



rijksuniversiteit  
groningen

# Romantic Regrets: Counterfactual Thoughts, Regret, and Rumination

*Christine Barnett*

Master Thesis - Applied Social Psychology

*S5171822*

*July 2023*

Department of Psychology

University of Groningen

Examiner/Daily supervisor:

Professor Russell Spears/Dr Kai Epstude

ROMANTIC REGRETS	2
Romantic Regrets: Counterfactual Thoughts, Regret, and Rumination	1
Abstract	4
Romantic Regrets	5
Understanding the Romantic Dissolution	6
Figure 1	7
Counterfactual Thoughts and Romantic Dissolutions	7
Regret and Romantic Dissolutions	8
Regret Intensity	9
Hypothesis 1	10
Investment and Regret Intensity	10
Hypothesis 2	11
Rumination and Romantic Dissolutions	11
Measuring Rumination	12
Hypothesis 3	13
The Present Study	13
Methods	14
Participants and Design	14
Procedure	14
Materials	15
Demographic Questionnaire	15
Romantic Demographics	16
Measuring Counterfactual Thoughts	16
Satisfaction With Life Scale (SWL)	17
Ruminative Response Scale (RRS)	18
Regret Elements Scale (RES)	18
Results	19
Hypothesis 1	19
Hypothesis 2	20

ROMANTIC REGRETS	3
Figure 2	21
Hypothesis 3	21
Exploratory Analyses	23
Omission Regrets as Moderator	23
Termination and Investment	24
Regret Elements Sub-Scales	25
SWL Correlation with Brooding and Reflection Sub-scales	26
Discussion	27
Commission and Omission Regrets as Moderators	28
Reflection and RES Correlation	31
Limitations	33
Language Barrier	33
Procedural Issues	35
Negative Affective Influences on the Open-ended Questions	35
Future Research	36
Conclusion	38
Acknowledgements	39
Conflicts of Interest	40
Compliance with Ethical Standards	40
Data Availability Statement	40
References	41
Appendices	47
Appendix 1	47
Appendix 2	48
Appendix 3	49
Appendix 4	50

### Abstract

Disenfranchised grief, such as the one experienced after romantic dissolutions, has been investigated with emphasis on the experiences of the situation as a type of bereavement, yet devalued of persistence, legitimacy, and intensity. Within romantic dissolutions, thought patterns and feelings have been identified to be part of the core experience. Some of these; counterfactual thoughts, regret, rumination, is at the centre of the current study which aims to investigate their associations with relationship-specific variables. The three hypotheses posited that the time passed since the dissolution and regret intensity would be correlational, with the effect being moderated by the regret categorisation of commission. Furthermore, the study hypothesised that investment, measured as time, and regret intensity would also be associated, based on the theoretical background of the emotional amplification effect and Duck's stage model of romantic dissolutions. Lastly, the study hypothesised that participants with higher brooding-trait scores would also show a greater tendency to regret. The cross-sectional correlational study was conducted using an online published survey, which collected a total of 434 participants. Overall, results suggest that some of these relationship-specific factors may have valuable implications for increasing the understanding of the core concepts and their influences within the context of romantic dissolutions, thereby also disenfranchised grief. Theoretical implications are discussed.

*Keywords:* counterfactual thoughts, regret, rumination, commission, omission

### **Romantic Regrets**

Grief is a universal experience that arises from our ability to form deep bonds throughout our lives. This bonding occurs not only on an emotional and cognitive level but also has physiological and biochemical implications (Field, 2011). The disruption of this equilibrium when we encounter loss, leads to disorganisation or imbalance, which we can recognise as grief (Davis et al., 2003). Grief can be categorised as bereavement or disenfranchisement, with bereavement referring to the loss of a loved one by death, and disenfranchised grief encompassing the same complex emotional and cognitive processes that, however, lack societal support and recognition (Corr, 1999).

Romantic dissolutions represent a form of disenfranchised grief that elicits similar grief responses as bereavement. However, society tends to devalue and underestimate the legitimacy, persistence, and intensity of emotional experiences associated with romantic dissolutions (Field, 2011; Doka, 1989; Rinofner-Kreidl, 2016). In this thesis, we draw upon the established and extensive grief and bereavement literature to explore the cognitive and emotional aspects of grief following romantic dissolutions. Central components of grief adaptation have been identified as counterfactual thoughts and regret, demonstrating empirical support in bereavement contexts (Neimeyer et al., 2021). These constructs have been associated with maladaptive outcomes, particularly when accompanied by rumination or repetitive thinking patterns (Lindgren et al., 1992; Neimeyer et al., 2021), such as increased risk of anxiety, depression, post-traumatic stress disorder, insomnia, and prolonged grief (Doering et al., 2018; Eisma et al., 2014; 2015; Sveen et al., 2019).

Despite the significance of counterfactual thoughts, regret, and rumination in adaptation following bereavement, there is a notable gap within the literature on these core concepts specifically within the context of disenfranchised grief. Therefore, the current study aims to build upon existing knowledge of these concepts in bereavement and extend it to the domain of romantic dissolution.

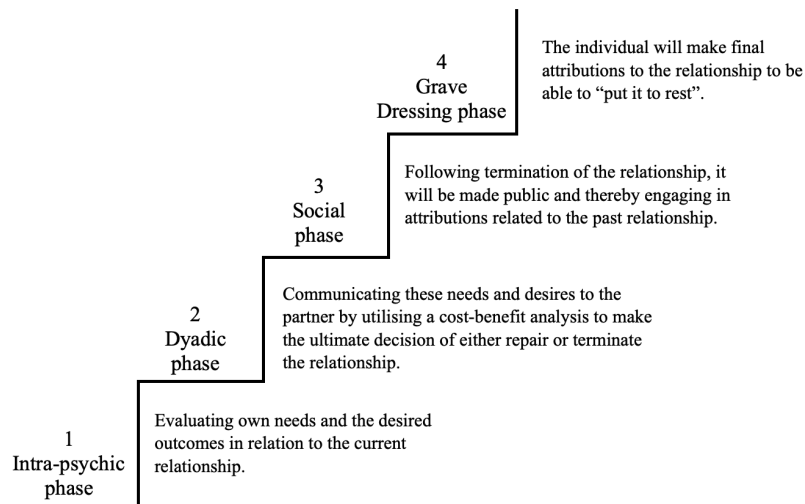
### **Understanding the Romantic Dissolution**

Romantic dissolution can be viewed as a dynamic process rather than a singular event, with various factors influencing the experienced distress. Duck (1982) proposed a stage model (Figure 1) that depicts different phases and their implications for adjustment. The model begins with the Intrapyschic phase, where individuals evaluate their needs, desires, and relationship outcomes. The Dyadic phase involves communication with the partner and a cost-benefit analysis to decide whether to repair or terminate the relationship. If termination occurs, the Social phase begins, involving public disclosure and attributions about the past relationship. Finally, the Grave Dressing phase involves making final attributions and "putting the relationship to rest."

Saffrey and Ehrenberg (2007) suggested that dysfunctional outcomes associated with the processes examined in this study could be attributed to the repetition of the Grave Dressing phase. This repetitive phase may resemble counterfactual thoughts, as it involves imagining alternative realities and attributions to the previous relationship. Constantly reimagining and ruminating about different outcomes and attributions may contribute to increased feelings of regret.

**Figure 1**

*Model designed to illustrate Duck's (1982) stage model, based on Saffrey and Ehrenberg's (2007) explanation.*



### **Counterfactual Thoughts and Romantic Dissolutions**

Counterfactual thoughts have been conceptualised as thoughts envisioning an alternative reality, compared to the one experienced by using an antecedent (if) followed by a consequence (then) (Roese & Olson, 1997). Thus, counterfactual thoughts work for the individual by examining the alternatives and making self-regulatory decisions upon the outcomes. Epstude and Roese (2008) found that the functionality of counterfactual thoughts can increase well-being and outcomes associated with future planning. Two dimensions of counterfactual thoughts have been described as followed; upward counterfactual thoughts, which imagine a better outcome to the negative event dependent on an alternative behaviour, and downwards counterfactual thoughts which imagine a worse outcome (Epstude & Roese, 2008). Related to romantic dissolutions, an upward counterfactual thought could be, "If only I had not kissed the other girl, then we would still be together", and a downward, "If I had not left him, then I would miss my freedom". The

counterfactual thoughts presented are different in their cognitive structure of the thought and the affective outcomes associated. Downward counterfactuals have been associated with increased positive affect, as Epstude and Roese (2017) described their functionality in terms of positive affect facilitation in response to a negative event such as the 'it could have been worse' mentality (Neimeyer et al., 2021; White & Lehman, 2005). Contrastingly, upwards counterfactuals have been associated with primarily preparatory functions for future interventions, but also increased distress as the thought pattern may serve to cognitively avoid painful aspects of the negative event by mitigating the affect and thereby prolonging it (Eisma et al., 2020). Importantly, the role of the actor has been suggested to be a crucial factor in the maladaptive nature of counterfactual thoughts. As upward counterfactuals are commonly related to the self, they can be interpreted as attributions of blame to the self which mirrors the conceptualisation of regret, (Branscombe et al., 2003), and has been shown to increase distress (Davis & Lehman, 1995; Eisma et al., 2020).

### **Regret and Romantic Dissolutions**

Throughout the psychological literature, regret has both been determined as a heavily cognitive- and an affective-loaded concept (Buchanan et al., 2016). On one hand, the experience of regret requires the individual to think practically about the decision and not just weigh the emotional inspection. Simultaneously, regret constitutes more than a simple practical appraisal as it is typically loaded with feeling commonly characterised as negative (Gilovich & Medvec, 1995). Regret has been conceptualised as a type of counterfactual thought (Broomhall et al. 2017) specifically referencing the upward and self-referent categorisation, as it involves painful thoughts and feelings of a past action or inaction, and how the individual could have achieved a better outcome (Stroebe et al., 2014). Therefore, the experience of regret has commonly been linked to that of emotional amplification; the tendency of individuals to exhibit stronger affect when easily imagined alternative events and better outcomes are present (Kahneman and Miller, 1986).



