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Post-Breakup Unwanted Pursuit: A Refined Analysis of the Role of Romantic Relationship  
Characteristics

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## Abstract

This study re-examined the role of romantic relationship characteristics in unwanted pursuit behavior (UPB) perpetration. Relationship characteristics were investigated accounting for the role of significant breakup characteristics, using data of 396 legally divorced adults and advanced count regressions. Except conflict, the main effects of characteristics of the former relationship didn't contribute explained variance to the frequency of UPBs when controlling for the effects of significant breakup characteristics (initiator status and post-breakup negative affect). However, moderator analyses--investigating the interactions between relationship and breakup characteristics--did reveal significant effects of relationship satisfaction, alternatives, investments, and anxious attachment in interaction with initiator status and of relationship alternatives in interaction with post-breakup negative affect. These findings illustrate that the association between relationship characteristics and UPB perpetration is more complex than previously thought and are theoretically and clinically valuable.

Keywords: unwanted pursuit behavior, stalking, breakup, romantic relationship, count regression

## Post-Breakup Unwanted Pursuit: A Refined Analysis of the Role of Romantic Relationship Characteristics

Since the recent vogue of research on stalking began, a relational view on unwanted pursuit has started to flourish alongside the original clinical-forensic view on “star stalkers”. This resulted from the conceptualization of most stalking as a form of unwanted relationship pursuit as well as observations that stalking most often occurs between people with a shared relationship history (Spitzberg & Cupach, 2003). Cupach and Spitzberg (1998) elaborated on unwanted pursuit, which they named obsessive relational intrusion (ORI) and defined as “repeated and unwanted pursuit and invasion of one’s sense of physical or symbolic privacy by another person, either stranger or acquaintance, who desires and/or presumes an intimate relationship” (pp. 234-235). Other researchers similarly developed constructs to describe these relational intrusions; for example, UPB (Langhinrichsen-Rohling et al., 2000), breakup persistence (Williams & Frieze, 2005), and intrusive contact (Haugaard & Seri, 2003).

According to recent meta-analyses (Cupach & Spitzberg, 2004; Spitzberg & Cupach, 2007), the diversity of pursuit tactics can be classified into several categories. These cover a broad continuum of activities, starting from relatively mild behaviors and escalating in terms of severity, frequency, duration, and impact (e.g., Langhinrichsen-Rohling et al., 2000). By most judicial definitions, stalking occurs at the point when UPBs develop into an intentional pattern of repeated behaviors that result in fear or threat. Further, whereas UPBs exclusively result from a desire for intimacy with someone who is reluctant to engage romantically with the pursuer, stalking can also evolve from other motives such as hatred or revenge (Cupach & Spitzberg, 1998, 2004; Spitzberg & Cupach, 2007).

Former partners have often been targeted in stalking and UPB studies because they represent the largest group of stalkers and pursuers (about 50%; for reviews, see Douglas & Dutton, 2001; Spitzberg & Cupach, 2007) and hold a higher risk for violent, persistent, and

recurrent stalking behavior (for a review, see McEwan et al., 2007). Self-report studies that looked at the broader continuum of UPBs demonstrated that mild persistence behaviors are widely present and, in some cases, turn into a more severe stalking pattern. Davis et al. (2000), for example, found that about 40% of separated college students perpetrated at least one UPB against their ex-partner. Of this percentage, 7.6% to 10.7% perpetrated six or more UPBs, 4.6% admitted to engaging in vandalism and 1.9% in threats. De Smet et al. (2011), who investigated separated adults, showed that 17% engaged in one or more post-breakup UPBs in the 2 weeks preceding the assessment and that severe tactics were reported least.

The latter observations, along with the perception of UPBs as annoying, upsetting, privacy-violating, or (sometimes) threatening (Cupach & Spitzberg, 2000) and the increased chance of experiencing multiple negative psychological consequences when being stalked by a former partner (Johnson & Kercher, 2009), stimulated researchers to explore which factors explain the presence of relational intrusions and grasp on the development from mild to severe pursuit.

### *Relationship Characteristics*

Among the several types of explanatory factors, researchers have explored which early features of romantic relationships facilitate UPB perpetrations after breaking up.

### *Relational Conflict*

Empirical studies using college student samples have shown that former partner pursuit and stalking often result from high-conflict romantic relationships. These relationships are typically characterized by verbal, psychological, physical, or sexual abuse (Coleman, 1997; Langhinrichsen-Rohling et al., 2000; Roberts, 2005; Wigman et al., 2008; Williams & Frieze, 2005), control and denigration (Davis et al., 2000; Dye & Davis, 2003; Roberts, 2005), anger, jealousy, suspiciousness, and possessiveness (Dutton-Greene, 2004;

Langhinrichsen-Rohling et al., 2000; Roberts, 2002; Tassy & Winstead, 2010; Wigman et al., 2008).

### *Adult Attachment Style*

In addition to the role of relational conflict, the attachment theory (Bowlby, 1969, 1973, 1980, 1988) is to-date the most popular psychological theory to explain stalking and UPB perpetration (for a review, see Spitzberg & Cupach, 2007). Recent research on adult attachment accepts the two-dimensional view developed by Brennan and colleagues (1998). Brennan et al.'s attachment anxiety dimension represents the need for approval from others, the inclination to worry about rejection or abandonment by important others, and to feel distressed when significant others are unavailable or unresponsive. The attachment avoidance dimension reflects the tendency to elude intimacy, emotional closeness, dependence, self-disclosure, and the need for self-reliance. People can score high on neither dimension (secure attachment) or on one or both dimensions (insecure attachment). Because of the variety of interpersonal experiences throughout life, people are assumed to have a global attachment style, as well as relationship-specific attachment styles that may differ across relationships (Collins & Read, 1994).

During times of distress, such as separation, the specific attachment style corresponding to the relationship is activated and one behaves accordingly (Ainsworth et al., 1978; Vormbrock, 1993). Hence, it is not surprising that higher levels of anxious attachment (or the presence of a preoccupied or fearful attachment style) have been found to predict UPB perpetration in samples of separated students (Dutton & Winstead, 2006; Dye & Davis, 2003; Langhinrichsen-Rohling et al., 2000; Tassy & Winstead, 2010; Wigman et al., 2008; Wisternoff, 2008) as well as stalking perpetration in campus samples (Lewis et al., 2001; Patton et al., 2010), forensic samples of fixated stalkers (Tonin, 2004), clinical samples of ex-partners (MacKenzie et al., 2008), and community samples of ex-partners (Kamphuis et al.,

2004). These studies generally found no correlation between the level of avoidant attachment of perpetrators and the acting of UPB or stalking (e.g., Dutton & Winstead, 2006).

### *Investment Model*

In contrast with the negative relationship characteristics mentioned above, positive-toned relationship characteristics theorized in Rusbult's investment model (1980; Rusbult et al., 1998) have received little attention in UPB research. The investment model developed out of the interdependence theory (Kelley, 1979; Kelley & Thibaut, 1978; Thibaut & Kelly, 1959), which states that people become dependent on their relationship through their level of satisfaction (i.e., positive affect resulting from the fulfillment of needs by the partner) and quality of alternatives (i.e., the desirability and availability of relationship alternatives that may fulfill needs outside the relationship). The investment model adds the argument that relational dependence increases when more and important resources are invested in the relationship (*investment size*) and posits that people who feel more satisfied, perceive their alternatives as low in quality, and invest more in the relationship develop a stronger commitment to their relationship and, subsequently, show more persistence and relationship maintenance behaviors.

In line with these assumptions, Dutton and Winstead (2006) found a negative correlation between quality of alternatives and UPB perpetration. However, when controlling for other covariates in a multiple regression model, this effect disappeared. Similarly, Wisternoff (2008) observed a positive bivariate correlation between the level of investments and stalking perpetration, which their multiple regression analysis showed to be insignificant. Next, Tassy and Winstead (2010) found that their pursuit subscale was negatively correlated with quality of alternatives and positively correlated with commitment and investment size. Investment size also positively correlated to the aggression subscale. Although the effect of investment size remained significant in their multiple regression with aggression as the

dependent variable, the effects of investment size and commitment became insignificant in their multiple regression using pursuit as the outcome variable. Finally, correlations with the level of satisfaction were insignificant in these three studies, although Dye and Davis (2003) observed a positive correlation between pursuing the former partner and perceived relationship passion. In sum, the results of the limited existing research looking at the investment model in the context of UPB or stalking indicate weak and inconsistent relationships that need further clarification.

The current study aimed to re-examine the link between relational conflict, adult attachment style, the investment model components and post-breakup UPB perpetration. The added value of this study to previous studies examining pre-breakup relationship characteristics is twofold. First, the current study assessed the role of relationship characteristics by taking into account the effects of characteristics of the breakup that have found to be important in the context of UPB perpetration (view below). More in concrete, (a) main effects of relationship characteristics (which are, in terms of time, more *distally* related to post-breakup UPB) were tested controlling for the main effects of breakup characteristics (which are more *proximally* related to the perpetration of post-breakup UPBs) in order to assess their explained variance on top of breakup properties' effects, and (b) moderator effects of breakup characteristic--represented as the interactions between relationship and breakup characteristics--were explored to assess whether the influence of relationship properties differed according to the condition of the breakup. Second, we addressed some methodological limitations of previous studies (see below) when testing our hypotheses.

