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JEALOUSY THROUGH THE LENS OF THE SELF-EXPANSION MODEL:

IOS DISCREPANCY AND THE EXPERIENCE OF JEALOUSY

by

Jabeene Bhimji

A thesis

submitted in partial fulfillment

of the requirements for the degree of

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To the Graduate Faculty:

The members of the committee appointed to examine the thesis of Jabeene Bhimji find it satisfactory and recommend that it be accepted.

---

Xiaomeng (Mona) Xu, Ph.D.

Major Advisor

---

Shannon Lynch, Ph.D.

Committee Member

---

Jane Coe Smith, Ph.D.

Graduate Faculty Representative

# Idaho State UNIVERSITY

Office for Research Integrity  
921 South 8th Avenue, Stop 8046 • Pocatello, Idaho 83209-8046

February 11, 2015

Jabeene Bhimji  
MS 8112  
Psychology  
Pocatello, ID 83209

RE: Your application dated 2/10/2015 regarding study number 4235: Jealousy through the Lens of the Self-Expansion Model: IOS Discrepancy, and the Experience of Jealousy

Dear Ms. Bhimji:

I have reviewed your request for expedited approval of the new study listed above. This is to confirm that I have approved your application.

Notify the HSC of any adverse events. Serious, unexpected adverse events must be reported in writing within 10 business days.

Submit progress reports on your project in six months. You should report how many subjects have participated in the project and verify that you are following the methods and procedures outlined in your approved protocol. Then, report to the Human Subjects Committee when your project has been completed. Reporting forms are available on-line.

You may conduct your study as described in your application effective immediately. The study is subject to renewal on or before 2/11/2016, unless closed before that date.

Please note that any changes to the study as approved must be promptly reported and approved. Some changes may be approved by expedited review; others require full board review. Contact Tom Bailey (208-282-2179; fax 208-282-4723; email: humsubj@isu.edu) if you have any questions or require further information.

Sincerely

Ralph Baergen, PhD, MPH, CIP  
Human Subjects Chair

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## Abstract

The self-expansion model of interpersonal relationships posits that individuals enter and remain in relationships that expand the self-concept. One means of expansion occurs through the incorporation of a significant others' resources, identities and perspectives into the self-concept. The self-expansion model has been applied to the construct of romantic love, but has yet to be applied to the correlated construct of jealousy. Jealousy has tremendous implications for both physiological and psychological health, and has the capacity to affect relationship outcomes in various ways. The current study investigates the relation between self-expansion, as measured by the Inclusion of Other in the Self scale (IOS) and the experience of jealousy, measured by the Interpersonal Jealousy Scale (IJS). We are interested in IOS discrepancy (ideal IOS – current IOS), as prior research has demonstrated predictive validity of discrepancies between ideal and current self-states and relationship variables on self and dyadic outcomes. Researchers have yet to investigate the relation between IOS discrepancy and jealousy. We hypothesized that individuals who endorsed a desire for more inclusion than currently experienced would also endorse heightened jealousy should the relationship be threatened, due to perceived loss of potential self-expansion through inclusion. An archival data set was used to investigate this hypothesis (N=46). Furthermore, moderation and mediation models were investigated with demographic and relational variables. Only results supporting our main hypothesis approached significance. Findings have implications for the conceptualization of jealousy, and the breadth of the self-expansion model. Limitations, implications, and future directions of the study are discussed.

*Keywords:* self-expansion, jealousy, IOS discrepancy, intimate relationships

## **Chapter I.**

### **Introduction and Literature Review**

It is widely supported that close relationships are essential to life satisfaction and well-being (Diener, Lucas, & Oishi, 2009). From an evolutionary perspective, close interpersonal relationships are both useful and necessary in establishing safe and supportive environments within physical and emotional realms, as both are crucial for successful species survival (Buss, Larsen, Westen, & Semmelroth, 1992). Research also indicates that close intimate relationships are not only useful in providing secure environments, but also greatly contribute to self-development. That is, through intimate relationships, individuals refine their self-concept through validation from close others, shared experiences with intimate partners, inclusion of others in the self, and other defining interactions (Aron & Aron, 1986).

#### **Self-Expansion**

Relationship theories vary drastically in terms of motivations to enter and remain in relationships. While some focus on support seeking and need fulfillment within intimate relationships, others focus on the development of the self-concept, and the determination of one's own value as a key component and function of intimate relationships (Aron & Aron 1986; Knee, Hadden, Porter, & Rodriguez, 2013; Le & Agnew, 2001). The self-expansion model of relationships, developed by Aron and Aron in 1986, posits that our motivation to enter, and remain in a close relationship stems from our desire to include aspects of a significant other in the self, thereby enhancing self-concept. In particular, through the development of a close relationship, one is able to incorporate the resources, knowledge, experiences, and identities of the other into one's

own self-concept (Aron & Aron, 1986). Through the acquisition of these material resources and intangible assets, self-expansion serves the development of the self-concept, allowing for the enhancement of an individual's self-efficacy and self-esteem, leading them to feel more capable in achieving personal and relational goals (Mattingly & Lewandowski, 2014). The loss of an expanding relationship can result in self-contraction, meaning that an individual experiences losses to their working self-concept, and increases in emotional distress (Mattingly & Lewandowski, 2014). The process of expansion is not necessarily a conscious motive, though feelings of being expanded can be subjectively experienced (Aron et al., 2004).

One method of measuring self-expansion is by investigating levels of inclusion of the other in the self (IOS). This is most commonly measured using the IOS Scale (Aron, Aron, & Smollan, 1992). Inclusion of the other in the self refers to the degree of overlap between two independent entities. The IOS scale can be used to measure both current and ideal levels of inclusion. The scale is a single item measure that is presented as seven sets of circle pairs. Within each pair, circles are labeled to represent the self, and other. Each of the seven sets varies in degree of overlap; while no overlap represents two independent entities, high overlap indicates substantial interdependence between partners (see Figures 1 and 2, Appendix A). High levels of IOS within interpersonal relationships are generally indicative of closeness, shared identities, resources, and experiences. As two individuals become more mutually inclusive, outcomes for one partner are seen to affect both individuals, whether they are negative or positive (Aron et al., 2004; Aron, Aron, Tudor, & Nelson, 1991). Furthermore, perspectives begin to meld as a result of shared resources, as what benefits one individual in terms of resource acquisition and maintenance

consequently benefits the partner. In short, an individual begins to see the world through lenses of both themselves and their significant partner due to changes made towards an inclusive self-concept. An inclusive and interdependent self-concept can be evidenced by increased use of terminology such as “we” rather than “I” and “us” instead of “me” (Agnew, Lange, Rusbult, & Langston, 1998). While IOS is not synonymous with self-expansion [as self-expansion can also occur at the individual level through non-relationship novel experiences that enhance one’s self-concept (Mattingly & Lewandowski, 2014)], it does serve a significant role in illustrating self-expansion within the context of close relationships. Changes to the self-concept have been shown to result from the process of falling in love (Aron et al., 1995). In one study with undergraduate students, Aron and colleagues (1995) used the Self-Concept Change Index to determine the amount of variation to self-concept that transpired from before to after falling in love. Results indicated that individuals who had fallen in love endorsed higher levels of content change to self-concept. Furthermore, the number of domains individuals endorsed as pertinent to their self-concept increased significantly from 5.25 to 6.15 domains before to after falling in love. Findings also indicated that substantial increases to self-efficacy and self-esteem were observed in individuals who had fallen in love over the course of the study. These trends were not seen in individuals who did not report falling in love over the same timespan. Overall, findings of this study support the notion that one byproduct of falling in love is the expansion of the self-concept, which in turn enhances self-efficacy and self-esteem (Aron et al., 1995).

Feelings of self-expansion experienced within an intimate partnership not only have implications for the individual self-concept, but also impact perceptions of the

relationship. Inclusion of the other in the self has been shown to correlate closely with levels of commitment within a relationship (Mattingly & Lewandowski, 2014).

According to the Investment Model (Rusbult, 1980) derived from Interdependence Theory (Thibaut & Kelley, 1959), commitment, defined as the intention to persist within a relationship, is determined through levels of investment, relationship satisfaction, and the quality of alternatives (Arriaga & Agnew, 2001; Rusbult, Martz, & Agnew, 1998).