The experience of regret has been found to influence both functional and dysfunctional outcomes. Functional outcomes have been suggested to provide the individual with preparatory benefits for successful coping (Lecci et al., 1994). Regret has been described to encourage thoroughness and thoughtfulness by generating behavioural intentions and making people more likely to recognise and remedy poor decisions (Zeelenberg, 1999). Comparatively, dysfunctional outcomes associated with regret have been described to exert a negative influence on overall well-being in health-related contexts (Epstude & Jonas, 2014) and within bereavement literature (Stroebe et al., 2014). Furthermore, regret generation can produce long-term difficulties through the experience of chronic negative affect (Gilovich & Medvec, 1995). In such cases, regret itself is not the problem, but rather an inability to inhibit the frequency of their occurrence, commonly associated with self-regulatory problems (Sjitsma et al., 2021; Rude et al., 2012; Saffrey & Ehrenberg, 2007). However, regret is commonly conceptualised through the lens of bereavement literature, and therefore lacks information pertaining to functional and dysfunctional outcomes of regret following disenfranchised grief, namely romantic dissolutions.

### ***Regret Intensity***

Regret intensity is a sub-factor that may influence the experience of regret. Pieters and Zeelenberg (2007) explained that regret intensity is influenced by the ease of comparing actual and counterfactual decision processes and outcomes, which includes factors like importance, salience, and reversibility. This aligns with Kahnemann and Miller's (1986) emotional amplification effect on the ease of imagining alternative realities. However, Towers et al. (2016) highlighted different theories that offer explanations for variations in regret intensity. These include the life domain of the regret, the justification of the decision, and the categorisation of the regret as either commission or omission. The latter is emphasised in the current study.

Commission regrets refer to regretting an action, where a negative affect is experienced due to a better alternative outcome. For example, "I regret kissing her sister." In contrast, omission regrets refer to regretting inaction, where negative outcomes and better alternatives are perceived despite no engagement, for example, "I regret not sharing my worries". Gilovich and Medvec (1995) suggested that commission regrets elicit stronger negative affect compared to omission regrets (Leach & Plaks, 2009; Kahneman & Tversky, 1982; Yeung et al., 2021). Furthermore, the intensity of regret is influenced by a temporal factor—the time since the regrettable action or inaction (Yeung et al., 2022). According to Gilovich and Medvec (1995) and Saffrey and Ehrenberg (2007), commission regrets are associated with short-term distress, while omission regrets may lead to long-term distress (Gilovich & Medvec, 1995; Kahneman & Tversky, 1982). Omission regrets are believed to be psychologically open to various alternatives, with perceived consequences growing over time. On the other hand, commission regrets tend to close relatively quickly due to limited alternatives, resulting in distress over a shorter period (Saffrey & Ehrenberg, 2007).

### ***Hypothesis 1***

The current study hypothesises that the shorter time since the breakup, the more regret intensity is reported. Additionally, the categorisation of the commission regrets is suggested to moderate the effect.

### ***Investment and Regret Intensity***

Another aspect of the romantic dissolution is the linkage between regret intensity and the investment, or effort, put into the relationship. Research by Van Dijk et al. (1999) saw increased regret intensity after investing more, depending on the perceived responsibility of attaining the desired outcome. Different conceptualisations of investment have been suggested, although the current study suggests equating it with time. Investment has been found in terms of energy and

commitment to the relationship, shown by Rhoades et al., (2011) who found cohabitation and plans for marriage significantly predicted increased psychological distress and a decline in life satisfaction after a breakup. Similarly, a meta-analysis of predictive factors involved in distress levels of non-marital dissolutions found commitment to be significantly related to increased distress (Le et al., 2010). Notably, time invested in the relationship, thereby characterising a longer relationship, has been suggested to involve mechanisms such as intentionality, evaluations, and emotional investment, influencing levels of distress (Perilloux & Buss, 2008). Sprecher et al. (1998) suggested that investment, and thereby time, be the genesis of the relationship and would therefore be predictive of distress following the dissolution.

### ***Hypothesis 2***

Increased investment has been suggested to be a predictor of romantic dissolution distress. Therefore, the current paper hypothesises the longer the relationship lasted, the higher the regret intensity was reported.

### **Rumination and Romantic Dissolutions**

Rumination, also known as repetitive thinking, is conceptualised as an individual's general tendency towards intrusive and regret-oriented thoughts, and can contain specific ruminative thoughts about a recent relationship dissolution (Saffrey & Ehrenberg, 2007). Rumination has been associated with increased distress related to traumatic experiences (Szabo et al., 2017), psychopathology (Ehring, 2021), bereavement (Eisma et al., 2014), and most importantly, romantic dissolutions (Field, 2011). Repetitive thoughts have received support to be concurrently associated with anxiety, depression, prolonged grief, PTSD, and insomnia (Doering et al., 2018; Eisma et al., 2014; Sveen et al., 2019). As such, repetitive thoughts can be operationalised as a dysfunctional mechanism of counterfactual thoughts as the individual engages in continuous attempts to undo,

alter, or mutate using the factual antecedent and consequence (Roese & Morrison, 2009). According to Saffrey and Ehrenberg (2007), rumination is a central part of romantic dissolutions and contributes to functional outcomes in terms of continuous reflection on the breakup or dysfunctional brooding. Noelen-Hoeksma and colleagues' extensive investigations into rumination and bereavement found increased pessimism, rates of distress, and difficulty in adjustment as a function of excessive rumination. As the individual seems unable to account for the loss or make sense of the loss of a loved one, the distress increases accordingly (Davis & Noelen-Hoeksma, 2001). As affective and cognitive responses to bereavement have previously been suggested to have similar involvement in the adjustment process of disenfranchised grief (Doka, 2008), the results by Noelen-Hoeksma and colleagues suggest that these reactions may be reflected during and after romantic dissolutions.

In sum, rumination reflects a disruption of the inhibition processes of regret-oriented thinking, and thereby upward and self-referent counterfactual thinking (Saffrey & Ehrenberg, 2007).

### *Measuring Rumination*

Importantly, rumination has been conceptualised as either a state or a trait which posits either a situationally specific area of rumination or a general tendency to ruminate, respectively (Smith & Alloy, 2009). In terms of the current study, trait rumination has been used to differentiate between functional and dysfunctional outcomes following excessive repetitive thoughts. Recent literature has used the two-factor structure of measuring rumination categorising either reflective or brooding tendencies of the individual. Saffrey and Ehrenberg (2007) reported on Noelen-Hoeksma and colleagues' employment of the 11-item Ruminative Response Scale (RRS) which indicated that brooding tends to be more strongly associated with dysfunctional outcomes compared to reflection (Whisman et al., 2020). Furthermore, Allaert et al., (2019) found that regret contributed to an increase in repetitive negative thinking in high-trait brooders. The authors suggested that this was

due to an aggregating function of the regrets on the repetitive negative thoughts depending on the participants' differences in their tendency to brood.

### ***Hypothesis 3***

The current study hypothesises a correlation between high-trait brooding scores and the participants' general tendency to regret. Similar results is suggested to be evident by using participants' reported regret intensity, frequency and duration elicited by a counterfactual thought structure.

## **The Present Study**

The current study aimed to emphasise the associations between the three concepts within the context of romantic dissolutions. Romantic dissolutions is a sub-category of disenfranchised grief which has shown to be perpetually devalued of persistence, intensity, and support (Field, 2011; Doka, 1989; Rinofner-Kreidl, 2016). Therefore, the current study aims to understand some of the mechanisms associated with romantic dissolutions, to inform and support established research and to gain a greater understanding for a subject seemingly understudied. Therefore, the current study used the upward and self-referent counterfactual-regret structure as a framework for identifying regret categories linked to potentially moderating dissolution-distress. Additionally, the reported regret intensity was investigated in relation to investment. Furthermore, ruminative tendencies were measured to identify the tendency of engaging in regret-oriented thinking. A cross-sectional correlational study design was used to reflect the multiple variables' influence.

## Methods

### Participants and Design

The study initially sampled 434 participants, but after exclusions, the final sample consisted of 336 participants (183 females, 153 males,  $M_{age} = 39.99$ ,  $SD_{age} = 10.64$ ). Out of the included participants, 87.8% reported they were heterosexual, 3.9% reported being homosexual, 6% reported being bisexual, and 2.4% reported “other”.

This cross-sectional correlational study focused on aspects related to romantic dissolutions and their associations with the examined concepts. A power analysis using the G\*Power procedure (Hulley et al., 2013) indicated that a minimum of 250 participants was necessary for a robust analysis, with a standard probability threshold, a Type II error rate of .05, and an expected correlation coefficient of 0.2. The study also allowed for additional exploratory analyses.

Data collection was conducted using Qualtrics and facilitated by a third party, Panel Inzicht, which maintained personal ID confidentiality. Thus, the study ensured anonymity. The data collection process spanned approximately three weeks. A prescreening was included, where participants were asked to indicate if they had regrets about their previous relationship, with those answering "no" being excluded from further participation in the study.

### Procedure

The procedure of the current study was fairly straightforward. The questionnaires were added to a Qualtrics survey, and revised, and the link was sent to Panel Inzicht, who provided us with a platform for data collection.

