-0.111	0.026	0.155
Incompetent	0.1	0.003	-0.046	-0.025	0.21	-0.04	0.208	-0.059	0.056	-0.042	***-0.269**	0.037	-0.019	-0.101
Successful in School	-0.086	-0.179	0.225	0.143	0.024	-0.07	0.077	0.124	-0.168	-0.017	***-0.292**	-0.145	-0.084	-0.156
Intelligent	-0.231	-0.168	0.111	-0.067	0.163	0.17	0.229	0.18	-0.059	-0.026	-0.25	***-0.311**	-0.138	-0.104
Behaviors														
Prosocial Behahavior to Friend	-0.119	0.029	-0.177	0.087	-0.05	0.13	**.284***	-0.095	**.292***	0.148	-0.198	-0.221	-0.201	-0.003
Antisocial Behavior to Friend	0.067	0.074	0.091	-0.158	0.037	-0.107	-0.133	-0.236	0.135	-0.173	-0.112	-0.186	-0.208	-0.085
Prosocial Behahavior to Rival	-0.161	0.144	-0.128	0.06	***-0.258**	0.155	0.125	-0.017	0.106	-0.07	0.067	-0.218	0.105	0.005
Antisocial Behavior to Rival	0.084	-0.003	0.074	-0.233	-0.096	-0.017	0.043	-0.127	0.22	0.025	-0.127	-0.067	-0.098	0.025
Next Partner Choice	-0.035	0.133	-0.143	0.117	-0.087	0.016	-0.209	0.25	0.124	0.121	0.042	-0.045	-0.157	0.009
Message Disclosure to Friend	0.202	**0.266***	-0.231	0.043	0.097	-0.162	0.053	-0.134	-0.074	0.19	0.06	-0.119	0.097	-0.09
Message Disclosure to Rival	0.058	0.106	***-0.269**	-0.084	0.013	0.035	0.111	-0.108	-0.094	0.214	0.133	-0.058	0.244	-0.218
Message Valence to Friend	-0.131	-0.227	0.156	-0.152	-0.018	0.145	**.278***	-0.012	0.113	0.117	-0.151	0.028	-0.061	0.04
Message Valence to Rival	0.183	**.263***	-0.185	-0.008	**.340****	0.154	0.017	-0.079	0.045	***-0.282**	-0.115	-0.044	0.016	0.092

Appendix H

Study 3 Full Results of the Associations between Jealous Responses and Relational Factors