#### *Breakup Characteristics' Main and Moderating Effects*

It is known that among the variety of predictors, breakup characteristics strongly influence the perpetration of UPB between ex-intimates. The level of UPB depends on the participant's role in the relationship termination; namely, people whose ex-partners were the

main drivers to end the relationship often engage in more UPBs (e.g., Davis et al., 2000). Also, when the ex-partner or external factors (i.e., other persons, working or living conditions) are more strongly believed to have caused the separation, more UPBs are shown (De Smet et al., 2011). Further, the emotional disturbance resulting from the breakup strongly affects the perpetration of UPBs. Such a disturbance includes a variety of emotional reactions including breakup anger and jealousy, anxiety, loneliness, frustration, hurt, sadness, guilt, depression, or unhappiness (Davis et al., 2000; Dennison & Stewart, 2006; De Smet et al., 2011; Dutton & Winstead, 2006; Tassy & Winstead, 2010).

Previous studies also demonstrated important interrelationships between relationship and breakup properties. Prior studies found for instance that persons who show a high preoccupied type of attachment to their relationship are less likely to initiate the breakup themselves (Barbara & Dion, 2000). Likewise, individuals who were more anxiously attached and committed to their ex-partner, who invested more in their relationship, who showed higher level of relationship satisfaction, and who believed less in acquiring desirable alternatives tended to be more emotionally disrupted by the separation (Barbara & Dion, 2000; Saffrey & Ehrenberg, 2007; Simpson, 1987; Sprecher et al., 1998; Wisternoff, 2008). Next to these studies that demonstrate direct associations between relationship and breakup characteristics, some UPB researchers assumed that the effects of relationship characteristics on UPBs are distinct according to specific conditions of the breakup. These researchers namely separated people having difficulty letting go of their former partner from people whose partner had such difficulty or isolated the breakup initiators from the breakup non-initiators when examining the role of relationship properties (e.g., Cupach & Metts, 2002; Dutton & Winstead, 2006; Langhinrichsen-Rohling et al., 2000; Tassy & Winstead, 2010). However, although these previous UPB studies hinted at the presence of moderating effects of breakup characteristics, moderator effects have, to our knowledge, not yet been empirically



established by running true moderator analyses. The study of moderator effects nevertheless seems important as it could advance insight into the effects of relationship characteristics. Indeed, the moderating role of breakup characteristics might reveal under which breakup conditions certain relationship characteristics will most strongly explain perpetration of UPBs. Moderation is also especially interesting to study in order to further explore unexpected weak and inconsistent effects of variables, such as the aforementioned investment model components (cf., Baron & Kenny, 1986; Frazier et al., 2004).

#### *Methodological Limitations of Previous Research*

A first restriction we took into account refers to the types of samples used to study UPB and stalking among ex-intimates. Although prevalence studies on stalking have used large-scale representative community samples inside and outside Europe (e.g., Stieger et al., 2008; Tjaden & Thoennes, 1998), the majority of UPB and stalking studies examining former partners have used non-European, college student samples. However, Ravensberg and Miller's (2003) review illustrated that college students differ from the general adult population in their experiences of stalking. Moreover, the constructions and perceptions of UPB and stalking are culturally determined (e.g., Cupach & Spitzberg, 2004) and the legal situation of stalking differs across countries (De Fazio, 2009). This means that most existing findings on former partner UPB and stalking conducted in non-European college student samples cannot be easily generalized. Some exceptional studies have examined adult community samples of ex-partners in Europe. For example, Kamphuis and colleagues (2003, 2004) looked at a Dutch community group of support seeking, female victims of former partner stalking. The specificity of these gendered victim reports was countered by De Smet et al.'s (2011) UPB perpetration study using a general community sample of Flemish ex-partners. Both latter samples were nevertheless convenient in nature and might have limited

external validity, as suggested by interpersonal aggression research showing divergent results among convenience and representative samples (Nielsen & Einarsen, 2008).

A second concern refers to the statistical approaches previously used to analyze the skewed distribution of perpetrated UPBs. Some researchers handled the skewed distributions by classifying participants into two or three categories to (e.g., Patton et al., 2010; Roberts, 2002, 2005), resulting in loss of meaningful variance of the continuous dependent variable. Other researchers did apply linear regression analyses on the skewed distribution, but needed to drop highly skewed subscales from the analyses (e.g., Dutton-Greene, 2004) or to reduce violations of the normality assumption (e.g., by removing persons who reported no UPBs or transforming the skewed dependent variable; Dutton & Winstead, 2006). Yet, the use of general linear models is considered less appropriate to analyze count data (e.g., Vives et al., 2006). To analyze skewed counts, such as the number of reported UPB perpetrations, more advanced count models are better suited (for an overview, see Atkins & Gallop, 2007; Karazsia & van Dulmen, 2010; Long, 1997). Poisson regression is the basic model to analyze count data, but the variance of counts is often larger than the mean (overdispersion). In this case, a Poisson regression with an overdispersion parameter, called the Negative Binomial (NB) regression, will better fit the data (e.g., Gardner et al., 1995). Count distributions also often consist of a large stack of zeros. Zero-Inflated Poisson (ZIP) and Zero-Inflated NB (ZINB) models (Lambert, 1992) properly deal with such zero-inflated distributions by estimating parameters in two parts. The zero-inflation part models the probability of having *excess* zeros not accounted for by the Poisson or NB models. The counts part models the frequency of the remaining non-excess zeros and non-zeros accounted for by the Poisson or NB distribution.

*Summary and Hypotheses*

When former partners separate, UPBs are often displayed as part of one partner's desire to remain intimate with the former partner. Both relationship and breakup characteristics seem to explain the presence of these persistence behaviors. In this paper, we wanted to reinvestigate the role of distal pre-breakup relational determinants by controlling for the effects of important proximal breakup characteristics and to explore whether breakup characteristics moderate the association between relationship characteristics and UPB perpetration. To account for the sample-related and statistical limitations discussed in the previous section, hypotheses were tested using a Flemish adult community sample of ex-partners systematically recruited in courthouses and applying more adapted statistical count models.

In order to test our hypotheses, different successive models were fitted. After testing a reference model that explored the role of possible control variables (i.e., several demographic variables and social desirability), a first model assessed the main effects of the aforementioned breakup characteristics (controlling for the significant variables from the reference model). In line with prior research, we hypothesized that the level of UPB perpetration would be higher when (a) not having initiated the breakup, (b) experiencing more negative affect (i.e., emotional disturbance resulting from the breakup), and (c) more strongly attributing the cause of the breakup to external factors or the ex-partner (hypotheses 1a through 1c). Controlling for the variables significant in the previous two steps, a second class of models was fitted that separately tested the main effect of each relationship characteristic of interest. We expected (based on the robust empirical effects found in previous studies) that the main effects of (a) relational conflict and (b) anxious adult attachment added unique explained variance to the perpetration of UPBs in addition to the significant breakup characteristics. And, because of the limited and inconsistent regression results described

earlier, we theoretically (instead of empirically) assumed that higher levels of (c) relationship satisfaction, (d) investment size, and (e) lower quality of alternatives increased the number of UPBs when controlling for significant properties of the breakup (hypotheses 2a through 2e). Finally, a third class of models exploring moderator effects--represented as the interactions between relationship and significant breakup characteristics--was fitted (again controlling for the variables significant in the first two steps)<sup>1</sup>. For the moderator hypothesis (hypothesis 3), we expected, based on the interrelationships described earlier and on logic reasoning, that the expected negative impact of the relationship variables would be especially present in combination with UPB-enhancing breakup conditions, such as not having initiated the breakup or feeling highly emotionally disturbed by the separation.