Firstly, a demographics section and romantic demographics section was included. Then counterfactual regrets were presented by providing participants with the opportunity to qualitatively

answer a total of four open-ended questions. The structure simulated that of an upward counterfactual thought, and thereby also regret, and was subsequently coded according to the commission and omission regret conceptualisation (Gilovich & Medvec, 1995). Furthermore, for all four open-ended questions, three measurements were included of the regret's intensity, frequency, and duration using a Likert scale. The rest of the study was quantitative as participants answered the Satisfaction With Life scale (SWL), the Ruminative Response Scale (RRS), and the Regret Elements Scale (RES). Lastly, all participants followed the standardised debrief procedure and received information on how to contact the appropriate individuals for further questions.

### ***Deletion***

The raw data was provided by the Qualtrics platform with progression data in percentages, of the questionnaire for each participant. After analysing these percentages, a pattern was found as the progression was aggregated. Therefore, participants who had only completed 38% or less, did not provide any information beyond the romantic demographics questionnaire. As such, participants with 38% or less completed, were excluded from the study (66 participants).

### **Materials**

Materials were inspired by Saffrey and Ehrenberg (2007), who investigated similar areas of interest. The questionnaires were, however, evaluated and changed for appropriateness for the current study's aims.

### ***Demographic Questionnaire***

The demographic questionnaire contained simple factual statements asking for participant's age, gender and sexual orientation, to gain insight into the categorical groupings of participants. As such, both descriptive statistics and frequency tables were produced for all variables involved.

### ***Romantic Demographics***

Similar to Saffrey and Ehrenberg (2007), the current paper asked for the participants to describe several aspects of their previous relationship as well as the termination to gain insight into potential factors involved in the experience of distress post-dissolution. This was done by asking the participants to score their expectations regarding the relationship (ranging from 1 - *short-term involvement* to 5 - *long-term involvement*), their emotional investment at the time of the dissolution (1- *superficially involved* to 5- *seriously involved*), their control in the actual breakup regarding both how much they wanted it to end (1- *none at all* to 5- *a great deal*) and whether they, their partner, or mutually, terminated the relationship (from 1- *me* to 7- *my partner*). Furthermore, the romantic demographics asked for the participants' hope for getting back together (1- *not at all* to 5- *very much*), their understanding of why the relationship ended (1- *not at all* to 5- *entirely*) and whether they felt closure post-dissolution (1- *not at all* to 5- *entirely*). Lastly, the romantic demographics measured the amount of time invested in the relationship by the number of months, and as a secondary temporal measurement, how long ago in months, the breakup happened. Both temporal variables were coded after a frequency analysis was done to assess the most common answers in months. Results showed that participants were more likely to report the temporal variables in yearly thresholds (12, 24, 36 etc.). As such the intervals were identified and numerically coded up to 180 months with the last code describing everything beyond 180 months.

### ***Measuring Counterfactual Thoughts***

The counterfactual thoughts measurements in the current paper were chosen to reflect the antecedent-consequence structure of the thought itself, inspired and adapted from Epstude and Roese's (2008) measure (see Appendix 1). Participants were asked to recall and complete four counterfactual thoughts containing the 'if only... then' structure by filling out the provided blank



spaces to record their regrets pertaining to their most recent terminated relationship. Specifically for the current study, the counterfactual thoughts were measured directly as regrets by emphasising that the participants should think about regrets in the context of their previous relationship.

Following each counterfactual thought, questions regarding the intensity, frequency, and duration were presented and scored on separate Likert scales. The first question: “How intensely do you feel this regret?” was scored from 1 (*Very weakly*) to 7 (*Very Strongly*). The second question regarding frequency “How frequently do you think about this thought?” scored from 1 (*Very Rarely*) to 7 (*Very Frequently*). Lastly, a question regarding the duration of the regret “How long do you spend thinking about the ‘if only’ thought when it comes to mind?” scored from 1 (*Very Briefly*) to 7 (*Very Long Time*). The three additional questions were included due to the hypothesised associations between commission/omission regrets (Gilovich and Medvec, 1995), ruminative responses (Allaert et al., 2019), and regret intensity and frequency. Importantly, both the commission (1) and the omission (0) regrets were coded following collection.

### ***Satisfaction With Life Scale (SWL)***

Diener et al. (1985) developed and validated the SWL scale in terms of a narrow focus on global life satisfaction. The evaluation showed good psychometric properties such as internal consistency, and high temporal validity. This suggests that the SWL was deemed useful across various age groups which is relevant for the current study due to the randomised participation collection. The SWL was suggested to provide the current study with data related to the distress experienced as a result of the counterfactual thoughts, regrets, and tendency to ruminate, and the temporal variable pertaining to the length of the relationship. The 5-item SWL was measured using a 7-point Likert scale ranging between 1 (*strongly disagree*) to 7 (*strongly agree*) (see Appendix 2). The internal consistency of the SWL was found to be good,  $\alpha = .885$ .

***Ruminative Response Scale (RRS)***

The Ruminative Response Scale (RRS) as part of the Response Style Questionnaire (RSQ) was used to assess participants' baseline tendency to either reflect or brood containing 11-items in total (see Appendix 3). Participants are asked to rate each item on a 4-point Likert-style scale from 1 (*never or almost never*) to 4 (*always or almost always*). Similar to Saffrey and Ehrenberg (2007), the symptom-based part of the RRS was not administered due to its direct association with depressive symptoms, which was not the aim of the current study. Thus, the word 'depressed' was also exchanged with 'bothered'. Reliability analysis of the RRS reported a good internal consistency,  $\alpha = .891$ . Similarly, the reliability of the sub-scales showed good internal consistency with brooding  $\alpha = .846$ , and reflection  $\alpha = .786$ .

***Regret Elements Scale (RES)***

The RES questionnaire was added to the study due to its differentiation between affective regret, commonly associated with dysfunctional outcomes, and cognitive regret associated with functional and preparatory outcomes. Both components have been suggested to be critical concerning the overall experience of regret (Buchanan et al., 2016). In terms of the current study the RES was utilised to establish the participants' general tendency to regret, and the potential influence on the rumination trait-scores in relation to Hypothesis 3. The RES contained 10-items and was scored using a 7-point Likert-style scale between 1 (*Definitely Disagree*) to 7 (*Definitely Agree*). A reliability analysis of the RES reported a good internal consistency,  $\alpha = .920$ . The RES sub-scales, affective and cognitive regret also showed good internal consistency at  $\alpha = .891$  and  $\alpha = .897$ , respectively.

## Results

Previous literature suggests support for associations between the three core concepts presented in the current study, yet lacking in investigations of the specific context, namely romantic dissolutions and the relationship-specific variables. The main variables and their descriptive statistics will be described for each hypothesis below.

### Hypothesis 1

To test the first hypothesis on the potential association between the time passed since the relationship and the reported regret intensity. The study examined the correlation between the amount of time since the breakup ( $M = 5.08$  months,  $SD = 28.43$ ) and the reported intensity of regrets ( $M = 4.23$ ,  $SD = 1.87$ ), which was calculated as the overall reported intensity means for the participants. Additionally, the moderating effects of commission regrets, as suggested by Gilovich and Medvec (1995), were incorporated by dichotomously coding commission and omission regrets.

Correlations between the overall mean of reported intensity and the amount of time since the breakup yielded a significant but relatively weak, negative correlation ( $r = -.136$ ,  $p = .015$ ). This suggests that regret intensity slightly declined over time, thereby providing evidence to reject the null hypothesis.

A frequency analysis of regret categorisations (commission vs. omission) showed that omission regrets were more prevalent in the dataset, with a total of 186 valid cases (55.5% cumulative), compared to commission regrets with only 115 valid cases (34.3% cumulative) across the four open-ended questions. Both types of regrets were further coded using a percentage calculation, indicating the likelihood of their occurrence out of the four open-ended questions ( $\frac{1}{4} = .25$ ,  $\frac{1}{2} = .5$  etc.). Overall, omission regrets had a higher mean ( $M = 0.52$ ,  $SD = 1.47$ ) compared to

commission regrets ( $M = 0.34$ ,  $SD = 1.36$ ), suggesting a greater likelihood of reporting omission regrets relating to the participant's previous romantic dissolution.

The moderating effect of commission regrets was analytically computed by filtering the dichotomously coded variables and thereby creating separate variables for commission and omission regrets. The mean intensity of commission-coded regrets was computed ( $M = 4.73$ ,  $SD = 1.5$ ) and correlated with the months passed since the breakup. The results showed a negative and non-significant point-biserial correlation ( $r = -.175$ ,  $p = .064$ ), however indicating a potential trend. The lack of significance may be due to the wide range of time passed since the dissolutions, with some participants reporting more than 15 years since their previous relationships.