	Relationship Value		Satisfaction		Closeness		Length	
Correlation	**Jealousy**	**Control**	**Jealousy**	**Control**	**Jealousy**	**Control**	**Jealousy**	**Control**
Emotions								
Jealous	-0.221	0.059	***-0.262**	-0.194	-0.197	0.108	-0.071	0.081
Betrayed	***-0.325**	0.019	-0.241	-0.175	-0.243	0.032	-0.054	-0.083
Hurt	***-0.275**	-0.004	-0.031	-0.030	***-0.277**	0.075	-0.163	-0.105
Angry	****-0.36**	0.047	0.035	0.035	-0.212	0.160	-0.131	0.181
Fearful	-0.097	0.105	-0.109	0.105	-0.050	0.149	-0.143	0.039
Anxious	****-0.33**	-0.152	-0.166	-0.124	-0.167	-0.041	-0.199	0.054
Sad	-0.236	0.018	-0.054	0.109	-0.033	0.103	-0.196	-0.095
Embarrassed	****-0.447**	0.100	-0.099	-0.060	**-0.294**	0.186	-0.144	0.260
Guilty	0.008	0.123	-0.033	0.037	-0.088	0.258	0.196	-0.077
Proud	0.100	0.113	0.076	-0.017	0.104	0.193	0.036	-0.117
Happy	0.215	0.019	0.193	0.014	0.054	-0.041	0.068	-0.156
Sleepy	0.123	-0.066	-0.043	0.100	0.107	-0.030	0.086	-0.007
Excited	0.148	0.055	0.062	-0.038	0.085	-0.053	0.123	-0.068
Rival Trait Perceptions								
Nice/Likable	0.162	0.173	**.295***	0.162	0.230	0.006	0.164	0.037
Good Communicator	0.051	0.202	**.257***	0.090	0.071	0.076	0.095	0.015
Sociable	0.006	-0.008	0.073	0.102	-0.128	-0.049	-0.062	-0.017
Good Personality	0.077	**.319***	0.219	**.270***	0.173	0.229	0.204	0.060
Untrustworthy	-0.065	0.040	-0.158	-0.038	-0.139	0.007	-0.034	0.245
Selfish	0.072	-0.047	-0.003	-0.171	0.121	-0.056	-0.148	0.094
Self-Involved	***-0.321**	0.183	-0.198	0.024	-0.250	0.045	-0.158	0.065
Sensitive	0.030	**.313***	-0.124	0.110	-0.113	0.251	-0.048	0.017
Incompetent	0.175	-0.152	0.222	0.209	0.123	0.000	-0.030	-0.028
Successful in School	0.213	0.200	**.264***	0.217	0.193	0.076	-0.013	0.110
Intelligent	**.308***	0.222	**.324***	**.304***	0.213	0.146	0.111	0.169
Behaviors								
Prosocial Behahavior to Friend	**.255***	**.309***	****.489**	0.229	**.288***	0.115	0.024	0.079
Antisocial Behavior to Friend	0.007	-0.007	-0.064	-0.010	0.110	0.145	-0.006	-0.055
Prosocial Behahavior to Rival	-0.223	0.173	-0.016	0.229	-0.181	0.033	0.020	0.070
Antisocial Behavior to Rival	-0.053	0.052	0.002	0.032	-0.053	0.075	-0.082	0.057
Next Partner Choice	-0.006	0.177	0.170	0.160	0.066	0.190	0.079	-0.109
Message Disclosure to Friend	-0.057	0.052	-0.102	0.200	0.043	0.167	-0.085	0.011
Message Disclosure to Rival	-0.159	-0.054	-0.144	0.042	-0.030	-0.077	-0.135	-0.037
Message Valence to Friend	0.008	0.020	0.105	0.081	-0.113	0.054	-0.122	0.070
Message Valence to Rival	-0.002	-0.106	0.043	0.046	0.087	-0.084	0.114	-0.109

References

Allen, L. F., Babin, E. A., & McEwan, B. (2012). Emotional investment: An exploration of young adult friends' emotional experience and expression using an investment model framework. *Journal of Social and Personal Relationships, 29*(2), 206-227.

Anderson, C. A., & Dill, K. E. (2000). Video games and aggressive thoughts, feelings, and behavior in the laboratory and in life. *Journal of Personality and Social Psychology, 78*(4), 772.

Andersen, P. A., Eloy, S. V., Guerrero, L. K., & Spitzberg, B. H. (1995). Romantic jealousy and relational satisfaction: A look at the impact of jealousy experience and expression. *Communication Reports, 8*(2), 77-85.

Argyle, M., Henderson, M., & Furnham, A. (1985). The rules of social relationships. *British Journal of Social Psychology, 24*(2), 125-139.

Bagwell, C. L., Bender, S. E., Andreassi, C. L., Kinoshita, T. L., Montarello, S. A., & Muller, J. G. (2005). Friendship quality and perceived relationship changes predict psychosocial adjustment in early adulthood. *Journal of Social and Personal Relationships, 22*(2), 235-254.

Barelds, D. P., & Barelds-Dijkstra, P. (2007). Relations between different types of jealousy and self and partner perceptions of relationship quality. *Clinical Psychology and Psychotherapy, 14*, 176–188.

Barelds, D. P., & Dijkstra, P. (2006). Reactive, anxious, and possessive forms of jealousy and their relation to relationship quality among heterosexuals and homosexuals. *Journal of Homosexuality, 51*(3), 183-198.

Bevan, J. L. (2008). Experiencing and communicating romantic jealousy: Questioning the investment model. *Southern Communication Journal, 73*(1), 42–67.

Bevan, J. L., & Samter, W. (2004). Toward a broader conceptualization of jealousy in close relationships: Two exploratory studies. *Communication Studies, 55*(1), 14-28.