Research indicates that levels of commitment are closely tied to cognitive interdependence, which is characterized as a “pluralistic, collective representation of the self-in-relationship” (Agnew et al., 1998, p. 939). In a study by Agnew and colleagues (1998), commitment was measured using items derived from previous research by Rusbult on the development and decline of relationship satisfaction and commitment in heterosexual couples (Rusbult, 1983). Commitment was significantly correlated with the inclusion of another in the self as measures by the IOS scale (Agnew et al., 1998). IOS was used to measure cognitive interdependence as both concepts investigate the melding between self and partner cognitions. By investigating self-expansion and investment models in conjunction, the utility of changes to the self-concept that occur through romantic relationships are made evident, as these changes support the development and maintenance of committed, healthy relationships.

**IOS discrepancy.** It is sometimes the case that a relationship does not offer optimal levels of self-expansion, which results in negative consequences. For example, research has demonstrated that a lack of novelty within a relationship is associated with decreased levels of self-expansion and in turn, poor relationship satisfaction (Reissman, Aron, & Bergen, 1993). In a longitudinal randomized study by Reissman and colleagues,

engagement in self-expanding activities (i.e. activities perceived to be exciting, stimulating, and providing new resources and experiences) led to increases in marital satisfaction above and beyond engagement in pleasant but non self-expanding activities (Reissman et al., 1993). Research by Lewandowski and Ackerman (2006) further demonstrated the importance of optimal self-expansion by investigating the relation between self-expansion and susceptibility to infidelity. In their study, both current levels of self-expansion as well as perceived potential for future self-expansion were significantly negatively correlated with susceptibility for infidelity (Lewandowski & Ackerman, 2006). It follows then, that individuals who are not currently satisfied with their level of self-expansion or the perceived potential for expansion within their relationship may be more susceptible to engage in infidelity, a behavior closely associated with decreased levels of commitment (Drigotas, Safstrom, & Gentilia, 1999). These studies, taken together, illustrate the tension that can result from insufficient self-expansion within a relationship and the benefits of adequate self-expansion.

The IOS scale, used to measure levels of inclusion of the other in the self, is often administered to assess self-expansion and perceived potential for expansion. This is accomplished by assessing both current and ideal levels of inclusion of the other in the self. The assessment of both current and ideal levels of inclusion renders valuable discrepancy information accessible. While it is often the case that individuals desire greater inclusion, which results in increased levels of commitment, closeness, and satisfaction, the opposite trend has also been observed in which partners feel excessive closeness and desire increased independence (Aron & Fraley, 1999; Mashek, Le, Israel, & Aron, 2011).

Research on psychological discrepancies has included the investigation of differences between the real and ideal self (Higgins, 1987). Research on the self-discrepancy theory indicates that the larger the gap between real and ideal self-states, the more people experience feelings of dejection and dissatisfaction, resulting in decreased positive emotions and increased negative affect (Higgins, 1987). Furthermore, poor psychological adjustment has been linked to higher levels of self-discrepancy, as indicated by research with clinically anxious and depressed populations (Scott & O'Hara, 1993).

Research on discrepancies within dyads has focused on partner and relationship current-ideal evaluations. According to Fletcher, Simpson, Thomas and Giles (1999) ideal partners and relationships are developed on five factors: warmth, loyalty, vitality, status and passion. Consistency between real and ideal perceptions of warmth and loyalty factors is of particular importance, as they are essential components for the development of intimate relationships (Fletcher, Simpson, Thomas, & Giles, 1999). Fletcher and colleagues posit that comparisons between relational realities and ideals serve two functions: evaluative and regulatory. Evaluative functions serve to assess whether the match between partners is appropriate, and regulatory functions serve to control the relationship and predict relational outcomes. Discrepancies result in alterations in behavior and cognitions with the motivation of reducing inconsistency between real and ideal partners and relationships, and thus relate to both evaluative and regulatory functions. Greater consistency (and less discrepancy) between real and ideal perceptions of partners and relationships is associated with increased relationship quality (Fletcher et al., 1999). Similar trends are evidenced in research on the well-being of marital couples,

with greater real-ideal partner discrepancies negatively correlating with well-being following 1 year of marriage (Ruvolo & Veroff, 1997).

Frost and Forrester (2013) investigated discrepancies between actual and ideal levels of perceived closeness in a relationship. As previous research has demonstrated self-other overlap to be associated with subjective perceptions of closeness (Aron & Fraley, 1999), the IOS scale was used to measure current and ideal levels of closeness in Frost and Forrester's study. Results indicated that regardless of direction (idealizing more or less inclusion), higher discrepancies between actual and ideal levels of IOS were associated with less stability within close interpersonal relationships, as well as decreased overall well-being and mental health (Frost & Forrester, 2013). In contrast, similarity between actual and ideal levels of self-other overlap was associated with higher relationship quality and well-being (Mashek et al., 2011). While previous research indicated that increased feelings of closeness were linked to more committed and satisfying relationships (Brunell, Pilkington, & Webster, 2007), Frost and Forrester experimentally illustrated that perceived closeness can also have negative implications for those who experience more or less than a desired amount of interdependence.

While disparities between current and ideal IOS are associated with poor relational well-being and mental health, gains in these areas of adjustment are observed as partners move towards their optimal level of inclusion. The study by Frost and Forrester (2013) conceptualized well-being by investigating relationship satisfaction, commitment, and break-up thoughts. Mental health was measured by investigating levels of depression. The finding that lower disparities in IOS were associated with better mental health and relational adjustment were supported after controlling for gender,

relationship length, and marital status (Frost & Forrester, 2013). A longitudinal investigation of change in IOS indicated that as relationships moved towards ideal levels of closeness, well-being and mental health benefitted regardless of whether more or less closeness was desired (Frost & Forrester, 2013). Similarly, when IOS moved in opposition of the ideal, well-being and mental health experienced declines. This longitudinal study highlights two important ideas. First, results of this study demonstrate the flexibility of IOS. Furthermore, this study demonstrates that by addressing and reducing IOS discrepancy, mental health and relational well-being can experience positive changes. These findings emphasize the importance of further understanding IOS discrepancies, and other variables that might correlate with self-other overlap, as they may lend themselves as targets in various forms of treatment (e.g. interpersonal therapy, cognitive therapy).

### **Jealousy**

Jealousy is defined as the complex interplay of thoughts, behaviors, and emotions that result in response to an actual or perceived threat of losing a valued relationship to a rival (Mathes & Severa, 1981). Several theories of jealousy exist, ranging from evolutionary to sociocultural conceptualizations (Pines & Friedman, 1998). The experience and expression of jealousy can vary between individuals, and this is often attributed to the interaction between a triggering event and an individual's predispositions to jealousy (Pines, 1992). While one individual might respond with a great deal of jealousy to a mundane event, another might only respond with jealousy when the loss of a valued relationship is realized. Characteristics associated with the propensity to experience problematic jealousy are emotional dependency, low self-esteem, and feelings

of insecurity (Bush, Bush, & Jennings, 1988). When one partner perceives their relationship to be threatened by a rival, exclusivity with that partner is believed to be at risk. The concept of exclusivity can vary culturally, and while often related to sexual domains, can also be present in terms of how individuals share their resources or interact socially (De Silva, 2004).

Not only do conceptualizations of jealousy vary in the literature, but views on the utility and treatment of jealousy vary as well (Pines, 1992). Some conceptualizations focus solely on an individual's experience of jealousy, while others focus on the impact of jealousy on the interactions within a relationship (Mathes, Adams & Davies, 1985; Andersen, Eloy, Guerrero, & Spitzberg, 1995). Integrative approaches to understanding jealousy have begun to address the individual, interactional, social, and cultural aspects of the phenomenon (Pines, 1992). By taking all of these factors into account simultaneously, a comprehensive picture is painted to understand the causes and reinforcers of jealousy, as well as negative and positive implications on the individual and relationship.

**Jealousy and neuroticism.** Jealousy is often experienced alongside various forms of negative affect. A study by Parrot and Smith (1993) investigated the characteristics of jealousy in contrast with features of envy. Findings showed that fear of loss, distrust, anxiety, and anger were unique to the experience of jealousy (Parrott & Smith, 1993). Furthermore, various studies have supported the relation between neuroticism and jealousy (Buunk, 1997; Mathes, Perta, & Joerger, 1982). Neuroticism is defined as a stable individual difference in the tendency towards negative emotional responding (e.g., anxiety, anger, sadness) (Donnellan, 2014). Individuals who identify closely with this

personality trait are more easily distressed, and tend to evaluate themselves more negatively than individuals with lower levels of neuroticism (Donnellan, 2014). In terms of mental health, neuroticism has been associated with a variety of negative outcomes. Correlations between Axis I and Axis II disorders, as categorized by the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; APA 1994) and neuroticism are robust throughout the lifespan (Lahey, 2007). Furthermore, it has also been demonstrated, by use of longitudinal studies, that neuroticism maintains predictive utility for a variety of physical health concerns and outcomes (Lahey, 2007). Some physical health problems associated with neuroticism are cardiovascular disease, asthma, and irritable bowel syndrome (Lahey, 2007). It appears that neuroticism might, in some cases, moderate the relation between mental and physical illness. For example, Russo and colleagues (1997) found that depression was not predictive of negative physical outcomes when controlling for neuroticism, demonstrating the role of this characteristic in the manifestation of poor health outcomes (Russo et al., 1997). Neuroticism also maintains utility in predicting decreased longevity in the general population (Smith & MacKenzie, 2006). Evidence further suggests that neuroticism is predictive of morbidity and mortality among individuals with chronic illness and cancer (Lahey, 2007). While neuroticism can exert effects on health and well-being on an individual level, it also has impacts on an interpersonal level, negatively affecting variables such as relationship satisfaction and relationship longevity (Donnellan, 2014).