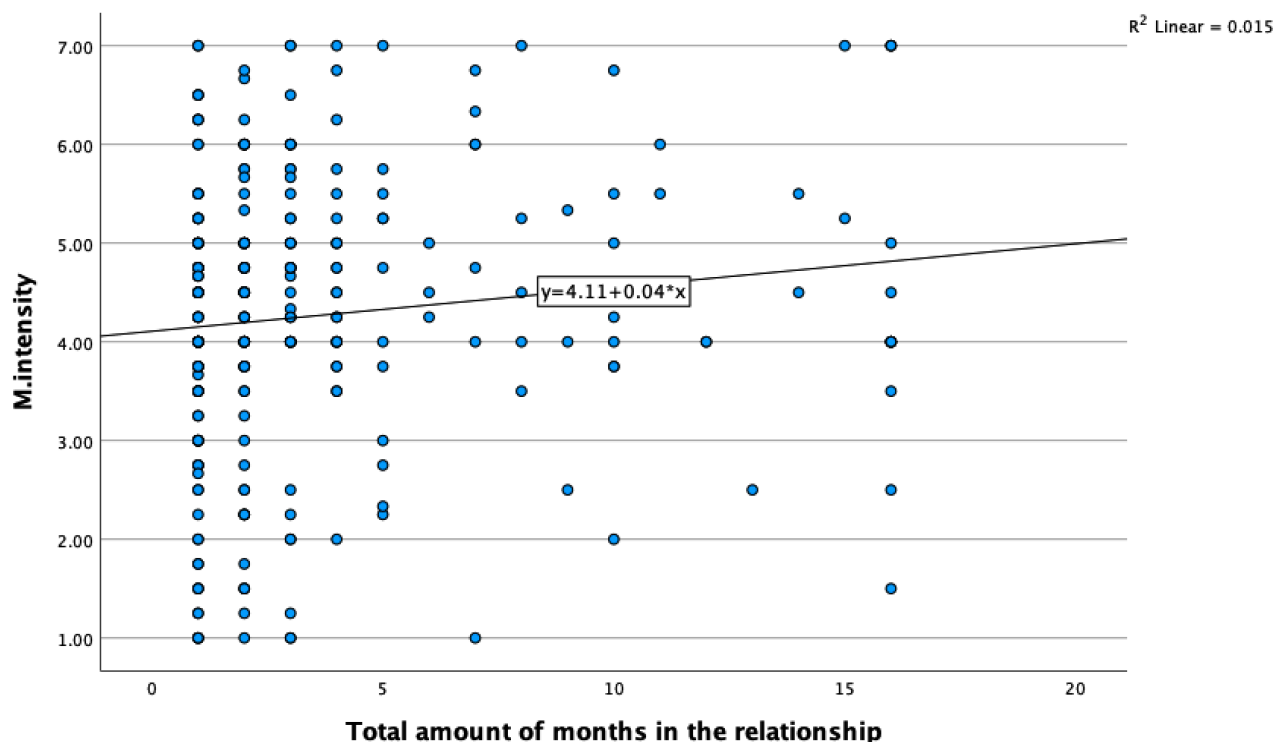
## **Hypothesis 2**

For hypothesis 2, the study expected to observe an increase in regret intensity ( $M = 4.23$ ,  $SD = 1.87$ ) alongside the duration of the relationship measured in months ( $M = 3.46$ ,  $SD = 3.79$ ), representing investment. This hypothesis was based on the emotional amplification effect (Kahneman & Miller, 1986), which suggested that easily imagined alternatives influence the negative affect of counterfactual thoughts more strongly. An initial scatterplot (see Figure 2) of the data with a linear fit line, suggested a slight incline in intensity over time ( $y = 4.11 + 0.04 * x$ ,  $R^2 = 0.015$ ), indicating that the longer participants were in the relationship, the more intense their regrets were following the breakup. The current study did find evidence to reject the null hypothesis. A point-biserial correlation revealed a weak, yet significant, association ( $r = .123$ ,  $p = .029$ ) between investment and regret intensity. This suggests that the intensity of the reported regrets did increase with the amount of time spent in the relationship. This was further supported by a correlation between the number of months spent in the relationship and the SWL scale, which showed a negative, significant, correlation ( $r = -.160$ ,  $p = .005$ ), thus suggesting that the longer

the participants had spent in their relationships, the lower their SWL scores were after the dissolution.

### Figure 2

Scatterplot depicting the correlation between the number of months spent in the relationship and the mean intensity of the reported regrets.



### Hypothesis 3

The third hypothesis posited that participants with higher brood-trait scores ( $M = 2.20$ ,  $SD = .65$ ) would be more likely to have a greater tendency to experience regret. Two different measures of regret tendency were analysed. Firstly, the Regret Elements Scale (RES) ( $M = 3.91$ ,  $SD = 1.29$ ), which demonstrated high reliability ( $\alpha = 0.9$ ), showed a highly significant point-biserial correlation ( $r = .520$ ,  $p < .001$ ). This suggests that individuals who were more likely to engage in brooding following romantic dissolutions also had a higher tendency to engage in regret-oriented thinking. A linear regression was conducted to further examine this effect. The overall model provided a good

fit, explaining a significant proportion of the variance in the overall regret tendency  $F(2,324) = 63.107, p < .001, \beta = .531$ .

Notably, when the RRS reflection sub-scale ( $M = 2.17, SD = 0.62$ ) was included as a coefficient in the linear regression, a significant result was also observed ( $p = .023, \beta = .157$ ), although not as strong as brooding. This suggests that the differentiation between sub-scales within the RRS ( $M = 2.19, SD = 0.59$ ) may not exhibit opposite effects when correlated with the RES. Exploratory analyses are needed for further investigation.

As a second measurement of participants' general tendency to regret, the means of reported regret intensity, frequency, and duration were included instead of the RES scores (Table 1). All three variables were significantly correlated with brood-trait scores: intensity ( $M = 4.23, SD = 1.36$ ) and brooding ( $r = .338, p < .001$ ), frequency ( $M = 3.72, SD = 1.45$ ) and brooding ( $r = .469, p < .001$ ), and duration ( $M = 3.55, SD = 1.40$ ) and brooding ( $r = .452, p < .001$ ).

**Table 1**

*Correlations between the brooding and reflection sub-scales and the romantic regret measures.*

		M.Brooding	M.Reflection	M.intensity	M.frequency	M.duration
M.Brooding	Pearson Correlation	1	.723**	.305**	.436**	.392**
	Sig. (2-tailed)		<.001	<.001	<.001	<.001
	N	326	326	324	324	324
M.Reflection	Pearson Correlation	.723**	1	.250**	.369**	.413**
	Sig. (2-tailed)	<.001		<.001	<.001	<.001
	N	326	326	324	324	324
M.intensity	Pearson Correlation	.305**	.250**	1	.660**	.562**
	Sig. (2-tailed)	<.001	<.001		<.001	<.001
	N	324	324	332	332	332
M.frequency	Pearson Correlation	.436**	.369**	.660**	1	.815**
	Sig. (2-tailed)	<.001	<.001	<.001		<.001
	N	324	324	332	332	332
M.duration	Pearson Correlation	.392**	.413**	.562**	.815**	1
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	
	N	324	324	332	332	332

\*\*Correlation is significant at the 0.01 level (2-tailed).

Although these results provide informative insights, the significant and moderate-sized correlations of the reflection sub-scale suggest the need for additional analyses. Specifically, the role of reflection in relation to the sub-scales associated with the Regret Elements Scale (RES) and the Satisfaction With Life (SWL) scale, warrant further exploratory analysis. Investigating reflection as a theoretical contrast to brooding and as a functional mechanism may be important to further investigate the underlying structure of repetitive, regret-oriented thinking within the context of romantic dissolution.

### **Exploratory Analyses**

In addition to the hypotheses, exploratory analyses were conducted to provide information and insights not available by the initial results.

#### ***Omission Regrets as Moderator***

Since the moderator analysis of commission regrets did not yield significant results, the study examined whether omission regrets might moderate the effects observed between regret intensity and time passed since the breakup. This was deemed necessary due to the broad range of reported months since the dissolution, suggesting a potential emphasis on omission regrets in the data (Gilovich & Medvec, 1995). Following the same statistical procedure as in Hypothesis 1, the mean intensity was calculated for the omission-coded regrets ( $M = 4.78$ ,  $SD = 1.55$ ). The results revealed a negative, yet close to significant moderator effect of omission regrets ( $r = -.144$ ,  $p = .051$ ), providing some evidence of an effect, albeit weak. This supports the notion that the broad range of time passed since the romantic termination may influence the moderator category, aligning with Gilovich and Medvec's (1995) hypothesis. Notably, the correlation was computed as negative, which would suggest that omission intensity declined as time passed since the dissolution.

Additionally, a paired samples t-test was conducted to investigate potential mean differences between omission and commission regrets. The mean of commission regrets ( $M = 4.8$ ,  $SD = 1.58$ ) were lower than that of omission regrets ( $M = 5.15$ ,  $SD = 1.53$ ). Results indicated a small mean difference ( $M = -0.349$ ,  $SD = 1.697$ ;  $t(82) = -1.876$ ,  $p = .064$ ) with a small effect size (Cohen's  $d = .206$ ). The results of the paired-samples t-test were not expected, as it suggests a trend in the opposite direction with omission regrets being of higher intensity than commission. Previous literature has provided support for Gilovich and Medvec (1995). Importantly, Yeung et al. (2022) replicated Gilovich and Medvec's (1995) studies to examine the previously mixed findings of the temporal pattern of regret. They found support for this temporal pattern for both commission and omission regrets across different scenarios. For the current study, this may suggest either a procedural issue or that romantic regrets may be different from other types of regret, a scenario which was not included in Yeung et al.'s (2022) study.

### ***Termination and Investment***

Related to the second hypothesis, a significant association was found between investment measured as time and the reported regret intensity. Based on theoretical suggestions from Kahneman and Miller's (1986) emotional amplification effect, as part of Norm Theory, and Duck's (1982) romantic dissolution stage model, it was hypothesised that the locus of control related to the termination itself might play a role. Duck (1982) highlighted the involvement of continuous attributions to the relationship prior to the termination. Based on a complex cost-benefit analysis of the relationship, resulting in a termination, the emotional amplification might not be as strong as most imagined outcomes had been exhausted prior to the termination. Therefore, an additional exploratory analysis was conducted to focus on the partner being the primary actor of the termination, thereby hypothesising increased regret intensity of the participant due to their lack of cost-benefit analysis prior to the termination.