## Method

### *Participants and Procedure*

This study made use of a subsample of the Interdisciplinary Project for the Optimization of Separation trajectories (IPOS; [www.scheidingsonderzoek.be](http://www.scheidingsonderzoek.be)), which is a cooperation of psychologists, lawyers, and economists from the Ghent University and the University of Leuven. This research project carried out a large-scale recruitment of formerly married partners. *All* partners who divorced between March 2008 and March 2009 in four major courts in Flanders were consequently approached in the waiting room to participate in a study on divorce ( $N = 8896$ ). In the court waiting room, people were handed over a research folder explaining the content and procedure of the IPOS-study as well as a response card whereupon they indicated whether or not they were interested to participate in the study, and, in case so, left their e-mail address or phone number to make further contact possible. The respondents willing to participate in court ( $N = 3921$ ; response rate = 44.1%) were

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<sup>1</sup> Because testing interaction effects is often subjected to low power, we chose to investigate simple rather than multiple interaction effects, which we assume will deflate Type I errors (Cohen et al., 2003; Frazier et al., 2004). To remain consistent, we likewise investigated simple instead of multiple main effects of the relationship characteristics.

subsequently contacted by phone or e-mail to arrange the filling out of a computerized questionnaire. This questionnaire was forwarded by e-mail to those people who preferred further contact by e-mail. People who preferred to be contacted by phone could decide during a standardized phone conversation whether they filled out the questionnaire (1) at home assisted by a researcher, (2) at home, alone, on their own computer (in that case the questionnaire was forwarded by e-mail), or (3) at one of the computer labs near their residence in the presence of a researcher. Both universities' ethical committees monitored the study closely. Respondents voluntarily participated and signed an informed consent form before filling out the survey. Because the total IPOS-questionnaire was very extensive, the questionnaire was divided into (1) a general basic questionnaire package that was assigned to every IPOS-respondent (and assessed standard information such as demographic data) and (2) three specific questionnaire packages (each assessing different topics of the divorce) of which only one was randomly assigned to each participant who previously completed all questions in the basic questionnaire package. The basic questionnaire package was filled out by 2146 persons (24.1%) and 1850 (20.8%) participants completed all questions in this package. Of these 1850 persons who were invited to fill out one of the three additional specific questionnaire packages, 1368 persons (15.4%) agreed. Based on random assignment, 447 (5%) persons received the specific questionnaire package that measured the variables of interest in this study. After eliminating 15 persons with invalid data for the intake assessment and 36 participants who did not answer more than 25% of the UPB items, a sample of 396 (4.5%) persons was eligible for the analyses<sup>2</sup>.

The 396 participants (59.6% women; 98.5% of Belgian nationality) were on average 43.10 years old ( $SD = 9.42$ , range = 22-68). Participants' highest education levels were most often at a bachelor's degree or above (39.9%). The formerly married persons in the sample

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<sup>2</sup> In the remaining measures, we similarly controlled for drop out by making (sub)scale scores invalid in cases where more than 25% of the items were unanswered.

had, on average, long-term relationships ( $M = 16.76$  years,  $SD = 9.43$ , range = 1-43) and long-term marriages ( $M = 14.87$  years,  $SD = 9.74$ , range = 0-43) with their ex-partner before the separation. Most participants also had children with their former partner (77.8%; number of children:  $M = 2.03$ ,  $SD = 0.93$ , range = 1-7). The mean time since the relationship ended was 1.80 years ( $SD = 1.87$ , range = 0-8.25). At the time the respondents participated in the study, 30.8% of the sample was already involved in a new romantic relationship<sup>3</sup>. Comparisons with the full population of persons in divorce proceedings in Flanders in 2009 ( $N = 14991$ ), provided by the Belgian National Institute of Statistics (2011), indicated no meaningful differences between the study sample and the Flemish population on the mean age of the ex-partners ( $M_{\text{sample}} = 43.10$ ,  $M_{\text{population}} = 43.20$ ), mean duration of their marriages ( $M_{\text{sample}} = 14.87$ ,  $M_{\text{population}} = 15.50$ ), and the presence of children (77.8%<sub>sample</sub>, 75.8%<sub>population</sub>). Other demographic data were not registered by this institute.

### *Measures*

#### *UPB Perpetration*

The Relational Pursuit-Pursuer Short Form (RP-PSF; Cupach & Spitzberg, 2004; Spitzberg & Cupach, 1997) was used to assess the extent of UPB perpetration. Using a procedure of forward and backward translations, a Dutch version of the scale was developed, which was evaluated by the second author of the scale. The original instruction, “In your lifetime, how often, if at all, have you ever persistently pursued someone over a period of time for the purpose of establishing some form of intimate relationship that this person did not want, by . . .”, was adapted to assess the perpetration of pursuit tactics against their ex-partner after a breakup. The new version read: “Since the breakup, how often, if at all, have you

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<sup>3</sup> Although being involved in a new relationship could potentially impact reports of the broken relationship, we did not observe significant differences in the reports of ‘singles’ and ‘non-singles’ on the pre-breakup relationship characteristics assessed in this study (except for quality of relationship alternatives with ‘singles’ showing a lower quality of alternatives than ‘non-singles’).

persistently pursued your ex-partner for the purpose of establishing some form of intimate relationship that your ex-partner did not want, by . . .” Example items are “leaving unwanted gifts (e.g., flowers, stuffed animals, photographs, jewelry, etc.)” and “threatening to hurt yourself (e.g., vague threats that something bad will happen to you, threatening to commit suicide, etc.)”. The normality of relationship pursuit was stressed and participants were explicitly asked to answer as sincerely as possible and to consider the total period of time they had been separated. The 28 items were rated on a 5-point Likert scale (from 0 = *never* to 4 = *over 5 times*). Because the scale’s development relies on thorough meta-analytic work of different pursuit tactics reported in the literature and due to the clustered-typed item format, the items represent a wide range of tactics that are quite complete reflection of the construct’s content, providing evidence for the instrument’s content or face validity. Factorial validity of the RP-PSF has been demonstrated by previous studies that found meaningful factor structures of, for example, two (Pursuit and Aggression; Dutton & Winstead, 2006), or three (Hyperintimacy, Intimidation, Physical Threat; Spitzberg, 2000) factors. These factors in general contain the pursuit-to-stalking continuum the scale intends to assess. Next to the use of subscales, the items can also be counted up to create an overall index of perpetration, with higher scores indicating greater levels of perpetration. The 28-item measure was reliable in the present study ( $\alpha = .88$ ), as was the case in previous research (e.g.,  $\alpha = .92$  in Kam & Spitzberg, 2005).

#### *Relationship Characteristics*

*Adult attachment style.* The participants’ adult attachment style was assessed using the 12-item Experience in Close Relationships Scale-Short Form (ECR-S; Wei et al., 2007). We employed a Dutch translation of the ECR-items (Conradi et al., 2006). Instead of measuring how the participants generally felt in romantic relationships, we chose for a relationship-specific approach by asking people to image their former partner as well as possible and to

remember how they generally felt in their relationship before the breakup. On a 7-point Likert scale (from 1 = *strongly disagree* to 7 = *strongly agree*), participants scored six anxious (e.g., “My desire to be very close sometimes scared my ex-partner away”) and six avoidant attachment items (e.g., “I wanted to get close to my ex-partner, but I kept pulling back”). Wei et al. (2007) found satisfactory psychometric properties for the ECR-S that were similar to those of the original ECR (Brennan et al., 1998). The ECR-S showed a stable factor structure, acceptable internal consistencies, good test-retest reliability, and evidence of construct validity. In the present study, alphas were .73 for anxiety and .48 for avoidance. Internal consistency increased to .81 and .84 by respectively dropping one of the six anxious and three of the six avoidant attachment items. Considering the unreliable nature of the avoidant attachment scale and its high negative correlation ( $r = -.62$ ) with anxious attachment, only the five-item anxiety subscale was used in the analyses. This subscale, moreover, included the items most theoretically relevant to UPB perpetration.

*Investment model.* The Investment Model Scale (IMS; Rusbult et al., 1998) assesses the key constructs of the investment model. Alongside commitment level, each of its three correlates--satisfaction level, quality of alternatives, and size of investment in romantic relationships--form separate subscales. The latter three subscales include global items (general measures of each construct used to calculate subscale scores), as well as facet items (concrete exemplars of each construct, which can optionally be offered to enhance global items' comprehensibility). To limit the length of the questionnaire, we omitted the facet items. The scale was translated into Dutch following the same procedure as for translating the RP-PSF. We modified the wording of the items so that participants focused on the relationship with their ex-partner before the breakup and we explicitly instructed the participants to consider the *total* period of their relationship with their ex-partner. Using a 9-point Likert scale (from 0 = *do not agree at all* to 8 = *completely agree*), the respondents judged five items assessing their



level of satisfaction (e.g., “During the time I was together with my ex-partner, our relationship was close to ideal”), five assessing their quality of alternatives (e.g., “During the time I was together with my ex-partner, people other than my ex-partner with whom I might become involved were very appealing”), five assessing the size of their investments (e.g., “During the time I was together with my ex-partner, I put a great deal into our relationship that I have lost now our relationship has ended”), and, finally, seven assessing their level of commitment (e.g., “During the time I was together with my ex-partner, I wanted our relationship to last forever”). Rusbult et al. (1998) demonstrated satisfactory internal reliability and convergent, discriminant, and predictive validity of the IMS. In this study, alpha values were .95 for satisfaction, .80 for quality of alternatives, .76 for investment size, and .91 for commitment. We considered analyses of the commitment subscale redundant because of its theoretical and statistical overlap with satisfaction ( $r = .62$ ), investment size ( $r = .55$ ), and quality of alternatives ( $r = -.34$ ).