Studies that have investigated the impact of personality on relationships have found neuroticism to be a powerful predictor of relational outcomes (Bouchard, Lussier, & Sabourin, 1999). In terms of perception of marital quality, research has indicated that

when one maintains a high level of neuroticism, poorer perception of marital quality can be predicted (Fisher & McNulty, 2008; Lavee & Ben-Ari, 2004). Importantly, this perception may accurately reflect levels of relationship quality, however it may also be the case that individuals high in neuroticism tend to negatively distort relationship quality (Barelds, 2005). Both explanations feasibly address the predictive relation between these variables. Neuroticism in an individual can also have deleterious effects on the relationship satisfaction of one's partner. Studies have indicated that within heterosexual relationships, a husband's neuroticism can negatively impact a wife's marital adjustment (Lavee & Ben-Ari, 2004). This finding supports the idea of neuroticism affecting one's partner, and in turn, relationship quality. Neuroticism has also been associated with heterosexual marital dissolution, specifically when a wife experiences high levels of neuroticism (Cramer, 1993). Interestingly, despite the close relation between jealousy and neuroticism, research findings on the association between jealousy and intimate relationships have been mixed (Mathes et al., 1982; Mathes, 1986), indicating uniqueness to the experience of jealousy that cannot be attributed to neuroticism alone.

With the close relation between neuroticism and jealousy, it is ostensibly the case that jealousy can have negative implications for interpersonal interactions. Evidence exists to support this perspective (Mathes et al., 1982). It has been found that jealousy within relationships can result in intimate partner violence, verbal and physical aggression, as well as reduced relationship satisfaction (Babcock, Costa, Green, & Eckhardt, 2004; Barnett, Martinez, & Bluestein, 1995). Furthermore, jealousy has been associated with heavy use of alcohol, which can result in negative interpersonal interactions (Mullen & Martin, 1994). The experience of jealousy can be distressing both

for the individuals experiencing jealousy, and for partners who are the focus of jealousy (De Silva, 2004). Clinical presentations of jealousy vary, and are often present in a constellation of relationship concerns. While it is sometimes the case that jealousy itself is the primary presenting concern for a couple, it is more frequently presented as a contributor to a presenting problem such as sexual dysfunction, relationship dissatisfaction, domestic abuse, or other mental health problems in which jealousy is experienced (e.g. schizophrenia) (De Silva, 2004). There are clear associations between jealousy and negative interpersonal outcomes and experiences. Less intuitively, however, jealousy has also been demonstrated to elicit positive outcomes and interpersonal interactions.

**Jealousy and communication.** According to the evolutionary perspective, jealousy is a naturally occurring phenomenon (Easton, Schipper, & Shackelford, 2007). Several hypotheses that test the utility of the evolutionary perspective in understanding jealousy have been supported, including predictions regarding differing situations in which men and women are likely to experience more jealousy, as well as which characteristics of a rival would elicit a greater jealousy response (Buss et al., 1992; Easton et al., 2007). These responses serve to maintain fidelity by motivating action to reduce threats to a relationship, and in turn are beneficial for survival of the species (Buss et al., 1992). This perspective suggests that the jealousy response can be beneficial in maintaining interpersonal relationships (Mathes, 1986).

It has been proposed that types of responding to interpersonal jealousy are of high importance in determining relationship quality (De Silva, 2004; Guerrero, Andersen, Jorgensen, Spitzberg, & Eloy, 1995). Jealousy is experienced alongside varying goals,

depending on the specific context in which feelings of jealousy emerge (Guerrero & Afifi, 2009). These goals elicit strategic communication, which can be used to fulfill several interpersonal functions. These goals include preserving or repairing self-esteem, lowering uncertainty within the relationships, relationship maintenance after jealousy has been experienced, re-assessing the relationship, and restoring equity between partners (Guerrero & Afifi, 2009; Guerrero et al., 1995). While jealousy is subjectively experienced with negative affect and in turn is frequently addressed with negative forms of communication, the effort to express jealousy constructively is actually associated with increases in relational satisfaction (Andersen, Eloy, Guerrero, & Spitzberg, 1995). Research has identified beneficial aspects of jealousy by investigating the association between jealousy and positive interpersonal outcomes (Guernsey, 1977; Power & Dalglish, 1997; Mathes, 1986). For example, findings in a study conducted by Mathes (1986) revealed an association between jealousy and long-term positive outcomes, such as the progression of relationships towards increased commitment (e.g. marriage).

Several factors contribute to whether negative or positive outcomes result as a response to jealousy, with one of the most studied being communication style. According to Guerrero and colleagues (1995), interactive responses to jealousy are those that occur immediately between partners, and can be broken down into a subset of specific behavior styles including: (1) active distancing, characterized by actively avoiding integrative communication or affection; (2) negative affect expression, characterized by nonverbal behaviors indicative of negative emotionality; (3) integrative communication, comprised of behaviors aimed at direct dyadic communication focused on resolving concerns; (4) distributive communication, which is comprised of dyadic communication that is

aggressive in nature; (5) avoidance or denial, characterized by denial of jealous feelings and becoming quiet around the partner, and finally (6) violent or threatening communication which includes communication based on threatening to or actually harming the partner (Guerrero et al., 1995). These styles of interactive responding can be classified as direct (integrative communication, negative affect expression, violent or threatening communication) or indirect (active distancing, avoidance and denial) in nature (Theiss & Solomon, 2006). Several factors contribute to the directness of communication elicited in response to jealousy. Factors positively correlated with direct communication include intimacy between partners, and interference from partners as a result of jealousy (amount of disruption from partner in daily activities). Factors negatively correlated with communication directness are partner, self, and relationship uncertainty, and cognitive jealousy (thoughts and anxieties about a partner's infidelity or engagement in external relationships) (Theiss & Solomon, 2006). A longitudinal analysis revealed that communicative directness, as measured by items that reflected the integrative communication facet of direct communication, was positively associated with relationship intimacy, and negatively associated with self, partner, and relationship uncertainty (Theiss & Solomon, 2006). This study clearly illustrates the effects of varying communication styles on relational outcomes, and highlights intimacy and certainty as factors contributing to positive relationship outcomes in the face of jealousy.

**Jealousy and attachment.** Another factor that guides how an individual experiences jealousy is attachment. According to Bowlby (1969), the attachment system develops in infancy as a byproduct of interactions with caregivers. Attachment styles can be secure or insecure in nature. Individuals with secure attachment styles benefit from

healthier relationships and higher psychological adjustment than those with insecure styles, who experience varying levels of avoidance and anxiety in their relationships. These early experiences influence how relationships are approached in adulthood (Bowlby, 1969). Attachment influences the perception of threat and the appraisal of rivals. These factors in turn influence relationship expectancies and outcomes (Radecki-Bush, Farrell, & Bush, 1993). Individuals with an insecure attachment style perceive greater threat by a rival as a result of distortions in perceived motivation and high negative expectations. This in turn leads to the experience of heightened jealous cognitions and emotions (Buunk, 1997; Selterman & Maier, 2013). Individuals with an anxious attachment style tend to respond to jealousy with increased self-blame, which might foster attempts to maintain the relationship, while those with an avoidant attachment style respond to increasing jealousy by reducing social support seeking behavior (Radecki-Bush et al., 1993). The coping mechanisms chosen by those with insecure attachment styles have proven to be ineffective in reducing jealousy, therefore demonstrating how attachment style influences coping effectiveness, and in turn, intimate relationship outcomes (Radecki-Bush et al., 1993).