A frequency table was computed to determine the reported termination actor, which did not reveal any visible differences among the groups (1/Me = 22.1%, 2/Mostly Me = 6.8%, 3/Somewhat Me = 11.7%, 4/Mutual = 22.9%, 5/Somewhat Partner = 10.9%, 6/Mostly Partner = 10.6%, and 7/Partner = 14.2%). Three separate variables were then computed based on the groupings of 'somewhat partner,' 'mostly partner,' and 'partner,' with a fourth variable representing the mean of the three categories. The mean of the termination actor variable was then correlated with the intensity of regrets to establish whether there was a significant association between the termination control and the reported regret intensity. The results showed a positive correlation ( $r = .215, p = .02$ ) between the termination being primarily attributed to the partner and the regret intensity. In line with Duck's (1982) stage model, this suggests that participants with partners who conducted a cost-benefit analysis may experience increased distress, as indicated by the intensity of reported regrets.

### ***Regret Elements Sub-Scales***

The RES categorisations of affective and cognitive regret have been associated with functional or dysfunctional outcomes, respectively (Buchanan et al., 2016). Thus, based on a psychometric analysis of Buchanan et al. (2016), separation of the RES questions into the two sub-scales and their means were computed (Table 2). Results showed that the correlations were larger for the affective sub-scale compared to the cognitive sub-scale when correlated with the brooding sub-scale ( $r_{\text{(affective)}} = .537$  vs.  $r_{\text{(cognitive)}} = .327$ ), both of which were considered significant ( $p < .001$ ). For the reflection sub-scale, the affective sub-scale still showed a stronger correlation coefficient ( $r_{\text{(affective)}} = .456$ ) compared to the cognitive sub-scale ( $r_{\text{(cognitive)}} = .286$ ), ( $p < .001$ ), although somewhat smaller than when correlated with brooding. This may suggest overlapping theoretical and operational functions between the RRS and the RES within the context of romantic dissolutions.

**Table 2**

*Correlations between the four sub-scales of the RRS and RES.*

		M.Brooding	M.Reflection	M.Affective	M.Cognitive
M.Brooding	Pearson Correlation	1	.723**	.569**	.376**
	Sig. (2-tailed)		<.001	<.001	<.001
	N	326	326	325	325
M.Reflection	Pearson Correlation	.723**	1	.493**	.326**
	Sig. (2-tailed)	<.001		<.001	<.001
	N	326	326	325	325
M.Affective	Pearson Correlation	.569**	.493**	1	.653**
	Sig. (2-tailed)	<.001	<.001		<.001
	N	325	325	325	325
M.Cognitive	Pearson Correlation	.376**	.326**	.653**	1
	Sig. (2-tailed)	<.001	<.001	<.001	
	N	325	325	325	325

\*\* Correlation is significant at the 0.01 level (2-tailed).

### ***SWL Correlation with Brooding and Reflection Sub-scales***

Regarding Hypothesis 3, it was important to establish the connection between participants' brooding-trait scores and their overall mean scores on the Satisfaction with Life scale (SWL). A negative correlation was found between brooding scores and the SWL ( $r = -.242, p < .001$ ), indicating that individuals who tend to engage in brooding are more likely to have lower SWL scores. This supports existing literature on the dysfunctional outcomes associated with brooding in bereavement (Stroebe et al., 2007; Eisma & Stroebe, 2017). Furthermore, this corroborates the correlational results of our third hypothesis, suggesting that increased regret tendencies and higher brooding-trait scores may influence the dysfunctional outcomes.

To fully understand the interaction between brooding and the SWL, the study also investigated the correlation between participants' mean SWL scores and the sub-means of the reflection portion of the RRS. This analysis revealed a very weak, non-significant negative

correlation ( $r = -.034$ ,  $p = .538$ ), which suggests that while the brooding sub-scale showed supportive results regarding increased distress associated with a greater tendency to brood, the reflection sub-scale did not demonstrate the opposite effect but rather non-significance. This implies that the sub-scales may not adequately reflect SWL scores within the context of romantic dissolutions.

### Discussion

The purpose of this study was to examine the associations between counterfactual thoughts, regret, and rumination in the context of romantic dissolutions. Hypothesis 1 proposed that the intensity of reported regrets would increase over time since the dissolution, with commission regrets acting as a moderating factor. However, only the main interaction between intensity and time since the dissolution was significant. Hypothesis 2 suggested that the intensity of regrets would be predicted by investment, measured as time spent in the relationship, which was also found to be significant. Hypothesis 3 suggested that participants with high-trait brooding scores would have a greater tendency to experience regrets, which was supported by the RES measurement and the romantic dissolution-specific regret measurements.

For the exploratory analyses, the study examined whether omission regrets could moderate the relationship between regret intensity and time since the termination, revealing a significant, albeit weak, effect. Additionally, the study explored the role of termination in measuring regret intensity, based on Duck's (1982) model of romantic dissolutions, and found a significant association. Furthermore, the analysis considered the reflection sub-scale of the RRS, finding significant correlations with regret intensity, frequency, and duration, similar to brooding. The RES was also split into affective and cognitive sub-scales, which showed significant correlations with

the other sub-scales. Lastly, correlations between brooding, reflection, and the Satisfaction With Life (SWL) scale revealed a significant negative association only for brooding, while reflection showed no effects.

The findings of this study are mixed and partly support our hypotheses. Important aspects for further discussion include the moderating effects of both types of regret, the appropriateness of measuring investment as time, the role of termination in the investment measure, and the role of the reflection sub-scale. Methodological limitations have been acknowledged, and potential solutions will be discussed to guide future research.

### **Commission and Omission Regrets as Moderators**

The first hypothesis posited the theoretical suggestion of time passed since the breakup would be moderated by whether the regrets could be categorised as either commission or omission regrets. The results of the main effect of the intensity of the reported regrets and the time passed since the dissolution were consistent with the original claim (Gilovich & Medvec, 1995), as the negative, albeit weak, correlation suggested a decline in intensity over time. The first hypothesis further claimed, based on the same article, that commission regrets would moderate this intensity (Gleicher et al., 1990; Kahneman & Tversky, 1982). However, the current study did not find a significant effect ( $p = .064$ ). Notably, a moderator analysis of the omission regrets found an almost significant effect ( $p = .051$ ). Towers et al. (2016), found a higher frequency of omission regrets, but higher reported intensity for commission regrets, which is inconsistent with the current results. As the mean intensity of both commission and omission regrets were calculated, the results suggest that the omission regrets were generally of higher intensity than commission regrets. This is further evident following a paired samples t-test, where the current study found little difference ( $M = -.349$ )

between the two means. This suggests that neither categorisation of regret seemed to be stronger, nor was there tentative evidence for one being stronger than the other.

The current study suggests this may be due to the sampling in relation to the conceptualisation of commission and omission regrets by Gilovich and Medvec (1995). As the current study examined a relatively broad spectrum of time since the previous relationships, from 1 month to 15 years, the current study's sampling may not have reflected the temporal criterion of the original idea posited by Gilovich and Medvec (1995). However, a criterion was never provided by Gilovich and Medvec (1995). Therefore, the current study suggest that the results may be a consequence of the broad spectrum of reported time since the dissolution, which theoretically would fit the conceptualisation of omission regrets. Omission regrets were described by Gilovich and Medvec (1995) and supported by additional literature to be more prevalent in long-term regrets (Feldman et al., 2020), and specifically related to life regrets (Wrosch et al., 2005). However, a frequency analysis of the reported time since the dissolution showed increased reporting between 1-12 months (41%). Theoretically, this would suggest a greater likelihood for reporting commission regrets following Gilovich and Medvec's (1995) hypothesis. Contrastingly, a frequency analysis of the reported types of regrets suggest a significantly higher frequency of omission (55.5%) compared to commission regrets (34.3%). Thus, the sample may not have been appropriately representing the temporal influence of commission regrets, but rather that of omission regrets.

In sum, the current study suggest that the spread of time since the dissolution influenced the moderator effect of omission regrets, and therefore the moderating effect of commission regrets may still be significant. Although, the moderating effect of commission regrets may only be significant in a smaller group compared to the one presented here.

### **Investment and Termination**

Previous literature has emphasised the significance of investment in romantic relationships (Perilloux & Buss, 2006; Field, 2011). Building upon the concept of emotional amplification (Kahneman & Miller, 1986), which posits that easily imagined alternative realities negatively influence current thoughts, the hypothesis was that higher investment would lead to increased regret intensity. Two perspectives were considered: first, whether the current study's conceptualisation of investment as time is appropriate, and second, whether the responsibility of the dissolution, specifically referencing the partner as the rejector, would significantly affect the reported regret intensity.

Regarding the conceptualisation of investment, the study acknowledges a potential flaw in its operationalisation, specifically equating investment with time. While previous literature has connected time and investment, Rusbult's (1980) Investment Model proposes that time represents only extrinsic investment and does not capture the intrinsic investment in the relationship. The Investment Model suggests that attraction and satisfaction in a relationship depend on the comparison between outcome value and individual expectations, with commitment influenced by relationship outcome value and individual investment magnitude (Rusbult, 1980). The study's sole measurement of investment as time neglects the informational value of the intrinsic investment, limiting the data to only a partial representation of the concept. Nevertheless, the results indicated a significant correlation between investment and regret intensity, suggesting the validity of the extrinsic investment variable, which could be potentially enhanced if an intrinsic investment is incorporated.

Thus, the study proposed that to represent the intrinsic investment, termination responsibility may be noteworthy. This may be attributed to the dissolution process outlined in Duck's (1982) stage model, wherein the continuous evaluation of the relationship and termination occurs in a cost-benefit framework before the dissolution. This process may minimise the emotional amplification

effect, as imagined outcomes may have been evaluated already, especially for individuals who initiated the termination. The role in the termination may therefore be the key factor in representing intrinsic investment, supported by previous research indicating attributional differences between rejectees and rejectors (Perilloux & Buss, 2008). The exploratory analysis found a positive, significant correlation between participants who reported their partner's involvement in the termination and regret intensity, supporting the claim above. These participants had little to no part in the termination, potentially leading them to react strongly to the termination reflected by reported regret intensity.