Bevan, J. L. (2013). *The communication of jealousy.* New York, NY: Peter Lang.

Blomquist, K. P. (2018). *Jealousy in close relationships among emerging adults*. [Doctoral dissertation, Duke University]. ProQuest Dissertations Publishing.

Bryant, C. M., & Conger, R. D. (1999). Marital success and domains of social support in long-term relationships: Does the influence of network members ever end? *Journal of Marriage and the Family, 61*(2), 437-450.

Burkett, B. N. (2009). *Friendship, jealousy, and the Banker's Paradox.* [Doctoral dissertation, University of California, Santa Barbara]. ProQuest Dissertations Publishing.

Buunk, B. P. (1982). Strategies of jealousy: Styles of coping with extramarital involvement of the spouse. *Family Relations, 31*, 13–18.

Buunk, B. P. (1991). An Exchange-Theoretical Perspective. In P. Salovey (Ed.), *The psychology of jealousy and envy* (pp. 148–177). New York: Guilford Press.

Buunk, B. P. (1997). Personality, birth order and attachment styles as related to various types of jealousy. *Personality and Individual Differences, 23*(6), 997–1006.

Chung, M., & Harris, C. R. (2018). Jealousy as a specific emotion: The dynamic functional model. *Emotion Review, 10*(4), 272-287.

Connolly, J., Baird, K., Bravo, V., Lovald, B., Pepler, D., & Craig, W. (2015). Adolescents' use of affiliative and aggressive strategies during conflict with romantic partners and best-friends. *European Journal of Developmental Psychology, 12*(5), 549-564.

Costa, P. T., Jr., & McCrae, R. R. (1989). Personality continuity and the changes of adult life. In M. Storandt & G. R. VandenBos (Eds.), *The adult years: Continuity and change* (pp. 41–77). American Psychological Association.

Daly, M., Wilson, M., & Weghorst, S. J. (1982). Male sexual jealousy. *Ethology and Sociobiology, 3*, 11–27.

Dandurand, C., & Lafontaine, M. F. (2014). Jealousy and Couple Satisfaction: A Romantic Attachment Perspective. *Marriage & Family Review*, *50*(2), 154-173.

Darwin, C. (1965). *The expression of the emotions in man and animals.* Chicago, IL: University of Chicago Press. (Original work published 1872)

Demir, M. (2010). Close relationships and happiness among emerging adults. *Journal of Happiness Studies, 11*(3), 293-313.

Demir, M., Özdemir, M., & Weitekamp, L. A. (2007). Looking to happy tomorrows with friends: Best and close friendships as they predict happiness. *Journal of Happiness Studies, 8*(2), 243-271.

Demirtaş, H. A., & Dönmez, A. (2006). Jealousy in close relationships (Personal, relational and situational variables). *Turkish Journal of Psychiatry, 17*(3), 181-191.

DeSteno, D., Valdesolo, P., & Bartlett, M. Y. (2006). Jealousy and the threatened self: Getting to the heart of the green-eyed monster. *Journal of Personality and Social Psychology, 91*(4), 626–641.

DiBello, A. M., Rodriguez, L. M., Hadden, B. W., & Neighbors, C. (2015). The green eyed monster in the bottle: Relationship contingent self-esteem, romantic jealousy, and alcohol-related problems. *Addictive behaviors, 49*, 52-58.

Doxey, C., & Holman, T. B. (2002). Social contexts influencing marital quality. In Premarital prediction of marital quality or breakup (pp. 119-139). Boston, MA: Springer.

Ekman, P. (1992). An argument for basic emotions. *Cognition & emotion, 6*(3), 169-200.

Ellis, C., & Weinstein, E. (1986). Jealousy and the social psychology of emotional experience. *Journal of Social and Personal Relationships, 3*(3), 337-357.

Ferguson, C. J. (2013). Violent video games and the Supreme Court: Lessons for the scientific community in the wake of Brown v. Entertainment Merchants Association. *American Psychologist, 68*(2), 57-74.

Fletcher, A. C., Hunter, A. G., & Eanes, A. Y. (2006). Links between social network closure and child well-being: The organizing role of friendship context. *Developmental Psychology, 42*(6), 1057-1068.

