An Integrative Theory Analysis of Real-Life and Cyber Unwanted Pursuit Perpetration
Following Relationship Break-Up

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This dissertation titled
An Integrative Theory Analysis of Real-Life and Cyber Unwanted Pursuit Perpetration
Following Relationship Break-Up

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Abstract

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An Integrative Theory Analysis of Real-Life and Cyber Unwanted Pursuit Perpetration
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The current study assessed and integrated theories for Unwanted Pursuit Behaviors (UPBs), including real-life UPBs (e.g., following, showing up in places unexpectedly), and cyber UPBs (e.g., sending threatening text messages, monitoring a person's Facebook account). Theories tested included: attachment theory, the investment model theory, relational goal pursuit theory, and coercive control theory, and included variables such as self-control and emotion regulation difficulties which are postulated to underlie these theories. Whereas models predicting individual forms of cyber and real-life stalking showed different correlates of each form, results of an integrated model demonstrated that, whereas the coercive control model best predicts threatening forms of real-life and cyber UPBs, relational goal pursuit variables, and indirectly, investment model variables, best predict real-life and cyber unwanted contact/checking UPBs. Whereas the predictors varied by type (unwanted contact compared to threatening UPBs), the predictors for each modality of UPB (real-life or cyber) were similar. This pattern suggests that threatening UPBs are motivated by anger and desire for power/control, whereas unwanted contact/checking UPBs are motivated by desperate desires to maintain or reclaim loving relationships. Longitudinal research is needed to replicate the integrated model with consideration of temporal sequence; however, the current results emphasize

the need for intervention in dating violence to prevent threatening UPBs when violent relationships are terminated. In addition, greater attention should be given to individuals who are the recipient of break-ups, because even if they do not engage in threatening post-break-up behaviors, those who engage in excessive and unwanted contact as a result of commitment and rumination about former partners are engaging in behaviors that are likely not in line with their desired goal (i.e., of reuniting with their former partners), and likely negatively impact their former partners' quality of life.

Dedication

To my parents, Don and Joanne, who taught me to persevere, my sister Michelle, who taught me “everything I know,” and to all victims and survivors of intimate partner violence.

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Literature Review

Unwanted Pursuit Behaviors (UPBs), experienced by up to 38% of women and 16% of men, are receiving increasing attention in the intimate partner violence (IPV) literature, with results of meta-analyses indicating that at least 24% of men and 12% of women admit to having perpetrated unwanted pursuit (Spitzberg, Cupach, & Ciceraro, 2010). UPBs include two forms: obsessive relational intrusion (“the repeated pursuit of intimacy with someone who does not want such attentions,” Cupach & Spitzberg, 2004, p.3), and its more severe form, stalking (“a problem behavior which is characterized by repeated attempts to impose unwanted communications and/or contacts on another in a manner which could be expected to cause distress and/or fear in any reasonable person,” Mullen, Pathe & Purcell, 2009, p.10). Research to date has focused on numerous predictors of UPBs demonstrating significant deleterious social, economic, physical and mental health consequences on victims (see Sheridan & Lyndon, 2012, for a review). However, whereas many theories have been proposed to explain UPB perpetration, Davis, Swan, and Gambone (2012) assert that “the single most important next step is the comparative evaluation of predictors and mediators from the different theories in the prediction of specific types of pursuit behaviors” (p.335). Such a focus would enable the determination of trajectories of real-life and cyber UPBs, as well as the design of prevention programs targeting UPBs. As stated by Davis et al., “A comprehensive study that includes variables from each of the theories could address the following sorts of predictions” (p.335). In addition, despite assertions that digital forms of violence are “the domestic violence wave of the future” (King-Ries, 2011, p.131), the existing literature

has largely neglected to investigate the use of technology to control, threaten or harass partners. Finally, many previous studies investigating UPB perpetration have assessed these characteristics from the perspectives of the victims, rather than from the perpetrators themselves. Sampling UPB perpetrators is important, particularly given that many stalking behaviors are covert and the extent of stalking may be unknown to victims. Thus, the purpose of the current study was to test and integrate existing theoretical models (i.e., investment model theory, coercive control theory, relational goal pursuit theory, and attachment theory) to explain perpetration of unwanted pursuit from the perspective of individuals who engage in UPBs, including so-called “real-life” and technologically-mediated (cyber) pursuit.

Real-Life and Cyber UPB and Prevalence

Real-life UPB has been investigated to a greater extent than has cyber UPB, and has included mostly cross-sectional designs; studies mentioned herein should be presumed to examine real-life UPB using a cross-sectional design unless otherwise noted. Research conducted specifically with college populations exhibit more gender-equivalence in UPB than clinical/forensic or community samples, in which men are found to perpetrate UPBs more frequently than do women (Spitzberg et al., 2010). Langhinrichsen-Rohling, Palarea, Cohen and Rohling (2000) found that 99.2% of students engaged in at least one real-life UPB following a break-up, with 5% having engaged in some form of threatening or violent stalking. Davis, Ace and Andra (2000) found that a more conservative 40% of students reported perpetrating some form of UPB following a break-up.

A more recent phenomenon, cyber UPB, has been understudied, often assessed with researcher-generated questionnaires lacking in psychometric information. However, a national-level study found that, among real-life stalking victims, 26.1% are also cyberstalked (Baum, Catalano, Rand & Rose, 2009), and a similar rate was found in a college sample (24.7% of those stalked; Fisher, Cullen, & Turner, 2002). Regarding perpetration, Reynolds, Henson and Fisher (2012) found that 4.9% of undergraduates indicated that they had perpetrated cyberstalking. Chaulk and Jones (2011) found that 63% of undergraduates reported using Facebook to make contact with former partners, with 31% using Facebook to “keep tabs on” the person.

To date, researchers have disagreed as to whether these “real-life” UPBs and cyber UPBs are theoretically different dimensions of the same unwanted pursuit behavior (which are either electronically-mediated or not; e.g., Sheridan & Grant, 2007), or if these behaviors are distinct forms of unwanted pursuit (i.e., are utilized differentially, or by different pursuers; e.g., Bocij & McFarlane, 2002). Regarding UPB victimization, Spitzberg and Hoobler (2002) found correlations between $r = .09-.46$ among real-life and cyber UPB. Correlations were stronger within types of behaviors, rather than across modalities (real-life compared to cyber UPBs).

Two studies have examined both real-life and cyber UPB perpetration. Menard and Pincus (2011) examined predictors of “overt” (i.e., real-life) and “covert” (i.e., cyber) UPB perpetration, finding that men with greater rates of child sexual abuse and narcissistic vulnerability to rejection were particularly likely to pursue others in both real-life and cyber forms. Among men, preoccupied attachment was also directly associated

with cyber UPB, whereas unexpectedly secure attachment was indirectly associated with real-life UPBs through narcissistic vulnerability to rejection and childhood sexual victimization. Similar to men, women's real-life and cyber UPB was associated with childhood sexual victimization; however, among women, both real-life and cyber UPBs were also associated with preoccupied attachment and viewing the relationship as secondary to the importance of one's achievements. These models, however, explained very small proportions of the variance in real-life and cyber UPB (i.e., 4%-16%) and Menard and Pincus (2011) did not examine the relationship among real-life and cyber UPBs. Lyndon, Bonds-Raacke and Cratty (2011) measured "Facebook-stalking" perpetration along with other forms of cyber and "real-life" unwanted pursuit perpetration, finding that various forms of "Facebook-stalking" were associated with a greater risk of other forms of cyber unwanted pursuit and real-life pursuit behaviors. In addition, those who engaged in real-life pursuit behaviors were 6.88 times more likely to engage in cyber unwanted pursuit than individuals who had not engaged in real-life pursuit behaviors. However, Lyndon et al. (2011) measured lifetime pursuit of ex-romantic partners, and thus, it is unclear whether these behaviors were perpetrated against the same target or over multiple targets.

Theories and Correlates of "Real-Life" and Cyber UPB

Investment model theory. The Investment Model (Rusbult, 1980), based on interdependence theory (Kelley & Thibault, 1978), was created to explain why individuals remain in relationships. This theory posits that relationships are most likely to remain intact to the extent that one or both partners remain committed (Rusbult & Martz,

1995). Commitment is predicted by: satisfaction (“the degree to which an individual favorably evaluates the relationship”, Rusbult & Martz, 1995. p.559), quality of alternatives to the relationship (“the attractiveness and availability of alternatives to the relationship,” p.560), and investment (“the number and magnitude of resources that are tied to a relationship,” p.560). However, although relationship investment, satisfaction, and poor quality of alternatives have been found to be bivariately related to UPB, they are not the strongest predictors of unwanted pursuit in the presence of attachment variables within multivariate regression analyses (e.g., Wisternoff, 2008), with the exception of Tassy and Winstead (2014), who found that high relationship investment was related to post-break-up aggressive unwanted pursuit. However, De Smet, Loeys and Buysse (2012) found an interaction among investment model variables and being the recipient of the break-up, such that greater unwanted pursuit occurred among recipients of break-ups whom also perceived a low quality of alternatives, had high investment, and greater satisfaction with the previous relationship. It would be anticipated that the investment model variables would overlap with some other theories. For example, individuals who are strongly invested and committed in relationships are more likely to ruminate about these losses and experience greater negative affect when they end, relative to individuals who are less strongly invested and committed (De Smet et al., 2012; see also Relational Goal Pursuit theory section). In addition, anxious attachment has been found to be associated with greater investment and commitment in relationships (De Smet et al., 2012). However, whereas some individuals might be motivated by their commitment, investment, satisfaction and quality of alternatives to their relationships with their former

partners, others might be motivated by desires to control or even harm their former partners or to exact revenge (see Coercive Control theory, below).

Coercive control theory. Coercive control has been defined as “an ongoing strategy of intimidation, isolation, and control” (Stark, 1995, p.30) and involves surveillance of a partner and making demands or threats of the partner in efforts to maintain control of the individual’s environment (Dutton & Goodman, 2005). This relationship dynamic of possessiveness and controlling behaviors over one’s partner has been demonstrated by both men (Dutton & Goodman, 2005), and women (Caldwell, Swan, Allen, Sullivan & Snow, 2009), and is believed to be an underlying dynamic or motivation of physical, sexual, and psychological abuse (Stark, 2007). Presenting the “dependency-possessiveness model,” Murphy, Meyer and O’Leary (1994), found that individuals who were dependent upon and possessive of their partners perpetrated increasing levels of violence, which the authors believe occurs in order to maintain control over the partner and prevent the partner from terminating the relationship. In a 15-month longitudinal study, Gondolf and Beeman (2003) found that, among a clinical sample, men who were possessive and controlling were significantly more likely to assault their partners (physically or sexually) over time. Regarding UPBs, coercive control has been implicated in the stalking literature (with both genders), with findings suggesting that individuals who demonstrate possessiveness and use violence during a relationship perpetrate UPB following break-ups, in cross-sectional designs across both real-life (e.g., Davis et al., 2000; Logan & Walker, 2009) and cyber UPBs (Bennett, Guran, Ramos & Margolin, 2011). Further, longitudinal research demonstrates that,

among a community sample, victims of IPV who report that their perpetrators engaged in controlling behaviors reported both higher levels of physical violence and greater stalking following relationship termination (Melton, 2007).

The strength of coercive control theory is in its focus on motivations for unwanted pursuit (i.e., retaining “possession” over the desired object). However, although some pursuers may be motivated by desires to control their targets or even harm their targets, other pursuers may be motivated by other reasons, including love for the target and investment in the relationship (De Smet et al., 2012; Sinclair & Frieze, 2000), distress over losing the target as a romantic partner (Dutton & Winstead, 2006), or an inability to regulate emotions (Creasey, 2002; Creasey & Hesson-McInnis, 2001), motivations which would not likely be explained by coercive control theory alone. Further, prior literature suggests that different forms of pursuit may be initiated by individuals who have intentions to control their targets or cause harm to their targets (stealing or destroying targets’ property, physically threatening target), as compared to individuals who wish to re-establish a loving relationship with their partners (sending unwanted expressions of affection or love, sending repeated messages; Dutton & Winstead, 2006). Finally, regarding the overlap between coercive control theory and other theories of UPBs, research on “morbid jealousy” among abusive partners postulates that post-separation violence occurs due to a series of depressive ruminative thoughts, such as, “If I can’t have her, nobody will” (Dutton, 2006). Within the UPB research, the association between increased possessiveness and violence during a relationship (i.e., coercive

control) and ruminative thoughts following the dissolution of the relationship (i.e., relational goal pursuit, see below) remains to be examined.

Relational goal pursuit theory. Relational Goal Pursuit theory (RGP; Cupach & Spitzberg, 2004), asserts that unwanted pursuit occurs when individuals are driven by the goal to establish or maintain a relationship with the target, such that reconciling a relationship (lower-order goal) is linked to happiness or self-worth (higher-order goals; Pomerantz, Saxon & Oishi, 2000). Because individuals normally select goals that they consider desirable and feasible (Heckhausen, 1991), self-efficacy in obtaining the desired outcome (the relationship) is usually a component of goal pursuit, ensuring that efforts will be continued to obtain the goal (e.g., DiPaula & Campbell, 2002). Further, individuals who pursue partners often believe that their self-worth is contingent upon obtaining relationships (Park, Sanchez, & Brynildsen, 2011). When they cannot reconcile with partners or are rebuffed, pursuers are left with high degrees of rumination (Davis et al., 2000). Empirical research investigating tenets of RGP theory in stalking has mostly been tested within two large cross-sectional surveys by Cupach, Spitzberg, Younghans, and Gibbons (2006), and Spitzberg, Cupach, Hannawa, and Crowley (2008), both showing that goal linkage and rumination were the most powerful predictors of all forms of unwanted pursuit. Both studies also demonstrated that, among persons who were rejected, depth of anger, distress, and sadness also contributed to greater unwanted pursuit, reflecting failures of self-regulation following distress.

The strength of the RGP model is in the complexity and specificity of the cognitive processes delineated. The RGP model incorporates break-up initiator status,

suggesting that pursuers tend to be individuals who have been broken up with, and addresses individual differences in reactions to break-up (the degree of goal-linkage, ruminative factors). However, this model does not account for attachment (which has been consistently related to unwanted pursuit behavior, e.g., Dutton & Winstead, 2006; Meloy, 1996; Patton et al., 2010; Tonin, 2004; Wigman et al., 2008), and also does not consider alternative motives for unwanted pursuit (e.g., anger, control, dominance, revenge; e.g., Logan & Walker, 2009).

There is also evidence that the relational goal pursuit model could be related to other theories. Specifically, in addition to a relationship between relational goal pursuit variables and being the recipient (compared to initiator of the break-up), as mentioned above (see Investment Model Theory), greater investment and commitment have been found to be associated with greater post-break-up negative affect and rumination (De Smet et al., 2012).

Attachment theory. Attachment theory (Ainsworth, Behler, Waters and Wall, 1978; Bowlby, 1973) has been applied to UPBs due to the seeming dependency and instability on others characteristic of those with insecure attachments. According to attachment theory, when children's bonding with caregivers is disrupted (e.g., due to abuse or abandonment), anxious attachments are formed in subsequent relationships, characterized by dependency and anxiety about maintaining relationships with others. Anxious attachment is associated (r 's = .21- .38) with increased real-life unwanted pursuit behavior across college and clinical/forensic samples (e.g., Dutton & Winstead,

2006; Dye & Davis, 2003; Langhinrichsen-Rohling, 2006; Meloy, 1996), and with cyber UPB perpetration in a college sample (Menard & Pincus, 2011).

However, attachment theory is an intraindividual theory that does not take into account relational factors (e.g., satisfaction with the relationship, quality of alternatives), or other motivations (e.g., need for control; Davis et al., 2000; Dye & Davis, 2003), which have been found to be mediating or moderating factors between attachment and unwanted pursuit, and which might more proximally explain UPB. Therefore, the explanatory power provided by attachment theory may be due to its relationships with other variables. For example, attachment has been associated with increased investment and commitment in a relationship (i.e., investment model theory; De Smet et al., 2012), desires to control a partner (i.e., coercive control theory; Davis et al. 2000, Dye & Davis, 2003), and increased rumination, emotional flooding and desire to reunite following relationship dissolution (i.e., aspects of relational goal pursuit theory; Cupach & Spitzberg, 2004). Attachment can therefore be examined as a variable that exerts indirect effects on unwanted pursuit behavior through these other constructs.