*Relational conflict.* Based on the conflict properties subscale of the Children’s Perception of Interparental Conflict (CPIC; Grych et al., 1992), the level of conflict before the breakup was measured using three items, each representing a conflict property dimension. One item referred to the frequency of the conflict (“How often did you and your ex-partner have conflicts before the breakup?”, from 1 = *almost never* to 5 = *almost always*), one to the intensity (“How intense were these conflicts before the breakup?”, from 1 = *very severe* to 5 = *very calm*), and one to the resolution of the conflict (“How often did you and your ex-partner find a solution to these conflicts?”, from 1 = *almost never* to 5 = *almost always*). Total scores were created by counting up the scores of the three items after the latter two items were reverse scored ( $\alpha = .78$ ).

*Breakup Characteristics*

*Initiator status and locus of cause.* To identify the breakup initiator, participants were asked to report who wanted the breakup most (1 = *I*, 2 = *ex-partner*, 3 = *both equally*). Locus of cause was assessed using four items asking to what extent participants viewed themselves (internal attribution), versus their ex-partner and external factors such as illness or unemployment (external attributions), and their relationship as having caused the breakup (1 = *completely disagree* to 7 = *completely agree*).

*Post-breakup negative affect.* On a 9-point Likert scale (from 0 = *not at all* to 8 = *very much*) respondents rated how strongly they currently experienced 10 negative emotions when thinking back to their breakup (anxious, angry, frustrated, sad, jealous, ashamed, guilty, hurt, depressed, unhappy). These emotions are relevant in the context of interpersonal rejection (e.g., Leary et al., 2001) and most have been found to be related to UPB perpetration (see above). Similarly to previous studies (e.g., Dutton & Winstead, 2006), we counted up all 10 scores to create one total negative affect score ( $\alpha = .88$ ).

#### *Social Desirability*

An 11-item short version of the 33-item Marlowe-Crowne Social Desirability Scale (SDS; Crowne & Marlowe, 1960), developed by Ballard (1992), was used to assess the participants' inclinations to present themselves in a positive way. Loo and Loewen (2004) recommend the use of this short version based on their psychometric evaluation of several shortened versions of the SDS. The 11 *true* (1)–*false* (2) items (e.g., “I have never deliberately said something to hurt someone’s feelings”) were, nonetheless, only weakly internally consistent in our study ( $\alpha = .55$ ).

#### *Statistical Analyses*

Analyses were run in SPSS 15.0 and R 2.9.0. In order to analyze the skewed frequency distribution of the dependent variable (see descriptive statistics), we applied count regression models. As explained earlier, different successive models were defined to examine the role of

relationship characteristics in UPB perpetration<sup>4</sup>. The reference model that was tested to explore the significance of possible control variables was used to select the best fitting count regression model for the dependent variable's distribution.

Dummy coding was used as the default option for testing the effects of the categorical variables. Predictors that were measured on a continuous scale were standardized because z-scoring diminishes potential problems with multicollinearity among the predictors. It also makes it easier to interpret significant relationships because it provides a meaningful zero point, and to plot significant interaction terms (Frazier et al., 2004). We plotted the significant interactions using the predicted means of the dependent variable for representative groups (see Cohen et al., 2003; Frazier et al., 2004); Three levels for each continuous predictor (the mean and two standard deviations above and two below the mean of the predictors) and each level of the categorical predictors were considered. We used two instead of one standard deviation above and below the mean to make the nature of the interaction effects more visible and to depict the effects on a wider range of UPBs.

Due to the recruitment strategy, 31 ex-couples were part of the sample. The analyses below ignored the potential interdependence within these dyads because the number of ex-couples was small comparing to the large number of individuals, and because there was no strong evidence for interdependence as the correlation between the male and female UPB scores in the ex-couples was not significant (Spearman's  $\rho = .06, p = .74$ ). Also, randomly removing one of both ex-partners from each dyad could have been done in multiple ways and would bring in some degree of arbitrariness as the results sometimes slightly differed depending on which specific male or female ex-partner was removed. To assure that the impact of non-independence was limited, we replicated the analyses on different samples in which one member of each ex-couple was randomly removed. The significant main and

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<sup>4</sup> In each model, the Variance Inflation Factors (VIF) or Generalized VIF for models with three or more leveled categorical variables (GVIF, Fox & Monette, 1992), were calculated to check for multicollinearity.

interaction effects presented below appeared to be robust as they were almost always reproduced.

## Results

### *Descriptive Statistics*

Before standardizing the continuous predictors, descriptive statistics were examined (see Table 1). Situating mean scores in the predictors' range indicated that the participants' extent of anxious attachment, satisfaction, and quality of alternatives in the pre-breakup relationship, as well as their post-breakup level of negative emotions, was on average low. The participants reported a moderate tendency to respond in a socially desirable way, a moderate level of conflict, and a moderate size of investments in their relationship before the breakup. Participants predominantly tended to attribute the cause of the breakup to their ex-partner or past relationship and less strongly agreed that external factors or they themselves had caused the breakup. According to the frequencies, most participants reported that they wanted the breakup most and a minority perceived both themselves and their ex-partner as equally wanting the separation.

The histogram displayed in Figure 1 illustrates the right skewed and highly kurtotic dependent variable's distribution. Participants in our sample perpetrated on average 2.48 UPBs. More than half of the sample, 63.1% ( $n = 250$ ), reported no UPBs since the breakup, 31.3% ( $n = 124$ ) reported between 1 and 10 UPBs, and the remaining 5.6% ( $n = 22$ ) of the sample reported between 11 and 68 UPBs. Of the participants that did engage in UPB, most perpetrated only one (7.8%), two (4.3%), three (3.0%), or four (3.5%) behaviors. Higher numbers of perpetrated UPBs were reported by less than 3% of the participants. Table 2 indicates that the most prevalent behaviors included watching the ex-partner, monitoring the ex-partner's behavior, and making exaggerated expressions of affection. The least prevalent kind of perpetrated tactics (< 1%) were physically aggressive and threatening in nature and

included showing up at places in threatening ways, sexually coercing the ex-partner, leaving or sending threatening objects, kidnapping or physically constraining the ex-partner, and physically endangering his/her life.

#### *Count Model Selection and Exploring Control Variables*

To explore the influence of several demographic variables and socially desirable responding on UPB perpetration, four count regression models were run; a Poisson, ZIP, NB, and ZINB regression. The deviance test, used to compare nested models, showed that the NB model better fitted the data than the Poisson model ( $\chi^2[1, n = 371] = 1802.50, p < .001$ ) and that the ZINB model better fitted the data than the ZIP model ( $\chi^2[1, n = 371] = 484.69, p < .001$ ), suggesting that the dependent variable's distribution was significantly overdispersed. The Vuong test for comparing non-nested models (Vuong, 1989) illustrated that the data were concomitantly zero-inflated; the ZIP model better fitted the data than the ordinary Poisson model ( $V = 6.71, p < .001$ ), and the ZINB model more closely fitted the dependent variable's distribution than the non-zero-inflated NB model ( $V = 2.30, p = .01$ ). Figure 1 also demonstrated that the predicted frequencies of the ZINB model fitted the observed UPB frequencies well. Therefore, the ZINB regression was used in all subsequent analyses.

As noted earlier, this regression model consists of two parts: a zero-inflation part and a counts part. The zero-inflation part models the *excess* of zero counts in the distribution that are not accounted for by the counts part and represents a latent class of persons who can only have zero values (i.e., people who may only report no UPB perpetration, also named the *always zero group*). The counts part models the remaining non-excess zero and non-zero counts and represents a latent class of persons who can have both zero and non-zero values (i.e., people who may report UPB perpetration, also named the *not always zero group*)<sup>5</sup>. The

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<sup>5</sup> A more straightforward investigation of all zeros versus all non-zeros (zero-inflation part) and of the frequency of all non-zero counts (counts part) is offered in the Hurdle NB model (Mullahy, 1986). A Hurdle NB model could be preferable over the ZINB model in that it offers an easier interpretation in terms of all zero versus all

zero-inflation part is a binary logistic regression predicting the probability of excess zeros or the probability of membership in the *always zero group*. The counts part is an NB regression modeling the frequency of non-(excess) zero counts of persons in the *not always zero group*. In both parts, regression coefficients are exponentiated ( $e^{\beta}$ ) and called Odds Ratios (OR) and Rate Ratios (RR), respectively. When expressed in terms of percentage change ( $100 \times [e^{\beta} - 1]$ ), OR reflect the percentage decrease or increase in the odds of excess zeros, whereas RR represent the percentage decrease or increase in the expected non-(excess) zeros for every unit increase in the independent variable while holding all other variables in the model constant. OR or RR that are equal to one correspond to no effect of the predictor under consideration (Atkins & Gallop, 2007; Karazsia & van Dulmen, 2010; Long, 1997).

The results of the ZINB regression testing control variables (see Table 3) showed that age and education level significantly influenced the frequency of perpetrated pursuit tactics in the counts part of the model, with older and higher educated people showing less frequent UPB perpetrations. More specifically, the size of the RR in the counts part demonstrated that the chance of perpetrating an additional UPB decreased by 38% for every unit increase in age. For persons having a bachelors degree or above (relative to participants with lower levels of education) this chance decreased by 44%.

