



# Negative cognitions in emotional problems following romantic relationship break-ups

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## Summary

*This study examined the role of negative cognitions in emotional problems following relationship dissolution. Seventy-nine undergraduate students who experienced a relationship break-up completed measures of break-up related complicated grief, depression and anxiety, together with an adjusted version of the Grief Cognitions Questionnaire (GCQ) that assesses four types of global negative beliefs, negative cognitions about self-blame and the responses of others, and three types of negative interpretations of one's own grief reactions. Results showed that all cognitive variables tapped by the GCQ were significantly associated with complicated grief, and—except for global beliefs about life—with depression and anxiety. Most of these associations remained significant when controlling for the influence of initiator status, variables linked with the ended relationship (e.g. duration) and personality factors (e.g. attachment anxiety, neuroticism). Catastrophic misinterpretations about one's own reactions, global negative beliefs about the self and cognitions reflecting self-blame were the strongest cognitive correlates of break-up related emotional problems. Overall, the findings are in keeping with cognitive models of trauma and loss, and suggest that changing negative cognitions could be a useful intervention for those who fail to recover from a relationship break-up. Copyright © 2008 John Wiley & Sons, Ltd.*

## Key Words

*attachment; break-up-of-close-relationships; distress; negative-cognitions; personality*

## Introduction

The dissolution of a close relationship can be an extremely upsetting event. It is a prospective risk

factor for the development of emotional problems (Monroe, Rohde, Seeley, & Lewinsohn, 1999). Yet, as with many other stressful life events (Bonanno, 2004) not every one develops such problems in reaction to this event. In some people, relationship break-ups even give rise to personal growth (Tashiro & Frazier, 2003). What variables are involved in individual differences in reactions to relationship break-up? To date, relatively much research in this area has focused on

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static risk factors such as demographic variables (e.g. gender), characteristics of the ended relationship (e.g. duration) and personality factors (e.g. attachment style, neuroticism) (Sbarra & Emery, 2005; Sprecher, Felmlee, Metts, Fehr, & Vanni, 1998; Tashiro & Frazier, 2003). Less attention has been paid to the role of potentially modifiable psychological mechanisms involved in recovery from relationship break-up. The present study sought to enhance knowledge about such mechanisms, by examining the role of negative cognitions in emotional problems following break-up.

Our examination was guided by the view that much can be learned from cognitive models of emotional problems after loss and trauma (Brewin & Holmes, 2003, Dagleish 2004). Central to these models is the notion that individual variations in cognitions that come to dominate thinking patterns after such events (including core beliefs as well as automatic thoughts) account for differences in emotional reactions to such events. Specifically, cognitive models of post-traumatic stress disorder (PTSD) postulate that a traumatic event may shatter pre-existing positive core beliefs about the self and the world, or confirm pre-existing negative ones, as a result of which negative beliefs that 'the self is worthless' and 'the world is dangerous' may come to dominate thinking patterns, causing PTSD (Foa & Rothbaum, 1998). Apart from such basic and global core beliefs about the self and the world, other, more superficial negative cognitions (also called automatic cognitions) have been associated with PTSD as well, including negative cognitions about self-blame ('I should have prevented the event'), the responses of others ('Nobody cares about me') and catastrophic misinterpretations of one's reactions to the event ('The vivid recollections are signs that I am going mad') (Ehlers & Clark, 2000). Several studies have confirmed the importance of these different cognitions in PTSD (Brewin & Holmes, 2003).

Boelen, van den Bout and van den Hout (2003) have postulated that the aforementioned negative cognitions are also involved in complicated grief—a debilitating condition that can develop after the death of a close relative (Prigerson & Jacobs, 2001). These authors constructed the Grief Cognitions Questionnaire (GCQ) that taps a wide array of negative loss-related cognitions, including four types of global negative beliefs (similar to core beliefs as defined in cognitive therapy) and negative cognitions about self-blame, negative cognitions about the responses of others and three types of negative interpretations of

one's own grief reactions (similar to automatic thoughts as defined in cognitive therapy). Research among bereaved adults confirmed that endorsement of these cognitions was positively associated with more severe and complicated grief, depression and anxiety (Boelen et al., 2003; Boelen & Lensvelt-Mulders, 2005). Global negative beliefs about the self, life and the future, and catastrophic misinterpretations of grief-reactions were found to be the strongest cognitive correlates of these emotional problems. A subsequent prospective study revealed that these four types of cognitions predicted the persistence of grieving problems across 2 years post-loss (Boelen, van den Bout, & van den Hout, 2006).