Other Variables Associated with UPB Perpetration

Several variables could be expected to underlie any of the previous theories. Following research indicating that anxious attachment and possessiveness are associated with decreased self-regulation, Davis and colleagues (2012) assert that self-regulation likely underlies various models of UPBs. Self-regulation, the ability to delay gratification in the interest of long-term goals, has been implicated in UPBs through experimental research indicating a relationship between depleted self-control and intentions to engage

in UPBs (Sinclair, Ladny, & Lyndon, 2011). Self-regulation, in the form of low trait self-control or difficulties with emotion regulation, may be related to attachment and/or components of relational goal pursuit theory, and its direct and indirect effects through other variables/models should be examined.

Drug and alcohol use have not been studied extensively in association with UPBs, with the exception of findings that alcohol expectancies are associated with women's cyber UPBs (Menard & Pincus, 2011). However, drug and alcohol use have been found to be associated with deficits in self-control (e.g., Ford & Blumenstein, 2013) and with other forms of intimate partner violence (e.g., Stuart et al., 2009) and could therefore be expected to predict coercive control. In addition, through its relationships with rumination and interaction with investment model variables in predicting UPBs in previous research, the extent to which one is the recipient of the break-up (compared to initiator) should be included in a model to explain UPBs.

Current Study

The current study sought to provide a comprehensive study of theories to predict both "real-life" and cyber UPB from the perspective of the perpetrator, including assessing 1) the investment model, 2) coercive control, 3) relationship goal pursuit, and 4) the influences of self-regulation (including control and emotion regulation). The current study focused exclusively on partner UPBs, as research indicates that partner unwanted pursuit is conceptually different than non-partner and stranger stalking, in degree of dangerousness, types of psychopathology implicated, and motivations for pursuit (Logan & Walker, 2009).

Hypotheses

It was hypothesized that each theory would predict UPB perpetration. Specifically, the first hypothesis was that the relationship between investment, satisfaction, and quality of alternatives on UPB perpetration would be mediated by commitment (investment model theory; Figure 1). The second hypothesis was that relational goal pursuit variables would predict UPB perpetration, including rumination, goal-linking, self-efficacy in maintaining the relationship, and relationship-contingent self-worth (Figure 2). Third, in accordance with coercive control theory, the relationship between possessiveness and unwanted pursuit behaviors would be mediated by DV perpetration during the relationship (i.e., physical, psychological, and sexual DV perpetration; Figure 3). For the fourth hypothesis, we expected that difficulties with self-control (i.e., emotion regulation, dispositional difficulty with self-control, increased substance use) would be associated with UPB perpetration, and preoccupied (anxious) attachment and being the recipient of a break-up would be associated with increased UPB through the other variables. Finally, it was hypothesized that an integrative model combining the predictors and theories would predict real-life and cyber unwanted pursuit perpetration (hypothesis 5).

Figure 1. *Investment Model*

Figure 2. *Relational Goal Pursuit Theory*

Figure 3. *Coercive Control Theory*

Method

Participants

Participants were 1,348 undergraduate students recruited through the psychology research participant pool in introductory psychology classes who were 18 years or older. Despite study descriptions explaining that eligible participants must have been in a relationship that ended within the past 3 years, 113 participants stated that they did not meet this criterion, and their participation was terminated at that time (resulting in 1,235 participants). Of these participants, 27 were missing more than 75% of the data, resulting in a sample of 1,208 participants. An additional 52 participants were missing data on one or more variables of interest, and were excluded from the final analyses in order to provide consistency across the analyses, resulting in a final sample of 1,156 participants. Participants missing data did not significantly differ from the 1,156 participants with complete data on any of the predictor or outcome variables.

Among the 1,156 participants, 33.1% were male ($n = 383$), 66.7% were female ($n = 771$), and 0.2% identified as transgendered ($n = 2$). The majority of participants were Non-Hispanic Caucasian (89.0%, $n = 1023$), 3.4% ($n = 39$) indicated that they were African-American, 2.7% ($n = 31$) identified as Latino/Hispanic, 1.4% identified as Asian/Pacific Islander, 2.8% ($n = 32$) indicated that they were bi/multiracial, and 1.3% ($n = 15$) selected “Other”. The majority of participants identified as heterosexual (95.6%, $n = 1101$), 2.2% ($n = 25$) identified as bisexual, 1.6% ($n = 19$) identified as homosexual/gay or lesbian, and 0.9% ($n = 11$) selected “Other”. The majority of the participants were in their first year of college (56.3%, $n = 651$), 25.3% were in their second year of college (n

= 292), 11.1% in their third year ($n = 128$), and 7.3% ($n = 85$) were in their fourth year of college or more. With regard to income, 47.1% ($n = 544$) reported that their parents' yearly income was greater than \$75,000, 33.3% ($n = 387$) reported that their parents' year income was less than \$75,000, and 19.5% ($n = 225$) indicated that they did not know their parents' yearly income.

Measures (See Table 1 for Descriptive Statistics; See Appendix A for Detailed Psychometric Information)

Self control.

Emotion regulation. The Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004), is a 36-item measure that assesses emotion regulation, which involves modulation of emotional arousal, awareness, understanding and acceptance of emotions, and the ability to act in desired ways regardless of emotional state. Items were scored on a scale from 0 (*Almost Never, 0-10% of the time*) to 4 (*Almost Always, 91-100% of the time*), resulting in a summed scale, with higher scores indicative of greater difficulty with emotion regulation. Example items include, "I experience my emotions as overwhelming and out of control," and "When I'm upset, I have difficulty getting work done." In the current study, internal consistency was high (Cronbach's $\alpha = .94$).

Dispositional self-control. The 23-item Grasmick, Tittle, Bursik and Arneklev (1993) measure of dispositional self-control was used to measure trait self-control. Items are scored on a 4-point scale from 0 (*strongly agree*) to 3 (*strongly disagree*); however, the items were reverse-scored in the current study such that higher scores indicated higher difficulties with self-control. Sample items (reverse scored) include, "I often act

on the spur of the moment without stopping to think,” and “When things get complicated, I tend to quit or withdraw.” For the current study, the internal consistency was high (Cronbach’s $\alpha = .88$).

Attachment. The Experiences in Close Relationships-Short Form (ECR-SF) questionnaire is a 12-item self-report measure designed to assess adult attachment (Wei, Russell, Mallinckrodt, & Vogel, 2007), based on the original Experiences in Close Relationships measure (Brennan, Clark, & Shaver, 1998). Responses options range from 1 (*disagree strongly*) to 7 (*agree strongly*), and scores are summed, with higher scores indicating a more dysfunctional attachment style. The ECR measure has undergone confirmatory factor analyses, identifying two higher-order factors: Anxious attachment and Avoidant attachment styles, each including 6 items (Wei et al., 2007). In the current study, only the Anxious attachment subscale was used. Sample items include, “My desire to be very close sometimes scares people away,” and “I need a lot of reassurance that I am loved by my partner.” Respondents were asked to indicate how they experience romantic relationships generally; not only referring to their most recent relationship, but also to prior romantic relationships as a relational trait. The Cronbach’s α for the current sample was .76.

History of unwanted pursuit behaviors.

“Real-life” unwanted pursuit. The Unwanted Pursuit Behavior Inventory (UPBI; Palarea & Langhinrichsen-Rohling, 1998) is a 26-item measure used to assess presence, frequency, impact, and motivations underlying unwanted pursuit behavior perpetration that ranges from mild (items 1-13) to severe (items 14-26). Palarea and Langhinrichsen-

Rohling (1998) developed this measure via review of empirical literature, as well as by examining behaviors endorsed by stalkers investigated by the Los Angeles Police Department's Treatment Management Unit. Items are reported on a 5-point scale, 0 (*never*), 1 (*once*), 2 (*twice*) 3 (*3-9 times*), and 4 (*10 or more times*).

The UPBI has demonstrated good psychometric properties. Across two college samples, the total score has achieved good internal consistency (Langhinrichsen-Rohling et al., 2000). See Appendix B for the factor analysis from the current sample.

Cyber unwanted pursuit. Cyber unwanted pursuit was measured using the Controlling Partners Inventory-Self (CPI-S; Burke, Wallen, Vail-Smith & Knox, 2011). This measure includes 18 items about whether they have performed a variety of controlling or harassing behaviors via electronic means on a 5-point scale from “never” to “4 or more times” since the break-up with their former romantic partners. Following a principal components factor analysis, the researchers obtained 4 factors, accounting for 58.3% of the common variance: 1) photos/camera/Spyware to monitor or post embarrassing photos of partner (8 items), 2) excessive communication (calls/texts) (4 items), 3) threatening calls, texts and emails (3 items), 4) checking on partner by using his/her password, checking cell call or email histories (3 items). The measure showed no significant differences by race/ethnicity. An example item is: “Did you send threatening texts to him/her?” See Appendix B for factor analysis from the current sample.

Coercive control.

Possessiveness scale. The Modified Possessiveness Scale (Dutton-Greene, 2004) is a modified version of Pinto and Hollandsworth's (1984) 21-item Possessiveness Scale

used to assess possessiveness by romantic partners in dating relationships. Items were measured on a 5-point scale with ratings from 1 (*never*) to 5 (*almost always or always*), and a summed score was produced, with higher scores indicative of high possessiveness during the relationship when it was still intact. Example items include, “I discouraged my partner from making new friends,” and “I did not like the idea of my partner going to a party if I could not be there, too.” In the current sample, Cronbach’s $\alpha = .89$.

History of physical, sexual, and psychological victimization and perpetration.

The Revised Conflict Tactics Scale (CTS2; Straus et al., 1996), the most widely used measure of intimate partner violence, was used to assess participants’ experiences of perpetration of Psychological Abuse (e.g., “I accused my partner of being a lousy lover”), Physical Abuse (e.g., “I punched or hit my partner with something that could hurt”) and Sexual Abuse (e.g., “I used force (like hitting, holding down, or using a weapon) to make my partner have sex”) in participants’ former relationships. Response options for each item are on a 6-point scale (ranging from “*Never*” to “*More than 20 times*”). Based on Straus and colleagues’ recommendations (1996), each of the response options were coded to the midpoints for the response categories (0 = 0; 1 = 1; 2 = 2; 3-5 = 4; 6-10 = 8; 11-20 = 15; >20 = 25). Each of the three forms of abuse (Psychological, Sexual, and Physical) were summed, with higher scores indicative of greater levels of that particular construct. Based on recommendations in the literature (Testa, VanZile-Tamsen & Livingston, 2005), psychological abuse was defined only using the severe items on the CTS2 because the majority of both men and women report experiencing incidents of moderate psychological aggression in relationships (White & Koss, 1991), as well as researcher

concerns that some of the moderate items (e.g., saying something to spite one's partner), may indicate arguing rather than abuse. In the current sample, Cronbach's α for the Sexual Abuse subscale was .74, for the Severe Psychological Abuse subscale .67, and for the Physical Abuse subscale .91.

Investment model variables. The Investment Model Scale (IMS; Rusbult, Martz & Agnew, 1998) is a 25-item measure that was used to assess investment model variables, including Satisfaction (e.g., "I feel satisfied with our relationship"), Quality of Alternatives (e.g., "My alternatives to our relationship are close to ideal (dating another, spending time with friends or on my own, etc)"), Investment ("I have put a great deal into our relationship that I would lose if the relationship were to end"), and Commitment ("I am committed to maintaining my relationship with my partner"). Response options on the IMS range from 0 (*Do not agree at all*) to 8 (*Agree Completely*). Each of the four variables was summed, with higher scores indicative of greater levels of that particular construct. In the current study, Cronbach's α for the Investment subscale was .74, for the Commitment subscale, .86, for the Satisfaction subscale, .94, and for the Quality of Alternatives subscale, .84.

Relational goal pursuit.

Rumination. Rumination about the target was measured by a 24-item measure (Cupach, Spitzberg, Bolingbroke & Tellitocci, 2011). Items are assessed on a 7-point scale from 1 (*not at all*) to 7 (*very much*). Sample items included, "The more I tried to stop thinking of this person, the more I thought about him/her" and "I thought about this

person constantly.” A summed score was created, with higher scores indicating greater rumination about the target; for the current sample, Cronbach’s $\alpha = .97$.

Goal-linking. Goal linking was assessed using an 8-item measure (Cupach, Spitzberg, Bolingbroke & Tellitocci, 2011). Items were measured on a 7-point scale from 1 (*not at all agree*) to 7 (*very much agree*), and summed, with higher scores indicative of greater goal-linking with the target. Sample items include, “I felt like our destinies were linked,” and “I determined that only this person could help me achieve my life’s goals.” In the current sample, Cronbach’s $\alpha = .92$.

Self-efficacy. Self-efficacy in relationship pursuit was assessed using an 8-item measure (Cupach, Spitzberg, Bolingbroke & Tellitocci, 2011), measuring individuals’ beliefs that their relational goals would be attained. Items are measured on 7-point scale from 1 (*not at all*) to 7 (*very much*), and a summed score created, with higher scores indicative of greater relationship pursuit self-efficacy. Sample items include, “I still feel capable of getting back into a relationship with this person” and “I was confident I could get my ex-partner to reconcile with me.” In the current sample, Cronbach’s $\alpha = .76$.

Relationship-contingent self-worth. Relationship-contingent self-worth was measured using a 4-item scale developed by Sanchez and Kwang (2007). Participants rated their agreement with each statement on a 7-point scale from 1 (*strongly disagree*) to 7 (*strongly agree*), and summed, with higher scores indicative of greater relationship-contingent self-worth. The four statements were: “When I have a significant other (i.e., a boyfriend or girlfriend), my self-esteem increases”; “I feel worthwhile when I have a significant other (i.e., boyfriend or girlfriend)”; “When I do not have a significant other

(i.e., boyfriend or girlfriend), I feel badly about myself”; and “My self-esteem depends on whether or not I have a significant other (i.e., boyfriend or girlfriend.” In the current sample, Cronbach’s $\alpha = .74$.

Substance use.

Alcohol use. The Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, de la Feunte & Grant, 1993) was used to assess problematic drinking behaviors. Three items assess frequency of drinking (e.g., “How often do you have a drink containing alcohol”), with five items assessing indicators of alcohol dependence, (e.g., “How often during the last year have you failed to do what was normally expected from you (e.g., go to class, work, etc.) because of drinking?”), and the remaining two items assessing personal harm as a result of drinking (i.e., “Have you or someone else been injured as a result of your drinking), and suggestions from others to cut down on drinking (i.e., “Has a relative or friend or a doctor or another health worker been concerned about your drinking or suggested you cut down?”). The items are scored on a 0-4 scale, and summed to create a total score. In the current study, Cronbach’s $\alpha = .82$.

Substance use. Use of addictive substances was assessed using 6 drug-specific items from the Drinking and Drug Habits Questionnaire (DDHQ; Collins, Parks, & Marlatt, 1985). Participants were asked to report how much they have used 6 different drugs (i.e., marijuana, opiates, “club” drugs, cocaine, amphetamines, and inhalants) on a 4-point scale from 1 (*never used*) to 4 (*regularly use*). Total drug use was summed; Cronbach’s $\alpha = .69$.

Procedure

Participants were recruited from the psychology research participant pool. Their participation was anonymous. Following informed consent, participants completed the study survey, titled “OU Students’ Break-Up Experiences” online through the Qualtrics data collection system. They were granted one credit for their participation. Following participation, participants were directed to a page displaying the debriefing form, which included a list of counseling centers, along with their phone numbers. Participants were also given the telephone numbers and email addresses of the faculty supervisor and principal investigator.