### **Reflection and RES Correlation**

Previous research has associated continuous regretting with maladjustment after bereavement (Noelen-Hoeksma, 2001), depression in adolescence (Hankin, 2009), and decreased well-being (Wolkin, 2015). In the current study, a positive correlation was found between brooding-trait scores and regret levels measured by the RES, indicating that higher brooding-trait scores were linked to an increased tendency to regret. Notably, the reflection-trait sub-means also showed a significant positive correlation with RES scores, suggesting that higher reflection-trait scores were also associated with engaging in regret-oriented thinking. This discrepancy may have been explained by the RES's sub-scales, which can be divided into a two-factor structure differentiating between affective and cognitive regret. Previous studies have shown that affective regret is linked to maladjustment, while cognitive regret serves preparatory functions (Buchanan et al., 2016). Thus, it is plausible to suggest that the correlation between reflection and RES may result from the 2-factor structure, with the reflection sub-scale responding to the cognitive sub-scale due to their similar associations with preparatory functions.

Analysing the output for the reflection sub-scale, the affective sub-scale from the RES exhibited a larger correlation coefficient compared to the cognitive sub-scale. This contrasts with previous literature of functional outcomes associated with reflection from the RRS and cognitive regret from the RES (Table 2). This discrepancy may be attributed to the overlapping qualities between rumination and regret. The lack of literature correlating the two scales and their sub-scales limits the ability to draw definitive conclusions based on the present findings.

The third hypothesis which posited that high brooding-scores would be predictive of an increased tendency to regret, was based on an article by Allaert et al. (2019), which found that individuals with high brooding-trait scores were more likely to engage in regret-oriented thinking. However, Allaert et al. (2019) did not include the reflection sub-scale of the RRS in their analysis, making the current study's findings potentially useful for future research, as the reflection sub-scale could be a confounding variable. Therefore, the significant correlation between brooding-trait scores and regret-oriented thinking may be due to the overlapping qualities among the four sub-scales rather than a specific effect of high brooding-trait participants. This was further evident in the secondary measurement of regret by correlating the intensity, frequency, and duration of the reported regrets with the brooding and reflection sub-scales. Significant correlations were found between brooding-trait scores and these three variables confirming the association between high brooding-trait scores and engagement in regret-oriented thinking. The reflection sub-scale also exhibited significant yet, evidently smaller correlations with the same three variables (Table 1).

The study's secondary measurement of regret-oriented thinking specifically targeted participants' previous relationships and romantic dissolutions. These results indicate that while the RRS and RES sub-scales provide insights into potential dysfunctions associated with the concepts, they are not mutually exclusive. Instead, they complement each other, shedding light on the mechanisms and evaluative qualities when measured together.



The study's results, explorations, and discussions emphasise the importance of understanding grief and its impact within the context of romantic dissolutions. Romantic dissolutions have been shown to affect an individual's psychological and emotional equilibrium, resembling reactions to bereavement (Field, 2011). In the current study, commission and omission regrets emerged as intriguing discussion points, challenging the original hypothesis by Gilovich and Medvec (1995), which may suggest a difference in the conceptualisation of the regret types within the context of disenfranchised grief. The study also highlights potential issues with the conceptualisation of investment, advocating for the inclusion of both extrinsic and intrinsic investment (Rusbult, 1980). Additionally, the differentiation between brooding and reflection offers an opportunity for further exploration of reflection's role in disenfranchised grief, an area that has seemingly been understudied compared to brooding. Overall, the study's core concepts - counterfactual thoughts, regret, and rumination - have significant potential for advancing knowledge and supporting existing literature on their role in disenfranchised grief and romantic dissolutions. As disenfranchised grief lacks the same level of support in terms of persistence, intensity, and legitimacy compared to bereavement, the current study aimed to potentially validate the influences of disenfranchised grief within the domain of romantic dissolutions.

### **Limitations**

Three potential limitations of the current study were evaluated to answer some of the discrepancies found in the original data provided by Qualtrics. These limitations were identified as potential language barriers, procedural issues, and potential influences on the participants' emotional well-being.

#### ***Language Barrier***

The first limitation concerns the potential language barrier. A pre-screening of the participants was included to emphasise the necessity of the participants having regrets regarding their previous relationship. If participants answered “Yes, I have regrets about a past relationship” they were given access to the rest of the study. If they answered “No, I don't have regrets about my past relationship”, they were excluded from completing the questionnaire. However, a significant number of participants from the original dataset seemed to not have understood this, and explicitly answered the open-ended questions with variations of “I don't have any regrets”. Secondly, participants also answered with singular words, for example, “Geen” (‘no’ in Dutch), which could be interpreted as the participants not having any regrets, or refusing to elaborate on them. The latter argument seems plausible as some participants who did not complete the open-ended questions, did rate them on all three related Likert-styled scales (intensity, frequency, and duration).

However, it would be appropriate to consider a possible language barrier and the potential influence such a barrier may have had on the questionnaire as a whole. The third-party, Panel Inzicht who published the study, reported their primary language to be Dutch. With the questionnaire being solely in English, this may have influenced the participant engagement. Mellenbergh (2019), emphasised the importance of reaching a specific comprehensiveness level (p. 41, paragraph 2.8.5). The current study may not have successfully reached this level, thereby minimising the understanding and subsequent reporting from the participants. Future studies should consider this when using a third-party publisher for the study. Additionally, patterns of language issues were explicitly discussed during the coding process of the commission and omission regrets. As both coders' primary or secondary language was English, it is logical to assume that some details were lost in translation or interpretation.

The current study suggests that this language barrier and the subsequent interpretative influences may have affected the nonsignificant effects found in Hypothesis 1. Future research

should consider this when cooperating with local publishers and evaluate whether the consequences may influence their data significantly.

### ***Procedural Issues***

A second potential limitation has been suggested to be the total length of the questionnaire. If a language barrier is assumed, the length of the questionnaire with a total of five different scales and measurements, may have been discouraging for participants to complete all of them. This was especially evident when evaluating the deletion and exclusion procedure before the statistical analyses. A recognisable pattern emerged based on the aggregated percentages of completion provided by Qualtrics, which saw 66 participants not completing the questionnaires beyond the romantic demographic questionnaire. Due to the nature of the current study, it is unlikely to retain the same amount of information with a significantly shorter questionnaire. However, evaluating the response ratios of the four open-ended questions suggested that minimising it by 50%, thereby only presenting two open-ended questions, could potentially provide the same amount of information with a shorter study.

### ***Negative Affective Influences on the Open-ended Questions***

Lastly, it can be argued that our participants may have been influenced by the negative affect associated with romantic dissolutions. Both regret and rumination have been associated with maladaptive outcomes and issues with adjustment following bereavement (Noelen-Hoeksema, 2001). As romantic dissolutions are categorised under disenfranchised grief, a version of bereavement, similar emotional and cognitive influences may be prevalent.

Potential evidence of this could be, as mentioned in the first limitation paragraph, that participants did not answer the open-ended questions, but did score them on the intensity, frequency, and duration scale. Thus, participants may not feel comfortable with writing out their

regrets but are aware of their existence and the influence they may have on them. Future research may want to evaluate the necessity of the open-ended questions and instead have participants report whether they regret an action or inaction, followed by scoring the intensity, frequency, and duration. Although the negative affect would still be prevalent, the pressure to report them would potentially minimise this and still provide future researchers with the appropriate data.

### **Future Research**

For future research purposes, several considerations have been deemed necessary by the current study. Firstly, due to the lack of significant results of the moderator analysis of commission regrets, the current study suggests future research focuses on specific temporal thresholds. Due to the increased frequency of participants reporting their past relationship to have been terminated between 1-12 months ago, the current study suggests this would be appropriate to focus on this category specifically.

Secondly, as discussed prior, the conceptualisation and further operationalisation of investment in the relationship should be taken into consideration. Following the Investment Model (Rusbult, 1980) the categorisation of extrinsic and intrinsic investment should be evaluated in terms of the hypotheses and their potential separate and dual influences. The current study found that being the rejectee or the rejector should have been partly involved in the concept of investment, as the results found a significant correlation between being the rejectee and the increased regret intensity.

Lastly, during the current investigations, an overarching theme of the measurements involved has been their associations with either functional or dysfunctional outcomes. Literature has shown that both the RRS and the RES contain sub-scales associated with functional or dysfunctional outcomes (Noelen-Hoeksema, 2001; Buchanan et al., 2016). However, the current

study found a correlation between both scales and their sub-scales, which suggests that the differentiation between functional and dysfunctional outcomes may not be as straightforward as expected. Notably, these correlations do not necessarily exclude each other neither theoretically nor practically, however, their overlapping qualities may alter or influence the interpretation of future data.

In sum, the current study found additional associations between disenfranchised grief and individual differences which may influence the subsequent outcomes. As all concepts described within the study (counterfactual thoughts, regret, and rumination) have been suggested to influence successful adaptation following bereavement, the inclusion of them within the disenfranchised grief category suggests the potential for expanding on established knowledge.

### **Conclusion**

This thesis examined counterfactual thoughts, regret, and rumination in the context of romantic dissolutions, revealing significant findings with implications for disenfranchised grief research. The results suggest that regret intensity in romantic dissolutions may decrease over time depending on individual factors associated with said dissolution. However, the moderating effects were inconclusive, with omission regrets showing potential significance and contrasting previous findings. The conceptualisation of investment over time also yielded significant effects and opened up for the potential of including both extrinsic and intrinsic investment (Rusbult, 1980). Furthermore, the role of the brooding-trait in regret was not the sole factor, emphasising the importance of considering reflection in disenfranchised grief, and specifically romantic dissolutions. Overall, this thesis aimed to fill some gaps in the literature and hopes to advance the understanding of counterfactual thoughts, regret, and rumination within the domain of romantic dissolutions, and thereby also disenfranchised grief.