#### *Breakup Characteristics: Main Effects*

Main effects of breakup characteristics were assessed controlling for the significant effects of age and education level. The Likelihood Ratio (LR) test showed a significant contribution of initiator status to both the zero-inflation and counts parts of the model, which partly confirmed hypothesis 1a (see Table 3). More specifically, the chance of excess zero UPB counts in the zero-inflation part, or the chance of belonging to the *always zero group*, decreased by 58% when the ex-partner, instead of the participant, initiated the breakup. The

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non-zero counts (see Loeys et al., in press). Replication of the analyses in this paper using Hurdle NB models, however, resulted in similar conclusions.

frequency of UPB perpetrations in the counts part decreased by 55% when both ex-partners equally wanted the breakup, compared to when the participant wanted the breakup. They also decreased marginally significantly (by 41%) when both ex-partners initiated the breakup, compared to when the ex-partner wanted the breakup. Further, in line with hypothesis 1b, every unit increase in the level of negative affect lowered the odds of excess zero UPB counts (45%) in the zero-inflation part and elevated the frequency of UPB perpetrations (27%) in the counts part. The locus of cause variables did not reach significance, contradicting hypothesis 1c. The number of UPBs in the counts part decreased only marginally significantly when participants more strongly attributed the breakup cause to oneself (19%,  $p = .06$ ) and the relationship (18%,  $p = .07$ ) and increased marginally significantly when more strongly attributing the cause to external factors (18%,  $p = .08$ ).

#### *Relationship Characteristics: Main Effects*

Controlling for the significant effects of age, education level, negative affect, and initiator status, five separate models--one for each relationship characteristic--assessed the association between the relationship variables and UPB perpetration. In line with hypotheses 2a and 2c, Table 3 demonstrates a positive effect of the level of relational conflict on the number of UPB perpetrations in the counts part (a 35% increase) and a negative effect of the level of satisfaction in the previous relationship on the chance of excess zeros in the zero-inflation part (a 28% decrease). Contradicting hypotheses 2d, 2e, and 2b, we found no evidence for the supposed effects of investment size and quality of alternatives and the level of anxious attachment only *tended* to lower the chance of excess zero UPB counts in the zero-inflation part (25%,  $p = .08$ ).

#### *Breakup and Relationship Characteristics: Moderator Effects*

Despite several insignificant main effects of the relationship characteristics, the moderating effects of initiator status and post-breakup negative affect revealed several

significant associations between the relationship variables and UPB perpetration that only existed for some groups of people or were stronger for some people than for others. This finding confirms hypothesis 3. Each interaction term between the relationship variables on the one hand and initiator status and negative affect on the other hand was separately tested controlling for the previous significant effects of age, education level, initiator status, and negative affect as well as the main effect of the relationship variable included in the specific interaction term.

All relationship characteristics, except relational conflict, interacted significantly with initiator status. Figure 2A shows that the expected negative association between quality of alternatives and UPB perpetration was only observable in cases where the ex-partner initiated the breakup and was partly present in cases where both ex-partners equally wanted to end the relationship. In contrast, quality of alternatives positively related to the number of perpetrated UPBs for participants who initiated the breakup themselves. Figures 2B to 2D demonstrate that investment size, satisfaction, and anxious attachment were positively related to UPB perpetration in cases where both ex-partners initiated the break, and, even more pronounced in cases where the ex-partner ended the relationship. In the group who initiated the breakup themselves, satisfaction was unrelated to UPB perpetration and the level of investments and anxious attachment were negatively related to the dependent variable.

Using negative affect as a moderator variable, only the interaction with quality of alternatives was significant. Figure 3 shows the interaction between quality of alternatives and negative affect; A lower quality of alternatives predicted more UPBs only when experiencing high levels of negative affect. Conversely, a lower quality of alternatives was associated with less UPB perpetration in cases where the participants experienced less negative emotions after the breakup.



Of the five significant interaction terms, especially the combination of a high level of anxious attachment in the relationship with ex-partner initiation of the breakup and the combination of a low quality of relationship alternatives with high levels of negative affect due to breaking up were interesting as they seem to explain more severe patterns of unwanted pursuit consisting of up to seven or nine UPBs. The other significant interaction effects only explained changes in the amount of perpetrated behaviors that were generally situated within a range of zero to four UPBs.

### Discussion

Starting from the idea that UPB often follows previous romantic entanglements, this study reassessed the role of pre-breakup romantic relationship features in UPB perpetration. Different from previous studies, relationship characteristics were examined on top of, and, in interaction with well-known breakup characteristics. This examination was based on a unique sample of legally divorced adults and on sound statistical count models.

First, as other studies led us to expect (e.g., Dutton & Winstead, 2006), post-breakup negative affect was an important breakup characteristic eliciting UPB perpetration and suggesting that former partner pursuit partly reflects an inappropriate way of regulating the emotional upheaval of breaking up. Further, as in previous studies, being *dumped* heightened the chance of engaging in UPB (e.g., De Smet et al., 2011) and joint, bilateral initiation instead of unilateral initiation of the breakup lowered the frequency of UPB perpetrations (e.g., Cupach & Metts, 2002). The latter authors argue that it is likely that participation in the decision to separate is less face-threatening, making it easier to accept the dissolution. The locus of cause variables provided no significant explanations for former partner pursuit in this study.

The examination of relationship characteristics accounting for the influence of these significant breakup characteristics led to this study's main conclusion that the association

between relationship characteristics and UPB perpetration is more complex than previously thought.

The first interesting observation was that, except relational conflict, the distal predictors situated in the relational history did not contribute explained variance to the frequency of UPB perpetrations on top of the significant breakup properties that are proximally related to former partner pursuit. The effect of relational conflict seems to indicate that previously antagonistic, “enmeshed” couples have more difficulties accepting the breakup and taking distance, irrespective of their levels of post-breakup negative affect and their role in the divorce initiation. In contrast to domestic violence, conflict has rarely been studied in relation to UPB perpetration. Although marital conflict is not the same as domestic violence, our finding is superficially in line with research showing important empirical and conceptual links between relational stalking and domestic violence (e.g., Douglas & Dutton, 2001). Of the remaining relationship characteristics, only the levels of satisfaction and anxious attachment significantly (in the case of anxious attachment, marginally significantly) influenced the probability of perpetrating UPB. People who felt more satisfied or anxiously attached in their relationship were more likely to engage in any pursuit behaviors, but did not display higher numbers of UPBs as hypothesized.

Based on the insignificant main effects of most investment model variables in the present study, as well as in other studies (see Dutton & Winstead, 2006; Tassy & Winstead, 2010; Wisternoff, 2008), one could wrongly conclude that these positive-toned relationship characteristics are irrelevant predictors of former partner pursuit. However, the investigation of moderator effects revealed that satisfaction, quality of alternatives, investment size, and, also, anxious attachment are important risk factors of pursuit that *do* matter, but complexly interact with certain breakup conditions.

As hypothesized, we found that initiator status moderated the effects of anxious attachment and all investment model variables. Specifically, a lower quality of alternatives was associated with more UPB in cases where the pursuer was *dumped* by the ex-partner. People who initiated the breakup themselves perpetrated less UPB, even when their quality of alternatives was low. People who invested more in the relationship, felt more satisfied with the relationship, and were more strongly anxiously attached to their ex-partner before the breakup, pursued their ex-partner more intensely when their ex-partner or (to a lesser extent) they both equally wanted to end the relationship. When the participants themselves initiated the separation, they did not pursue their ex-partner more, even if they were more satisfied or anxiously attached, or had invested more in the former relationship. Generally speaking, ex-partner and mutual breakup initiation seemed to enhance, whereas self-initiation seemed to buffer the adverse effects of the relationship variables.

Negative affect interacted with quality of alternatives; a lower quality of alternatives was associated with more UPBs, but only in cases where the pursuer experienced higher levels of negative affect. People who experienced fewer negative emotions as a result of the separation perpetrated less UPBs, even when their quality of alternatives for the relationship was low. Other moderator effects of negative affect were insignificant. Negative affect might be more a mediator explaining the link between relationship characteristics and UPB perpetration, rather than a moderator altering the direction or strength of this relationship. The effects of anxious attachment, relational investments, and relationship passion on UPB perpetration have namely previously been found to be mediated by breakup anger-jealousy or sadness (Davis et al., 2000; Dye & Davis, 2003; Wisterhoff, 2008). Otherwise, as is often the case, low power might have hindered the detection of true interaction effects with negative affect (Frazier et al., 2004).