The culmination of research on jealousy supports both its negative and positive effects on interpersonal relationships. While jealousy has been associated with reduced relationship quality, increased aggression, and even violence, it has also been shown to elicit increases in relationship satisfaction if responded to with constructive and caring communication (Andersen et al., 1995; Babcock et al., 2004; Barnett et al., 1995). When one partner experiences jealousy, both individuals within a dyadic relationship are affected (De Silva, 2004). Variables associated with both the individuals within the dyad,

as well as the relationship more holistically, are associated with differential patterns of responding to jealousy. Some of these variables include attachment style and communicative directness. Ultimately, individuals who report satisfaction with their current romantic relationship are less prone to experience jealousy (Mullen & Martin, 1994). This finding mirrors the association between heightened relationship adjustment and decreased discrepancy in current and ideal levels of IOS. This parallel relationship raises questions regarding how jealousy and IOS discrepancy might be related, potential mediators and moderators of this association, and inspires thought on how jealousy can be conceptualized through the model of self-expansion.

### **Potential Moderators and Mediators**

Several factors may influence the relation between IOS discrepancy and the experience of jealousy, should such a relation exist. For example, it is possible that the relation between IOS discrepancy and jealousy might be moderated by age given the existing literature on change in the nature of romantic relationships over the lifespan. Furthermore, it may be the case that jealousy mediates the relation between IOS discrepancy and relationship status, as IOS discrepancy and correlates of jealousy have both shown associations with relationship dissolution. Finally, it is possible that the relation between IOS discrepancy and jealousy is mediated by relationship satisfaction, given the strong relation between satisfaction and the main variables of interest. The rationale for the proposed moderation and mediation models is outlined below.

**Age, jealousy, and IOS discrepancy.** According to the triangular theory of love proposed by Sternberg (1988), there are three components of love: passion, intimacy, and commitment (Sternberg, 1988). Passion is often linked to the experience of self-

expansion, as individuals experiencing passion are often engaging in new and exciting experiences, resulting in enhanced self-concept (Sheets, 2013). Passionate love is often contrasted against companionate love, a type of love comprised of commitment and intimacy. Research by Sheets (2013) has shown that across the lifespan, different aspects of love are emphasized. While passionate love is often present in adolescent and young adult populations, companionate love appears to be a driving force in older populations (Sheets, 2013). This research collaborates with evolutionary perspectives of intimate relationships. As passionate love is associated with feelings of sexual desire, passion during periods of fertility fosters procreation, and in turn, the perpetuation of the species (Jankowiak, 2013). Passion may not serve the same purpose with older adults who do not hold goals of reproduction, and therefore may be of less relative importance in this population in contrast to other forms of love (Buss & Schmitt, 1993). Conversely, feelings of commitment and intimacy, the components of companionate love, serve to ensure social support, which is of great importance during cognitive and functional decline. Though research indicates that individuals are capable of experiencing passionate love across the lifespan (Hatfield, Brien, & Le, 2008), little research has examined the relative influence of passionate love, in contrast with other forms of love, on relational well-being in mature populations.

Within this conceptualization, correlates of passionate love including expansion may be a greater determinant of satisfaction in relationships of younger populations in contrast with older populations. As jealousy often presents alongside relational dissatisfaction, it is likely that one's desire for expansion is more closely associated with levels of jealousy in younger populations. Conversely, desire for inclusion might play a

less important role within the relationships of older individuals in predicting factors associated with relationship satisfaction, including jealousy.

**Relationship status, jealousy, and IOS discrepancy.** Discrepancies in IOS have also been associated with higher incidence of break up thoughts (Frost & Forrester, 2013). Research investigating discrepancy as a predictor of relationship dissolution found that individuals who desired increased levels of inclusion with their partner were more than twice as likely to dissolve their relationship over a 1 year period than those who did not experience a discrepancy between current and ideal levels of inclusion (Frost & Forrester, 2013). Similarly, variables associated with jealousy have been correlated with relationship dissolution. Neuroticism has been linked to elevated rates of divorce, and numerous studies have shown neuroticism to have detrimental effects on marital stability over a 5 year period (Jockin, McGue, & Lykken, 1996; Kurdek, 1993). Given the impact of both discrepancy and components of jealousy on relationship dissolution, investigating these variables in the same model could assist in understanding the mechanisms by which dissolution occurs. Of interest is whether IOS discrepancy, and in turn the experience of jealousy, is related to relationship dissolution, as few studies have examined this indirect effect.

**Relationship satisfaction, jealousy, and IOS discrepancy.** High levels of IOS have typically been associated with higher levels of commitment within an intimate relationship, as well as increased relationship satisfaction (Frost & Forrester, 2013). Recent research has demonstrated that the experience of a less than optimal amount of closeness in an interpersonal relationship is associated with poorer relationship outcomes, including relationship quality, satisfaction, and stability (Frost & Forrester, 2013). These

findings demonstrate the impact of both experienced levels of inclusion and discrepancy in levels of inclusion on relationship satisfaction. Research by Barnett and colleagues (Barnett, Martinez, & Bluestein, 1995) implicates jealousy in relationship outcomes, with increased levels of jealousy relating to decreased relationship satisfaction. Given the associations among IOS discrepancy, jealousy, and relationship satisfaction, investigating their relation to one another may reveal relationship satisfaction as a potential mechanism relating jealousy and IOS discrepancy, should a significant correlation be found between these two constructs.

### **Purpose of the Current Study**

While jealousy has been investigated from several different perspectives, it has yet to be empirically examined through the lens of self-expansion. An investigation through this perspective sheds light on how the perception of a threat is not only influenced by one's current level of self-expansion and interdependence, but also how one's desire to further expand and increase inclusion is related to the threat response. Investigation of jealousy from this perspective has the capacity to reveal valuable insight regarding the utility of, and response to jealousy within intimate relationships. Furthermore, using the well-established framework of self-expansion to investigate a novel construct will expand the application of the model itself.

Jealousy can work to enhance or diminish relationship quality. Current information on factors that influence relationship outcomes in the face of jealousy can be understood using the self-expansion model. Beneficial communicative responses to jealousy serve to preserve or repair self-esteem, restore equity between partners, and lower uncertainty within the relationships and among partners individually (Guerrero et

al., 1995). Through the lens of self-expansion, these communication goals can be conceptualized as being directed towards affirming the value of each partner, ensuring that both parties feel they are mutually benefitting from the relationship by means of self-expansion, and determining clear conceptualizations of the relationship and individuals that comprise it, respectively. The capacity to understand responses to jealousy through the model of self-expansion further supports the experimental investigation of the construct from this perspective, allowing for an empirical comprehension on how jealousy and self-expansion are related rather than a merely conceptual one.

Along with investigating the direct relation between IOS discrepancy and jealousy, examining potential moderating variables allows for a more complete understanding of factors that influence the strength of the relation between IOS discrepancy and jealousy.

Similarly, examining potential mediating variables will contribute to a more complete understanding of mechanisms that underlie this relation.

**Study conceptualization.** Based on the current definition and knowledge of jealousy, it is conceivable that the self-expansion perspective can offer a unique contribution to understanding the phenomenon. Jealousy in intimate relationships occurs as a response to perceived or actual loss of a valued relationship to a rival. The self-expansion model might offer assistance in understanding how a relationship gains “value”. According to the Merriam-Webster dictionary (2014), value is defined as “relative worth, utility, or importance”. It is possible that a valuable relationship is conceived as one where perceived potential for expansion is large, but remains unexplored. Viewing a partner as an untapped resource of knowledge, identities, and

experience may mean a partner has increased relative worth, or “value”. By conceiving the relative value of each partner through the resources they have to offer one another, the cognitive and emotional experience of jealousy and responses to it can be understood as reactions to the perceived threatened loss of a self-expanding relationship and the subsequent contraction of the self-concept. As such, it can be hypothesized that threat to relationships that offer higher levels of expansion are associated with increased levels of jealousy due to heightened value of the relationship.

To investigate this idea, the current study seeks to explore the relation between IOS discrepancy and jealousy. As noted, inclusion of other in the self is only one means by which an individual can expand their self-concept. However, the nature of the measure, and the ability to measure current and ideal levels of inclusion render this method of measurement useful in operationalizing the perceived potential for expansion. Based on the presented research, if an individual experiences low current levels of inclusion, and idealizes high levels of inclusion, it can be proposed that this individual perceives their partner to possess qualities that are not yet part of their own self-concept, resulting in increased desire for self-other overlap. This notion is supported by one of the main tenets of the self-expansion model – individuals enter and remain in close relationships due to their general motive to expand their self-concept. As including another in the self is seen as means for self-expansion (Aron et al., 2004), it is feasible that discrepancies between current and ideal levels of inclusion also represent differences in perceived potential for expansion, with jealousy being a response to real or imaged threats of losing expanding resources to a rival. We hypothesized that IOS discrepancy (IOS ideal-IOS current) would be positively correlated with the experience of jealousy, as

measured by the IJS. Notably, discrepancy between current and ideal levels of IOS are also correlates of individual differences in jealousy (e.g. attachment style), rendering the investigation between jealousy and IOS discrepancy a natural progression in gaining a more complete understanding on the relation between these variables (Mashek et al., 2011; Selterman & Maier, 2013; Radecki-Bush et al., 1993).