### Acknowledgements

I would like to thank my Supervisor Dr Kai Epstude for his patience and his thorough editing. Similarly, I would like to thank my fellow student Christianne Evasco for her help with coding and supportive conversations.

Thank you to the University of Groningen and the associated Professors for the opportunity to finalise my MSc in Applied Social Psychology, and who gave me the knowledge and skills to remain confident in my abilities.

Lastly, I would like to thank my friends and family who have been my anchors throughout the past year, and who have been able to keep me afloat and safe during the various academic storms. A special thanks to JoAnn Augustus, who has taken the brunt of my frustrations and who has been a massive support throughout this previous year.

*“It takes a village”*

*-An African tribal proverb*

**Conflicts of Interest**

The Author declares that they have no conflict of interest.

**Compliance with Ethical Standards**

Considerations have been followed and successfully adapted to the standards of the RUG Ethical Committee. The current study used Panel Inzicht to publish our questionnaire. Notably, Panel Inzicht uses personal ID's for their own data collection, which the current study did not have access to. Therefore, Panel Inzicht are the controller of these data, not the current study's researchers, or supervisor.

**Data Availability Statement**

Uploaded to a RUG server.



### References

- Allaert, J., De Raedt, R., & Vanderhasselt, A. (2019). When choosing means losing: Regret enhances repetitive negative thinking in high brooders. *Journal of Experimental Social Psychology, 85*, 103850–103850. <https://doi.org/10.1016/j.jesp.2019.103850>
- Allaert, J., Gleicher, F., Kost, K., A., Baker, S., M., Stratham, A., J., Richman, S., A., & Sherman, S., J. (1990). The Role of Counterfactual Thinking in Judgments of Affect. *Personality and Social Psychology Bulletin, 16*(2). <https://doi.org/10.1177/014616729016200>
- Avni-Babad, D. (2003). Action/inaction regret as a function of severity of loss. *Applied Cognitive Psychology 17*(2), 225-235. doi:[10.1002/acp.855](https://doi.org/10.1002/acp.855)
- Branscombe, N. R., Wohl, M. J. A., Owen, S., Allison, J. A., & N'gbala, A. (2003). Counterfactual Thinking, Blame Assignment, and Well-Being in Rape Victims. *Basic and Applied Social Psychology, 25*(4), 265–273. [https://doi.org/10.1207/s15324834basp2504\\_1](https://doi.org/10.1207/s15324834basp2504_1)
- Broomhall, A. G., Phillips, W. J., Hine, D. W., & Loi, N. M. (2017). Upward counterfactual thinking and depression: A meta-analysis. *Clinical Psychology Review, 55*(1), 56–73. <https://doi.org/10.1016/j.cpr.2017.04.010>
- Buchanan, J., Summerville, A., Lehmann, J., & Reb, J. (2016). The Regret Elements Scale: Distinguishing the affective and cognitive components of regret. *Judgment and Decision Making, 11*(3), 275–286. <https://doi.org/10.1017/s1930297500003107>
- Corr, C. A. (1999). Enhancing the Concept of Disenfranchised Grief. *OMEGA - Journal of Death and Dying, 38*(1), 1–20. <https://doi.org/10.2190/ld26-42a6-1eav-3mdn>
- Davis, C. G., & Nolen-Hoeksema, S. (2001). Loss and Meaning: How Do People Make Sense of Loss? *American Behavioral Scientist, 44*(5), 726–741. <https://doi.org/10.1177/0002764201044005003>
- Davis, C., G., & Lehman, D., R. (1995). Counterfactual thinking and coping with traumatic life events. N. J. Roese & J. M. Olson (Eds.), *What Might Have Been: The Social Psychology of Counterfactual Thinking*, 353–374.

- Davis, H., Irwin, P., Richardson, M., & O'Brien-Malone, A. (2003). When a pet dies: Religious issues, euthanasia and strategies for coping with bereavement. *Anthrozoös*, *16*(1), 57-74.
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment*, *49*, 71-75.
- Doering, B. K., Barke, A., Friehs, T., & Eisma, M. C. (2018). Assessment of grief-related rumination: validation of the German version of the Utrecht Grief Rumination Scale (UGRS). *BMC Psychiatry*, *18*(1). <https://doi.org/10.1186/s12888-018-1630-1>
- Doka, K. J. (1999). Disenfranchised grief. *Bereavement Care*, *18*(3), 37–39. <https://doi.org/10.1080/02682629908657467>
- Doka, K. J. (2008). Disenfranchised grief in historical and cultural perspective. In M. S. Stroebe, R. O. Hansson, H. Schut, & W. Stroebe (Eds.), *Handbook of bereavement research and practice: Advances in theory and intervention* (pp. 223–240). American Psychological Association. <https://doi.org/10.1037/14498-011>
- Duck, S., W. (1982). A topography of relationship disengagement and dissolution. In *Personal relationships 4: Dissolving personal relationships*, Edited by: Duck, S.W. *New York: Academic Press.*, 1–30.
- Eisma, M. C., Epstude, K., Schut, H. A. W., Stroebe, M. S., Simion, A., & Boelen, P. A. (2020). Upward and Downward Counterfactual Thought after Loss: A Multi-wave Controlled Longitudinal Study. *Behavior Therapy*, *52*(3). <https://doi.org/10.1016/j.beth.2020.07.007>
- Eisma, M. C., Lang, T. A., & Boelen, P. A. (2020). How thinking hurts: Rumination, worry, and avoidance processes in adjustment to bereavement. *Clinical Psychology & Psychotherapy*, *27*(4). <https://doi.org/10.1002/cpp.2440>
- Eisma, M. C., Schut, H. A. W., Stroebe, M. S., Boelen, P. A., van den Bout, J., & Stroebe, W. (2014). Adaptive and maladaptive rumination after loss: A three-wave longitudinal study. *British Journal of Clinical Psychology*, *54*(2), 163–180. <https://doi.org/10.1111/bjc.12067>

- Ehring T. (2021). Thinking too much: rumination and psychopathology. *World psychiatry : official journal of the World Psychiatric Association (WPA)*, 20(3), 441–442. <https://doi.org/10.1002/wps.20910>
- Epstude, K. (2015). Regret and Counterfactual Thinking in the Face of Inevitability: The Case of HIV-Positive Men. *Social Psychological and Personality Science*. <https://journals.sagepub.com/doi/abs/10.1177/1948550614546048?journalCode=sppa>
- Epstude, K., & Jonas, K. J. (2014). Regret and Counterfactual Thinking in the Face of Inevitability. *Social Psychological and Personality Science*, 6(2), 157–163. <https://doi.org/10.1177/1948550614546048>
- Epstude, K., & Roese, N. J. (2008). The Functional Theory of Counterfactual Thinking. *Personality and Social Psychology Review*, 12(2), 168–192. <https://doi.org/10.1177/1088868308316091>
- Field, T. (2011). Romantic breakups, heartbreak and bereavement—Romantic breakups. *Psychology*, 2(04), 382. DOI:[10.4236/psych.2011.24060](https://doi.org/10.4236/psych.2011.24060)
- Gilovich, T., & Medvec, V. H. (1995). The experience of regret: What, when, and why. *Psychological Review*, 102(2), 379–395. <https://doi.org/10.1037/0033-295x.102.2.379>
- Gleicher, F. (1990). The Role of Counterfactual Thinking in Judgments of Affect. *Personality and Social Psychology Bulletin*. <https://doi.org/10.1177/014616729016200>
- Hulley, S. B., & Newman, T. B. (2013). Designing cross-sectional and cohort studies. *Designing Clinical Research*, 85.
- Kahneman, D., & Miller, D. T. (1986). Norm theory: Comparing reality to its alternatives. *Psychological Review*, 93(2), 136–153. <https://doi.org/10.1037/0033-295x.93.2.136>
- Kahneman, D., & Tversky, A. (1982). The Psychology of Preferences. *Scientific American*, 246(1), 160–173. <https://doi.org/10.1038/scientificamerican0182-160>
- Kansky, J., & Allen, J. P. (2017). *Making Sense and Moving On*. 6(3), 172–190. <https://doi.org/10.1177/2167696817711766>
- Le, B., Dove, N. L., Agnew, C. R., Korn, M. S., & Mutso, A. A. (2010). Predicting nonmarital romantic relationship dissolution: A meta-analytic synthesis. *Personal Relationships*, 17(3), 377–390. <https://doi.org/10.1111/j.1475-6811.2010.01285.x>