Building and expanding on cognitive approaches to loss and trauma, the current study was designed to examine negative cognitions in emotional problems after relationship break-ups in undergraduate students. An adjusted version of the GCQ was used to assess negative cognitions. Break-up related complicated grief, depression and anxiety served as the indices of psychological malfunctioning. The assessment of complicated grief represents an extension of earlier studies that typically confine their examination of the emotional consequences of relationship break-up to depression, anxiety and general mental health (e.g. Chung et al., 2002; Sprecher et al., 1998).

The aim of the present study, conducted in The Netherlands, was threefold. First, we examined the role of several demographic variables (age, gender, current dating status), variables related to the relationship break-up (duration of the relationship, time since break-up, degree of commitment, initiator status and suddenness of break-up) and personality factors (neuroticism, attachment anxiety, attachment avoidance). Based on previous research (e.g. Chung et al., 2002; Davis, Shaver, & Vernon, 2003; Sprecher et al., 1998; Tashiro & Frazier, 2003), it could be expected that current dating status, most of the relationship variables, and neuroticism and attachment anxiety would be linked with the severity of break-up related emotional problems. Second, we examined the association between cognitive variables and these emotional problems. Based on research on trauma and loss (Boelen et al., 2003; Ehlers, Mayou, & Bryant, 1998), it was predicted that all cognitive variables tapped by the GCQ would be significantly linked with emotional problems. Moreover, we expected that these cognitions would continue to predict variance in emotional problems, over and above the variance

explained by demographic, relationship and personality variables. Finally, we sought to determine which cognitive variables explained most variance in emotional problems, after controlling for the influence of relevant background variables and the shared variance between the cognitive variables. Based on findings among bereaved individuals (Boelen et al., 2003), it was expected that negative global beliefs about the self, life and the future, and catastrophic misinterpretations of one's reactions would be among the most important cognitive correlates of break-up related emotional problems.

## Method

### *Participants and procedures*

Data were available from 79 undergraduate students from Utrecht University. They were all recruited via posters in university buildings and an advertisement on the university Internet site. Solicitations stated that the aim of the study was to learn about emotional problems after a relationship break-up. Criteria for inclusion were: being a student between 18 and 30 years of age and having experienced the break-up of a romantic relationship that lasted at least 2 months, within the past 7 years.

The mean age of the sample was 21.5 years [standard deviation (SD) = 2.5], 66 participants (83.5 per cent) were female and 35 participants (44.3 per cent) were dating someone new. On average, the duration of the ended relationship was Mean (M) = 16.6 months (SD = 17.5) and M = 17.5 months (SD = 15.5) had passed since the relationship ended. On a three-point 'commitment' scale, 11 (13.9 per cent) rated that they had been 'somewhat' committed to the previous relationship, 34 (43 per cent) rated 'strongly' and 34 (43 per cent) rated 'very strongly'. Thirty-eight participants (48.1 per cent) had initiated the break-up, 29 (36.7 per cent) were non-initiators and 12 (15.2 per cent) reported that initiation of break-up was mutual. Sixty-one participants (77.2 per cent) experienced the break-up as 'sudden', 18 (22.8 per cent) as non-sudden.

All participants completed the questionnaires in return for course credits. Participants completed the questionnaires in group-testing sessions. None of the 79 participants terminated their participation before they had completed all questionnaires.

## Measures

**Inventory of complicated grief revised (ICG-R).** The ICG-R is a self-report measure constructed by Prigerson and Jacobs (2001) to assess symptoms of complicated grief. The 29-item Dutch version has good psychometric properties (Boelen, van den Bout, de Keijser, & Hoijsink, 2003). In the present study, break-up related complicated grief was assessed using an adjusted version of the ICG-R. Specifically, items were altered, such that references to the death of the respondents' relative were replaced by the ending of the relationship. For instance, the item 'I feel I have trouble accepting the death' was changed into 'I feel I have trouble accepting that this relationship is over'. For one item (i.e. 'I feel that it is unfair that I should live when he/she died'), this adjustment could not be made and this item was dropped in the adjusted version. The 28 remaining items ( $\alpha = 0.94$ ) were rated on five-point scales ranging from 1 (not at all) to 5 (very much).