With regard to the proposed moderating effect of age on the relation between IOS discrepancy and jealousy, we hypothesized IOS discrepancy to be less predictive of jealousy in older populations than in younger populations, as other components of love besides passion are more responsible for the success and satisfaction of a relationship at this point in time.

With regard to the proposed mediating effect of jealousy on the relation between IOS discrepancy and relationship status, we hypothesized that individuals who responded when reflecting on a past, dissolved relationship would report higher IOS discrepancy and more experienced jealousy than those reporting on a current relationship should our primary hypothesis be supported. That is, we hypothesized that jealousy would significantly mediate the relation between high levels of IOS discrepancy and relationship status, in that individuals who reported high levels of IOS discrepancy (ideal-current) would also report more jealousy (higher IJS scores), which would be related to an increased probability that the participant was reporting on a past relationship rather than current.

Finally, with regard to the proposed mediating effect of relationship satisfaction on the relation between IOS discrepancy and jealousy, we hypothesized that relationship satisfaction, as measured by a modified eight-item version of the Relationship

Assessment Scale (Hendrick, 1988), would act as a mediator between IOS discrepancy and jealousy (See Appendix C). That is, we hypothesized that levels of discrepancy directly affect levels of satisfaction within close relationships, which in turn relates to the amount of jealousy experienced within that relationship. Significant findings will not only indicate a mechanism behind the IOS discrepancy - jealousy relation (should this correlation be significant), but will also provide clarity as to whether poor relationship satisfaction precedes the experience of jealousy as opposed to solely being a byproduct of jealousy.

### **Hypotheses**

The current study tested the following hypotheses:

1. High discrepancy scores (IOS ideal – IOS current) will be positively correlated with jealousy (IJS scores).
2. The relation between IOS discrepancy (IOS ideal – IOS current) and jealousy (IJS scores) will be moderated by age.
3. Jealousy (IJS scores) will mediate the relation between IOS discrepancy (IOS ideal – IOS current) and relationship status.
4. Relationship satisfaction will mediate the relation between IOS discrepancy (IOS ideal – IOS current) and jealousy (IJS scores).

## Chapter II.

### Methodology

#### Participants

Participants consisted of 46 undergraduate students from Stony Brook University. While 65 participants provided responses regarding IOS discrepancy, and 64 participants completed the IJS measure, only 46 participants completed both the IJS and IOS measures. Of the 46 participants included in the study, 41 individuals reported their ages, which ranged from 20 to 63-years-old ( $M = 24.59$ ,  $SD = 9.1$ ). Notably, the modal age of participants was 21-years-old. While age demographics demonstrate a wide range, 3 outliers ( $\pm 2$  SD from mean; ages 44, 50, 63) were included in an attempt to maintain variability in the sample. Furthermore, age outliers were not outliers on either the IOS discrepancy or IJS measures, supporting their inclusion in statistical analyses. Of the participants involved in the study, 19 individuals completed self-report measures based on past relationships, and 27 completed measures based on current relationships. Respondents were predominantly female, with 32 participants identifying as female and 14 participants identifying as male. With regard to ethnicity, 22 participants identified as Caucasian, 14 identified as Asian, 6 identified as Hispanic/Latino, and 2 identified as African American (2 missing data points). With regard to religious affiliation, 19 individuals identified as Christian, 5 as Atheist/Agnostic, 2 as Buddhist, and 8 as Other (12 missing data points). Finally, relationship length ranged from 1 month to 37 years ( $M = 4.74$  years,  $SD = 8.36$  years), however only 27 of the 46 participants in the study provided this demographic information, resulting in 19 missing data points.

**Procedures**

After initial IRB approval at Stony Brook University was obtained, longitudinal data collection occurred over the course of a semester. An assortment of questionnaires was administered to undergraduate students enrolled in a close relationships psychology course at Stony Brook University. Informed written consent was obtained. All students in the class were eligible to participate in the study, and data was kept anonymous by use of participant-specific codes. Participants were allowed privacy when completing questionnaires, participation in the research study was entirely voluntary, and students were not compensated for their involvement. Completion of questionnaires was assigned as a mandatory component of daily classwork due to their relevance to course content, but students who did not want their data used for the purpose of the research study were instructed not to turn in questionnaires. All administered questionnaires were presented with standardized completion instructions (See Appendices A, B & C).

The administered questionnaires were chosen on the basis of their relevance to course content, and therefore covered a variety of relational variables. All relationship questionnaires administered were well-validated measures. Among the measures included in the study were those assessing: the main variables of interest, demographic variables, and variables relating to the proposed moderation and mediation models. Participants were asked to respond to questionnaires based on their current or most recently dissolved relationship. In order to engage in statistical analysis of this de-identified archival data set, approval from the Idaho State University Institutional Review Board (IRB) was acquired.

## Measures

**Inclusion of Other in the Self (IOS) Scale.** The Inclusion of Other in the Self (IOS) scale (see Appendix A) is a well-validated measure of closeness and self-concept expansion in the form of inclusion of other in the self (Aron, Aron, & Smollan, 1992). This measure is one that is simplistic in nature, and has been shown to have reliability, as well as discriminant, convergent, and predictive validity that meets or exceeds that of other measures intended to evaluate the same construct (Aron et al., 2004). In this study, we have used the discrepancy between ideal and current IOS as a measure of perceived potential for closeness and expansion. This variable was determined, using similar methodology as Frost and Forrester (2013), by subtracting one's current level of IOS from their ideal level on the same scale. Positive values therefore represent individuals who are currently experiencing a less than desired amount of closeness or expansion in the form of inclusion.

**Interpersonal Jealousy Scale (IJS).** The Interpersonal Jealousy Scale (IJS) is comprised of 28 items that describe responses to interpersonally threatening scenarios (Mathes & Severa, 1981). Administration included 27 of the 28 items, with the omitted item pertaining to marriage and therefore having little relevance for the selected college sample (see Appendix B). Subjects were asked to respond on a scale ranging from -4 (absolutely false, disagree completely) to +4 (absolutely true, agree completely). Participants were able to select 0 if they believed the statement to be neither true, nor false, and did not experience a high valence emotional response to the scenario. After reverse scoring was completed on the appropriate items, scores were averaged so that each individual's experience of jealousy was represented by a single value. This scale has

been shown to correlate with behavioral measures of possessiveness and threat in theoretically congruent ways. These results are only one demonstration of the validity of the IJS (Mathes, Phillips, Skowran, & Dick, 1982). Scores on the IJS are correlated with levels of romantic love, defined as an “intense emotion which causes an individual to seek to become totally involved in his beloved” (Mathes & Severa, 1981, p. 25) . This finding is indicative of construct validity, as the positive correlation between romantic love and jealousy has been established by several empirical studies (Mathes, 1986; Mathes & Severa, 1981). Note that the correlation between jealousy and romantic love does not imply that one causes the other, merely that the experiences of jealousy and romantic love are often co-occurring.

**Relationship Assessment Scale (RAS).** Relationship satisfaction was measured by using a modified version of the Relationship Assessment Scale (RAS; Hendrick, 1988), a reliable and valid measure of relationship satisfaction (Hendrick, Dicke, & Hendrick, 1998). This measure was administered at the same time as the IOS scale. While the unmodified version of this measure provides 7 generic statements related to relationship satisfaction, the administered version included an eighth item related to relationship need fulfillment (See Appendix C, item 8). Individuals responded to this measure using a 7-point likert scale (1 = low agreement, 7 = high agreement). After reverse scoring was completed on the appropriate items, scores were averaged to determine a mean relationship satisfaction score.

**Demographics Questionnaires.** Demographic data was collected over the course of the semester. Students were asked to report on several demographic variables including ethnicity, religious affiliation, age, gender, and relationship status and

relationship length. As some questions were asked multiple times, the most recent information obtained was used during statistical analysis.

**Relationship Status.** Relationship status was determined by asking participants whether they were reporting on a past or current relationship. Participants reported on their relationship status on the same questionnaire that evaluated for IOS current and ideal.