- Leach, F. R., & Plaks, J. E. (2009). Regret for errors of commission and omission in the distant term versus near term: the role of level of abstraction. *Personality & Social Psychology Bulletin*, 35(2), 221–229. <https://doi.org/10.1177/0146167208327001>
- Lecci, L., Okun, M. A., & Karoly, P. (1994). Life regrets and current goals as predictors of psychological adjustment. *Journal of Personality and Social Psychology*, 66(4), 731–741. <https://doi.org/10.1037/0022-3514.66.4.731>
- Lindgren, C. L., Burke, M. L., Hainsworth, M. A., & Eakes, G. G. (1992). Chronic sorrow: A lifespan concept. *Scholarly Inquiry for Nursing Practice*, 6(1), 27–40.
- Mandel, D. (2010). Counterfactuals, emotions, and context. *Cognition and Emotion*, 14(1). <https://doi.org/10.1080/02699930302275>
- Mellenbergh, G. J. (2019) *A conceptual introduction to psychometrics*. Eleven International Publisher. ISBN: 978 94 9094 729 3
- Miller, D., T., & Taylor, B., R. (2014). Counterfactual Thought, Regret, and Superstition: How to Avoid Kicking Yourself. In *Taylor & Francis* (pp. 317–344). <https://doi.org/10.4324/9781315806419-15>
- Neimeyer, R. A., Pitcho-Prelorentzos, S., & Mahat-Shamir, M. (2021). “If only...”: Counterfactual thinking in bereavement. *Death Studies*, 45(9), 1–10. <https://doi.org/10.1080/07481187.2019.1679959>
- Perilloux, C., & Buss, D. M. (2008). Breaking up Romantic Relationships: Costs Experienced and Coping Strategies Deployed. *Evolutionary Psychology*, 6(1), 147470490800600. <https://doi.org/10.1177/147470490800600119>
- Pieters, R., & Zeelenberg, M. (2007). A Theory of Regret Regulation 1.1. *Journal of Consumer Psychology*, 17(1), 29–35. [https://doi.org/10.1207/s15327663jcp1701\\_6](https://doi.org/10.1207/s15327663jcp1701_6)
- Rhoades, G. K., Kamp Dush, C. M., Atkins, D. C., Stanley, S. M., & Markman, H. J. (2011). Breaking up is hard to do: The impact of unmarried relationship dissolution on mental health and life satisfaction. *Journal of Family Psychology*, 25(3), 366–374. <https://doi.org/10.1037/a0023627>

- Rinofner-Kreidl, S. (2016). On Grief's Ambiguous Nature. *Quaestiones Disputatae*, 7(1), 178–207. <https://doi.org/10.5840/qd20167121>
- Roese, N. J. (1997). Counterfactual thinking. *Psychological Bulletin*, 121(1), 133–148. <https://doi.org/10.1037/0033-2909.121.1.133>
- Roese, N. J., & Epstude, K. (2017). The Functional Theory of Counterfactual Thinking: New Evidence, New Challenges, New Insights. *Advances in Experimental Social Psychology*, 56, 1–79. <https://doi.org/10.1016/bs.aesp.2017.02.001>
- Roese, N. J., & Morrison, M. (2009). The psychology of counterfactual thinking. *Historical Social Research*, 34(2), 16–26. <https://doi.org/10.12759/hsr.34.2009.2.16-26>
- Roese, N. J., & Olson, J. M. (1997). Counterfactual Thinking: The Intersection of Affect and Function. *Advances in Experimental Social Psychology*, 29, 1–59. [https://doi.org/10.1016/s0065-2601\(08\)60015-5](https://doi.org/10.1016/s0065-2601(08)60015-5)
- Rude, S. S., Little Maestas, K., & Neff, K. (2007). Paying attention to distress: What's wrong with rumination? *Cognition & Emotion*, 21(4), 843–864. <https://doi.org/10.1080/02699930601056732>
- Rusbult, C., E., Johnson, D., J., & Morrow, G., D. (1986). Predicting Satisfaction and Commitment in Adult Romantic Involvements: An Assessment of the Generalizability of the Investment Model on JSTOR. *Proxy-Ub.rug.nl*, 46(1). <https://doi.org/10.2307/2786859>
- Saffrey, C., & Ehrenberg, M. (2007). When thinking hurts: Attachment, rumination, and postrelationship adjustment. *Personal Relationships*, 14(3), 351–368. <https://doi.org/10.1111/j.1475-6811.2007.00160.x>
- Sijtsema, J. J., Zeelenberg, M., & Lindenberg, S. M. (2021). Regret, Self-regulatory Abilities, and Well-Being: Their Intricate Relationships. *Journal of Happiness Studies*, 23. <https://doi.org/10.1007/s10902-021-00446-6>
- Smith, J. M., & Alloy, L. B. (2009). A roadmap to rumination: a review of the definition, assessment, and conceptualization of this multifaceted construct. *Clinical psychology review*, 29(2), 116–128. <https://doi.org/10.1016/j.cpr.2008.10.003>

- Sprecher, S. (1998). Insiders' Perspectives on Reasons for Attraction to a Close Other. *Social Psychology Quarterly*, *61*(4), 287. <https://doi.org/10.2307/2787031>
- Stroebe, M., Stroebe, W., van de Schoot, R., Schut, H., Abakoumkin, G., & Li, J. (2014). Guilt in Bereavement: The Role of Self-Blame and Regret in Coping with Loss. *PLoS ONE*, *9*(5), e96606. <https://doi.org/10.1371/journal.pone.0096606>
- Sveen, J., Pohlkamp, L., Kreicbergs, U., & Eisma, M. C. (2019). Rumination in bereaved parents: Psychometric evaluation of the Swedish version of the Utrecht Grief Rumination Scale (UGRS). *PLOS ONE*, *14*(3), e0213152. <https://doi.org/10.1371/journal.pone.0213152>
- Szabo, Y. Z., Warnecke, A. J., Newton, T. L., & Valentine, J. C. (2017). Rumination and posttraumatic stress symptoms in trauma-exposed adults: A systematic review and meta-analysis. *Anxiety, Stress, & Coping*, *30*(4), 396-414.
- Towers, A., Williams, M. N., Hill, S. R., Philipp, M. C., & Flett, R. (2016). What Makes for the Most Intense Regrets? Comparing the Effects of Several Theoretical Predictors of Regret Intensity. *Frontiers in Psychology*, *7*. <https://doi.org/10.3389/fpsyg.2016.01941>
- Van Dijk, W. W., van der Pligt, J., & Zeelenberg, M. (1999). Effort invested in vain: The impact of effort on the intensity of disappointment and regret. *Motivation and Emotion*, *23*, 203-220.
- Whisman, M. A., Miranda, R., Fresco, D. M., Heimberg, R. G., Jeglic, E. L., & Weinstock, L. M. (2018). Measurement Invariance of the Ruminative Responses Scale Across Gender. *Assessment*, *27*(3), 508–517. <https://doi.org/10.1177/1073191118774131>
- White, K., & Lehman, D. R. (2005). Looking on the Bright Side: Downward Counterfactual Thinking in Response to Negative Life Events. *Personality and Social Psychology Bulletin*, *31*(10), 1413–1424. <https://doi.org/10.1177/0146167205276064>
- Yeung, S. K., Yay, T., & Feldman, G. (2021). Action and Inaction in Moral Judgments and Decisions: Meta-Analysis of Omission Bias Omission-Commission Asymmetries. *Personality and Social Psychology Bulletin*, *48*(10), 014616722110423. <https://doi.org/10.1177/01461672211042315>
- Zeelenberg, M. (1999). Anticipated regret, expected feedback and behavioral decision making. *Behavioural Decision Making*, *12*(2). [https://doi.org/10.1002/\(SICI\)1099-0771\(199906\)12:2%3C93::AID-BDM311%3E3.0.CO;2-S](https://doi.org/10.1002/(SICI)1099-0771(199906)12:2%3C93::AID-BDM311%3E3.0.CO;2-S)

## Appendices

### Appendix 1

*Epstude, K., & Roese, N. J. (2008).*

*The counterfactual-regret question from the Qualtrics survey.*

Think about your relationship that ended sometime during the past year. As you look back across your experience in your former romantic relationship, is there anything in particular that stands out as a regret? These can be very minor regrets or more major ones. In the spaces below, please record a few details about the FIRST regret.

IF ONLY...

---

THEN

---

**Appendix 2**

*Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985).*

Below are five statements that you may agree or disagree with. Indicate your agreement with each item by clicking on the respective option.

(The items are scored as follows: 1-Strongly Disagree, 2-Disagree, 3-Slightly Disagree, 4-Neither Agree nor Disagree, 5-Slightly Agree, 6-Agree, 7-Strongly Agree)

---

In most ways my life is close to ideal	—
The conditions of my life are excellent	—
I am satisfied with my life	—
So far I have gotten the important things I want in life	—
If I could live my life over, I would change almost nothing	—

---



**Appendix 3**

*Saffrey, C., & Ehrenberg, M. (2007).*

*The Rumination Response Scale (RRS) 11-items. (Changed from 'depressed' to 'bothered').*

How often do you...?	1 Never or Almost Never	2 Sometimes	3 Often	4 Always or Almost Always
Think "What am I doing to deserve this?"				
Analyse recent events to try and understand why you are bothered				
Think "Why do I always react this way?"				
Go away by yourself and think about why you feel bothered				
Write down what you are thinking and analyse it				
Think about a recent situation, wishing it had gone better				
Think "Why do I have problems others don't have?"				
Think "Why can't I handle things better?"				
Analyse your personality to try and understand why you are bothered				
Go someplace alone to think about your feelings				
Think about how angry you are with yourself				

**Appendix 4**

*Buchanan, J., Summerville, A., Lehmann, J., & Reb, J. (2016)*

*(A1-5 = affective sub-scale, C1-5 = cognitive sub-scale)*

Underneath you are asked different questions. Please complete the questionnaire while thinking back on your most recent breakup.

(Below question are scored as such: 1-Definitely Disagree, 2-Disagree, 3-Somewhat Disagree, 4-Neutral, 5-Somewhat Agree, 6-Agree, 7-Definitely Agree)

- 
- (A1) I am experiencing self-blame about the way I made my decision \_\_\_\_\_
- (A2) I wish I had made a different decision \_\_\_\_\_
- (A3) I am experiencing self-blame \_\_\_\_\_
- (A4) I would have been better off if I had decided differently \_\_\_\_\_
- (A5) I feel like kicking myself \_\_\_\_\_
- (C1) Things would have gone better if I had chosen another option \_\_\_\_\_
- (C2) I feel sorry \_\_\_\_\_
- (C3) I should have decided differently \_\_\_\_\_
- (C4) I feel guilty \_\_\_\_\_
- (C5) Before, I should have chosen differently \_\_\_\_\_
-