Analysis Plan

Correlations among variables of interest are shown in Table 2. Given that each form of UPB had two subscales, 4 sets of analyses were performed for each hypothesis. However, only variables correlated .2 or greater with the DV were included in the analyses. Although an initial cutoff of .3 was desired, this resulted in inclusion of only 1 or 2 correlates of each DV. Therefore, as this project was an initial comprehensive examination of variables related to UPBs, a more inclusive criterion of .2 or above was established for inclusion into multivariate models (regressions and the final structural equation models). Normality of the variables was assessed prior to analyses; rumination, drug and alcohol use were moderately skewed and square root transformed prior to analysis. In addition, each of the 4 UPB forms was severely skewed, and these variables were log-transformed for the analyses. For models in which there was simple mediation, the PROCESS macro (Hayes, 2013) was employed. This method allows the researcher to

test the indirect effect of investment, satisfaction, and quality of alternatives on unwanted pursuit perpetration through commitment, enabling examination of mediation as described by Baron and Kenny (1986), as well as bootstrapping to assess the influence of indirect effects while protecting against Type II error. For models in which there were latent variables, Amos 18 (Arbuckle, 2007) was used in order to perform structural equation modeling. Well-fitting models should have a root mean square error of approximation of .06 or lower with narrow 90% confidence intervals, whereas for the Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI), values of .95 and higher are desirable (MacCallum, Browne, & Sugawara, 1996; Tabachnick & Fidell, 2007). For nested models, the Aikake's Information Criterion (AIC) and Consistent Aikake's Information Criterion (CAIC) were used, in which smaller values are considered more desirable (Tabachnick & Fidell, 2007).

Results

Prevalence of Real-Life Unwanted Pursuit and Cyber Unwanted Pursuit

Frequencies and descriptive statistics of the prevalence of real-life and cyber unwanted pursuit are shown in detail in Appendix B. To summarize, 86.1% of participants indicated that they had performed a real-life unwanted pursuit act two or more times, and 48.5% indicated that they had performed a cyber-unwanted pursuit act two or more times. Threatening acts were much less common—6.9% of participants endorsed 2 or more real-life threatening behaviors, and 2.7% of participants endorsed 2 or more cyber threatening behaviors. Finally, 39.9% of the sample indicated that they had perpetrated 2 or more real-life pursuit behaviors as well as 2 or more cyber pursuit behaviors. There were no participants who endorsed real-life or cyber threatening pursuit behaviors in the absence of the excessive contact/checking forms of pursuit.

Hypothesis 1

Hypothesis 1, that the investment model theory would predict unwanted perpetration, with commitment mediating the relationship between each of the other investment model variables (i.e., investment, satisfaction, and quality of alternatives) and unwanted pursuit perpetration, was assessed using the PROCESS macro for SPSS (Hayes, 2013). As none of the variable were found to be correlated $r = .2$ or higher with real-life or cyber threatening UPBs (see Table 2), no PROCESS models were performed to predict these forms of UPB, and the investment model variables are presumed to be inadequate predictors of these behaviors. By contrast, investment in the relationship and commitment to the relationship were each associated with increased real-life unwanted

contact/checking behaviors and cyber excessive contact/checking behaviors. Therefore, PROCESS results for real-life unwanted contact/checking UPBs and cyber excessive contact/checking UPBs are shown in Figures 4 and 5 and Table 3. For the PROCESS models predicting real-life unwanted contact/checking UPBs and cyber excessive contact/checking UPBs, commitment and investment each had a significant and positive direct effect on perpetration of real-life unwanted contact/checking, with indirect effects of level of investment on real-life unwanted contact/checking behaviors through commitment. The relationships were such that increased investment was related to increased commitment, which was associated with increased real-life unwanted contact/checking behaviors. This model explained 6.8% of the variance in real-life unwanted contact/checking behaviors and 10.0% of the variance in cyber excessive contact/checking behaviors.

Hypothesis 2

Hypothesis 2, that the relational goal pursuit theory would predict unwanted pursuit perpetration, with goal-linkage, rumination, self-efficacy, and relationship-contingent self-worth all predictive of unwanted pursuit perpetration, was tested using 4 simultaneous logistic regressions and entering variables into the regressions that were significantly bivariately correlated with each outcome variable at $r = .2$ or above. There were no relational goal pursuit variables that met this criterion in predicting real-life or cyber threatening UPBs (see Table 2). However, rumination about the relationship and goal-linking were each associated with real-life and cyber unwanted contact/checking

behaviors. These variables were therefore included in regressions predicting each form of unwanted pursuit perpetration (Table 4).

When examining real-life unwanted contact/checking behaviors, results of the regression indicated that increased rumination was associated with significantly higher real-life unwanted contact/checking behaviors. However, in the presence of rumination, goal linking was no longer associated with real-life unwanted contact/checking behaviors. This regression explained 12.2% of the variance in real-life unwanted contact/checking behaviors.

Results of the regression of cyber excessive contact/checking behaviors on relationship goal pursuit variables reflected those of real-life unwanted contact/checking behaviors. Specifically, increased rumination was associated with increased cyber excessive contact/checking behaviors in the presence of goal-linking. However, goal-linking was not uniquely related to cyber excessive contact/checking behaviors in the presence of rumination. The regression explained 19.2% of the variance in cyber excessive contact/checking behaviors.

Hypothesis 3

Hypothesis 3 was that the coercive control theory would predict unwanted pursuit perpetration, with psychological, physical and sexual violence during the relationship mediating the relationship between possessiveness during the relationship and unwanted pursuit perpetration. Correlations of $r \geq .2$ were considered significant, and when mediation could be tested (i.e., possessiveness and one or more dating violence variables were significantly associated with unwanted pursuit), structural equation modeling was

used to assess mediation using a latent variable of abuse variables (i.e. psychological, physical and/or sexual when significant). If mediation could not be tested, correlations and linear regression were performed.

With regard to real-life unwanted contact/checking behaviors, increased severe psychological DV perpetration during the relationship was correlated with increased real-life unwanted contact/checking behaviors following the relationship (see Table 2). However, none of the other coercive control variables were correlated with real-life unwanted contact/checking behaviors at $r = .2$ or higher, and a regression was not performed.

By contrast, all four coercive control variables were significantly correlated with real-life threatening unwanted pursuit behaviors. A structural equation model testing this relationship was a good fit to the data, $\chi^2(4) = 9.82$, $p = .044$, RMSEA = .035 (90% CI = .005-.064), CFI = .995, TLI = .988, and is presented in Figure 6 and Table 5. In the model, the latent variable of greater DV during the relationship (including the indicators of physical, sexual, and psychological DV perpetration) was directly associated with increased real-life threatening UPBs following the relationship. In addition, as hypothesized, there was an indirect effect of possessiveness on real-life threatening UPBs through DV perpetration, such that greater possessiveness was associated with increased DV during the relationship, which was related to greater real-life threatening UPBs following the relationship. However, there was no direct effect of possessiveness on real-life threatening UPBs. The variables accounted for 30.0% of the variance in real-life threatening UPBs.

Cyber excessive contact/checking behaviors were bivariately associated with increased psychological DV perpetration, increased physical DV perpetration, and increased possessiveness, but unrelated to sexual DV perpetration. The structural equation model (Figure 7, Table 6), was an excellent fit to the data, $\chi^2(1) = 0.21$, $p = .646$, RMSEA = .000 (90% CI = .000-.060), CFI = 1.00, TLI = 1.006. In the model, greater possessiveness and the latent variable of greater DV during the relationship (including the indicators of physical and psychological DV perpetration) were each directly associated with increased cyber excessive contact/checking behaviors following the relationship. In addition, as hypothesized, there was an indirect effect of possessiveness on cyber excessive contact/checking behaviors through DV perpetration, such that greater possessiveness was associated with increased DV during the relationship, which was related to greater cyber excessive contact/checking behaviors following the relationship. The variables accounted for 14.4% of the variance in cyber excessive contact/checking behaviors.

Finally, cyber threatening UPBs were associated with all three forms of DV perpetration, but not with possessiveness. A regression combining these variables (Table 7) demonstrated that all three forms of DV perpetration during the relationship were significantly associated with increased cyber threatening UPBs following the relationship. The model accounted for 19.9% of the variance in cyber threatening UPBs.

Hypothesis 4

Hypothesis 4 stated that relationship and individual perpetrator characteristics would be related to unwanted pursuit perpetration. Specifically, it was hypothesized that

the following variables would be related to unwanted pursuit perpetration: break-up initiator status (4a), anxious attachment (4b), emotion regulation (4c), dispositional self-control (4d), and alcohol and drug use (4e). Correlations in Table 2 were examined. Consistent with the previous hypotheses, only those correlations of $r \geq .2$ were considered significant and discussed herein (a complete discussion of correlations can be found in Appendix C).

Contrary to hypotheses, there were few significant relationships between these predictors and unwanted pursuit. Break-up initiator status (4a), emotion regulation (4c), and alcohol and drug use (4e) were not significantly associated with any form of unwanted pursuit perpetration. Anxious attachment was associated with increased cyber excessive contact/checking behaviors ($r = .25$) only (4b), and greater dispositional difficulty with self-control was associated with significantly higher real-life threatening UPBs ($r = .23$) only.

Hypothesis 5

In order to achieve the proposed study's ultimate aim, to attempt to fit an integrated model as suggested in Hypothesis 5, the integrated model was built based on significant predictors from Hypotheses 1-4, and preliminary integrated models, including modifications from the testing of these preliminary models (see Appendix D for these models). Most relationships found in the preliminary models were consistent with the outcomes of hypotheses 1-4; however, a modification made across the real-life and cyber contact/checking UPB models was the inclusion of an indirect effect of investment model variables (i.e., investment and/or commitment) and coercive control variables (i.e.,

possessiveness and DV) on unwanted pursuit through rumination. Models were run in AMOS 18 (Arbuckle, 2009) using maximum-likelihood estimation. In order to test indirect effects, bootstrapping was performed with 95% bias-corrected confidence intervals.

Based upon the results of the previous models indicating that there were similar correlates of the “minor” forms of pursuit (real-life unwanted contact/checking and cyber excessive contact/checking UPBs) and “severe” forms of pursuit (real-life and cyber threatening UPBs), a model was attempted that included two latent variable DVs, one for these minor forms (Contact/Checking UPBs) and one for the more severe forms (Threat/Surveillance UPBs). All significant paths from the previous models were included. As it was hypothesized that the contact/checking and threatening UPB forms would be related, the model was tested with the directional arrow pointing each way. First, the model was tested with a unidirectional path from Threatening UPBs to Contact/Checking UPBs. This model was a good fit to the data, $\chi^2(53) = 244.82$, $p < .000$, RMSEA = .056 (90% CI = .049-.063), CFI = .954, TLI = .932, AIC = 320.82, CAIC = 550.83. Second, the model was tested with a unidirectional path from Contact/Checking UPBs to Threatening UPBs. This model was also a good fit to the data, $\chi^2(53) = 263.52$, $p < .000$, RMSEA = .059 (90% CI = .052-.066), CFI = .949, TLI = .925, AIC = 339.52, CAIC = 569.524. However, the first model, (Figure 8, Table 8) will be described here, as it was of superior fit as demonstrated by a smaller value on the consistent Aikake’s information criterion (CAIC; 550.83 compared to 569.52) as well as the large χ^2 difference ($\Delta\chi^2(0) = 18.7$). The second model can be found in Appendix E. Specifically,

consistent with coercive control theory, greater DV during the relationship was associated with increased threatening UPBs following the relationship. Additionally, consistent with hypotheses and coercive control theory, possessiveness had an indirect effect on threatening UPBs through DV, such that greater possessiveness was associated with greater DV, which was associated with increased threatening UPBs. Greater difficulty with self-control was indirectly associated with increased threatening UPBs through possessiveness and DV perpetration, and anxious attachment was indirectly associated with increased threatening UPBs through the combined variables (self-control, possessiveness and DV perpetration). By contrast, in examining the variables associated with contact/checking UPBs, possessiveness during the relationship (coercive control theory), rumination following the relationship (relational goal pursuit) and threatening UPBs each had direct effects on contact/checking UPBs, such that increased possessiveness during the relationship, increased rumination following the relationship, and increased threatening UPBs were each associated with increased contact/checking UPBs. In contrast to the threatening UPBs, prior DV perpetration was not directly associated with contact/checking UPBs, but was indirectly associated with contact/checking UPBs through its relationship with increased threatening UPBs and greater rumination following the relationship. In addition, in contrast to threatening UPBs, greater investment and commitment (investment model variables) were indirectly associated with contact/checking UPBs through their relationship with greater rumination following the relationship. Finally, similar to UPB threatening behaviors, possessiveness,

self-control, and anxious attachment were indirectly associated with unwanted contact/checking UPBs.

Discussion

The purpose of the present study was to examine the utility of three theories in explaining real-life and cyber unwanted pursuit perpetration following relationship dissolution. This study was novel in that it attempted to examine similarities and differences in cyber and real-life UPB from the perpetrator's perspective, assessed multiple theories, and attempted to integrate and combine these theories to best explain UPBs. When considering a threshold for unwanted pursuit perpetration of 2 or more behaviors used in previous research, 88% of the sample met this threshold for either cyber or real-life UPBs, with nearly all of these individuals (86% of the sample) having committed 2 or more real-life pursuit behaviors, and approximately 49% having performed 2 or more cyber unwanted pursuit behaviors. In addition, approximately 12% of the sample endorsed that they had perpetrated at least one real-life threatening UPB, such as threatening to harm or kill the former partner, and about just over 4% endorsed having engaged in at least one cyber threatening UPB, such as sending threatening emails or using GPS to track the former partner. The high frequency of these behaviors was broadly in line with prior research using these measures, which suggests that pursuing a partner following a break-up is, to some degree, normative behavior within a college sample. For example, Langhinrichsen et al. (2000) found that 99.2% of undergraduates endorsed engaging in at least one real-life unwanted pursuit behavior and 5% endorsed one of the threatening behaviors using the Unwanted Pursuit Behaviors Inventory; in the current study, approximately 91% of participants endorsed engaging in at least one real-life unwanted pursuit behavior, with 12% having engaged in at least one of the

threatening behaviors. Although Burke et al. (2011) do not report an overall percentage of individuals who engaged in any cyber UPBs, frequencies for individual items varied somewhat from the current study. For example, 52% made an excessive number of phone calls in Burke et al, compared to 14% in the current study. However, the same percentage of participants (52%) monitored their partner's Facebook site in Burke et al. (2011)'s study, and in the current study.

Consistent with previous research, results of the current study indicate that, whereas the correlation between type of UPBs (i.e., contact/checking and threatening forms) within each modality are small (.24 between real-life pursuit and real-life threatening behaviors; .25 between cyber excessive contact/checking and cyber threatening behaviors), correlations between the same types of behaviors across modalities are larger (.44 between real-life and cyber unwanted contact/checking behaviors; .47 between real-life and cyber threatening behaviors). This correlation between real-life and cyber threat (.47) is very close to the .46 correlation between the severe real-life and cyber UPBs found by Spitzberg and Hoobler (2002), strengthening previous assertions that more severe forms of unwanted pursuit may be similar in nature, despite the medium through which they are perpetrated.

Further, consistent with this notion that type of pursuit (unwanted contact/checking or threatening behaviors), not the modality by which pursuit occurs (real-life or electronically) is more similar, the predictors and theories which appear to be useful in understanding types of UPB are consistent across modality. Specifically, results of the current study suggest that, across modalities, real-life and cyber

unwanted/excessive contact and checking behaviors were predicted by increased rumination about the former partner and, indirectly, some of the investment model variables (i.e., investment in and commitment to the relationship), whereas more threatening UPBs (across modality) were best explained by coercive control theory (i.e., possessiveness and prior relationship dating violence perpetration) and difficulties with self-control. These results also suggest that different types of pursuit might be motivated by different desires. For example, although some pursuers may be motivated by desires to control or even harm their former partners (i.e., coercive control theory) and to continue a pattern of violent and aggressive behaviors during the relationship, other pursuers may be motivated by love and commitment (Sinclair & Frieze, 2000), consistent with investment model theory, or desires to rekindle the relationship or maintain contact with the former partner (Dutton & Winstead, 2006), such as in relational goal pursuit theory. Indeed, if the desire were to maintain the relationship, threatening to harm or kill a former partner would not be conducive to this goal. Rather, excessive messages, gifts, and other forms of contact are consistent with the presentation of someone who is highly invested in and committed to the relationship and wishes (perhaps desperately) to reconcile. That investment and commitment were not associated with threatening UPBs makes sense, given that the items on the Investment Model Scale discuss positive feelings toward one's partner (e.g., "I felt very attached to our relationship—very strongly linked to my partner," and "My relationships with friends and family members are complicated because my partner and I broke up"). These attributes, feeling linked to one's partner or having relationships altered with others, may not be characteristic of relationships in

which one person is using coercive control, as the perpetrator's behavior might be in anger rather than out of desire to rekindle the relationship.