### **Chapter III.**

#### **Results**

In order to determine whether demographic variables were significantly contributing to the correlation between IOS discrepancy scores and IJS scores, several analyses were run to evaluate for significant differences. An analysis of variance (ANOVA) was conducted to decipher significant differences in gender, as it relates to IOS discrepancy and IJS. A non-parametric test of significance, the Kruskal-Wallis H test, was conducted to evaluate whether ethnicity should be controlled for, due to the non-normally distributed nature of this variable.

Due to low variability of ethnicity across the sample and the limited number of individuals identifying with ethnic minority groups, ethnicity was grouped into 3 distinct categories: Caucasian (n = 22), Asian (n = 14), and Other (n = 8). The “Other” ethnic group consisted of individuals who identified as Hispanic/Latino or African-American. Relationship length could not be investigated due to large amounts of missing data. While sufficient data was collected with regard to the demographic variable of religious affiliation, the limited number of participants identifying with the evaluated religious groups (small cell size) rendered this variable unlikely to demonstrate systematic differences in responding across religious groups, and was therefore not included in our statistical analysis as a potentially confounding variable. While grouping religious affiliation into a Christian and non-Christian dichotomous variable was considered, such grouping was not conducted due to significant differences between Atheist/Agnostic, Buddhist, and Other religious groups.

Analysis revealed that there were no significant differences between males

( $M=.29$ ,  $SD = 1.82$ ) and females ( $M=.78$ ,  $SD = 1.68$ ) in relation to IOS discrepancy ( $F(1,44) = 0.81$ ,  $p = .37$ ). Similarly, no significant differences between males ( $M=.12$ ,  $SD = .66$ ) and females ( $M=.09$ ,  $SD = 1.08$ ) were found in relation to IJS scores, ( $F(1,44) = .003$ ,  $p = .95$ ). Non-parametric tests of significance revealed that the distribution of IOS discrepancy was not significantly different across categories of ethnic groups ( $H(2) = 2.189$ ,  $p = .335$ ). Similarly, the distribution of IJS scores was not significantly different across categories of ethnic groups ( $H(2) = .306$ ,  $p = .858$ ). Due to the lack of significance between demographic variables and the main variables of interest, these variables were not controlled for during further analysis.

The bootstrapping method was used in the analysis of the main effect due to small sample size. The bootstrapping method was developed by Bradley Efron in 1979 (Hilmer, 2010) and is a statistical method of resampling with replacement. This method can be used with small sample sizes, as it allows for a more accurate impression of true population variance and provides an estimate of the population's distribution. This method of resampling was selected, as bootstrapping is theoretically simplistic, but computationally scrupulous (Hilmer, 2010). Notably, while the bootstrapping method is useful for enhancing power, it does not increase the variance of the sample. In calculating the correlational main effect between IOS discrepancy and IJS, a bootstrapping for correlation applet designed by Busey and Troyer (n.d.; available from <http://cognitrn.psych.indiana.edu/busey/homepage/Statistics.html>) was used. Analysis revealed that upon conducting 100,000 iterations, the correlation between IOS discrepancy and IJS approached significance ( $r = 0.23$ ,  $p = 0.054$ ). Notably, the bootstrapping method allows for only two-tailed tests of significance. However, it should

be acknowledged that the initial hypothesis involved the prediction that discrepancy in the form of idealizing more inclusion would be correlated with higher IJS scores. That is, as there was a prediction regarding the direction of the association present in the hypothesis, a one-tailed test of significance would have been more appropriate for detecting a significant main effect. As the overarching goal of this project was to determine whether jealousy could be conceptualized within the self-expansion framework, the bootstrapping method was selected as the most appropriate method for statistical analysis as it allows for increased power to detect a relation, should one exist. Future work should focus on obtaining a large and representative sample, circumventing the need for resampling methods and thereby allowing for one-tailed tests of significance.

Moderation and mediation analysis was conducted using the PROCESS statistical software (Hayes & Preacher, 2014) for the Statistical Package for the Social Sciences (SPSS; IBM Corp., 2011) program, and did not reveal any significant findings. When using bootstrapping methods in moderation and mediation analysis, one determinant of significance comes from examining confidence intervals. Should the 95% confidence interval cross the value of zero, the results are considered insignificant. For each mediator and moderator, analysis was run with the specification of 50,000 iterations. With regard to age, statistical analysis revealed that this variable was not a significant moderator of the relation between IOS discrepancy and IJS scores ( $\beta = -.001$ ,  $t(37) = -.08$ ,  $p = .93$ , 95% CI [-0.03, 0.03], SE= .01).

Statistical analysis also revealed that jealousy was not a significant mediator between IOS discrepancy and relationship status. In using the product of coefficients approach (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002) for evaluating

mediation, the indirect effect was determined by multiplying the standardized regression coefficients between IOS discrepancy and jealousy (a path;  $\beta = 0.13$ ) and jealousy and relationship status (b path;  $\beta = -.14$ ). The significance of the indirect effect was evaluated by use of the bootstrapping method, and this analysis revealed no significant mediation ( $\beta = -0.02$ ,  $p > .05$ , 95% CI [-0.19, 0.07], SE = .06). Finally, in evaluating relationship satisfaction as a mediator between IOS discrepancy and IJS scores, the indirect effect was determined by multiplying the standardized regression coefficients between IOS discrepancy and relationship satisfaction (a path;  $\beta = -0.01$ ) and relationship satisfaction and IJS scores (b path;  $\beta = 0.05$ ). The significance of the indirect effect was evaluated by use of the bootstrapping method, and analysis revealed no significant mediation ( $\beta = -0.00$ ,  $p > .05$ , 95% CI [-.05,0.03], SE = .02). Notably, previous findings by Frost and Forrester (2013) suggesting that lower levels of IOS discrepancy were associated with increased relationship satisfaction were not supported in our results ( $\beta = -0.01$ ,  $p > .05$ , 95% CI [-0.14,0.12], SE = .07). The interpretation of these results will be discussed below.

## **Chapter IV.**

### **Discussion**

#### **General Discussion**

The main hypothesis that discrepancy in levels of IOS, in the direction of wanting more inclusion, would be significantly correlated with higher scores on the IJS measure of jealousy was supported. Notably, though a positive correlation approaching significance was found, it is not possible to draw causality from these findings. That is, while it is possible that increased discrepancy results in increased levels of jealousy, it may also be the case that higher levels of jealousy lead to the perception that relations are not as close as idealized, or that a third unaccounted for variable is simultaneously affecting both IOS discrepancy and jealousy. Regardless, these results represent important findings for both jealousy and self-expansion research. Primarily, these findings provide preliminary support for the conceptualization of jealousy within the framework of the self-expansion model, broadening the applicability of the self-expansion model. Though this study was conducted with a small sample size, and therefore estimates of population had to be approximated by computational means, these findings support a relation between discrepancy in levels of inclusion and jealousy, and it is therefore warranted that further research on these variables be conducted.

Should future research investigating jealousy within the context of the self-expansion model replicate our findings, increased applicability of the self-expansion model would be supported. Demonstrating the wide breadth of the self-expansion model would be beneficial to the field of psychology, as it would move interpersonal relationship research towards a parsimonious model that accounts for several aspects of

interpersonal relationships. Furthermore, awareness of the relation between jealousy and inclusion discrepancy may assist in the clarification of the role of jealousy. Though it remains uncertain whether jealousy leads to discrepancy or is a byproduct of it, the apparent correlation between these variables indicates that jealousy, a variable often associated with negative relational outcomes, may potentially be reduced by targeting ideal or current levels of inclusion as means of decreasing discrepancy. The ability to reduce IOS discrepancy and jealousy in interpersonal relationships is valuable for several reasons. As noted, jealousy is associated with negative outcomes in mental, physical, and interpersonal well-being. Therefore, the benefits of reducing jealousy by means of decreasing discrepancy between current and ideal IOS are three fold.

Several of our secondary hypotheses surrounding potential mediators and moderators were found to be non-significant. There are many reasons why the proposed relations were not statistically supported. With regard to the proposed mediation between IOS discrepancy, IJS and relationship status, it might have been the case that the experience of jealousy does not mediate the relation between perceived discrepancy in levels of inclusion and relationship outcome. Furthermore, it should be noted that the use of relationship status information as a representation of relationship outcome is an indirect measure of dissolution. That is, as these relationships were not followed longitudinally, there might have been several extenuating circumstances that contributed to dissolution which were not divulged during data collection, and were therefore not controlled for during statistical analysis. For example, given that the demographic being investigated was primarily students in their first years of college, it is possible that several relationships were terminated due to physical distance between partners.

Controlling for such extenuating circumstances might have enhanced the ability to detect mediation between IOS discrepancy, jealousy, and relationship status, should such a relation exist.