Fiori, K. L., Rauer, A. J., Birditt, K. S., Marini, C. M., Jager, J., Brown, E., & Orbuch, T. L. (2018). "I Love You, Not Your Friends" Links between partners' early disapproval of friends and divorce across 16 years. *Journal of Social and Personal Relationships, 35*(9), 1230-1250.

Frijda, N. (1986). *The emotions*. Cambridge, UK: Cambridge University Press.

Gilbert, D. T., Pinel, E. C., Wilson, T. D., Blumberg, S. J., & Wheatley, T. P. (1998). Immune neglect: a source of durability bias in affective forecasting. *Journal of Personality and Social Psychology, 75*(3), 617-638.

Gomillion, S., Gabriel, S., & Murray, S. L. (2014). A friend of yours is no friend of mine: Jealousy toward a romantic partner's friends. *Social Psychological and Personality Science, 5*(6), 636-643.

Grice, J. W., & Seely, E. (2000). The evolution of sex differences in jealousy: Failure to replicate previous results. *Journal of Research in Personality, 34*(3), 348-356.

Guerrero, L. K. (1998). Attachment-style differences in the experience and expression of romantic jealousy. *Personal Relationships, 5*(3), 273–291.

Guerrero, L. K. (2014). Jealousy and relational satisfaction: Actor effects, partner effects, and the mediating role of destructive communicative responses to jealousy. *Western Journal of Communication, 78*, 586– 611.

Guerrero, L. K., & Afifi, W. A. (1998). Communicative responses to jealousy as a function of self-esteem and relationship maintenance goals: A test of Bryson's dual motivation model. *Communication Reports, 11*(2), 111–122.

Guerrero, L. K., Andersen, P. A., Jorgensen, P. F., Spitzberg, B. H., & Eloy, S. V. (1995) Coping with the green-eyed monster: Conceptualizing and measuring communicative responses to romantic jealousy. *Western Journal of Communication, 59*(4), 270-304.

Guerrero, L. K., & Eloy, S. V. (1992). Relational satisfaction and jealousy across marital types. *Communication Reports*, *5*(1), 23-31.

Guerrero, L. K., Hannawa, A. F., & Babin, E. A. (2011). The Communicative Responses to Jealousy Scale: Revision, empirical validation, and associations with relational satisfaction. *Communication Methods and Measures, 5*(3), 223–249.

Harmon-Jones, E., Peterson, C. K., & Harris, C. R. (2009). Jealousy: Novel methods and neural correlates. *Emotion, 9*(1), 113–117.

Harris, C. R. (2000). Psychophysiological responses to imagined infidelity: The specific innate modular view of jealousy reconsidered. *Journal of Personality and Social Psychology, 78*(6), 1082.

Harris, C. R. (2002). Sexual and romantic jealousy in heterosexual and homosexual adults. *Psychological Science, 13*(1), 7-12.

Harris, C. R. (2003). A review of sex differences in sexual jealousy, including self-report data, psychophysiological responses, interpersonal violence and morbid jealousy. *Personality and Social Psychology Review, 7*, 102–128.

Harris, C. R., & Chung, M. (2018). Author reply: What jealousy can tell us about theories of emotion. *Emotion Review, 10*(4), 291-292.

Harris, C. R., & Darby, R. S. (2010). Jealousy in adulthood. In S. L. Hart & M. Legerstee (Eds.), *Handbook of jealousy: Theory, research, and multidisciplinary approaches* (pp. 547–571). Oxford, UK: Wiley-Blackwell.

Harris, C. R., & Salovey, P. (2008). Reflections on envy. In R. H. Smith (Ed.), *Envy: Theory and research* (pp. 335–356). Oxford University Press.

Harris, C. R., & Prouvost, C. (2014). Jealousy in dogs. *PLoS One, 9*(7), e94597. doi:10.1371/journal.pone.0094597

Hart, S. L., & Carrington, H. A. (2002). Jealousy in six-month-old infants. *Infancy, 3*, 395–402.

Hart, S. L., Carrington, H. A., Tronick, E. Z., & Carroll, S. R. (2004). When infants lose exclusive maternal attention: Is it jealousy? *Infancy, 6*(1), 57–78.