Similar to the outcomes of De Smet et al., (2012) the relationship between investment, commitment, and rumination makes theoretical sense; as one ponders the target's role as central to their lives and the relationship as important, they are more likely to ruminate about the loss of the relationship when it terminates. In addition, the results of the current study are consistent with Dye and Davis' (2003) work, in which they found that real-life stalking was associated with "passion", a measure of "exclusiveness, sexual desire, enjoyment and attractiveness" of the relationship through the perpetrator's thoughts of anger and jealousy following the break-up. Similarly, in the current study, investment and commitment (similar to "passion") were associated with real-life and cyber unwanted/excessive contact through ruminative thoughts about the former partner. In the current study, rumination was moderately correlated with investment ($r = .45$) and strongly correlated with commitment ($r = .63$). However, due to the retrospective nature of this study, it is possible that their rumination impacts their self-reported investment and commitment during the relationship. Prospective studies are needed to investigate the relationship between investment and commitment measured during the relationship to rumination following the relationship.

It was also hypothesized that self-control could underlie any of the theories. In the current study, emotion regulation did not emerge as a significant predictor of either form of UPB. It could be that trait emotion regulation itself is not related to UPBs, but that rejection sensitivity, or difficulty regulating one's affect in the face of rejection, would be

more closely related to UPB. Indeed, in a laboratory task, Sinclair, Ladny and Lyndon (2011) found that rejection sensitivity interacted with self-control, such that when self-control was depleted in a laboratory task, individuals who received internal rejections (i.e., saying it was a characteristic of that individual they did not like, “It’s not me, it’s you”) were significantly more likely to report that they would consider using UPBs than individuals who received external rejection (e.g., “It’s not you, it’s me”, or “My parents don’t approve”, other outside reasons) or who had adequate self-control. Future research should attempt to assess rejection sensitivity and its interactions with perpetration of UPBs. In addition, it was surprising that rumination was the only relational goal pursuit variable associated with UPBs, as goal-linking, self-efficacy in maintaining the relationship, and relationship-contingent self-worth have predicted UPBs in previous research. However, whereas goal-linking was bivariately associated with real-life and cyber unwanted contact/checking behaviors in the current study, it was also highly correlated with rumination ($r = .65$). It is possible that the shared variance among rumination and goal-linking prevented a unique relationship between goal-linking and UPBs. Self-efficacy and relationship-contingent self-worth did not demonstrate strong relationships with the other relational goal pursuit variables. It could be that the extent to which one believes he/she can obtain a relationship are not as relevant to UPBs, as the UPBs may represent “last-ditch” efforts or desperate pleas to retain the relationship, rather than logical, goal-directed acts. In addition, the concept of relationship-contingent self-worth asks about the importance of relationships, generally, to one’s self-concept. It is possible that, generally, relationships are not critical to one’s self-concept, but that this

specific relationship with the former partner is part of one's self-concept. Future research should attempt to assess more specific relationship-contingent self-worth.

Interestingly, that the model fits the data better with the path from Threat to Pursuit than vice versa suggests that individuals who engage in threatening behaviors are using all forms of contact in their campaign of pursuit toward a former partner. It is possible that, consistent with a coercive control theory (Dutton & Goodman, 2005), these partners are making excessive contacts with a different goal than those who engage only in checking/contact UPBs—to intimidate their former partners or to “keep tabs” on them in order to maintain their control. Future research is needed to examine, from the perspectives of perpetrators, their motivations for perpetrating UPBs.

Despite the contributions of this study, it is not without its limitations. Most importantly, the cross-sectional design limits the ability to determine the temporal sequence of events that predict UPBs. For example, it is possible that UPBs affect rumination (e.g., with failed attempts to contact or reconcile with the former partner, rumination increases). In addition, the retrospective nature of the study might affect accurate recall of aspects such as who initiated the break-up or how invested or committed one was to the relationship. Whereas the current study attempted to limit recall issues by assessing only break-ups within the past 3 years (with an average of 16 months since the break-up in the current sample and 48% of break-ups in the past year), future research should attempt to replicate these results with longitudinal samples with more recent break-ups. In addition, the current researcher only assessed perpetration of UPBs against a partner following a relationship. Whereas the majority of UPB

perpetration occurs against those with whom one has had an intimate relationship (e.g., Tjaden & Thoennes, 1998), there is some evidence that UPBs occur even during a relationship (in the form of jealous and controlling behaviors; Tjaden & Thoennes, 1998), and the occurrence of these behaviors during the relationship as predictors of the behaviors following the relationship should be assessed, as well as perpetration of cyber and real-life UPBs against strangers or non-romantic acquaintances. Specifically, one might anticipate that contact/checking UPBs occur with acquaintances with whom one is interested in beginning a new relationship. With the availability of social media and prevalence of online dating, it is possible a great deal of pursuit of new relationships occurs in the cyber realm, meriting further study. In addition, whereas it is a strength of the current study that participants were asked about their own perpetration behaviors (rather than from the perspective of victims), this approach is not without limitation. For example, perpetrators of UPBs might have limited insight into their behaviors, and it is difficult for researchers to ascertain whether perpetrators would define their behaviors as “excessive.” In addition, whereas the measure of cyber UPBs in the current study used the term “excessive,” the measure of real-life UPBs used less subjective language (i.e., “unwanted” or “unsolicited” behaviors). Rates of real-life UPBs were higher than cyber UPBs in the current study and rates of cyber UPBs were somewhat inconsistent with previous estimates of this behavior; it is possible that the difference in wording between questionnaires led to interpretations of the CPI items as more severe. However, in the current study, 10.5% of participants endorsed engaging in 20 or more real-life unwanted pursuit behaviors. Whereas “unsolicited” behaviors may not constitute unwanted pursuit

when occurring very infrequently (e.g., showing up in places your former partner might be once or twice), 20 or more unsolicited behaviors could be reasonably expected to become increasingly unwanted. Future research examining perpetration should attempt to use similar language across the cyber and real-life unwanted pursuit measures, assess for similarities and differences in those who experience frequent unwanted contact compared to threatening pursuit behaviors and the level of fear, threat, and distress experienced by each, and should also assess both members of a relationship dyad in order to measure both the behavior on the part of the potential perpetrator as well as the impact that it has on the potential victim. This method would allow researchers to better understand which behaviors, in which specific contexts, are seen as excessive, unwanted, or distressing to victims.

There are many implications of this study for future research, clinical work and programming efforts, particularly if the results are replicated in longitudinal studies. Future research should also attempt to further integrate other theories in the stalking literature as well as in the broader violence literature. For example, the theories in the current study did not examine relationship dynamics. One theory, control balance theory, states that deviant behaviors are a function of both deficits in control (i.e., being subjected to more control than one is able to exert) and surpluses of control (i.e., exerting more control than to what one is subjected), such that those with deficits are likely to engage in assault and defiance, and those with surpluses are likely to engage in exploitative acts (Tittle, 1995). Nobles and Fox (2013) found an effect of gender on control balance theory, such that surpluses are associated with stalking behaviors among

men and deficits are associated with stalking behaviors among women. This theory could interact with self-control (i.e., with depleted self-control these effects might be larger), or some of the coercive control constructs, and should be assessed in future integrative theory research. Further, whereas the current study did not find strong relationships among general problem drinking and substance use and UPBs, more proximal assessment of the relationship between alcohol and substance use and UPBs should be considered as a potentiating factor. For example, it is possible that individuals are more likely to pursue former partners when their inhibitions are lowered by drugs or alcohol (e.g., the phenomenon of “drunk dialing”). It is also possible that such contact is perceived differently by recipients of such contact. Similar to the manner in which alcohol often functions to mitigate perpetrator responsibility in sexual assault (Grubb & Turner, 2012), victims of UPBs might minimize unwanted or even threatening contact due to the perpetrator’s intoxication. In addition, future research is needed to understand the perpetrator’s perception of interest in the contact from the victim, including whether various responses (positive or negative) to their pursuit reinforce future pursuit efforts. Such information would be very helpful to provide to victims of UPBs.

With regard to clinical work and IPV programming targeting UPBs, the current study suggests that there are some pursuit behaviors following a relationship which are normative in an undergraduate sample. However, in order to attempt to predict more threatening UPBs, the results of the current study suggest that an examination of the history of violence might be useful, as increased psychological, physical and sexual perpetration, as well as possessiveness during the relationship, were associated with

increased threatening UPBs. Assisting individuals who have experienced break-ups who are having difficulties managing and coping with their frustrations and impulses could be an important step in preventing threatening UPBs. In addition, whereas individuals who are ruminative and invested in recently dissolved relationships are not as likely to perpetrate threatening UPBs, their rumination and potential dependency on the relationship is associated with increased contact/checking behaviors. Whereas not as obviously pernicious as threatening UPBs, victims do rate these behaviors as anxiety-provoking and frightening, even making them feel “sick” about the pursuit (Ngo & Paternoster, 2013), and, if replicated, the results of the current study might be helpful to victims in lessening their concerns about the likelihood of violence from these individuals. However, these behaviors are likely unhealthy for the perpetrators, and clinicians could assess for the extent of ruminative thought about former partners and inquire about the amount and types of contacts being made with former partners, assisting clients in healthy mourning of the desired relationship. The current study does not, however, support the idea of an obsessed erotomaniac portrayed in popular media who will resort to violent acts in the face of rejection; rather, individuals desperately in love with their former partners are more likely to irritate or annoy their former partners, whereas those who have had a previous violent relationship may be more likely to continue such violence.

In sum, some extent of unwanted pursuit following the termination of a relationship is common among college students. Results of the current study indicate that the type of behavior is more important than the modality of the behavior; that is,

threatening types of behaviors performed in different modalities (i.e., “real-life” or through technology) are more similar than are different types of behaviors expressed through the same modality (e.g., cyber excessive contact and cyber threatening behaviors). In addition, different variables best explain different forms of behavior, with behaviors of similar types associated with similar predictors (e.g., predictors of cyber excessive contact were similar to predictors of real-life unwanted contact/checking). The integrated model is an important contribution of the current study, as it can be used to tailor interventions to specific types of perpetrators and inform victims about potential “red flags” in relationships that could be expected to lead to greater risk of unwanted pursuit following relationship termination. For example, if ending a relationship characterized by dating violence, possessiveness and difficulties with self-control, one can anticipate a higher risk of threatening UPBs following the end of the relationship. By contrast, if ending a relationship where the partner is invested, commitment, and ruminative, these relationships may be more difficult to terminate once the partner is confronted with the prospect of losing his/her partner. Terminating “first loves” will always be an emotional grieving process for young adults. However, future work with young adults in understanding healthy relationships, including curbing dating violence and educating young adults that possessiveness and emotional dependency are not necessarily positive or indicative of “love” are critical in preventing behaviors that range from simply annoying to downright dangerous.

Table 1. *Descriptive Statistics of Continuous Variables of Interest*

Variable	Measure	Subscales	Possible Range	Observed Range	Mean (SD)	α
Real-Life Unwanted Pursuit	Unwanted Pursuit Behaviors Inventory (UPBI; Palarea & Langhinrichsen-Rohling, 1998)	Pursuit	0-40	0-40	9.40 (7.37)	.81
		Threat/Harm	0-48	0-48	0.67 (3.64)	.96
Cyber-Pursuit	Controlling Partners Inventory-Self (CPI-S; Burke, et al., 2011)	Excessive Contact/Excessive Contact/Checking	0-24	0-24	2.97 (4.23)	.76
		Threat/Surveillance	0-28	0-28	0.23 (1.67)	.94
Prior Relationship Violence Perpetration	Revised Conflict Tactics Scales for perpetration (CTS2-P; Straus et al., 1996)	Psychological	0-100	0-75	1.81 (6.53)	.67
		Physical	0-300	0-275	3.48 (15.46)	.91
		Sexual	0-175	0-105	1.67 (6.73)	.74
Possessiveness	Possessiveness Scale (Dutton-Greene, 2004)	N/A	23-115	23-97	49.22 (13.65)	.89
Investment Model Variables	Investment Model Scale (IMS; Rusbult et al., 1998)	Investment	0-40	0-40	19.17 (7.74)	.74
		Commitment	0-48	0-48	27.12 (11.52)	.86
		Satisfaction	0-40	0-40	24.33 (10.30)	.94
		Quality of Alternatives	0-40	0-40	28.43 (8.42)	.84

Table 1. *Continued*

Anxious Attachment	Experiences in Close Relationships Questionnaire-Short Form (ECR-SF; Wei et al., 2007)	Anxious Attachment Subscale	6-42	6-42	23.35 (6.96)	.76
Dispositional Self Control	Self Control Scale (Grasmick et al., 1993)	N/A	0-69	2-69	43.98 (10.63)	.88
Emotion Regulation	Difficulty in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004)	N/A	36-180	36-154	84.96 (21.92)	.94
Goal Linking	Goal Linking Questionnaire (Cupach, Spitzberg, Bolingbroke, & Tellitocci, 2011)	N/A	8-56	8-56	25.96 (13.04)	.92
Rumination	Rumination Questionnaire (Cupach, Spitzberg, Bolingbroke, & Tellitocci, 2011)	N/A	24-168	24-168	77.96 (41.05)	.97
Self-Efficacy in Relationships	Self-Efficacy Questionnaire (Cupach, Spitzberg, Bolingbroke, & Tellitocci, 2011)	N/A	8-56	8-56	30.06 (9.38)	.76
Relationship Contingent Self-Worth	Relationship Contingent Self-Worth Scale, (Sanchez & Kwang, 2007)	N/A	4-28	4-28	14.73 (4.61)	.74

Table 1. *Continued*

Alcohol Use	Alcohol Use Disorders Identification Test (Saunders, Aasland, Babor, de la Feunte & Grant, 1993)	N/A	0-40	0-33	8.73 (5.74)	.82
Drug Use	Drinking and Drug Habits Questionnaire (DDHQ; Collins, Parks, & Marlatt, 1985)	N/A	6-24	6-24	7.88 (2.45)	.69

Table 2. *Correlations among variables of interest*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1. Real-Life Contact/Check (log)	1	.24*	.44*	.16*	.16*	.17*	.16*	.20*	.17*	.12*	.15*	.13*	-.05	.21*	.25*	.35*	.24*	.14*	.09*	.16*	.11*	.16*
2. Real-Life Threat/Harm (log)		1	.21*	.47*	.16*	.23*	.07*	.37*	.46*	.30*	.23*	-.10*	-.08*	.10*	.02	.09*	.03	.05	-.03	.06*	.14*	-.06*
3. Cyber Ex. Contact/Check (log)			1	.25*	.18*	.12*	.25*	.28*	.27*	.14*	.26*	.05	-.08*	.26*	.30*	.44*	.29*	.10*	.15*	.18*	.12*	.14*
4. Cyber Threat (log)				1	.09*	.13*	.02	.30*	.38*	.38*	.19*	-.04	-.10*	.04	.01	.04	.03	.03	-.01	.06	.08*	-.06*
5. Diff. w/ Emotion Regulation					1	.42*	.48*	.20*	.22*	.20*	.37*	-.08*	-.23*	.20*	.17*	.32*	.22*	.04	.30*	.09*	.08*	.14*
6. Diff. w/ Self Control						1	.30*	.19*	.23*	.22*	.26*	.02	.03	.08*	.02	.13*	.08*	.09*	.11*	.26*	.21*	.02
7. Anxious Attachment							1	.14*	.12*	.08*	.36*	-.04	-.12*	.23*	.24*	.37*	.25*	.01	.36*	.07*	.08*	.18*
8. CTS Psycho-logical (log)								1	.60*	.38*	.30*	-.16*	-.04	.07*	.03	.19*	.04	.08*	.04	.15*	.13*	-.06
9. CTS Physical (log)									1	.45*	.28*	-.06*	-.09*	.17*	.11*	.16*	.12*	.10*	-.01	.13*	.14*	-.09*
10. CTS Sexual (log)										1	.17*	.03	-.05	.09*	.06	.14*	.10*	.07*	.05	.15*	.18*	-.02

Table 2. *Continued*[illegible]

*Significant at $p < .05$ or lower, (log) denotes log transformation (sqrt) denotes square root transformation, CTS = Conflict Tactics Scales, IMS = Investment Model Scales, RCSW = Relationship-Contingent Self-Worth, AUDIT = Alcohol Use Disorders Identification Test, DDHQ = Drinking and Drug Habits Question

Figure 4. *Mediation Model using Investment Model variables to predict Real-Life Unwanted Contact/Checking Behaviors*

Figure 5. *Mediation Model using Investment Model variables to predict Cyber Excessive Contact/Checking*

Table 3. *Mediational Model of Investment Model Theory on Unwanted Pursuit*

	Real-Life Unwanted Contact/Checking $F(2, 1153) = 42.05, p<.000, R^2=.068$		Cyber Excessive Contact/Checking $F(2, 1153) = 63.89, p<.000, R^2=.10$	
	$B (SE)$	95% CI		95% CI
Indirect Effect	0.01(0.001)***	0.004 - 0.01	0.01 (0.001)***	0.005 - 0.01
Total Effect of Investment	0.01 (0.002)***		0.01 (0.002)***	
Direct Effect of Investment	0.004 (0.002)*		0.06 (0.002)**	

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 4. *Simultaneous Linear Regression of UPBs on Relational Goal Pursuit Variables*

	B	SE B	<i>B</i>	<i>t</i>	<i>p</i>	<i>sr²</i>
Real-Life Unwanted						
Contact/Checking						
Goal Linking	0.001	0.001	.02	0.59	.557	.016
Rumination	0.06	0.01	.34	9.50	<.000	.262
$F(2,1153) = 81.56, p<.000, R^2 = .122$						
Cyber Excessive Contact/Checking						
Goal Linking	0.0001	0.001	.01	0.38	.707	.010
Rumination	0.07	0.01	.43	12.65	<.000	.334
$F(2, 1153) 138.62, p<.000, R^2 = .192$

Figure 6. *Coercive Control Model with Real-Life Threatening UPBs. Numbers in corners of endogenous variables are squared multiple correlations.*

Table 5. *Standardized Indirect, Direct and Total Effects of Coercive Control Model on Real-Life Threatening Behaviors*

Variable	Indirect		Direct		Total	
	<i>B (SE)</i>	95% CI	<i>B (SE)</i>	95% CI	<i>B (SE)</i>	95% CI
Possessiveness	.19 (.03)	.12-.26*	.04 (.03)	-.02-.11	.23 (.03)	.18-.28*
IPV	N/A	N/A	.53 (.06)	.37-.63*	.53 (.06)	.37-.63*

Figure 7. *Coercive Control Model with Cyber Excessive Contact/Checking Behaviors.* Numbers in corners of endogenous variables are squared multiple correlations.