**Symptom checklist-90 (SCL-90) depression and anxiety scale.** The 16-item depression subscale and 10-item anxiety subscale of the Symptom Checklist-90 (SCL-90) (Derogatis, 1983; Dutch version by Arrindell & Ettema, 2003) were used to assess symptoms of depression and anxiety. Respondents rate how often they experienced the symptoms described in the items during the last week, on five-point scales ranging from 1 (never) to 5 (always). In this sample, the depression and anxiety scales had  $\alpha$ 's of 0.89 and 0.83, respectively.

**Grief cognitions questionnaire (GCQ).** The GCQ, developed by Boelen et al. (2003), is a 38-item measure of negative cognitions involved in emotional problems after loss. It contains nine subscales: four subscales tapping global negative beliefs about the Self (six items), the World (four items), Life (four items) and the Future (five items); a fifth subscale representing cognitions about Self-Blame over having caused the loss or having done things wrongly in the relationship with the lost person (five items); a sixth subscale assessing negative cognitions about the way Others responded after the loss; and three subscales tapping negative cognitions about one's own reactions to the loss, specifically negative cognitions about the Appropriateness of one's reactions (four items), cognitions reflecting the

importance of Cherishing the Pain of the loss (three items) and Catastrophic Misinterpretation of one's feelings as signs of impending mental insanity (five items).

As with the ICG-R, items were altered such that references to the death of a relative were replaced by relationship break-up. For instance, the item 'Since he/she died, I think I am worthless' (subscale Self) was changed into 'Since the relationship ended, I think I am worthless'. Respondents rated their agreement with each item on six-point scales ranging from 0 (disagree strongly) to 5 (agree strongly). Psychometric properties of the original (bereavement-related) version are adequate, and confirmatory factor analysis has shown that the GCQ taps nine distinguishable, but related categories of cognitions (Boelen & Lensvelt-Mulders, 2005). In this study, correlations among the GCQ subscales ranged from  $r = 0.09$  ( $p = 0.45$ ) to  $r = 0.69$  ( $p < 0.001$ ), which confirms that they represent relatively independent constructs.

In the present sample, the  $\alpha$  of the GCQ total scale was 0.91. The  $\alpha$ 's of the GCQ subscales were moderate to high (Self,  $\alpha = 0.72$ ; World,  $\alpha = 0.71$ ; Life,  $\alpha = 0.62$ ; Future,  $\alpha = 0.48$ ; Self-Blame,  $\alpha = 0.62$ ; Others,  $\alpha = 0.81$ ; Appropriateness,  $\alpha = 0.51$ , Catastrophic Misinterpretations,  $\alpha = 0.86$ ), with the exception of the  $\alpha$  of the subscale Cherishing the Pain that was low ( $\alpha = 0.21$ ).

Neuroticism scale from the Eysenck Personality Questionnaire revised and short scale version (EPQ-RRS). The 12-item Neuroticism subscale from the EPQ-RRS (Eysenck & Eysenck, 1991; Dutch version by Sanderman, Arrindell, Ranchor, Eysenck, & Eysenck 1995) was used to assess neuroticism. Respondents indicate their agreement with 12 statements, using a forced-choice response format (yes versus no). The  $\alpha$  was 0.73.

Revised experiences in close relationships (ECR-r). The shortened version of the ECR-r, originally developed by Fraley, Waller and Brennan (2000), was used to measure attachment anxiety (i.e. a person's predisposition towards anxiety and vigilance about rejection and abandonment) and attachment avoidance (i.e. a person's discomfort with closeness and dependency or a reluctance to be intimate with others). Attachment anxiety was tapped by a five-item scale and attachment avoidance by a six-item scale. Respon-

dents rate their agreement with statements on seven-point scales ranging from 0 (strongly disagree) to 6 (strongly agree). In the present sample, the attachment anxiety and attachment avoidance scales had  $\alpha$ 's of 0.79 and 0.78, respectively.