Hart, S., Field, T., Letourneau, M., & Del Valle, C. (1998). Jealousy protests in infants of depressed mothers. *Infant Behavior and Development, 21*(1), 137-148.

Hawkins, S. A., & Hastie, R. (1990). Hindsight: Biased judgments of past events after the outcomes are known. *Psychological bulletin, 107*(3), 311-327.

Henniger, N. E., & Harris, C. R. (2014). Can negative social emotions have positive consequences? An examination of embarrassment, shame, guilt, jealousy, and envy. In W. G. Parrott (Ed.), *The positive side of negative emotions* (pp. 76–97). New York, NY: Guilford Press.

Hess, U., Cossette, M., & Hareli, S. (2016). I and my friends are good people: The perception of incivility by self, friends and strangers. *Europe's journal of psychology, 12*(1), 99-114.

Huelsnitz, C. O., Farrell, A. K., Simpson, J. A., Griskevicius, V., & Szepsenwol, O. (2018). Attachment and jealousy: Understanding the dynamic experience of jealousy using the response escalation paradigm. *Personality and Social Psychology Bulletin, 44*(12), 1664-1680.

House, J. S., Landis, K. R., & Umberson, D. (1988). Social relationships and health. *Science, 241*(4865), 540-545.

Kahneman, D., & Snell, J. (1992). Predicting a changing taste: Do people know what they will like? *Journal of Behavioral Decision Making, 5*(3), 187-200.

Keltner, D., & Haidt, J. (1999). Social functions of emotions at four levels of analysis. *Cognition & Emotion, 13*(5), 505-521.

Kennedy-Lightsey, C., & Booth-Butterfield, M. (2011). Responses to jealousy situations that evoke uncertainty in married and dating relationships. *Communication Quarterly, 59*(2), 255-275.

Konijn, E. A., Nije Bijvank, M., & Bushman, B. J. (2007). I wish I were a warrior: The role of wishful identification in the effects of violent video games on aggression in adolescent boys. *Developmental psychology, 43*(4), 1038.

Kraft, C., & Mayeux, L. (2018). Associations among friendship jealousy, peer status, and relational aggression in early adolescence. *The Journal of Early Adolescence, 38*(3), 385-407.

Krems, J. A. (2018). *"Friendship Jealousy": An (Overlooked) Emotion for Friendship Maintenance?* [Doctoral dissertation, Arizona State University]. ProQuest Dissertations Publishing.

Krems, J. A., Williams, K. E., Aktipis, A., & Kenrick, D. T. (2021). Friendship jealousy: One tool for maintaining friendships in the face of third-party threats? *Journal of Personality and Social Psychology, 120*(4), 977-1012.

Larson, J. H., & Holman, T. B. (1994). Premarital predictors of marital quality and stability. *Family Relations, 43*(2), 228-237.

Lavallee, K. L., & Parker, J. G. (2009). The role of inflexible friendship beliefs, rumination, and low self-worth in early adolescents' friendship jealousy and adjustment. *Journal of abnormal child psychology, 37*(6), 873-885.

Lazarus, R. S. (1991). *Emotion and adaptation*. New York, NY: Oxford University Press.

Le, B., & Agnew, C. R. (2013). Commitment and its theorized determinants: A meta-analysis of the Investment Model. *Personal Relationships, 10,* 37-57.

Legerstee, M., Ellenbogen, B., Nienhuis, T., & Marsh, H. (2010). Social bonds, triadic relationships, and goals. In S. L. Hart & M. Legerstee (Eds.), *Handbook of jealousy: Theory, research, and multidisciplinary approaches* (pp. 163–191). Oxford, UK: Wiley-Blackwell.

Lennarz, H. K., Lichtwarck-Aschoff, A., Finkenauer, C., & Granic, I. (2017). Jealousy in adolescents' daily lives: How does it relate to interpersonal context and well-being? *Journal of Adolescence, 54,* 18-31.

Loewenstein, G., O'Donoghue, T., & Rabin, M. (2003). Projection bias in predicting future utility. *The Quarterly Journal of economics, 118*(4), 1209-1248.