Table 6. *Standardized Indirect, Direct and Total Effects of Coercive Control Model on Cyber Excessive Contact/Checking Behaviors*

Variable	Indirect		Direct		Total	
	<i>B (SE)</i>	90% CI	<i>B (SE)</i>	90% CI	<i>B (SE)</i>	90% CI
Possessiveness	.11 (.001)	.07-.16*	.15 (.03)	.08-.21**	.26 (.03)	.18-.31*
IPV	N/A	N/A	.30 (.05)	.21-.38*	.30 (.05)	.21-.38*

[illegible]

Figure 8. *Integrated Model with Latent Variables and Path from Threatening UPBs to Contact/Checking UPBs. Numbers in corners of endogenous variables are squared multiple correlations.*

Table 8. *Standardized Indirect, Direct and Total Effects of Final Integrated Model (Path from Threat to Pursuit)*

Effects on Pursuit	Indirect		Direct		Total	
Variable	<i>B (SE)</i>	90% CI	<i>B (SE)</i>	90% CI	<i>B (SE)</i>	90% CI
Self-Control	.11 (.02)	.08-.15*	N/A	N/A	.11 (.02)	.08-.15*
Anxious Attachment	.24 (.02)	.20-.29**	N/A	N/A	.24 (.02)	.20-.29**
Possessiveness	.15 (.02)	.10-.20*	.08 (.04)	.02-.16*	.23 (.04)	.16-.29*
Investment	.19 (.02)	.15-.22**	N/A	N/A	.19 (.02)	.15-.22**
IPV	.34 (.13)	.20-.66**	.002 (.15)	-.35-.19	.34 (.05)	.23-.43*
Commitment	.28 (.02)	.24-.34**	N/A	N/A	.28 (.02)	.24-.34**
Rumination	N/A	N/A	.52 (.03)	.47-.60**	.52 (.03)	.47-.60**
Threatening/Surveillance UPBs	N/A	N/A	.38 (.15)	.21-.69**	.38 (.15)	.21-.69**
Effects on Threat						
Self-Control	.21 (.03)	.14-.26*	N/A	N/A	.21 (.03)	.14-.26*
Anxious Attachment	.07 (.01)	.05-.10*	N/A	N/A	.07 (.01)	.05-.10*
Possessiveness	.24 (.03)	.18-.30*	N/A	N/A	.24 (.03)	.18-.30*
Investment	N/A	N/A	N/A	N/A	N/A	N/A
IPV	N/A	N/A	.76 (.05)	.62-.87*	.76 (.05)	.62-.87*
Commitment	N/A	N/A	N/A	N/A	N/A	N/A
Rumination	N/A	N/A	N/A	N/A	N/A	N/A

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Appendix A: Detailed Psychometric Information for Measures Used

Measures

Self control.

Emotion regulation. The Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004), is a 36-item measure that assesses emotion regulation, which involves modulation of emotional arousal, awareness, understanding and acceptance of emotions, and the ability to act in desired ways regardless of emotional state. High internal consistency has been achieved with the DERS (Cronbach's $\alpha = .93$; Gratz & Roemer, 2004). Items were scored on a scale from 0 (*Almost Never, 0-10% of the time*) to 4 (*Almost Always, 91-100% of the time*), resulting in a summed scale, with higher scores indicative of greater difficulty with emotion regulation. Example items include, "I experience my emotions as overwhelming and out of control," and "When I'm upset, I have difficulty getting work done." Construct validity has been demonstrated by strong negative correlation ($r = -.69$) with a measure of adaptive emotion regulation and a positive correlation with experiential avoidance ($r = .60$; Gratz & Roemer, 2004). With regard to predictive validity, DERS scores are positively correlated with frequency of deliberate self-harm behavior among women ($r = .20$) and men ($r = .26$; Gratz & Roemer, 2004). Test-retest reliability over a 4-8 week period was good ($r = .88$; Gratz & Roemer, 2004). In the current study, internal consistency was high (Cronbach's $\alpha = .94$).

Dispositional self-control. The 23-item Grasmick, Tittle, Bursik and Arneklev (1993) measure of dispositional self-control was used to measure trait self-control. The total scale, a summed measure of all items, has demonstrated internal consistency varying

from Cronbach's $\alpha = .81$ (Grasmick et al., 1993) to $.91$ (Flora, Finkel & Foshee, 2003). Items are scored on a 4-point scale from 0 (*strongly agree*) to 3 (*strongly disagree*), with data recoded such that higher scores indicate high self-control. For the current study, items were reverse scored, such that higher scores indicated greater difficulties with self-control. Sample items include (reverse-scored), "I often act on the spur of the moment without stopping to think," and "When things get complicated, I tend to quit or withdraw." The self-control measure demonstrates convergent validity, correlating ($r = .67$) with the self-control scale of the California Psychological Inventory (CPI; Gough, 1975), and divergent validity, in a lack of relationship with measures of intelligence (Marcus, 2003). For the current study, the internal consistency was high (Cronbach's $\alpha = .88$).

Attachment. The Experiences in Close Relationships-Short Form (ECR-SF) questionnaire is a 12-item self-report measure designed to assess adult attachment (Wei, Russell, Mallinckrodt, & Vogel, 2007), based on the original Experiences in Close Relationships measure (Brennan, Clark, & Shaver, 1998). Responses options range from 1 (*disagree strongly*) to 7 (*agree strongly*), and scores are summed, with higher scores indicating a more dysfunctional attachment style. The ECR measure has undergone confirmatory factor analyses, identifying two higher-order factors: Anxious attachment and Avoidant attachment styles, each including 6 items (Wei et al., 2007). Internal consistency for the higher order Anxiety Subscale (ranging from Cronbach's $\alpha = .78-.86$) and for the Avoidance Subscale (Cronbach's $\alpha = .78-.88$) are good (Wei et al., 2007). Low correlation between the two subscales ($r = .19$) indicates that the two

subscales represent separate forms of attachment, and the correlation between the short form and long form versions of each subscale were each high ($r = .95$), demonstrating that the short-form measure is assessing the same underlying construct as the long-form measure (Wei et al., 2007). In the current study, only the Anxious attachment subscale was used. Convergent and divergent validity of this subscale has been demonstrated by a correlation between anxious attachment and excessive reassurance-seeking ($r = .45$), and emotional reactivity ($r = .27$), but not with emotional avoidance ($r = .12$). Sample items include, “My desire to be very close sometimes scares people away,” and “I need a lot of reassurance that I am loved by my partner.” Respondents were asked to indicate how they experience romantic relationships generally; not only referring to their most recent relationship, but also to prior romantic relationships as a relational trait. The Cronbach’s α for the current sample was .76.

History of unwanted pursuit behaviors.

“Real-life” unwanted pursuit. The Unwanted Pursuit Behavior Inventory (UPBI; Palarea & Langhinrichsen-Rohling, 1998) is a 26-item measure used to assess presence, frequency, impact, and motivations underlying unwanted pursuit behavior perpetration that ranges from mild (items 1-13) to severe (items 14-26). Palarea and Langhinrichsen-Rohling (1998) developed this measure via review of empirical literature, as well as by examining behaviors endorsed by stalkers investigated by the Los Angeles Police Department’s Treatment Management Unit. Items are reported on a 5-point scale, 0 (*never*), 1 (*once*), 2 (*twice*), 3 (*3-9 times*), and 4 (*10 or more times*).

The UPBI has demonstrated good psychometric properties. Across two college samples, the total score has achieved good internal consistency, [(Cronbach's $\alpha = .81$, Langhinrichsen-Rohling et al., 2000) (Cronbach's $\alpha = .83$, Wigman et al., 2008)], with a similar internal consistency for the severity index [(Cronbach's $\alpha = .82$, Langhinrichsen-Rohling, 2000). With regard to validity data, convergent validity is evidenced by regression analyses indicating the possessive and dependent love styles are related to greater unwanted pursuit behaviors ($\beta = .31$; Langhinrichsen-Rohling et al., 2000), as well as with anxious attachment ($r = .16$; Wigman et al., 2008), and emotional reliance on the former partner ($r = .21$; Wigman et al., 2008). Divergent validity is evidenced by a lack of relationship between secure attachment and unwanted pursuit behaviors ($r = -.04$; Wigman et al., 2008), as well as verbal abuse and physical abuse perpetration ($r = .05$ and $.13$, respectively; Wigman et al., 2008) as measured by the Conflict Tactics Scales-2 (CTS2; Straus et al., 1996). An example item is: "Did you show up in places where you thought he/she might be?" See Appendix B for factor analysis from the current sample.

Cyber unwanted pursuit. Cyber unwanted pursuit was measured using the Controlling Partners Inventory-Self (CPI-S; Burke, Wallen, Vail-Smith & Knox, 2011). This measure includes 18 items about whether they have performed a variety of controlling or harassing behaviors via electronic means on a 5-point scale from "never" to "4 or more times" since the break-up with their former romantic partners. Content and face validity were established within the original study (Burke et al., 2011) by sending the measure to a variety of experts in the field. Internal consistency was good (Cronbach's $\alpha = .90$), with a split-half reliability of .85 (Burke et al., 2011). Following a

principal components factor analysis, the researchers obtained 4 factors, accounting for 58.3% of the common variance: 1) photos/camera/Spyware to monitor or post embarrassing photos of partner (8 items), 2) excessive communication (calls/texts) (4 items) , 3) Threatening calls, texts and emails (3 items) , 4) checking on partner by using his/her password, checking cell call or email histories (3 items). The measure showed no significant differences by race/ethnicity. An example item is: “Did you send threatening texts to him/her?” See Appendix B for factor analysis from the current sample.

Coercive control.

Possessiveness scale. The Modified Possessiveness Scale (Dutton-Greene, 2004) is a modified version of Pinto and Hollandsworth’s (1984) 21-item Possessiveness Scale used to assess possessiveness by romantic partners in dating relationships. Items were measured on a 5-point scale with ratings from 1 (*never*) to 5 (*almost always or always*), and a summed score was produced, with higher scores indicative of high possessiveness during the relationship when it was still intact. Example items include, “I discouraged my partner from making new friends,” and “I did not like the idea of my partner going to a party if I could not be there, too.” With regard to validity data, this measure has undergone confirmatory factor analysis (Pinto & Hollandsworth, 1984), finding evidence of six factors, including: trust, confidence, insecurity, jealousy, independence, and freedom, obtaining Spearman-Brown and Kuder-Richardson reliability coefficients for the total scale of .85 and .80, respectively. Evidence of convergent validity comes from research indicating a correlation between possessiveness and the extent to which one connects their goals (experiences goal-linkage with) a partner ($r = .15$), as well as

possessiveness and rumination about a partner ($r = .67$), and a negative relationship between possessiveness and trust ($r = -.51$; Carson & Cupach, 2000). In the current sample, Cronbach's $\alpha = .89$.

History of physical, sexual, and psychological victimization and perpetration.

The Revised Conflict Tactics Scale (CTS2; Straus et al., 1996), the most widely used measure of intimate partner violence, was used to assess participants' experiences of perpetration of Psychological Abuse (e.g., "I accused my partner of being a lousy lover"), Physical Abuse (e.g., "I punched or hit my partner with something that could hurt") and Sexual Abuse (e.g., "I used force (like hitting, holding down, or using a weapon) to make my partner have sex") in participants' former relationships. Response options for each item are on a 6-point scale (ranging from "Never" to "More than 20 times"). Based on Straus and colleagues' recommendations (1996), each of the response options were coded to the midpoints for the response categories (0 = 0; 1 = 1; 2 = 2; 3-5 = 4; 6-10 = 8; 11-20 = 15; >20 = 25). Each of the three forms of abuse (Psychological, Sexual, and Physical) were summed, with higher scores indicative of greater levels of that particular construct. Based on recommendations in the literature (Testa, VanZile-Tamsen & Livingston, 2005), psychological abuse was defined only using the severe items on the CTS2 because the majority of both men and women report experiencing incidents of moderate psychological aggression in relationships (White & Koss, 1991), as well as researcher concerns that some of the moderate items (e.g., saying something to spite one's partner), may indicate arguing rather than abuse.

The CTS2 has demonstrated good psychometric properties.. With regard to validity data, construct validity of the CTS2 is evidenced by 1) higher positive correlation for men than women between the Sexual Abuse perpetration subscale and the other two subscales (i.e., Physical and Psychological perpetration), and 2) a strong negative relationship between perpetration subscales of the CTS2 and measures of integration into conventional society (Straus et al., 1996). Discriminant validity of the CTS2 has been evidenced by a lack of relationship between items assessing positive negotiation techniques in a relationship and Sexual Abuse perpetration. In the current sample, Cronbach's α for the Sexual Abuse subscale was .74, for the Severe Psychological Abuse subscale .67, and for the Physical Abuse subscale .91.

Investment model variables. The Investment Model Scale (IMS; Rusbult, Martz & Agnew, 1998) is a 25-item measure that was used to assess investment model variables, including Satisfaction (e.g., "I feel satisfied with our relationship"), Quality of Alternatives (e.g., "My alternatives to our relationship are close to ideal (dating another, spending time with friends or on my own, etc)"), Investment ("I have put a great deal into our relationship that I would lose if the relationship were to end"), and Commitment ("I am committed to maintaining my relationship with my partner"). Response options on the IMS range from 0 (*Do not agree at all*) to 8 (*Agree Completely*). Each of the four variables was summed, with higher scores indicative of greater levels of that particular construct.

Rusbult et al. (1998), provided evidence for convergent validity, reporting in their validation study that the IMS is related to measures that assess positive couple adjustment

and functioning (e.g., relationship closeness, trust level, love for partner, dyadic adjustment). Discriminant validity was also evidenced by relatively weak (or nonsignificant) relationships with dispositional measures (i.e., affiliation and independence needs, self-esteem, perceived behavioral control, self-deception, impression management). Finally, the predictive validity of the IMS is evidenced by the scale's ability to predict dyadic adjustment and relationship dissolution. In the current study, Cronbach's α for the Investment subscale was .74, for the Commitment subscale, .86, for the Satisfaction subscale, .94, and for the Quality of Alternatives subscale, .84.

Relational goal pursuit.