## Results

### *Descriptive statistics*

Mean scores of participants on the (28-item) adjusted ICG-R, the SCL depression scale and SCL anxiety scale are shown in Table I. Scores on the SCL depression and anxiety scales were significantly higher than mean scores of a representative non-clinical sample from the Dutch population (Arrindell & Ettema, 2003; see Table I). Table I also shows scores of the current participants on the GCQ, together with scores of 531 bereaved individuals included in the study of Boelen and Lensvelt-Mulders (2005). Comparison of these scores using *t*-tests, outcomes of which are also shown in Table I, showed that mean GCQ subscale and total scores in the current sample were all significantly lower than the scores found in the bereaved sample. The exception was that the current sample scored *higher* on the GCQ subscale Self-Blame. Scores on the three symptom measures and the GCQ subscales, and GCQ total score were positively skewed and were, therefore, log-transformed in all analyses described below.

### *Relationship of demographic, relationship and personality variables with symptoms*

Relationships of the symptom measures with demographic variables (age, gender, current dating status), relationship variables (duration of relationship, time since break-up, degree of commitment, initiator status and suddenness of break-up) and personality variables (neuroticism, attachment anxiety, attachment avoidance) were examined using Pearson correlations, *t*-tests and analyses of variance.

Demographic variables age and gender were not related to symptom measures. Current dating status was associated with all three symptom measures. Compared with those who were dating someone new, participants who were still single had higher ICG-R scores [ $t(77) = 4.00$ ], SCL depression scores [ $t(77) = 2.34$ ] and SCL anxiety scores [ $t(77) = 2.04$ ,  $ps < 0.05$ ].

Table I. Mean scores on measures of complicated grief, depression, anxiety, and cognitive variables in present sample and reference groups.

	Present sample <i>M</i> ( <i>SD</i> )	Reference group <i>M</i> ( <i>SD</i> )	Difference test <i>t</i>
Symptom measures			
ICG-R	49.33 (16.46)	—	—
SCL-depression	27.35 (9.39)	21.58 (7.56)	5.46*
SCL-anxiety	15.73 (5.39)	12.76 (4.41)	4.90*
Cognitive variables			
Self	3.98 (4.29)	7.25 (7.69)	-6.72*
World	1.46 (2.53)	5.58 (5.84)	-15.31*
Life	2.29 (3.02)	5.35 (6.11)	-8.94*
Future	2.53 (3.01)	7.72 (7.13)	-15.23*
Self-blame	7.65 (5.07)	5.37 (6.40)	3.98*
Others	1.84 (2.60)	5.51 (4.93)	-12.43*
Appropriateness	2.06 (2.55)	5.01 (5.67)	-10.18*
Cherish Grief	1.15 (1.70)	3.88 (4.26)	-14.18*
Catastrophic interpretations	2.99 (4.18)	7.75 (6.36)	-10.07*
GCQ total score	24.47 (19.94)	53.70 (41.05)	-12.94*

\*  $p < 0.001$ .

GCQ = Grief cognitions questionnaire. ICG-R = Inventory of complicated grief revised. SCL = Symptom checklist.

Several relationship variables were associated with complicated grief. Complicated grief was inversely related with time since break-up ( $r = -0.48$ ,  $p < 0.001$ ). There was an effect of 'degree of commitment' [ $F(2,78) = 7.15$ ,  $p < 0.01$ ], such that those who were 'somewhat' committed to the relationship had lower ICG-R scores than those who were 'strongly' or 'very strongly' committed ( $ps < 0.05$ ). There was an effect of initiator status [ $F(2,78) = 5.06$ ,  $p < 0.01$ ], such that 'initiators' had lower scores than 'non-initiators' ( $p < 0.05$ ). Moreover, sudden break-ups coincided with higher ICG-R scores than non-sudden break-ups [ $t(77) = 2.42$ ,  $p < 0.05$ ]. Relationship variables were not associated with depression and anxiety.

With respect to personality variables, complicated grief was associated with attachment anxiety ( $r = 0.35$ ,  $p < 0.01$ ), depression with attachment anxiety ( $r = 0.23$ ,  $p < 0.05$ ) and neuroticism ( $r = 0.35$ ,  $p < 0.01$ ), and anxiety with neuroticism ( $r = 0.29$ ,  $p < 0.01$ ).

### Relationship of cognitive variables with symptoms

Table II shows Pearson correlations between the nine subscales and total score of the GCQ and the three symptom measures. To control for Type I error, we adjusted the alpha-level, using the false discovery rate procedure developed by Benjamini

and Hochberg (1995).<sup>1</sup> All GCQ subscales and the GCQ total score were significantly related with break-up related complicated grief. Moreover, except for one subscale (i.e. Life), higher scores on all the GCQ subscales and its total score were significantly related to higher levels of depression and anxiety.