Despite their relevance, interaction effects between relationship and breakup characteristics on UPB have (different from mediation analyses) not been studied in the past. Instead, the only evidence pointing at the moderating effects of breakup characteristics result from UPB studies that conducted separate analyses on people having difficulty letting go of their former partner versus people whose partner had such difficulty, or on breakup initiators versus breakup non-initiators. Results from these studies indirectly seem to support our observed moderator effect of initiator status in the association between relationship properties and UPB perpetration. Specifically, a lower quality of alternatives (Tassy & Winstead, 2010) predicted higher levels of pursuit perpetration among students having difficulty letting go of their former partner, and prior closeness (Cupach & Metts, 2002) as well as anxious attachment (Langhinrichsen-Rohling et al., 2000) were positively associated with (more severe) reconciliation attempts among rejected ex-partners. Because anxiously attached persons and persons who feel more satisfied, who invest more and who perceive their alternatives as low in quality tend to persist more in their relationships (Barbara & Dion, 2000; Brennan et al., 1998; Rusbult et al., 1998), it sounds logical that being rejected by the former partner amplifies their tendency to persevere.

Our prevalence estimates showed that, in general, a minority of all ex-partners engage in UPB perpetration. Only about one third of our sample engaged in at least one pursuit tactic. The average frequency of behaviors was low (i.e., on average two to three behaviors were shown) and especially mild UPBs were present, such as keeping an eye on the ex-partner or making exaggerated expressions of affection. Similar to other UPB studies (e.g., Davis et al., 2000), escalation in terms of highly frequent perpetration and/or engaging in threatening, aggressive UPBs was observed in only a small minority of cases even though ex-partners are known to have an elevated risk of persistent and violent stalking (e.g., McEwan et al., 2007). At the risk of extrapolating results to UPB ranges where we had a relatively small number of

observations, we found indications that specific interactions between initiator status and anxious attachment, and between negative affect and quality of alternatives related to a relatively high number of UPB perpetrations whereas the other significant interaction terms only related to a restricted and less meaningful number of behaviors. Clearly, a doubling of the number of UPBs from two to four has less clinical implications than a doubling from four to eight, but further studies would be needed to confirm our findings at the higher ranges of UPB.

Most studies using college student samples found, relative to the present study, higher estimates of post-breakup UPB perpetration up to 97% (Williams & Frieze, 2005) or 99% (e.g., Langhinrichsen-Rohling et al., 2000). The fact that self-selective convenience samples generally show higher estimates of interpersonal aggression compared to more representative samples (Nielsen & Einarsen, 2008) might partly explain this divergence. Also, according to our significant effect of age, younger people, like students, are more likely to pursue their ex-partner more often. Similar to our significant effect of age, previous studies found that younger people show more protest reactions to breaking up (such as wanting/trying to get the ex-partner back) and display greater perseveration in wanting the lost partner back (Davis et al., 2003). Ravensberg and Miller (2003) attributed the cause of higher prevalence rates of stalking among young adults to the structure of college campuses (e.g., sharing of common spaces) and immature social skills to negotiate relationships with others. Less developed social skills, as well as heightened rates of unemployment observed among stalkers (Cupach & Spitzberg, 2004), might also explain the risk we found of having a lower than bachelors education level (see also, De Smet et al., 2011).

#### *Limitations, Strengths, and Implications*

Several strengths and limitations of this study deserve mentioning.

The current study analyzed a unique, ecological valid adult community sample of legally divorced ex-partners instead of separated students. Consequently addressing *all* divorcing partners in specific courthouses over a 1-year period was intended to reduce the self-selection bias of convenience sampling (in that it gave all separating people equal chance to participate) and to improve representativeness of the sample. Although there was a (typical) slight overrepresentation of women in our sample, comparisons with the total Flemish divorcing population on other demographic variables generally supported the representative nature of our sample. Presumably, highly educated people were somewhat overrepresented in our sample, but, unfortunately, information on the education level of the divorcing population in Flanders was not available. Most participants in our sample had the Belgian nationality. Although our Flemish study promotes cultural diversity of the UPB and stalking research examining former partners that is currently dominated by the use of non-European samples, future comparative research using multicultural samples would be valuable to directly address cultural differences.

Previous studies used inventive techniques to deal with the skewed, zero-inflated distributions of UPB perpetration. Tassy and Winstead (2010), for example, combined discriminant function analyses (to distinguish the non-zero from the zero counts) with linear regressions (to analyze the frequency of the transformed non-zero counts). We, on the other hand, used more advanced zero-inflated count models that simultaneously tested two models to examine the excess zero and non-(excess) zero counts. Although both models were statistically useful to fit all observations in our distribution, especially the findings in the counts parts that analyzed the frequency of non-(excess) zero counts were theoretically and clinically meaningful as not the mere presence of such behaviors but their repeated character or frequency is a fundamental element in defining UPB and stalking (Cupach & Spitzberg, 1998, 2004; Spitzberg & Cupach, 2007). Except the significant main effect of relationship

satisfaction (and marginally significant main effect of anxious attachment), all other effects reached statistical significance in the counts parts of our models.

For timesaving reasons, only the perpetrator's perspective was assessed in this study. Several studies warn that--due to the presence of cognitive rationalizations--perpetrators tend to underreport the number of UPBs they exhibited (e.g., Cupach & Spitzberg, 2004; Dutton & Winstead, 2006; Sinclair & Frieze, 2005), especially when it comes to more severe pursuit tactics (Langhinrichsen-Rohling et al., 2000). However, in contrast to previous studies (e.g., De Smet et al., 2011), the present study did not show that the RP-PSF was confounded with social desirability but this might have been due to the use of an only modest reliable scale to assess social desirability. Despite satisfying confirmatory factor analyses of the full and short SDS, the lower than psychometrically desirable reliability of the full and short scale scores appears to be a general problem of the popular Marlow-Crowne scale (Loo & Loewen, 2004) and supports the use of alternative scales in future research (e.g., the Lie scale of the Eysenck Personality Scale; Eysenck & Eysenck, 1985). It is difficult to predict whether the use of a more reliable scale would have had more potential to detect response biases in UPB reports and how possible significant response biases would have influenced the other findings<sup>6</sup>. On the other hand, the lack of effect of self-presentation concerns in our study as well as in some other studies (e.g., Spitzberg, 2000), show we have no strong empirical basis to suggest an underestimation of the true frequency of UPBs in our sample. Moreover, comparable prevalence estimates of UPB in other ex-partner studies (36.9% at least one UPB in our sample versus 40% in Davis et al., 2000) and of ex-partner stalking in national victim studies (5.6% more than 10 UPBs in our sample versus 3.8% lifetime prevalence of ex-partner stalking in Dressing et al., 2007) defend the accurateness of our data.

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<sup>6</sup> In the study of De Smet et al. (2011), however, controlling for the significant effect of social desirability still resulted in meaningful effects of the predictors of interest.

Further, the retrospective nature of our study likely induced recall biases present in the reports of the intact, pre-breakup relationship. Although participants were explicitly instructed to consider the complete period they were together with their ex-partner, reports of relationships after they have ended tend to be influenced by current thoughts and feelings (McFarland & Ross, 1987). More severe pursuers, for instance, are prone to idealize the lost relationship they desire (Cupach & Spitzberg, 2004) and, thus, likely glorified their past relationship in the questionnaires. Due to these biases, the current study should be considered an examination of the link between *post hoc perceived* relationship characteristics and *subjective* reports of UPB perpetration. More objective ratings of the assessed constructs could be better captured by combining self-report data of both ex-partners or by performing follow-up studies gathering information from the time relationships are still intact. Follow-up studies are, moreover, indispensable to shed light on the causal direction of the observed relationships. Future dyadic research using samples of ex-couples would also be interesting to conduct in that it could take into account the interdependence between ex-partners and reveal bidirectional (partner) effects of relationship characteristics.

To conclude, assuming we acquired accurate data based on perpetrators' reports, we found that the prevalence and severity of UPBs in a general sample of divorced partners was limited. As there are two sides to every question, the estimates we obtained can be interpreted in a two-folded way. On a negative note, it seems that a small but significant number of cases do exist in the general divorcing population that show a clinically relevant pattern of repeated and severe behaviors that deserves professional attention. On a positive note, it appears that most divorces are free of unwanted pursuit and that UPBs, if perpetrated, are most of the time less severe in nature and perpetrated with low frequency. Unfortunately, we lack information on the receivers' subjective perceptions of these behaviors and their impact which would be useful to further determine the genuine clinical relevance of the UPBs we observed. Next to



assessing the prevalence of UPBs, the main focus of this study lay on examining the dynamics behind the perpetration of these behaviors. The current study indicates that former partner UPB perpetration, in case it occurs, can be partly explained by the perpetrators' perceptions of the breakup context, the relational history and their broader interactions. Especially the investigation of moderator effects contributed to the existing knowledge on relationship characteristics and can be considered theoretically and clinically valuable. For researchers, one challenge might be the refinement of theoretical models, such as the attachment theory and theoretical investment model central in this paper, as their suitability to explain UPB and stalking after breaking up seem to differ depending on the proximal conditions of the breakup. Maturation of the field in theorizing about UPB and stalking might also consist of studying the need for particular combinations or clusters of predictive factors or categorically distinct theoretical models (according to who initiated the breakup--e.g., Cupach et al., 2011). Clinical practice involved with the identification, assessment, and management of the risk for unwanted pursuit and stalking, might profit from the present and future research results that provide input to polish existing risk assessment instruments or therapy programs for pursuers and stalkers.