Masciuch, S., & Kienapple, K. (1993). The emergence of jealousy in children 4 months to 7 years of age. *Journal of Social and Personal Relationships, 10*(3), 421–435.

Mathes, E. W. (1986). Jealousy and romantic love: A longitudinal study. *Psychological Reports, 58,* 885–886.

McCarthy, R. J., Elson, M., Vazire, S., & Tullett, A. (2018). A conceptual review of lab-based aggression paradigms. *Collabra: Psychology, 4*(1), 1-12.

Mellers, B. A., & McGraw, A. P. (2001). Anticipated emotions as guides to choice. *Current directions in psychological science, 10*(6), 210-214.

Miller, M. J., Denes, A., Diaz, B., & Buck, R. (2014). Attachment style predicts jealous reactions to viewing touch between a romantic partner and close friend: Implications for internet social communication. *Journal of nonverbal behavior, 38*(4), 451-476.

Montoya, R. M., & Hibbard, K. C. (2014). The use of covert and overt jealousy tactics in romantic relationships: The moderating role of relationship satisfaction. *Current Research in Social Psychology, 22,* 39–50.

Narr, R. K., Allen, J. P., Tan, J. S., & Loeb, E. L. (2019). Close friendship strength and broader peer group desirability as differential predictors of adult mental health. *Child development, 90*(1), 298-313.

Neal, A. M., & Lemay, E. P., Jr. (2014). How partners' temptation leads to their heightened commitment: The interpersonal regulation of infidelity threats. *Journal of Social and Personal Relationships, 31*(7), 938–957.

Nesse, R. M. (1990). Evolutionary explanations of emotions. *Human Nature, 1*, 261–289.

Parker, J. G., Campbell, C., Kollat, S., & Lucas, A. (2008). The role of contingent self-esteem in adolescents' jealous and aggressive responses to friendship interference. Paper presented at the annual meetings of the International Association of Relationship Researchers, Providence, RI.

Parker, J., Campbell, C., & Lucas, A. (2007). Individual differences in adolescents' behavioral and cognitive responses to jealousy and rival attractiveness among same-sex friends. In biennial meetings of the Society for Research in Child Development, Boston, MA.

Parker, J. G., Ebrahimi, N., & Libber, K. (2005). Body image insecurity and rival's physical attractiveness in adolescents' jealousy surrounding friends and romantic partners. Paper presented at the biennial meetings of the Society for Research in Child Development, Atlanta, GA.

Parker J. G., Kruse S. A., Aikins J. W. (2010). When friends have other friends: Friendship jealousy in childhood and early adolescence. In Hart S. L., Legerstee M. (Eds.), *Handbook of jealousy: Theory, research and multidisciplinary approaches* (pp. 516-546). New York, NY: Wiley-Blackwell.

Parker, J. G., Low, C. M., Walker, A. R., & Gamm, B. K. (2005). Friendship jealousy in young adolescents: Individual differences and links to sex, self-esteem, aggression, and social adjustment. *Developmental Psychology, 41*, 235–250.

Parker, J. G., Ramich, C., & Roth, M. (2009). Third party peers as interlopers: Role of outside peer interference in preadolescents' feelings and thoughts surrounding friendship disappointments. Unpublished manuscript: University of Alabama, AL.

Parrott, W. G. (1991). The emotional experiences of envy and jealousy. In P. Salovey (Ed.), *The psychology of jealousy and envy* (pp. 3–30). New York, NY: Guilford Press.

Parrott, W. G., & Smith, R. H. (1993). Distinguishing the experiences of envy and jealousy. *Journal of Personality and Social Psychology, 64*, 906–920.

Rawlins, W. (2017). *Friendship matters*. Routledge.

Roberts, B. W., & DelVecchio, W. F. (2000). The rank-order consistency of personality traits from childhood to old age: a quantitative review of longitudinal studies. *Psychological bulletin, 126*(1), 3-25.

Roseman, I. J. (2013). Appraisal in the emotion system: Coherence in strategies for coping. *Emotion Review, 5*, 141–149.