Regression analyses were used to examine if the GCQ subscales and total score continued to be associated with the three symptom measures when controlling for the effect of relevant demographic, relationship and personality variables (i.e. those that were related to symptoms as described in the previous section). Again, we adjusted the alpha-level using the procedure of Benjamini and Hochberg (1995).<sup>2</sup>

<sup>1</sup>In controlling the false discovery rate, we reasoned that, for each of the three symptom measures (ICG-R, SCL depression scale and SCL anxiety scale) consecutively treated as dependent variables, we tested a series of ten hypotheses (one for each of the nine GCQ subscale scores and the GCQ total score). For instance, there were 10 correlations and  $p$  values pertaining to the associations of the GCQ subscale and the GCQ total score with the ICG-R.

<sup>2</sup>In controlling the false discovery rate, we reasoned that, for each of the three symptom measures (ICG-R, SCL depression scale and SCL anxiety scale) consecutively treated as dependent variables, we again tested ten hypotheses (one for each of the nine GCQ subscale scores and the GCQ total score).

Table II. Associations of cognitive variables with complicated grief, depression, and anxiety.

	Complicated grief		Depression		Anxiety	
	<i>r</i>	$\beta$	<i>r</i>	$\beta$	<i>r</i>	$\beta$
Self	<u>0.68</u>	<u>0.43</u>	<u>0.43</u>	<u>0.32</u>	<u>0.46</u>	<u>0.38</u>
World	<u>0.41</u>	<u>0.29</u>	<u>0.31</u>	<u>0.22</u>	<u>0.26</u>	0.18
Life	<u>0.46</u>	<u>0.27</u>	0.16	-0.08	0.16	-0.02
Future	<u>0.55</u>	<u>0.36</u>	<u>0.36</u>	0.21	<u>0.27</u>	0.13
Self-blame	<u>0.30</u>	<u>0.21</u>	<u>0.39</u>	<u>0.41</u>	<u>0.36</u>	<u>0.38</u>
Others	<u>0.57</u>	<u>0.42</u>	<u>0.36</u>	<u>0.27</u>	<u>0.31</u>	<u>0.24</u>
Appropriateness	<u>0.55</u>	<u>0.32</u>	<u>0.41</u>	<u>0.38</u>	<u>0.47</u>	<u>0.43</u>
Cherish grief	<u>0.53</u>	<u>0.28</u>	<u>0.31</u>	<u>0.23</u>	<u>0.42</u>	<u>0.37</u>
Catastrophic Interpretations	<u>0.70</u>	<u>0.54</u>	<u>0.49</u>	<u>0.41</u>	<u>0.48</u>	<u>0.42</u>
GCQ total score	<u>0.77</u>	<u>0.56</u>	<u>0.56</u>	<u>0.49</u>	<u>0.54</u>	<u>0.48</u>

Note: Underlined correlations and  $\beta$ 's are significant at  $p < 0.05$  controlling the false discovery rate.

GCQ = Grief cognitions questionnaire.

Table III. Summary of hierarchical regression analyses for variables predicting complicated grief, depression, and anxiety.

		Variables entered (in order)	$R^2$ change	$F$ change
Complicated grief				
Block 1 (enter)		Background variables	0.53	9.43***
Block 2 (stepwise)		Catastrophic interpretations	0.23	62.01***
		Self	0.03	7.31**
Depression				
Block 1 (enter)		Background variables	0.17	5.03**
Block 2 (stepwise)		Self-blame	0.17	18.36***
		Catastrophic interpretations	0.10	12.12**
Anxiety				
Block 1 (enter)		Background variables	0.12	4.99**
Block 2 (stepwise)		Catastrophic interpretations	0.16	16.36***
		Self-blame	0.09	10.01**

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

Table II shows the standardized regression coefficients representing the association of each GCQ subscale and the GCQ total score with the three symptom measures, controlling relevant background variables. As can be seen, all GCQ subscales and its total score continued to predict variance in complicated grief. Moreover, the GCQ total score and six GCQ subscales remained significantly associated with depression and anxiety.