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Table I

*Descriptives and Pearson Correlations of Independent Variables*

Variable	<i>N</i>	<i>M (SD)</i>	Range	2	3	4	5	6	7	8	9	10	11
1. ECR-S_anxious	387	15.35 (7.61)	5-35	.12*	.06	.27**	-.07	.03	.07	-.02	-.02	.35**	-.09
2. IMS_satisfaction	385	17.38 (11.58)	0-40	-	-.13*	.39**	-.48**	.05	-.07	-.31**	.01	.18**	.01
3. IMS_alternatives	383	15.65 (9.66)	0-40		-	-.08	-.03	.23**	-.04	.16**	-.04	-.11*	-.23**
4. IMS_investment	377	21.27 (9.31)	0-40			-	-.12*	-.02	.10*	-.18**	.06	.41**	.04
5. Relational conflict	378	9.97 (3.15)	3-15				-	-.17**	.17**	.15**	-.03	-.06	-.05
6. LOC_self	396	2.77 (1.65)	1-7					-	-.45**	.26**	.04	-.05	-.28**
7. LOC_ex-parter	396	5.02 (1.81)	1-7						-	-.19**	-.07	.14**	.11*
8. LOC_relationship	396	4.72 (1.91)	1-7							-	-.15**	-.13*	-.11*
9. LOC_external factors	396	2.50 (1.92)	1-7								-	.04	-.08
10. Negative affect	396	24.56 (18.13)	0-80									-	-.06
11. SDS	374	18.80 (2.03)	11-22										-
12. Initiator	396	I = 49%, ex-partner = 32.3%, both = 18.7%											

Note. ECR-S = Experience in Close Relationships Scale-Short Form; IMS = Investment Model Scale; LOC = locus of cause; SDS = Social Desirability Scale.

\* $p < .05$ . \*\* $p < .01$ .

Table II

*Descriptives and Frequencies of Perpetrated UPBs Since the Breakup (N = 396)*

UPB	<i>M (SD)</i>	%
Leaving unwanted gifts	0.12 (0.48)	7.1
Leaving unwanted messages of affection	0.19 (0.69)	8.3
Making exaggerated expressions of affection	0.29 (0.90)	11.9
Following your ex-partner around	0.08 (0.48)	3.0
Watching your ex-partner	0.31 (0.88)	13.9
Intruding uninvited into your ex-partner's interactions	0.09 (0.45)	4.8
Invading your ex-partner's personal space	0.16 (0.64)	7.6
Involving your ex-partner in activities in unwanted ways	0.03 (0.27)	1.5
Invading your ex-partner's personal property	0.08 (0.48)	3.8
Intruding upon friends, family or coworkers of your ex-partner	0.09 (0.47)	4.8
Monitoring your ex-partner and/or his/her behavior	0.27 (0.81)	12.4
Approaching or surprising your ex-partner in public places	0.02 (0.24)	1.3
Covertly obtaining private information of your ex-partner	0.19 (0.68)	9.3
Invading your ex-partner's property	0.04 (0.27)	2.3
Leaving unwanted threatening messages	0.12 (0.60)	5.3
Physically restraining your ex-partner	0.05 (0.32)	3.8
Engaging in regulatory harassment	0.03 (0.25)	1.5
Stealing or damaging valued possessions of your ex-partner	0.02 (0.24)	1.3
Threatening to hurt yourself	0.10 (0.46)	5.8
Threatening others your ex-partner cares about	0.06 (0.43)	2.8
Verbally threatening your ex-partner personally	0.08 (0.40)	5.6
Leaving or sending your ex-partner threatening objects	0.00 (0.05)	0.3
Showing up at places in threatening ways	0.01 (0.21)	0.5
Sexually coercing your ex-partner	0.01 (0.07)	0.5
Physically threatening your ex-partner	0.03 (0.19)	2.3
Physically hurting your ex-partner	0.03 (0.21)	2.8
Kidnapping or physically constraining your ex-partner	0.00 (0.00)	0.0
Physically endangering your ex-partner's life	0.00 (0.00)	0.0

Table III

*Summary of Significant Main Effects in ZINB Regressions Testing Control, Breakup, and Relationship Variables*

Variable	Zero-inflation part		Counts part	
	OR ( $e^\beta$ )	95% CI	RR ( $e^\beta$ )	95% CI
Control variables <sup>a</sup> ( $n = 371$ )				
Age	1.06	0.61-1.85	0.62*	0.40-0.95
Education	0.55	0.27-1.12	0.56*	0.35-0.91
Breakup characteristics <sup>b</sup> ( $n = 393$ )				
Initiator	$\chi^2(2, n = 393) = 8.25^*$		$\chi^2(2, n = 393) = 6.01^*$	
Ex-partner vs. I	0.42**	0.22-0.77	0.76	0.47-1.21
Both vs. I	0.75	0.35-1.64	0.45*	0.24-0.83
Both vs. ex-partner	1.80	0.78-4.15	0.59 <sup>†</sup>	0.34-1.04
Negative affect	0.55***	0.41-0.74	1.27*	1.05-1.54
Relationship characteristics <sup>c</sup> ( $n_{\text{satisfaction}} = 383, n_{\text{conflict}} = 375$ )				
IMS_satisfaction	0.72*	0.53-0.98	1.00	0.81-1.23
Relational conflict	1.11	0.78-1.58	1.35*	1.03-1.75

*Note.* OR = Odds Ratios reflecting the effect of a predictor on the odds of *excess* zeros (i.e., the zeros not accounted for by the NB model), RR = Rate Ratios reflecting the effect of a predictor on the mean number of UPB perpetrations in the absence of zero-inflation, CI = confidence interval.

<sup>a</sup>The model included gender, age, education level, having a new partner, having children with the ex-partner, length of the past relationship, time since the breakup, and social desirability (VIF = 1.03-2.51). Education level was recoded into education level lower than a bachelor degree (reference category) and a bachelor’s degree or above. <sup>b</sup>The model consisted of age, education level, and locus of cause in the counts part and initiator status and negative affect in both parts (cf., De Smet et al., 2011; GVIF = 1.01-1.16). <sup>c</sup>Relationship characteristics were separately studied each time controlling for age and education level in the counts part and initiator status and negative affect in both parts (GVIFs = 1.00-1.12).

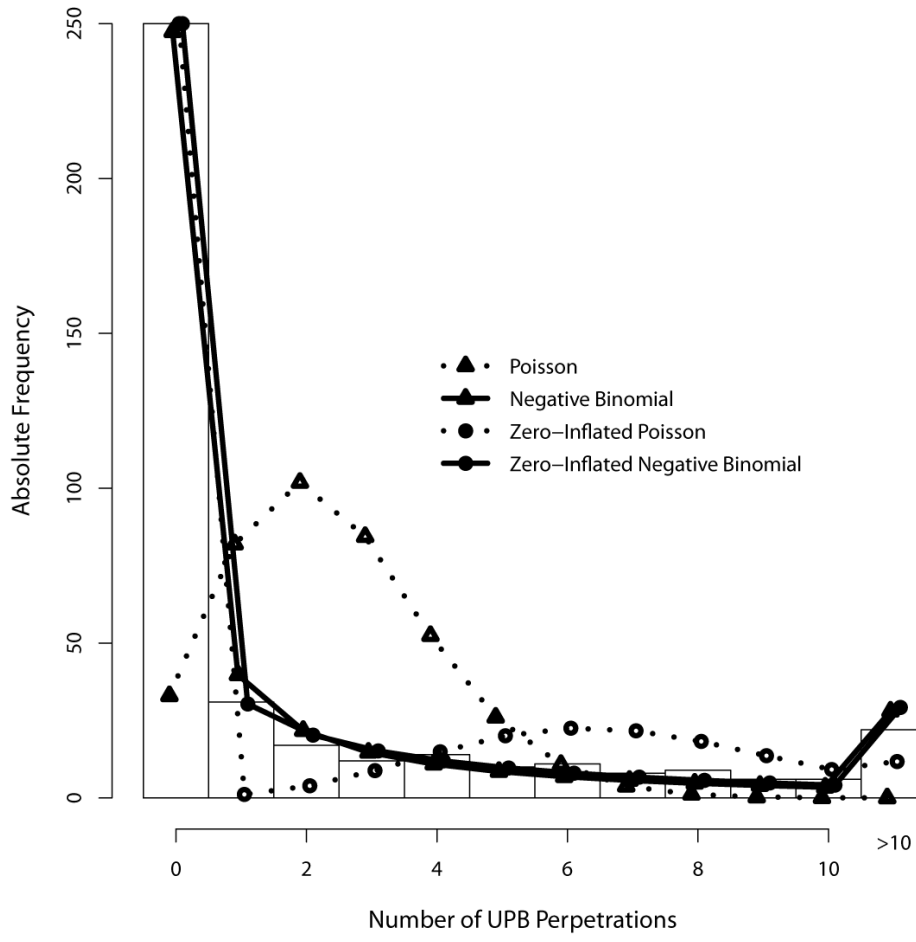
\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ . <sup>†</sup> $p < .10$ .