With regard to the moderating relation between IOS discrepancy, IJS scores, and age, it is once again possible that such a relation does not exist, as the predicted relation was derived from the conceptual understanding of passionate love in relation to age. It may be the case that while expansion is associated with feelings of passion for younger adults, other aspects of intimate relationships are responsible for feelings of expansion in older adults. This would account for the finding that the relation between IOS discrepancy and jealousy is not significantly moderated by age, while also accounting for the changing emphasis from passionate love to companionate love with age. It may also be the case that age was confounded with relationship length, a variable we were unable to account for due to large amounts of missing data. Therefore, analysis might not have revealed the moderating effects of age as a variable on its own. Finally with regard to age, it should be noted that variance within this demographic variable was limited, with the majority of individuals falling within their 20's. Lack of variance in the ages of participants might have contributed to the inability to detect a moderating effect of age.

The mediating effect of relationship satisfaction between IOS discrepancy and IJS scores was also found to be non-significant. This finding was unexpected, as IOS discrepancy has been shown to relate to relationship satisfaction in previous research (Frost & Forrester, 2013). Similarly, the experience of jealousy within interpersonal relationships has been associated with decreased relationship satisfaction (Babcock, Costa, Green, & Eckhardt, 2004; Barnett, Martinez, & Bluestein, 1995). Findings

showing a non-significant mediation between relationship satisfaction, IOS discrepancy, and IJS scores might indicate that relationship satisfaction is not a mechanism by which IOS discrepancy and jealousy are related. It should be recognized, however, that several individuals involved in this study were responding retrospectively with regard to relationship satisfaction, and therefore perception might have been skewed during responding, with the intention of romanticizing or decrying past relational experiences, reducing the accuracy of current findings. Notably, previous findings that high IOS discrepancy was related to low levels of relationship satisfaction were not replicated in statistical analysis. This may be an indicator that the sample used in the study was not diverse enough to exhibit this established effect. Due to the lack of significance between the predictor variable and mediating variable, it would not be possible to detect any indirect effects on the dependent variable of jealousy.

In relation to all mediation and moderation, it should be noted that due to our small sample size of 46, it is likely the case that there was not enough power in order to successfully detect a small or moderate mediated or moderated effect. Notably, even with the enhanced power by use of the bootstrap method, it is probable that the original data set did not have enough variance to accurately approximate population parameters.

### **Limitations**

Due to the nature of analyzing archival data, several limitations are present in the current research. One of the most profound limitations of this study is the small sample size. Not only did this small sample size decrease the probability of finding a significant main effect, it also contributed to the lack of power in detecting mediated and moderated effects. That is, the small sample size used in this study likely did not exhibit sufficient

variability across mediators and moderators to significantly affect the relation between the independent and dependent variables within their respective models. Furthermore, as data was collected in a college setting, the study is limited by the student status of participants. It is possible that individuals in a college setting systematically differ from the general population, and are therefore not wholly representative. Similarly, given that this study was conducted in a college setting, little variation was observed across the sample with regard to age. This further limits the generalizability of the findings, as they were derived primarily from young adults in the early to mid-20 age range.

Another limitation to this study was the methodology by which data was collected. Due to the prolonged nature of data collection (over the course of a semester), and the dependence on student attendance for complete data collection, several demographic variables and outcome measures were not obtained for all participants. Due to this specific limitation, only 46 of the potential 289 students in the class provided adequate data for our outcome variables of interest (IOS current, IOS ideal, and IJS). Furthermore, the amount of missing data as a result of this methodological flaw resulted in the inability to investigate potential variables of interest (e.g. relationship length, cultural affiliation). Another limitation related to the archival nature of the data was the inability to assess for variables that were of interest within the context of the conceptual framework of the study, as measures of these variables were not originally included during data collection. Examples of such variables are neuroticism and communication style. The cross-sectional nature of the current study serves as another limitation. Though this cross-sectional data revealed important information regarding the relation between jealousy and IOS discrepancy, it does not inform researchers about how changes to

discrepancy over time impacts the experience of jealousy, and ultimately affects relationship outcomes. In a similar vein, the correlational nature of this research serves as a limitation, as it does not allow for the inference of causality. That is, it remains unclear as to whether discrepancy in IOS leads to high levels of jealousy, if the opposite is the case, or if the correlation between these two variables is accounted for by a third variable. Finally, a limitation of this study is the exclusive use of self-report outcome measures of IOS discrepancy and jealousy. Self-report data inherently contains biases, and therefore may not be a reliable or accurate source of data. Furthermore, as many participants' responses related to past relationships, the retrospective nature of their self-reported responses may also have been distorted as a result of time passed and cognitive biases.

### **Implications**

While the current study provides preliminary support for the investigation of jealousy and self-expansion together, our findings encourage future work investigating the relation between these constructs. Following more extensive research on these variables, stronger support for the relation between jealousy and self-expansion model may be established, and may in turn catalyze future work with the aim of widening the applicability of the self-expansion model. For example, demonstrating that jealousy can be conceptualized within the self-expansion framework may initiate research aimed towards conceptualizing other interpersonal phenomena (e.g. envy) within the same model. By understanding the motivational components associated with both positive and negative interpersonal interactions through the self-expansion model, we might be better equipped to address interpersonal difficulties, and enhance relational well-being. Furthermore, the ability for the self-expansion model to explain the experience of

jealousy would aid in understanding the adaptive and motivational properties of jealousy, reducing stigma associated with this emotional experience. That is, should more support for the current findings be established, jealousy may potentially be understood as an indicator that ideal levels of closeness and inclusion are not being achieved within an intimate relationship, and could therefore be conceptualized as a catalyst for positive interpersonal changes.

Further work supporting the preliminary findings of the current study may have implications for treatment. While causality cannot be implicated based on the methodology and statistical analysis used in this study, future work based on our initial findings may support the presence of a causal relation between expansion and jealousy. Should a causal relation between these variables be established, IOS discrepancy may be determined as a useful treatment target in decreasing jealousy, thereby enhancing psychological, psychological, and relationship outcomes.

### **Future Directions**

While the current study provides important information regarding the relation between inclusion discrepancies and the experience of jealousy, several factors limit the generalizability of these findings. It is imperative that this study be conducted with a larger sample size, and across a diverse group of individuals with regards to ethnic, religious, age, and gender demographic variables. By using a larger and more diverse sample, generalizability will be enhanced, along with power to detect small or moderate effects as well as potential mediators or moderators. Furthermore, the variance within the sample will more accurately approximate population variance. Enhanced power to detect mediation and moderation will allow for a greater understanding of the mechanisms

underlying the relation between inclusion discrepancy and jealousy, and circumvent some of the limiting factors present in the current study with regard to non-significant mediation and moderation models. For example, in a larger study with a more expansive age range, it will be possible to determine whether age is a significant moderator in the relation between IOS discrepancy and IJS scores. In order to acquire a diverse sample, future studies might consider the use of online methods of data collection. Given the low power and variance in the current study, we have little understanding regarding the mechanisms underlying the relation between IOS discrepancy and jealousy, or what factors impact the magnitude of the relation.

One limitation of the current study, due to the archival nature of the data, is the inability to assess for several variables that are related to the experience of jealousy or inclusion discrepancy, such as neuroticism and communication style. Future studies should investigate these variables to determine how they fit within the IOS discrepancy and jealousy model. For example, as research surrounding the effects of jealousy on relationship outcomes focuses heavily on direct versus indirect communication, it would be of importance to determine whether communication style moderates the relation between IOS discrepancy and IJS, ultimately affecting relationship outcomes. Similarly, it would be of relevance to determine whether trait levels of neuroticism are associated with high levels of discrepancy, and whether controlling for this relation reduces or eliminates the association between IOS discrepancy and jealousy, given the close association between jealousy and neuroticism. Furthermore, while relationship status was used to approximate dissolution information, a more direct measure of dissolution intent and behavior would be beneficial to include in future studies investigating the

effects of IOS discrepancy and jealousy on relational outcomes.

Another limitation of the current study is the amount of missing data for variables of interest, resulting in the inability to include them in analysis. An example of a variable that was investigated during data collection but had a large amount of missing data was relationship length. Future studies should investigate the effects of relationship length on the relation between IOS discrepancy and IJS scores. Similarly, this variable should be controlled for when investigating the effects of age on the main effect, and vice versa.