Roth, M. A., & Parker, J. G. (2001). Affective and behavioral responses to friends who neglect their friends for dating partners: Influences of gender, jealousy, and perspective. *Journal of Adolescence, 24*, 281–296.

Rusbult, C. E. (1980). Commitment and satisfaction in romantic associations: A test of the investment model. *Journal of experimental social psychology*, *16*(2), 172-186.

Rusbult, C. E. (1983). A longitudinal test of the investment model: The development (and deterioration) of satisfaction and commitment in heterosexual involvements. *Journal of Personality and Social Psychology, 45*(1), 101-117.

Powers, A. M. (2000). The effects of attachment style and jealousy on aggressive behavior against a partner and a rival. *Dissertation Abstracts International, 61*, 6-B, 3325.

Rydell, R. J., & Bringle, R. G. (2007). Differentiating reactive and suspicious jealousy. *Social Behavior and Personality: An International Journal, 35*(8), 1099–1114.

Salovey, P. (1991). Social comparison processes in envy and jealousy. In J. Suls & T. A. Wills (Eds.), *Social comparison: Contemporary theory and research* (pp. 261–285). Lawrence Erlbaum Associates, Inc.

Salovey, P., & Rodin, J. (1984). Some antecedents and consequences of social-comparison jealousy. *Journal of personality and Social Psychology, 47*(4), 780-792.

Selman, R. L. (1980). *The growth of interpersonal understanding: Developmental and clinical analyses*. New York: Academic Press.

Selman, R. L., & Schultz, L. H. (1990). *Making a friend in youth: Developmental theory and pair therapy.* Chicago: University of Chicago Press.

Sharpsteen, D. J., & Kirkpatrick, L. A. (1997). Romantic jealousy and adult romantic attachment. *Journal of Personality and Social Psychology, 72*(3), 627–640.

Sidelinger, R. J., & Booth–Butterfield, M. (2007). Mate value discrepancy as predictor of forgiveness and jealousy in romantic relationships. *Communication Quarterly*, *55*(2), 207-223.

Slotter, E. B., Finkel, E. J., DeWall, C. N., Pond Jr, R. S., Lambert, N. M., Bodenhausen, G. V., & Fincham, F. D. (2012). Putting the brakes on aggression toward a romantic partner: the inhibitory influence of relationship commitment. *Journal of personality and social psychology*, *102*(2), 291.

Smith, R. H., Kim, S. H., & Parrott, W. G. (1988). Envy and jealousy: Semantic problems and experiential distinctions. *Personality and Social Psychology Bulletin, 14*(2), 401-409.

South, S. J., & Haynie, D. L. (2004). Friendship networks of mobile adolescents. *Social forces, 83*(1), 315-350.

Sprecher, S., & Felmlee, D. (1992). The influence of parents and friends on the quality and stability of romantic relationships: A three-wave longitudinal investigation. *Journal of Marriage and the Family, 54*(4), 888-900.

Stanley, S. M., & Markman, H. J. (1992). Assessing commitment in personal relationships. *Journal of Marriage and the Family*, 595-608.

Surra, C. A. (1990). Research and theory on mate selection and premarital relationships in the 1980s. *Journal of Marriage and the Family, 52*(4), 844-865.

Timmerman, L. M. (2001). *Jealousy expression in long-distance romantic relationships.* Unpublished doctoral dissertation, University of Texas, Austin.

White, G. L., & Mullen, P. E. (1989). *Jealousy: Theory, research, and clinical strategies.* New York, NY: Guilford Press.

Wilson, T. D., & Gilbert, D. T. (2003). Affective forecasting. In M. P. Zanna (Ed.), *Advances in experimental social psychology*, Vol. 35, (pp. 345–411). Elsevier Academic Press.

Wilson, T. D., & Gilbert, D. T. (2005). Affective forecasting: Knowing what to want. *Current directions in psychological science, 14*(3), 131-134.

Worley, T., & Samp, J. (2014). Exploring the associations between relational uncertainty, jealousy about partner's friendships, and jealousy expression in dating relationships. *Communication Studies, 65*(4), 370–388.

Yoshimura, S. M. (2004). Emotional and behavioral responses to romantic jealousy expressions. *Communication Reports, 17*(2), 85-101.