Figure Captions

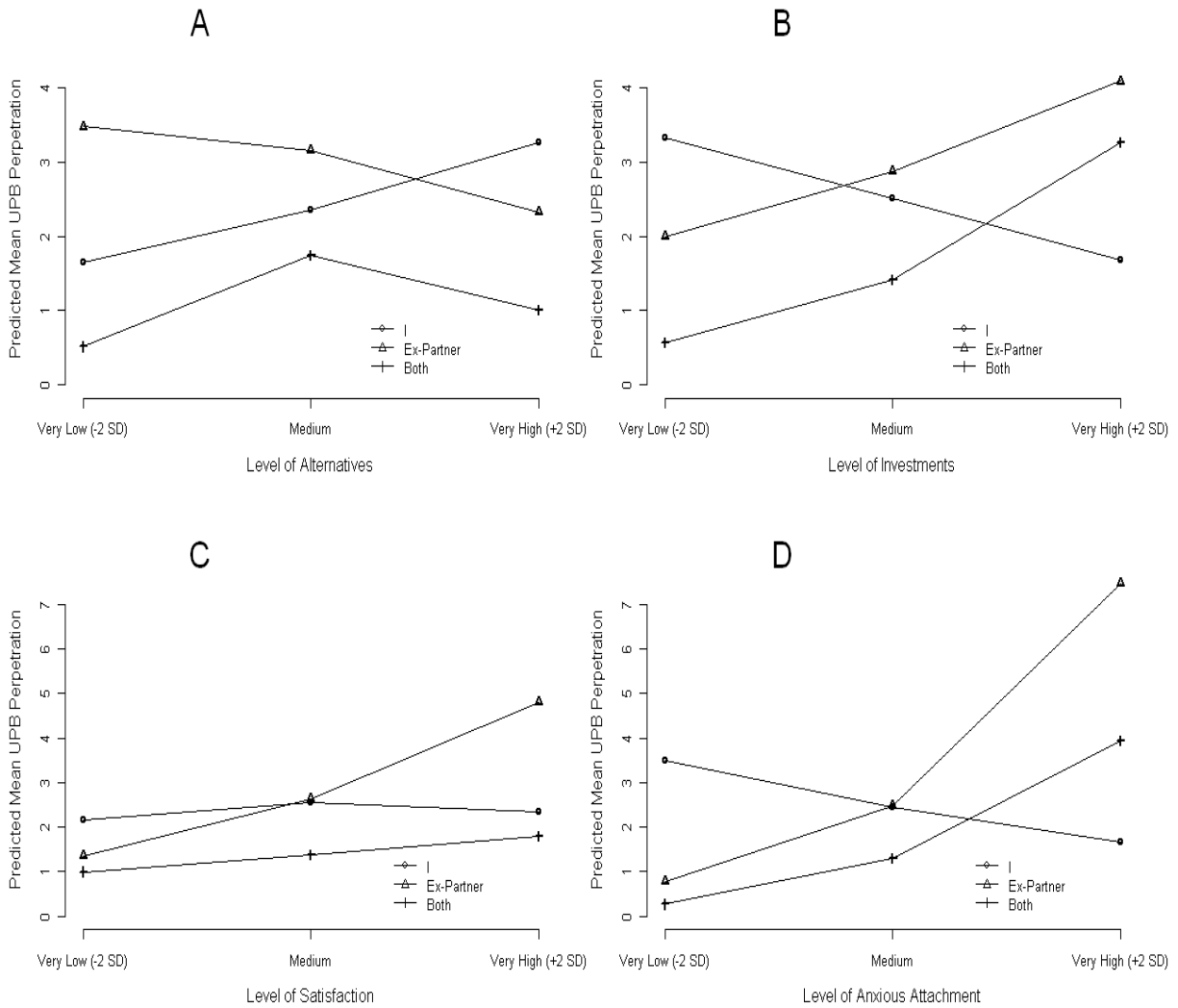
*Figure 1.* Histogram of UPB perpetrations with predicted frequencies from different types of count regressions.

*Figure 2.* Plot of *A)* significant level of alternatives x initiator interaction, *B)* significant level of investments x initiator interaction, *C)* significant level of satisfaction x initiator interaction, and *D)* significant level of anxious attachment x initiator interaction.

*Figure 3.* Plot of significant level of alternatives x negative affect interaction.

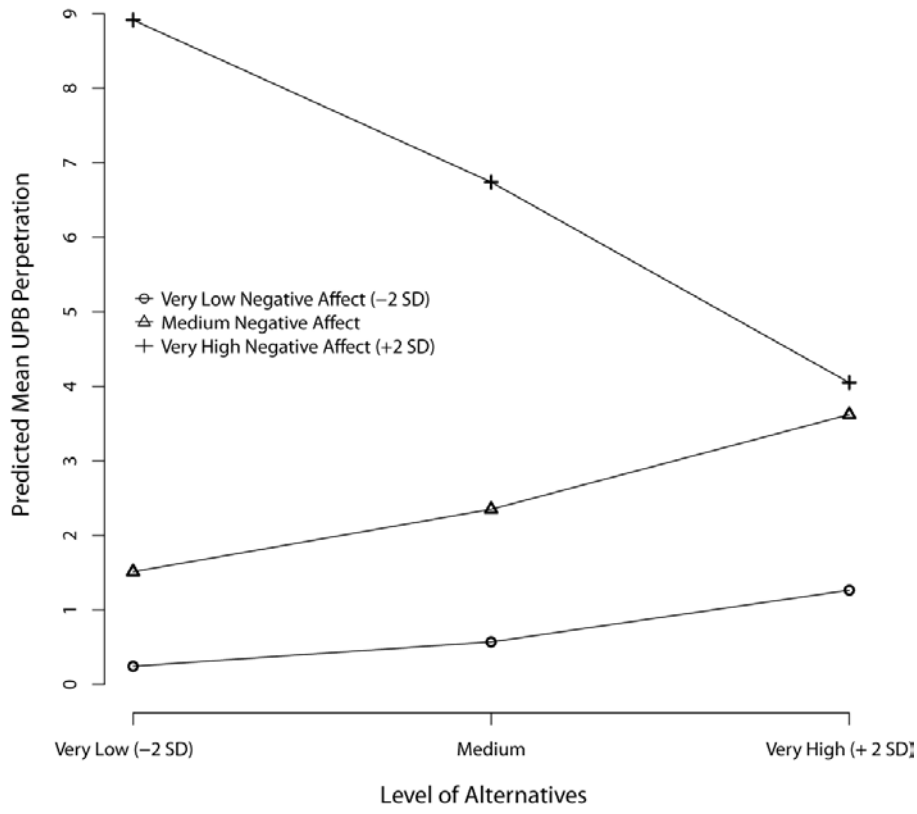


Note.  $N = 396$ ,  $M (SD) = 2.48 (6.29)$ , Range = 0-68, Skewness = 6.15, Kurtosis = 53.46.



Note. A) Interaction significantly contributed to the model;  $\chi^2_{\text{zero-inflation}}(2, n = 381) = 12.71, p < .005$  and  $\chi^2_{\text{counts}}(2, n = 381) = 8.28, p < .05$ . Significant levels of initiator; both vs. I (RR = 0.38,  $p < .05$ , CI<sub>95%</sub> RR = 0.18-0.83; OR = 0.18,  $p < .01$ , CI<sub>95%</sub> OR = 0.05-0.63) and ex-partner vs. I (RR = 0.57,  $p < .05$ , CI<sub>95%</sub> RR = 0.34-0.94). B) Interaction significantly contributed to the counts part;  $\chi^2_{\text{counts}}(2, n = 375) = 9.19, p < .05$ . Significant levels of initiator; both vs. I (RR = 1.96,  $p < .05$ , CI<sub>95%</sub> RR = 1.17-3.29) and ex-partner vs. I (RR = 1.85,  $p < .01$ , CI<sub>95%</sub> RR = 1.16-2.94). C) Interaction significantly contributed to the counts part;  $\chi^2_{\text{counts}}(2, n = 383) = 6.66, p < .05$ . Significant levels of initiator; both vs. I (RR = 1.82,  $p < .05$ , CI<sub>95%</sub> RR = 1.01-3.27) and ex-partner vs. I (RR = 1.65,  $p < .05$ , CI<sub>95%</sub> RR = 1.07-2.53). D) Interaction significantly contributed to the counts part;  $\chi^2_{\text{counts}}(2, n = 385) = 9.58, p < .01$ . Significant levels of initiator; ex-partner vs. I (RR = 2.13,  $p < .005$ , CI<sub>95%</sub> RR = 1.32-3.42).





Note. Interaction term reached significance;  $RR = 0.77$ ,  $p < .01$ ,  $CI_{95\% RR} = 0.63-0.94$ .