### Stepwise regression analyses

Finally, we examined which cognitive variables explained most variance in symptom severity, after controlling for the influence of relevant

demographic, relationship and personality variables, and the shared variance between the cognitive variables. To this end, three hierarchical regression analyses were run, in which complicated grief, depression and anxiety were the dependent variables. Relevant demographic, relationship and personality variables were entered in block 1, and the nine GCQ subscales were included in a stepwise analysis in block 2.

Table III summarizes the outcomes. In the analysis with the ICG-R, catastrophic misinterpretations and global negative beliefs about the self explained 26 per cent of variance in complicated grief, over and above the 53 per cent explained by current dating status, time since break-up, commitment, initiator status, suddenness of

break-up, and attachment anxiety. The analysis with depression showed that negative cognitions about self-blame and catastrophic misinterpretations explained 27 per cent of variance in depression, over and above the 17 per cent explained by current dating status, attachment anxiety and neuroticism. Finally, the analysis with anxiety showed that catastrophic misinterpretations and negative cognitions about self-blame explained 25 per cent of variance in anxiety over and above the 12 per cent of variance explained by current dating status and neuroticism.<sup>3</sup>

#### *Additional analyses with adjusted symptom measures*

The adjusted ICG-R contained six 'cognitive' grief-reactions that showed conceptual overlap with items from the GCQ. Similarly, the SCL depression scale included three 'cognitive' depression symptoms.<sup>4</sup> Hence, it was possible that this overlap in content inflated associations of the ICG-R and SCL depression scale with the GCQ. To examine this possibility, we reran all analyses using shortened versions of the ICG-R and SCL depression scale from which these cognitive items were removed. Results found with these shortened measures were almost equivalent to those obtained with the full-length versions. There were, however, two changes. First, the association of depression with the GCQ subscale World after controlling for relevant demographic, relationship and personality variables that was not

significant initially (see Table II), became significant when using this shortened depression scale ( $\beta = 0.24$ ,  $p = 0.03$ ). Secondly, in the stepwise regression with depression serving as a dependent variable, the order of variables entering the equation was reversed, with catastrophic misinterpretations now entering first ( $\Delta R^2 = 0.17$ ,  $\Delta F = 18.70$ ,  $p < 0.001$ ), followed by cognitions about self-blame ( $\Delta R^2 = 0.10$ ,  $\Delta F = 13.40$ ,  $p < 0.001$ ).

#### **Discussion**

In the current study, we examined the association between negative cognitions and emotional problems after a relationship break-up, in a sample of undergraduate students—also taking into account the role of demographic, relationship and personality variables. Notably, mean scores on depression and anxiety measures in the current study group were significantly higher than scores in the normal Dutch population. This is in line with previous work showing that romantic break-ups in adolescence and young adulthood can be accompanied by serious mental health problems (Davis et al., 2003; Monroe et al., 1999).

Examination of the impact of demographic, relationship and personality variables showed that current dating status (but not gender and age) was significantly associated with all three symptom measures. This is consistent with earlier findings that dating someone new is associated with less distress (e.g. Tashiro & Frazier, 2003). Also consistent with earlier findings (Sprecher et al., 1998), complicated grief was associated with several relationship variables (e.g. time since break-up, initiator status). Somewhat unexpected, was that relationship variables did not affect depression and anxiety. This suggests that these relationship variables have a differential impact on different emotional problems after break-up. Yet, the absence of an association with depression and anxiety symptoms may also be due to the fact that we only assessed the intensity of these symptoms in the preceding week rather than during a more extended period of time in the aftermath of the break-up. With respect to personality factors, attachment anxiety affected complicated grief and depression, and neuroticism was linked with depression and anxiety. These results add to earlier research showing that these variables are involved in break-up related distress (Chung et al., 2002; Davis et al., 2003; Sbarra & Emery, 2005; Sprecher et al., 1998; Tashiro & Frazier, 2003).

<sup>3</sup>As an additional step, we reran all regression analyses, leaving out the GCQ subscale 'Cherishing the Pain of the Loss', that had a low internal consistency ( $\alpha = 0.21$ ). This did not change the outcomes of the regression analyses.