Rumination. Rumination about the target was measured by a 24-item measure (Cupach, Spitzberg, Bolingbroke & Tellitocci, 2011). Items are assessed on a 7-point scale from 1 (*not at all*) to 7 (*very much*). Sample items included, "The more I tried to stop thinking of this person, the more I thought about him/her" and "I thought about this person constantly." Convergent validity has been demonstrated through a positive relationship between rumination and unwanted pursuit behaviors ($\beta = .34$) as well as attempts at reconciliation with a former partner ($\beta = .59$) (Cupach et al., 2011). A summed score was created, with higher scores indicating greater rumination about the target; for the current sample, Cronbach's $\alpha = .97$.

Goal-linking. Goal linking was assessed using an 8-item measure (Cupach, Spitzberg, Bolingbroke & Tellitocci, 2011). Items were measured on a 7-point scale from 1 (*not at all agree*) to 7 (*very much agree*), and summed, with higher scores indicative of greater goal-linking with the target. Sample items include, "I felt like our destinies were

linked,” and “I determined that only this person could help me achieve my life’s goals.” Convergent validity has been demonstrated through a positive relationship between goal-linking and persistence in attempting to reconcile with a former partner ($\beta = .19$, Cupach et al., 2011). In the current sample, Cronbach’s $\alpha = .92$.

Self-efficacy. Self-efficacy in relationship pursuit was assessed using an 8-item measure (Cupach, Spitzberg, Bolingbroke & Tellitocci, 2011), measuring individuals’ beliefs that their relational goals would be attained. Items are measured on 7-point scale from 1 (*not at all*) to 7 (*very much*), and a summed score created, with higher scores indicative of greater relationship pursuit self-efficacy. Sample items include, “I still feel capable of getting back into a relationship with this person” and “I was confident I could get my ex-partner to reconcile with me.” Convergent validity has been demonstrated through a positive relationship between self-efficacy and both mild pursuit behaviors ($\beta = .14$), and persistence in attempting to reconcile with a former partner ($\beta = .16$, Cupach et al., 2011). In the current sample, Cronbach’s $\alpha = .76$.

Relationship-contingent self-worth. Relationship-Contingent Self-Worth was measured using a 4-item scale developed by Sanchez and Kwang (2007). Participants rated their agreement with each statement on a 7-point scale from 1 (*strongly disagree*) to 7 (*strongly agree*), and summed, with higher scores indicative of greater relationship-contingent self-worth. The four statements were: “When I have a significant other (i.e., a boyfriend or girlfriend), my self-esteem increases”; “I feel worthwhile when I have a significant other (i.e., boyfriend or girlfriend)”; “When I do not have a significant other (i.e., boyfriend or girlfriend), I feel badly about myself”; and “My self-esteem depends on

whether or not I have a significant other (i.e., boyfriend or girlfriend.” Relationship-Contingent Self Worth has also shown predictive validity, predicting attitudes toward body esteem and romantic relationships above and beyond relationship satisfaction, showing divergent validity with other self-worth measures (e.g., appearance/body self-worth; Sanchez et al., 2008). In the current sample, Cronbach’s $\alpha = .74$.

Substance use.

Alcohol use. The Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, de la Feunte & Grant, 1993) was used to assess problematic drinking behaviors. Three items assess frequency of drinking (e.g., “How often do you have a drink containing alcohol”), with five items assessing indicators of alcohol dependence, (e.g., “How often during the last year have you failed to do what was normally expected from you (e.g., go to class, work, etc.) because of drinking?”), and the remaining two items assessing personal harm as a result of drinking (i.e., “Have you or someone else been injured as a result of your drinking), and suggestions from others to cut down on drinking (i.e., “Has a relative or friend or a doctor or another health worker been concerned about your drinking or suggested you cut down?”). The items are scored on a 0-4 scale, and summed to create a total score. A review of research using the AUDIT has found that the measure has evidence acceptable sensitivity and specificity for current hazardous use, with convergent validity with other self-report alcohol use screens (Allen, Litten, Fertig & Babor, 1997). In the current study, Cronbach’s $\alpha = .82$.

Substance use. Use of addictive substances was assessed using 6 drug-specific items from the Drinking and Drug Habits Questionnaire (DDHQ; Collins, Parks, &

Marlatt, 1985). Participants were asked to report how much they have used 6 different drugs (i.e., marijuana, opiates, “club” drugs, cocaine, amphetamines, and inhalants) on a 4-point scale from 1 (*never used*) to 4 (*regularly use*). Total drug use was summed; Cronbach’s $\alpha = .69$.

Appendix B: Factor Analyses for Dependent Measures

Exploratory Factor Analysis for UPBI

A principal components factor analysis with Varimax rotation was used to assess the factor structure of the UPBI. Whereas an analysis was also completed using Direct Oblimin rotation, the results were very similar to that of the Varimax rotation. For ease of interpretation, the results of the Varimax presented are presented herein. The sample was first divided into two halves using a random number generator. In addition to specifying retention of factors with eigenvalues greater than one, a Monte Carlo parallel analysis was performed, and the scree plot was examined to avoid over-estimates of retained factors. Although four eigenvalues were greater than 1, Monte Carlo parallel analysis suggested retention of 3 factors, and examination of the scree plot indicated a clear break between factors 2 and 3. The factor analysis was re-run specifying two and three factors, with the two-factor solution providing fewer cross-loadings and representing a substantively more reasonable solution. Following rotation, items loading greater than .35 were retained with items cross-loading (i.e., loadings greater than .35 on both factors) dropped from the final solution.

The first factor consisted of 12 of the 13 items that Langhinrichsen-Rohling et al., (2000) originally identified as severe stalking (referred to hereafter as “Threat/Harm”) items, and accounts for 40.0% of the variance (see Table B1 for items and factor loadings). This factor includes items such as “threaten to harm or kill him/her,” and “kidnap him/her or hold him/her against his/her will” (see Table B1 for rotated factor loadings). The item “follow him/her” originally part of Lanhinrichsen-Rohling et al.’s

(2000) “severe” factor with these other 12 items, was factorially complex (loaded above .35 on both factors), and will be dropped from subsequent analyses. The second factor, Pursuit, consists of 12 of the 13 items obtained by Langhinrichsen-Rohling et al. and accounted for an additional 15.5% of the variance. This factor includes items such as, “Go out of your way to run into him/her “unexpectedly”” and “show up in places where you thought he/she might be.” Item #11 “Unexpectedly visit him/her at his/her home” was factorially complex. Therefore, the factor analysis revealed two factors identical to Langhinrichsen-Rohling’s factors.

In the second sample, the same procedures were followed, and two factors were again retained based on eigenvalues and examination of the scree plot. The first factor consisted of the same items as those obtained with the first sample, and accounted for 47.0% of the variance (see Table B1 for items and loadings). As with the first sample, item #14 “Follow him/her” was factorially complex. The second factor was similar to that identified with the first sample, and accounted for an additional 13.4% of the variance. However, items #13 “Wait outside of his/her home/work/school,” and item #12 “Unexpectedly visit him/her at school/work/some other public place” were factorially complex.

Factor analysis was re-run on the sub-samples deleting these factorially complex items. Results are in Table B2.

In the first sample, factor 1 (Threat/Harm) accounted for 42.5% of the variance, and factor 2 (Pursuit) accounted for an additional 15.6% of the variance. In the second sample, the Threat/Harm factor accounted for 48.7% of the variance, and the Pursuit

factor accounted for an additional 14.8% of the variance. The differences in factor loadings between samples 1 and 2 are also displayed in Table B2. All differences in factor loadings were in the small, acceptable range (less than $|\cdot 20|$ across the samples; Osborne & Fitzpatrick, 2012), suggesting similar factorability among the two samples. Cronbach's alpha for factor 1 (Threat/Harm), consisting of 12 items was .96 for sample 1 and .97 for sample 2. For factor 2 (Pursuit), consisting of 10 items, Cronbach's alpha was .80 for sample 1 and .82 for sample 2.

Table B1. *Initial UPBI Factor Loadings*

	Rotated Factor Loading				Differences between samples (absolute value)	
	Sample 1		Sample 2			
Item	Threat	Unwanted Contact/ Checking	Threat	Unwanted Contact/ Checking	Threat	Unwanted Contact/ Checking
25. Kidnap him/her or hold him/her against his/her will	.96	.09	.96	.12	0	-
23. Cause harm to someone close to him/her or to his/her pet	.96	.10	.97	.13	.01	-
18. Threaten to harm/kill someone close to him/her or to his/her pet	.93	.09	.94	.13	.01	-
17. Threaten to harm/kill him/her	.92	.10	.91	.16	.01	-
19. Threaten him/her with a weapon	.91	.10	.94	.12	.03	-
26. Force him/her to engage in sexual contact after the break-up	.90	.07	.91	.14	.01	-
21. Steal items from him/her	.89	.11	.84	.18	.05	-
22. Cause damage to his/her property (e.g., home or car)	.85	.12	.91	.17	.06	-
24. Physically injure him/her	.83	.12	.92	.14	.09	-

Table B1. *Continued*

20. Release information that was harmful to him/her	.76	.10	.80	.11	.04	-
16. Threaten to release information that would be harmful to him/her	.68	.15	.85	.18	.17	-
15. Make vague or implied threats to him/her	.64	.13	.66	.25	.02	-
14. <i>Follow him/her</i>	<i>.60</i>	<i>.42</i>	<i>.63</i>	<i>.35</i>	<i>.03</i>	-
6. Give him/her items (e.g., letters/gifts) in person	.04	.68	.15	.65	-	.03
9. Show up in places where you thought he/she might be	.14	.66	.23	.64	-	.02
12. <i>Unexpectedly visit him/her at school/work/some other public place</i>	<i>.21</i>	<i>.65</i>	<i>.38</i>	<i>.57</i>	-	<i>.08</i>
3. Engage him/her in a phone conversation	-.03	.64	-.05	.71	-	.07
5. Engage him/her in a conversation in person	-.09	.63	-.06	.64	-	.01
7. Ask friends for information about him/her	-.03	.61	-.01	.57	-	.04
11. <i>Unexpectedly visit him/her at his/her home</i>	<i>.34</i>	<i>.61</i>	<i>.43</i>	<i>.56</i>	-	<i>.05</i>
10. Go out of your way to run into him/her “unexpectedly”	.11	.61	.30	.61	-	0
13. <i>Wait outside of his/her home/work/school</i>	<i>.25</i>	<i>.61</i>	<i>.53</i>	<i>.46</i>	-	<i>.15</i>
8. Contact his/her family/friends without his/her permission	.25	.53	.26	.54	-	.01
1. Leave him/her phone messages or hang-up calls	-.01	.52	.02	.60	-	.08
2. Send/Leave unwanted letters/gifts	.21	.50	.33	.50	-	0
4. Talk with him/her in an Internet chat room	.06	.42	.12	.55	-	.13

Table B2. *UPBI FA Following Deletion of Factorially Complex Items.*

	Rotated Factor Loading				Differences in Samples (absolute values)	
	Sample 1		Sample 2			
Item	Threat	Unwanted Contact/Checking	Threat	Unwanted Contact/Checking	Threat	Unwanted Contact/Checking
25. Kidnap him/her or hold him/her against his/her will	.96	.07	.96	.11	0	-
23. Cause harm to someone close to him/her or to his/her pet	.96	.07	.97	.12	.01	-
18. Threaten to harm/kill someone close to him/her or to his/her pet	.94	.07	.95	.13	.01	-
19. Threaten him/her with a weapon	.92	.07	.94	.11	.02	-
26. Force him/her to engage in sexual contact after the break-up	.90	.05	.91	.14	.01	-
21. Steal items from him/her	.90	.09	.84	.16	.06	-
17. Threaten to harm/kill him/her	.90	.09	.91	.16	.01	-
22. Cause damage to his/her property (e.g., home or car)	.86	.11	.91	.17	.05	-
24. Physically injure him/her	.83	.10	.92	.13	.09	-
20. Release information that was harmful to him/her	.77	.10	.80	.11	.03	-
16. Threaten to release information that would be harmful to him/her	.68	.17	.85	.18	.17	-
15. Make vague or implied threats to him/her	.64	.16	.67	.28	.03	-
3. Engage him/her in a phone conversation	-.02	.70	-.03	.75	.05	
5. Engage him/her in a conversation in person	-.07	.69	-.05	.68	-	.01
7. Ask friends for information about him/her	-.01	.67	.01	.61	-	.06
6. Give him/her items (e.g., letters/gifts) in person	.05	.67	.16	.65	-	.02
9. Show up in places where you thought he/she might be	.16	.63	.23	.61	-	.02

Table B2. *Continued*

10. Go out of your way to run into him/her “unexpectedly”	.13	.59	.30	.58	-	.01
1. Leave him/her phone messages or hang-up calls	.02	.58	.04	.63	-	.05
8. Contact his/her family/friends without his/her permission	.26	.52	.26	.52	-	0
2. Send/Leave unwanted letters/gifts	.23	.50	.33	.49	-	.01

Exploratory Factor Analysis for CPI

Similar to the factor analysis performed on the UPBI, split halves were assessed separately for the CPI, using both Varimax and Direct Oblimin procedures. Due to the similarity in results obtained, the Varimax rotation is presented herein. In examining the initial principal components analysis with Varimax rotation, 4 factors had eigenvalues greater than 1; however, results of a Monte Carlo parallel analysis suggested retention of 3 factors, and an examination of the scree plot indicated a break between factors 2 and 3. Therefore, the 2 and 3 factor solutions were examined. However, the 3-factor solution yielded one factor with just two items. Therefore, the 2 factor solution was retained, accounting for 58.1% of the variance.

The first factor (11 items) accounted for 42.7% of the variance, and combined 7 items from Burke et al (2011)’s factor “Photos, Camera, Spyware” (e.g., “Use Web Cam to monitor his/her activities,” “Posted inappropriate photos of him/her”) with 3 items from the “Threatening” subscale (e.g., sent threatening texts to him/her”). One item from Burke et al.’s original “Photos/Camera/Spyware” subscale (“Made embarrassing, insulting or threatening wall posts”) was factorially complex, and was dropped from both

scales. One item from Burke et al. (2011)'s "Excessive communication" factor ("sent excessive number of emails to partner") loaded onto this factor among both samples, but did not fit conceptually with the other items, and was dropped from the scale. This factor will be labeled Threat/Surveillance in the current study (see Table B3 for factor loadings).

The second factor, which accounted for 15.4% of the variance, consists of the Excessive Contact/Checking Behaviors items from Burke et al (2011)'s original factor analysis, with the exception of one item (sent excessive number of emails to partner), which loaded onto the first factor, as described above. Items include, "make excessive number of cell calls to him/her" and "Check his/her social network page (e.g., Facebook, Twitter) to monitor him/her."

In the second sample, Factor 1 accounted for 51.2% of the variance, and factor 2 for an additional 13.4% of the variance (see Table B3 for factor loadings). Items were identical to those indicated above among the first sample; however, Item #5 "Make threatening cell phone calls to him/her" and Item #6 "Send threatening texts to him/her" were found to be factorially complex, and were dropped from factor 2. In addition, examination of the differences between samples among the factor loadings indicates one very large difference in item #11 "Check his/her cell phone bill."

These four items (the three total factorially complex items and one differentially loading factor) were removed, and factor analysis was re-run. Results are shown in Table B4. In sample 1, factor 1 accounted for 44.1% of the variance, with factor 2 accounting for an additional 20.85% of the variance. In sample 2, factor 1 (Threats/Surveillance)

accounted for 50.3% of the variance, with factor 2 adding an additional 18.1% of explained variance.

Cronbach's alphas were calculated for the subscales. For the Threats/Surveillance factor (7 items), alpha for sample 1 was .92 and for sample 2 .96. For the Excessive Contact/Checking subscale, in sample 1, Cronbach's alpha = .76 and for sample 2, alpha = .77.