Future studies would benefit from investigating IOS discrepancy and IJS at several time points, monitoring how IOS discrepancy and the experience of jealousy vary with relationship quality and status outcomes (e.g. dissolution, marriage, etc.). This information would be important in determining how changes to IOS discrepancy impact the experience of jealousy and other relational variables, allowing for a clear understanding of the purpose of jealousy within interpersonal relationships. Current research on this remains unclear. As the current study used self-report measures as means of acquiring outcome data, future studies may benefit from the use of behavioral measures of constructs such as jealousy. Though IJS scores have been demonstrated to correlate with behavioral measures of jealousy, the use of behavioral measures decreases the probability of biased responding, and therefore enhances the validity of findings. Specifically, relational constructs such as jealousy are often stigmatized, and therefore self-reports might be particularly vulnerable to response bias, a response style that frames the respondent in a favorable light. Future behavioral studies or self-report studies that also include measures of social desirability to help control for these biases are thus needed.

Future research might also aim at investigating how concordance of IOS discrepancy scores across intimate partner dyads predicts relational outcomes. While the current study focused primarily on how discrepancy within subjects predicted jealousy, investigating the interaction of perceived discrepancy between partners may inform the direction of IOS change over time, and ultimately may account for some of the variance in relationship outcomes. For example, in dyads where there is high concordance between partners on the level of discrepancy between current and ideal levels of inclusion, it might be the case that partners maintain the same relational goals and have a more positive relationship prognosis. In contrast, if partners have differing perceptions on current and ideal levels of inclusion, with one partner perceiving high discrepancy and the other perceiving low discrepancy, contrasting relationship goals might differentially influence motivation to alter the relationship, potentially leading to poorer relationship outcomes.

In terms of clinical applicability, it would be of interest to investigate how levels of negative affect, along with depressive and anxiety symptoms, change in relation to changes in IOS discrepancy, as depressive symptoms have been shown to relate to IOS discrepancy (Frost & Forrester, 2013). Given the underlying presence of negative affectivity in both depression and anxiety disorders, investigating negative affectivity in relation to IOS discrepancy would support targeting IOS discrepancy from a transdiagnostic treatment approach, given that there are significant interpersonal relationship concerns in the clinical presentation.

Following a large and more extensive replication of the current study, future studies might apply IOS reducing or enhancing strategies (depending on the direction of

discrepancy) to enhance relational outcomes, and potentially reduce negative affectivity, along with anxiety and depression symptoms. Treatments that utilize IOS discrepancy reducing tactics might use strategies that either enhance current levels of IOS, or reduce ideal levels of IOS. By determining which strategy is more effective, such strategies can be integrated into current interventions that aim to enhance the quality of interpersonal relationships, and reduce negative affectivity.

Findings of the current study provide preliminary support for the conceptualization of jealousy within the framework of the self-expansion model. While the current research is not without limitations, this work is of importance in that it helps to establish the foundation for future work with these constructs. Ultimately, understanding the breadth of the self-expansion model facilitates progress towards a unifying and parsimonious interpersonal relationship framework that is able to account for both negative and positive interpersonal experiences, aiding in the understanding and enhancement of interpersonal relationships. By increasing relationship quality, individual psychological and physical wellbeing are also enhanced, alluding to the clinical implications of further investigating jealousy through the lens of the self-expansion model.

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Appendix A

Please circle the picture below that best describes your **current** relationship with your partner (if you are not in a relationship, please answer for your most recent partner).

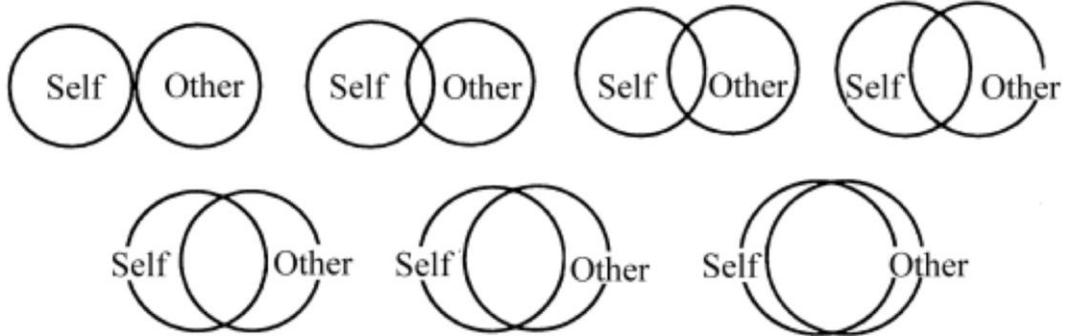


Figure 1. Inclusion of other in the self (IOS) scale, current (Aron, Aron, & Smollan, 1992)

Please circle the picture below that best describes your **desired** relationship with your partner (if you are not in a relationship, please answer for your most recent partner).

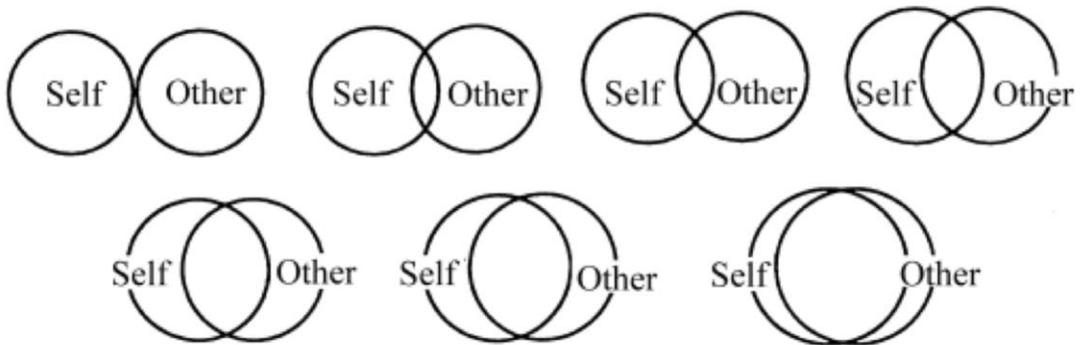


Figure 2. Inclusion of other in the self (IOS) scale, ideal (Aron, Aron, & Smollan, 1992)

## Appendix B

## Interpersonal Jealousy Scale (Mathes &amp; Severa, 1981)

Please think of a serious committed romantic relationship that you have had in the past, that you currently have, or that you would like to have. Please answer the following questions about that relationship. Fill in the appropriate number from the scale below in the blank spaces of each item

-4      -3      -2      -1      0      1      2      3      4

**Absolutely false**  
**Absolutely true**

**Neither true nor false**

\_\_\_ If partner were to see an old friend of the opposite sex and respond with a great deal of happiness, I would be annoyed.

\_\_\_ If partner went out with same-sex friends, I would feel compelled to know what he/she did.

\_\_\_ If partner admired someone of the opposite sex, I would feel irritated.

\_\_\_ If partner were to help someone of the opposite sex with his/her homework, I would feel suspicious.

\_\_\_ When partner likes one of my friends I am pleased.

\_\_\_ If partner were to go away for the weekend without me, my only concern would be with whether he/she had a good time.

\_\_\_ If partner were helpful to someone of the opposite sex, I would feel jealous.

\_\_\_ When partner talks of happy experiences of his/her past, I feel sad that I wasn't part of them.

\_\_\_ If partner were to become displeased about the time I spend with others, I would be flattered.

\_\_\_ If partner and I went to a party and I lost sight of him/her, I would become uncomfortable.

\_\_\_ I want partner to remain good friends with the people he/she used to date.

\_\_\_ If partner were to date others, I would feel unhappy.

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- \_\_\_ If I noted that partner and person of the opposite sex have something in common, I would become envious.
- \_\_\_ If partner were to become very close to someone of the opposite sex, I would feel very unhappy and/or angry.
- \_\_\_ I would like partner to be faithful to me.
- \_\_\_ I don't think it would bother me if partner flirted with someone of the opposite sex.
- \_\_\_ If someone of the opposite sex were to compliment partner, I would feel that the person was trying to take partner away from me.
- \_\_\_ I feel good when partner makes a new friend.
- \_\_\_ If partner were to spend the night comforting a friend of the opposite sex who had just had a tragic experience, partner's compassion would please me.
- \_\_\_ If someone of the opposite sex were to pay attention to partner, I would become possessive of him/her.
- \_\_\_ If partner were to become exuberant and hug someone of the opposite sex, it would make me feel good that he/she was expressing his/her feelings openly.
- \_\_\_ The thought of partner kissing someone else drives me up the wall.
- \_\_\_ If someone of the opposite sex lit up at the sight of partner, I would become uneasy.
- \_\_\_ I like to find fault with partner's old dates.
- \_\_\_ I feel possessive toward partner.
- \_\_\_ If I saw a picture of partner and an old date I would feel unhappy.
- \_\_\_ If partner were to accidentally call me by the wrong name, I would become furious.