<sup>4</sup>The six 'cognitive' grief symptoms included in the Dutch ICG-R were 'Ever since \_\_\_\_ died it is hard for me to trust people', 'I feel that life is empty or meaningless without \_\_\_\_', 'I feel like the future holds no purpose or meaning since \_\_\_\_ died', 'I feel unable to imagine life being fulfilling without \_\_\_\_', 'I feel that the death of \_\_\_\_ has changed my view of the world' and 'I have lost my sense of security, safety or control since the death of \_\_\_\_'. The three 'cognitive' depression symptoms from the SCL depression scale were: 'Blaming yourself for things', 'Feeling hopeless about the future' and 'Feelings of worthlessness'.

Negative cognitions were assessed using an adjusted version of the GCQ (Boelen & Lensvelt-Mulders, 2005). The GCQ taps a wide range of negative cognitions, including four types of global negative beliefs, negative cognitions about self-blame and the responses of others, and three types of negative interpretations of one's own grief reactions. As expected, all cognitions tapped by the GCQ were associated with complicated grief and all but global negative beliefs about life with depression and anxiety. Importantly, most of the cognitive variables continued to predict emotional problems after controlling for the effect of relevant demographic, relationship and personality variables. Thus, even when taking into account the impact of being able to reinvest in a new relationship and personality vulnerabilities of attachment anxiety and neuroticism, negative cognitions revolving around the relationship break-up contributed considerably to the distress experienced in its aftermath. These findings link up with previous research showing the pivotal role of negative cognitions in recovery from trauma (e.g. Ehlers et al., 1998) and loss (Boelen et al., 2003, 2006).

We also investigated which cognitions were most important (i.e. showed the strongest links with emotional problems) when taking into account relevant demographic, relationship and personality variables, and the shared variance among cognitions. Consistent with our expectations and studies on loss (Boelen et al., 2006) and trauma (Ehlers et al., 1998), catastrophic misinterpretations about one's own reactions to the break-up were among the strongest cognitive correlates of complicated grief, depression and anxiety. Also as expected, negative beliefs about the self were key cognitive correlates of complicated grief. This suggests that having difficulties sustaining a positive sense of self is an important variable impeding recovery from a relationship break-up. The expectation that global negative beliefs about life and the future would prove to be central to complicated grief was not confirmed. Notably, cognitions about self-blame, but none of the global negative beliefs, emerged as key cognitive correlates of depression and anxiety. This suggests that it is the tendency to blame oneself for one's role in the break-up or one's behaviour during the relationship more than it is the presence of global, core negative beliefs about the self, life or the future that put persons at risk for depression and anxiety following a break-up.

Several limitations of the present study deserve mention. First, the relatively small sample size may have reduced the statistical power necessary to detect some significant associations. Second, the cross-sectional design of this study does not allow drawing conclusions about the direction of causality between cognitive variables and emotional problems following break-up. Prospective longitudinal studies are needed to gain more insight into the direction of causality between these variables. It would be interesting for these studies to use methods based in structural equation modelling rather than regression analysis, to allow for a better understanding of the direct and indirect relationships of cognitive and background variables with symptoms after break-up. Third, generalization of the current findings to other groups should be done cautiously, given that participants were all undergraduate students, were all young, and likely had fewer, shorter and less intense relationships than older victims of break-ups most likely would have had. Fourth, as this study relied on self-report measures, we can not rule out that shared method variance affected some of the associations between dependent and independent variables. Finally, adaptation for relationship break-up of the GCQ and ICG-R may have compromised psychometric properties of these scales. Indeed, internal consistencies of the adjusted GCQ subscales were lower than those of the original bereavement-related version (Boelen & Lensvelt-Mulders, 2005). Thus, it is important for future studies to replicate the current findings using measures specifically designed and validated for the assessment of break-up related cognitions and emotions.

Notwithstanding these limitations, the current findings may have both theoretical and clinical implications. Theoretically, the findings provide evidence that focusing on maladaptive cognitions is a fruitful approach in research on relationship break-up. More generally, findings suggest that a common core process of negative thinking runs through the process of coping with all kinds of stressors. With regard to clinical implications, the present results suggest that cognitive therapeutic interventions that have been successfully applied in the treatment of PTSD (Ehlers, Clark, Hackmann, McManus, & Fennell, 2005) and complicated grief (Boelen, de Keijser, van den Hout, & van den Bout, 2007) may prove useful in counselling or therapy for those suffering from psychological problems after relationship break-up.

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