Table B3. *Initial CPI Factor Loadings*

	Rotated Factor Loadings				Differences between samples (absolute value)	
	Sample 1		Sample 2			
Item	Threat	Excessive Contact/Checking	Threat	Excessive Contact/Checking	Threat	Excessive Contact/Checking
16. Use Web Cam to monitor his/her activities	.95	.02	.94	.10	.01	-
17. Use hidden camera to monitor his/her activities	.95	.03	.95	.10	0	-
18. Use spyware to monitor his/her activities	.95	.04	.95	.09	0	-
4. Send threatening emails to him/her	.94	.06	.80	.28	.14	-
7. Sent excessive numbers of emails to him/her	.81	.15	.71	.33	.10	-
13. Threaten to post or send inappropriate photos of him/her	.77	.10	.81	.15	.04	-
14. Post/send inappropriate photos of him/her	.75	.07	.85	.18	.10	-
6. Send threatening texts to him/her	.68	.28	.50	.48	.18	-
15. Use GPS (including Foursquare, Check-ins or Social Network) to monitor his/her location	.66	.19	.86	.09	.20	-

Table B3. *Continued*

5. Make threatening cell phone calls to him/her	.63	.16	.63	.43	0	-
11. Check his/her cell phone bill	.45	.17	.84	.26	.39	-
12. Make embarrassing, insulting or threatening Facebook posts about him/her	.44	.41	.63	.28	.19	-
9. Send excessive number of texts to him/her	.07	.76	.10	.72	-	.04
8. Make excessive number of cell calls to him/her	.15	.74	.19	.74	-	0
2. Check his/her cell phone call history	.14	.73	.18	.76	-	.03
3. Use his/her password to Check up on him/her	.14	.72	.27	.67	-	.05
1. Check his/her sent/received email history	.16	.62	.30	.65	-	.03
10. Check his/her social network page (e.g., Facebook, Twitter) to monitor him/her	-.05	.59	-.05	.60	-	.01

Table B4. *CPI FA Following Deletion of Factorially Complex Items.*

	Rotated Factor Loadings				Differences between samples (absolute value)	
	Sample 1		Sample 2			
Item	Threat	Excessive Contact/ Checking	Threat	Excessive Contact/ Checking	Threat	Excessive Contact/ Checking
16. Use Web Cam to monitor his/her activities	.97	.06	.95	.12	.02	-
18. Use spyware to monitor his/her activities	.96	.07	.95	.12	.01	-
17. Use hidden camera to monitor his/her activities	.96	.07	.95	.13	.01	-
4. Send threatening emails to him/her	.93	.07	.78	.29	.15	-
13. Threaten to post or send inappropriate photos of him/her	.79	.13	.81	.17	.02	-
14. Post/send inappropriate photos of him/her	.75	.07	.87	.22	.12	-
15. Use GPS (including Foursquare, Check-ins or Social Network) to monitor his/her location	.68	.22	.87	.10	.19	-
9. Send excessive number of texts to him/her	.06	.77	.08	.71	-	.06
8. Make excessive number of cell calls to him/her	.14	.76	.16	.73	-	.03
3. Use his/her password to Check up on him/her	.13	.73	.27	.71	-	.02
2. Check his/her cell phone call history	.12	.73	.18	.78	-	.05
1. Check his/her sent/received email history	.15	.63	.30	.68	-	.05
10. Check his/her social network page (e.g., Facebook, Twitter) to monitor him/her	-.06	.59	-.06	.60	-	

Descriptive Statistics and Frequencies

Frequencies for individual items for the UPBI are shown in Table B5, and for the CPI are shown in Table B6. Descriptive statistics, using a criterion of 2 or more unwanted pursuit behaviors, are presented in Table B7. Using this criterion of 2 or more unwanted pursuit behaviors in the current sample, 88.3% of individuals were perpetrators of some form of unwanted pursuit following the break-up of their romantic relationships. Specifically, 86.1% of the sample (97.5% of unwanted pursuit perpetrators) reported engaging in 2 or more Real-Life Unwanted Contact/Checking behaviors (e.g., showing up in places they thought the former partner would be, leave him/her messages or hang-up calls), either alone or in combination with another form of unwanted pursuit, and 90.8% of the sample reported engaging in 1 or more Real-Life Unwanted Contact/Checking behaviors. In addition, 48.5% performed similar behaviors using technology, as indicated by 48.5% of the sample having engaged in 2 or more items (and 58.6% having engaged in 1 or more of the items) on the Cyber Excessive Contact/Check subscale (54.9% of unwanted pursuit perpetrators), perpetrating behaviors such as checking the former partner's email or call history, making excessive calls and sending excessive texts. Threatening behaviors were less frequent, with 6.9% of the sample (7.8% of unwanted pursuit perpetrators) having endorsed 2 or more of the Real-Life Threat behaviors (e.g., threaten to harm or kill the former partner, physically injure the former partner), and 11.5% reporting having engaged in 1 or more Real-Life Threat UPBs. Further, 2.7% of the sample (3.0% of unwanted pursuit perpetrators) endorsed 2 or more

of the Cyber Threat behaviors (e.g., send threatening emails, use GPS to track the former partner), with 4.1% endorsing 1 or more Cyber Threat behaviors.

A frequency distribution of the Real-Life Unwanted Contact/Checking UPBs summed subscale (prior to transformation) is shown in Figure B1. The majority of participants (51.8%) endorsed 8 or fewer Real-Life Unwanted Contact/Checking UPBs. However, 10.5% of individuals endorsed engaging in 20 or more Real-Life Unwanted Contact/Checking UPBs. Similarly, a frequency distribution of the Cyber Excessive Contact/Checking behaviors is shown in Figure B2, with much less variability than the Real-Life Unwanted Contact/Checking UPBs (due to fewer items per subscale). The majority of participants (51.5%) endorsed 2 or fewer Cyber Excessive Contact/Checking UPBs. However, 8.5% of individuals endorsed engaging in 10 or more Cyber Excessive Contact/Checking UPBs. Due to the lack of variability in both Real-Life Threatening and Cyber Threatening UPBs, which were infrequently endorsed, frequency histograms were not produced for these subscales.

Many perpetrators of unwanted pursuit endorsed 2 or more behaviors on more than one of the subscales (Table B7). When examining mutually exclusive categories, the largest proportion of participants were perpetrators of the combination of Real-Life Unwanted Contact/Checking and Cyber Excessive Contact/Check behaviors (39.9% of the sample), or of Real-Life Unwanted Contact/Checking behaviors alone (38.2%), representing what might be considered more “minor” forms of unwanted pursuit. A minority of participants in the current sample (10.2%) engaged in some combination of threatening and pursuit behaviors. Notably, there were no participants who engaged in

only Real-Life Threat or Cyber Threat behaviors without the presence of some form of pursuit (i.e., Real-Life Unwanted Contact/Checking, Cyber Excessive Contact/Checking). In addition, only a small minority of participants (2.2%) engaged in 2 or more Cyber Excessive Contact/Checking behaviors alone, suggesting that, when cyber unwanted pursuit occurs, it occurs in the presence of other “real-life” stalking behaviors, as well. A very small minority of participants (1.3%) endorsed engaging in all 4 forms of pursuit.

UPBs varied in the extent to which they were endorsed by the participants. Among the Real-Life Unwanted Contact/Checking behaviors, the most commonly endorsed items were “engage him/her in a conversation in person” (58.2% endorsed having done this 2 or more times), “engage him/her in a phone conversation” (51.9% endorsed that this occurred 2 or more times), and “ask family/friends for information about him/her” (50.9% endorsed that they had done this 2 or more times). It was relatively less common for individuals to endorse that they “showed up in places where you thought he/she might be” (17.3% had done so 2 or more times), or to “go out of your way to run into him/her unexpectedly” (14.5% indicated that they had done this 2 or more times). Similarly, among the CPI Excessive Contact/Check behaviors, 39.5% of individuals indicated that they had checked their former partner’s social network page to monitor their former partner 2 or more times, and 14.5% indicated that they had sent excessive texts to their former partner 2 or more times. Checking a partner’s email or phone history was less common (5.1% and 8.8%, respectively, had done so 2 or more times). However, having checked a partner’s social network page to monitor the partner

was endorsed very frequently, with 21% of participants endorsing that they did so “4 or more times” (the highest category).

With regard to the Real-Life Threatening behaviors, 3.3% of participants indicated that, at least 2 or more times, they had made “vague or implied threats” to their former partners, with 1.9% indicating that they had threatened to “harm or kill” their former partners. Further, 1.6% indicated that they had physically injured their former partners following the break-up, 1.3% indicated that they had kidnapped their former partners and held them against their will, and 1.3% also endorsed that they had forced their partners to engage in sexual contact with them following the break-up. CPI Threat behaviors were also less common than CPI Pursuit behaviors. However, 1.5% of participants indicated that they had used GPS to track their former partners, 1.0% indicated that they used “hidden camera to monitor” his/her activities, and 1.0% indicated that they sent threatening emails to their former partners.

Table B5. *Frequency of UPBI Items*

Item	Mean	SD	Frequency (n)				
			Never	Once	Twice	3-9 times	10 or more times
1. Leave him/her phone messages or hang-up calls	1.11	1.32	49.9% (577)	14.4% (167)	15.7% (182)	14.1% (163)	5.8% (67)
2. Send/Leave unwanted letters/gifts	0.26	0.73	85.3% (986)	7.4% (86)	3.7% (43)	2.6% (30)	1.0% (11)
3. Engage him/her in a phone conversation	1.68	1.49	33.7% (390)	14.4% (167)	17.6% (203)	18.6% (215)	15.7% (181)
4. Talk with him/her in an Internet chat room	0.76	1.28	68.3% (789)	8.6% (99)	7.8% (90)	9.3% (107)	6.1% (71)
5. Engage him/her in a conversation in person	1.94	1.53	28.4% (328)	13.5% (156)	15.6% (180)	21.3% (246)	21.3% (246)
6. Give him/her items (e.g., letters/gifts) in person	0.63	1.18	71.8% (830)	10.7% (124)	5.6% (65)	6.3% (73)	5.5% (64)
7. Ask friends for information about him/her	1.59	1.42	34.9 % (403)	14.2% (164)	18.3 % (212)	21.9% (253)	10.7% (124)
8. Contact his/her family/friends without his/her permission	0.40	0.88	79.0% (913)	9.3% (107)	6.2% (72)	4.2% (48)	1.4% (16)
9. Show up in places where you thought he/she might be	0.54	0.99	72.0% (869)	10.7% (129)	9.6% (116)	6.3% (76)	1.4% (17)
10. Go out of your way to run into him/her “unexpectedly”	0.48	0.96	75.7% (875)	9.8% (113)	7.0% (81)	6.1% (71)	1.4% (16)
11. Unexpectedly visit him/her at his/her home	0.22	0.68	88.9% (1028)	4.3% (50)	3.5% (41)	2.7% (31)	0.5% (6)

Table B5. *Continued*

12. <i>Unexpectedly visit him/her at school/work/some other public place</i>	0.26	0.75	86.8% (1003)	5.4% (62)	4.2% (48)	2.7% (31)	1.0% (12)
13. <i>Wait outside of his/her home/work/school</i>	0.18	0.68	92.0% (1063)	2.5% (29)	2.2% (26)	2.0% (23)	1.3% (15)
14. <i>Follow him/her</i>	0.11	0.51	95.1% (1099)	1.1% (13)	2.2% (26)	1.2% (14)	0.3% (4)
15. Make vague or implied threats to him/her	0.11	0.47	94.2% (1089)	2.5% (29)	1.9% (22)	1.3% (15)	0.1% (1)
16. Threaten to release information that would be harmful to him/her	0.08	0.41	95.2% (1100)	2.5% (29)	1.6% (18)	0.5% (6)	0.3% (3)
17. Threaten to harm/kill him/her	0.05	0.35	97.8% (1130)	0.3% (4)	1.3% (15)	0.4% (15)	0.2% (2)
18. Threaten to harm/kill someone close to him/her or to his/her pet	0.05	0.33	97.9% (1132)	0.6% (7)	1.0% (12)	0.2% (2)	0.3% (3)
19. Threaten him/her with a weapon	0.04	0.30	98.4% (1137)	0.5% (6)	0.7% (8)	0.2% (2)	0.3% (3)
20. Release information that was harmful to him/her	0.08	0.40	95.0% (1098)	3.0% (35)	1.1% (13)	0.7% (8)	0.2% (2)
21. Steal items from him/her	0.05	0.34	97.5% (1127)	1.0% (11)	0.9% (10)	0.5% (6)	0.2% (2)
22. Cause damage to his/her property (e.g., home or car)	0.05	0.33	96.5% (1116)	2.2% (26)	0.8% (9)	0.2% (2)	0.3% (3)
23. Cause harm to someone close to him/her or to his/her pet	0.04	0.33	98.1% (1134)	0.5% (6)	0.9% (10)	0.2% (2)	0.3% (4)
24. Physically injure him/her	0.05	0.32	97.5% (1127)	0.9% (10)	1.1% (11)	0.4% (5)	0.1% (1)

Table B5. *Continued*

25. Kidnap him/her or hold him/her against his/her will	0.04	0.30	98.4% (1137)	0.3% (4)	0.8% (9)	0.3% (4)	0.2% (2)
26. Force him/her to engage in sexual contact after the break-up	0.04	0.31	98.0% (1133)	0.8% (9)	0.8% (9)	0.2% (2)	0.3% (3)

Table B6. *Frequency of CPI items*

Item	Mean	SD	Frequency (<i>n</i>)				
			Never	Once	Twice	3 times	4 or more times
1. Check his/her sent/received email history	0.18	0.67	91.2% (1054)	3.7% (43)	2.4% (28)	1.1% (13)	1.6% (18)
2. Check his/her cell phone call history	0.31	0.88	85.7% (991)	5.5% (64)	3.5% (40)	2.4% (28)	2.9% (33)
3. Use his/her password to check-up on him/her	0.23	0.77	90.0% (1040)	3.9% (45)	2.1% (24)	1.5% (17)	2.6% (30)
4. Send threatening emails to him/her	0.03	0.28	98.3% (1136)	0.8% (9)	0.6% (7)	0.1% (1)	0.3% (3)
5. <i>Make threatening cell phone calls to him/her</i>	0.05	0.36	97.2% (1124)	1.1% (13)	1.1% (13)	0.1% (1)	0.4% (5)
6. <i>Send threatening texts to him/her</i>	0.10	0.48	94.7% (1095)	2.3% (27)	2.1% (24)	0.1% (1)	0.8% (9)
7. Sent excessive numbers of emails to him/her	0.05	0.31	97.5 % (1127)	1.0% (12)	1.1 % (13)	0.2% (2)	0.2% (2)
8. Make excessive number of cell calls to him/her	0.30	0.88	86.3% (998)	5.2% (60)	3.3% (38)	2.2% (25)	3.0% (35)
9. Send excessive number of texts to him/her	0.54	1.13	75.5% (873)	10.0% (116)	5.8% (67)	2.2% (25)	6.5% (75)
10. Check his/her social network page (e.g., Facebook, Twitter) to monitor him/her?	1.40	1.61	48.3% (558)	12.2% (141)	11.6% (134)	6.9% (80)	21.0% (243)

Table B6. *Continued*

11. Check his/her cell phone bill	0.04	0.28	97.9% (1132)	0.6% (7)	1.1% (13)	0% (0)	0.3% (4)
12. Make embarrassing, insulting or threatening Facebook posts about him/her?	0.09	0.45	94.5% (1092)	3.1% (36)	1.6% (19)	0.2% (2)	0.6% (7)
13. Threaten to post or send inappropriate photos of him/her	0.04	0.28	97.8% (1130)	1.1% (13)	0.9% (10)	0.1% (1)	0.2% (2)
14. Post/send inappropriate photos of him/her	0.04	0.31	98.1% (1134)	0.4% (5)	1.1% (13)	0.1% (1)	0.3% (3)
15. Use GPS (including Foursquare, Check-Ins on social network) to monitor his/her location	0.04	0.32	97.8% (1130)	0.8% (9)	1.1% (13)	0.1% (1)	0.3% (3)
16. Use Web Cam to monitor his/her activities	0.03	0.24	98.7% (1141)	0.3% (4)	0.7% (8)	0.2% (2)	0.1% (1)
17. Use hidden camera to monitor his/her activities	0.03	0.24	98.7% (1141)	0.3% (4)	0.8% (9)	0.1% (1)	0.1% (1)
18. Use spy ware to monitor his/her activities	0.03	0.25	98.6% (1140)	0.4% (5)	0.7% (8)	0.2% (2)	0.1% (1)

Table B7. *Descriptive Statistics of Categorical Study Variables*

Variable	Percent	N
Pursuit Types (mutually exclusive)		
No Pursuit	11.7%	135
UPBI Pursuit only	38.2%	442
UPBI Threat only	0.0%	0
CPI Excessive Contact/Check only	2.2%	25
CPI Threat only	0.0%	0
UPBI Pursuit and UPBI Threat only	1.2%	14
UPBI Pursuit and CPI Excessive Contact/Check only	39.9%	461
UPBI Pursuit and CPI Threat only	0.1%	1
UPBI Threat and CPI Excessive Contact/Check only	0.0%	0
UPBI Threat and CPI Threat only	0.0%	0
CPI Excessive Contact/Check and CPI Threat only	0.1%	1
UPBI Pursuit, UPBI Threat, and CPI Excessive Contact/Check only	4.2%	48
UPBI Pursuit, UPBI Threat, and CPI Threat	0.3%	3
UPBI Pursuit, CPI Excessive Contact/Check and CPI Threat only	1.0%	11
UPBI Threat, CPI Excessive Contact/Check and CPI Threat only	0.0%	0
All 4 types	1.3%	15
Pursuit Types (for analyses)		
No Perpetration	11.7%	135
Any UPBI Pursuit	86.1%	995
Any UPBI Threat	6.9%	80
Any CPI Excessive Contact/Check	48.5%	561
Any CPI Threat	2.7%	31
Both UPBI and CPI (of any combination)	46.6%	539

Figure B1. *Frequency Histogram of Real-Life Unwanted Contact/Checking UPBs*

Figure B2. *Frequency Histogram of Cyber Excessive Contact/Checking Behaviors*

Appendix C: Hypothesis 4 Extended Results

Hypothesis 4a

Regarding hypothesis 4a, that break-up initiator status would be related to unwanted pursuit perpetration, bivariate correlations were examined. As hypothesized, break-ups initiated to a greater extent by the partner (than by oneself) were associated with significantly greater real-life unwanted contact/checking behaviors ($r = .16$) and cyber excessive contact/checking behaviors ($r = .14$). However, contrary to hypotheses, break-ups initiated to a greater extent by the partner (than by oneself) were associated with significantly less real-life and cyber threatening UPBs, though this correlation was very weak (r 's = $-.06$).

Hypothesis 4b

Hypothesis 4b, that anxious attachment would be related to unwanted pursuit perpetration, was assessed through examination of the bivariate correlations. Anxious attachment was associated with real-life unwanted contact/checking behaviors ($r = .16$), as well as cyber excessive contact/checking behaviors ($r = .25$), such that increased anxious attachment was associated with increased pursuit behaviors. However, the relationships between anxious attachment and real-life threatening UPBs ($r = .07$), and cyber threatening UPBs ($r = .02$) were nonsignificant.

Hypothesis 4c

Hypothesis 4c, that difficulties with emotion regulation would be related to unwanted pursuit perpetration, was assessed by examining the bivariate correlations. Examining the correlations, emotion regulation was significantly but weakly positively

correlated with real-life unwanted contact/checking UPBs ($r = .16$), real-life threatening UPBs ($r = .16$), and cyber excessive contact/checking UPBs ($r = .18$), but uncorrelated with cyber threatening UPBs ($r = .09$).

Hypothesis 4d

Hypothesis 4d, that dispositional self-control would be related to unwanted pursuit perpetration, was assessed by examining the bivariate correlations. From examination of the bivariate correlations, dispositional difficulties with self-control was significantly but weakly correlated with each form of unwanted pursuit perpetration, such that greater difficulty with self-control was associated with significantly higher unwanted pursuit perpetration; however correlations were small ($r = .17$ for real-life unwanted contact/checking behaviors, $.23$ for real-life threatening UPBs, $.12$ for cyber excessive contact/checking behaviors, and $.13$ for cyber threatening UPBs).

Hypothesis 4e

Hypothesis 4e, that alcohol and drug use would be related to unwanted pursuit perpetration, was assessed by examining the bivariate correlations. Disordered alcohol use was associated with significantly higher real-life unwanted contact/checking UPBs ($r = .16$), and cyber excessive contact/checking behaviors ($r = .18$), but not significantly correlated with real-life and cyber threatening UPBs (r 's = $.06$). In addition, increased substance use was weakly but significantly associated with increased real-life unwanted contact/checking UPBs ($r = .11$), real-life threatening UPBs ($r = .14$), and cyber excessive contact/checking UPBs ($r = .12$), but not associated with cyber threatening

UPBs ($r = .08$). None of the alcohol or substance use variables were included in the final integrated model.

Appendix D: Preliminary Integrated Models

In order to achieve the proposed study's ultimate aim, to attempt to fit an integrated model as suggested in Hypothesis 5, the integrated model was built based on significant predictors from Hypotheses 1-4, using the same continuous variables as in Hypotheses 1-4, testing the models separately for (a) real-life unwanted contact/checking UPBs (b) real-life threatening UPBs, (c) cyber excessive contact/checking UPBs, and (d) cyber threatening UPBs. Significant predictors from the regressions, and significant correlations larger than $r = .20$ were included in the path analysis. Models were run in AMOS 18 (Arbuckle, 2009) using maximum-likelihood estimation. In order to test indirect effects, bootstrapping was performed 95% bias-corrected confidence intervals. If models did not fit, standardized residual covariances and modification indices were examined. Only those theoretically justifiable modifications were conducted, at which time models were re-run.

The initial model for real-life unwanted contact/checking UPBs is shown in Figure D1, and was a poor fit to the data, $\chi^2(5) = 618.84, p < .000, .326$ (90% CI = .305-.348), CFI = .556, TLI = .113. Examination of the standardized residual covariances (larger than 4) and the modification indices suggested addition of paths from investment, commitment, and psychological perpetration with rumination. Directional arrows were added from each of these constructs to rumination, as investment in the relationship, commitment to the relationship, and psychological violence perpetrated during the relationship should theoretically precede rumination about the relationship after the relationship ends. With the addition of these three paths (Figure D2 and Table D1), the

model was a good fit to the data, $\chi^2(2) = 6.34$, $p = .042$, RMSEA = .043 (90% CI = .007-.083), CFI = .997, TLI = .984. This model included variables from the relational goal pursuit theory (rumination), coercive control theory (psychological DV perpetration), and investment model (investment and commitment) associated with increased real-life unwanted contact/checking pursuit behaviors following the break-up of a romantic relationship. Specifically, greater psychological DV perpetration during the relationship and greater rumination following the break-up were both directly associated with increased real-life unwanted contact/checking following the end of the relationship. In addition, based upon the standardized indirect effects produced by bootstrapped 95% bias-corrected confidence intervals, there was an indirect effect of psychological DV perpetration on real-life unwanted contact/checking behaviors through rumination, such that increased psychological DV perpetration during the relationship was associated with increased rumination following the relationship, which was associated with increased real-life unwanted contact/checking behaviors. There were no significant direct effects of investment or commitment, but there was an indirect effect of commitment to the relationship on real-life unwanted contact/checking behaviors through rumination, such that greater commitment to the relationship was associated with increased rumination following the relationship, and greater rumination was associated with real-life unwanted contact/checking following the relationship. In addition, investment in the relationship had indirect effects on rumination (through increased commitment; 95% CI = .31-.39, $p = .009$) and real-life unwanted pursuit perpetration (through increased rumination and increased commitment).

The integrated model predicting real-life threatening behaviors included only the coercive control variables and dispositional difficulties with self-control. This model was a good fit to the data, $\chi^2(7) = 19.63$, $p = .006$, RMSEA = .040 (90% CI = .019-.061), CFI = .991, TLI = .981 (Figure D3, Table D2). In this model, there were significant direct effects of DV during the relationship and difficulty with self-control on real-life threatening UPBs following the relationship, such that greater DV and greater self-control difficulties were each associated with increased real-life threatening UPBs. In addition, there was an indirect effect of possessiveness on real-life threatening UPBs through DV perpetration, such that greater possessiveness was associated with greater DV perpetration, which in turn, was associated with increased real-life threatening UPBs. Finally, there was an indirect effect of difficulty with self-control on DV perpetration (95% CI = .06-.10, $p = .011$), and an indirect effect of difficulty with self-control on real-life threatening UPBs through the other combined variables (possessiveness and DV perpetration). The variables together accounted for 30.0% of the variance in real-life threatening UPBs.

The integrated model for cyber excessive contact/checking behaviors included all of the variables from the model that predicted real-life unwanted contact/checking behaviors, including the variables from relational goal pursuit theory (rumination), investment model theory (investment and commitment), and coercive control theory (psychological DV perpetration), but also included physical DV perpetration, possessiveness, and anxious attachment. Anxious attachment was hypothesized in the original model to underlie any of the potential correlates, and was placed first in the

model with unidirectional arrows to each of the predictors of cyber excessive contact/checking behaviors. The initial model for cyber excessive contact/checking behaviors is depicted in Figure D4, and was a poor fit to the data, $\chi^2(12) = 600.76$, $p < .000$, RMSEA = .206 (90% CI = .192-.220), CFI = .771, TLI = .466. However, similar to the real-life unwanted contact/checking behaviors model, examination of standardized residual covariances indicated that there should be relationships between rumination and commitment, and between rumination and psychological DV perpetration. In addition, examination of the residuals indicated that the path from possessiveness to rumination should be added. Therefore, similar to the procedure in the real-life unwanted contact/checking UPBs model, unidirectional arrows were added from commitment, possessiveness, and psychological DV perpetration to rumination (Figure D5, Table D3). This model was a fair fit to the data, $\chi^2(11) = 75.221$, $p < .000$, RMSEA = .071 (90% CI = .056-.087), CFI = .975, TLI = .936. Results indicated that the coercive control variables (DV perpetration and possessiveness) were directly associated with increased cyber excessive contact/checking behaviors, such that greater DV perpetration and greater possessiveness were associated with increased cyber excessive contact/checking behaviors. There was also an indirect effect of DV perpetration on cyber excessive contact/checking behaviors through rumination. In addition, there was an indirect effect of greater possessiveness on increased rumination through greater DV perpetration (95% CI = .004-.01, $p = .009$), and an indirect effect of greater possessiveness on cyber excessive contact/checking behaviors through DV perpetration and rumination combined. In addition, similar to the model predicting real-life unwanted contact/checking behaviors,

greater rumination about the relationship was directly associated with increased cyber excessive contact/checking behaviors. There were no direct effects of investment or commitment on cyber excessive contact/checking behaviors, but, similar to real-life unwanted contact/checking behaviors, there was an indirect effect of greater commitment to the relationship on cyber excessive contact/checking behaviors through increased rumination. There was also an indirect effect of investment on rumination through commitment (95% CI = .09-.11, $p = .009$), and of investment on cyber excessive contact/checking behaviors through both commitment and rumination. Anxious attachment was indirectly associated with cyber excessive contact/checking behaviors through the other variables in the model.

As there were no variables other than the coercive control variables of physical, psychological and sexual DV perpetration that were correlated with cyber threatening UPBs at or above $r = .2$, there is no integrated model for cyber threatening UPBs. See results section and Table 7 for final results.

Figure D1. *Initial Integrated Model Predicting Real-Life Unwanted Contact/Checking Behaviors. Numbers in corners of endogenous variables are squared multiple correlations.*

Figure D2. *Modified Integrated Model Predicting Real-Life Unwanted Contact/Checking Behaviors. Numbers in corners of endogenous variables are squared multiple correlations.*

Table D1. *Standardized Indirect, Direct, and Total Effects of Integrated Real-Life Unwanted Contact/Checking Behaviors Model*

Variable	Indirect		Direct		Total	
	<i>B (SE)</i>	90% CI	<i>B (SE)</i>	90% CI	<i>B (SE)</i>	90% CI
Psychological DV Perpetration	.05 (.01)	.03-.06*	.14 (.03)	.09-.20*	.19 (.03)	.14-.25*
Investment	.15 (.02)	.11-.19*	.05 (.03)	-.03-.11	.20 (.03)	.13-.26**
Commitment	.15 (.02)	.11-.20**	.05 (.04)	-.03-.14	.20 (.04)	.12-.27*
Rumination	N/A	N/A	.27 (.04)	.18-.34*	.27 (.04)	.18-.34*

Figure D3. *Integrated Model Predicting Real-Life Threatening UPBs. Numbers in corners of endogenous variables are squared multiple correlations.*

Table D2. *Standardized Indirect, Direct, and Total Effects of Integrated Real-Life Threatening Behaviors Model*

Variable	Indirect		Direct		Total	
	<i>B (SE)</i>	90% CI	<i>B (SE)</i>	90% CI	<i>B (SE)</i>	90% CI
Self-Control	.15 (.03)	.10-.21*	.08 (.04)	.01-.17*	.23 (.03)	.17-.29**
Possessiveness	.16 (.03)	.11-.22*	N/A	N/A	.16 (.03)	.11-.22*
IPV	N/A	N/A	.52 (.06)	.37-.62*	.52 (.06)	.37-.62*

Figure D4. Initial Integrated Model Predicting Cyber Excessive Contact/Checking. Numbers in corners of endogenous variables are squared multiple correlations.

Figure D5. *Modified Integrated Model of Cyber Excessive Contact/Checking Behavior. Numbers in corners of endogenous variables are squared multiple correlations.*

Table D3. *Standardized Indirect, Direct, and Total Effects of Integrated Cyber Excessive Contact/Checking Model*

Variable	Indirect		Direct		Total	
	<i>B (SE)</i>	90% CI	<i>B (SE)</i>	90% CI	<i>B (SE)</i>	90% CI
Anxious Attachment	.21(.02)	.17-.25**	N/A	N/A	.21 (.02)	.17-.25**
Possessiveness	.13 (.02)	.09-.17*	.08 (.03)	.02-.15**	.21(.03)	.13-.26*
Investment	.15 (.02)	.11-.19*	.02 (.03)	-.03-.12	.17 (.03)	.12-.25**
IPV	.04 (.01)	.02-.06*	.24 (.05)	.15-.32*	.28 (.04)	.18-.36*
Commitment	.17 (.02)	.14-.22**	.08 (.04)	-.004-.14	.25 (.03)	.19-.30**
Rumination	N/A	N/A	.31 (.04)	.25-.39**	.31 (.04)	.25-.39**

Appendix E: Alternate Final Integrated Model

Figure E1. Second Integrated Model with Latent Variables and Path from Contact/Checking UPBs to Threatening UPBs. Numbers in corners of endogenous variables are squared multiple correlations.

Table E1. *Standardized Indirect, Direct and Total Effects and Bias-Corrected Confidence Intervals for Bootstrapped Total, Direct and Indirect Effects for Final Model with Latent Variable Path from Contact/Checking to Threat*

Effects on Pursuit						
	Indirect		Direct		Total	
Variable	<i>B (SE)</i>	90% CI	<i>B (SE)</i>	90% CI	<i>B (SE)</i>	90% CI
Self-Control	.12 (.02)	.08-.15*	N/A	N/A	.12 (.02)	.08-.15*
Anxious Attachment	.24 (.02)	.20-.28**	N/A	N/A	.24 (.02)	.20-.28**
Possessiveness	.15 (.03)	.10-.20*	.09 (.04)	.02-.18**	.24 (.03)	.16-.30*
Investment	.18 (.02)	.15-.22**	N/A	N/A	.18 (.02)	.15-.22**
IPV	.04 (.01)	.02-.07*	.31 (.05)	.18-.40*	.35 (.05)	.23-.45*
Commitment	.26 (.02)	.23-.32**	N/A	N/A	.26 (.02)	.23-.32**
Rumination	N/A	N/A	.50 (.03)	.44-.58**	.50 (.03)	.44-.58**
Effects on Threat						
Self-Control	.21 (.03)	.15-.26*	N/A	N/A	.21 (.03)	.15-.26*
Anxious Attachment	.09 (.01)	.07-.12**	N/A	N/A	.09 (.01)	.07-.12**
Possessiveness	.25 (.03)	.19-.30*	N/A	N/A	.25 (.02)	.19-.30*
Investment	.02 (.01)	.002-.05*	N/A	N/A	.02 (.01)	.002-.05*
IPV	.03 (.02)	.01-.08*	.72 (.07)	.55-.84*	.75 (.06)	.61-.87*
Commitment	.03 (.02)	.004-.06*	N/A	N/A	.03 (.02)	.004-.06*
Rumination	.05 (.03)	.01-.13*	N/A	N/A	.05 (.03)	.01-.13*
Contact/Checking UPBs	N/A	N/A	.09 (.06)	.02-.26*	.09 (.06)	.02-.26*

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