Published in final edited form as:
J Nerv Ment Dis. 2014 August ; 202(8): 620–622. doi:10.1097/NMD.0000000000000171.

Anxiety Sensitivity in Bereaved Adults with and without Complicated Grief

Donald J. Robinaugh, M. A.[1,2], **Richard J. McNally, Ph.D.**[1], **Nicole J. LeBlanc, B.S.**[1], **Kimberly Z. Pentel, B.A.**[2], **Noah R. Schwarz, B.A.**[2], **Riva M. Shah, B.A.**[2], **Mireya F. Nadal-Vicens, M.D., Ph.D.**[2], **Cynthia W. Moore, Ph.D.**[2], **Luana Marques, Ph.D.**[2], **Eric Bui, M.D., Ph.D.**[2], and **Naomi M. Simon, M.D., M.Sc.**[2]

[1]Department of Psychology, Harvard University, Cambridge, Massachusetts, United States of America

[2]Center for Anxiety and Traumatic Stress Disorders, Massachusetts General Hospital, Boston, Massachusetts, United States of America

Abstract

Complicated grief (CG) is a bereavement specific syndrome chiefly characterized by symptoms of persistent separation distress. Physiological reactivity to reminders of the loss and repeated acute pangs or waves of severe anxiety and psychological pain are prominent features of CG. Fear of this grief-related physiological arousal may contribute to CG by increasing the distress associated with grief reactions and increasing the likelihood of maladaptive coping strategies and grief-related avoidance. Here, we examined anxiety sensitivity (i.e., the fear of anxiety-related sensations; AS) in two studies of bereaved adults with and without CG. In both studies, bereaved adults with CG exhibited elevated AS relative to those without CG. In Study 2, AS was positively associated with CG symptom severity among those with CG. These findings are consistent with the possibility that AS contributes to the development or maintenance of CG symptoms.

Keywords

Anxiety sensitivity; complicated grief; risk factors; bereavement

Introduction

Complicated grief (CG) is a bereavement specific syndrome chiefly characterized by symptoms of separation distress, including distressed yearning and intense ‘pangs’ of grief, that persist for more than six months after the death of a loved one (Horowitz et al, 1997; Prigerson et al, 2009; Shear et al, 2011). CG occurs in 6.7% of bereaved adults (Kersting et al, 2011) and is independently associated with increased risk for adverse medical and mental health outcomes and substantial impairment across domains of functioning (Bonanno et al, 2007; Latham & Prigerson, 2004; Ott, 2003). Accordingly, there is a clear need to identify

Correspondence concerning this article should be addressed to Donald J. Robinaugh, Department of Psychology, Harvard University, 33 Kirkland Street, Cambridge, MA 02138. robinaug@fas.harvard.edu..

Conflict of Interest Disclosures For the remaining authors no conflicts of interest were declared.

factors that contribute to the development or maintenance of CG symptoms following the death of a loved one.

One risk factor implicated in the etiology of emotional disorders is anxiety sensitivity (AS; Reiss et al, 1986). AS denotes fear of anxiety-related sensations (e.g., increased heart rate and dyspnea). Not only is elevated AS strongly associated with panic disorder (McNally, 2002), it also prospectively predicts the onset of spontaneous panic attacks (Schmidt et al, 1999) and anxiety disorders in general (Maller & Reiss, 1992; Schmidt et al, 2006). In addition, AS is elevated in people with mood disorders (Naragon-Gainey, 2010; Simon et al, 2005).

There is good reason to suspect that AS may also increase risk for CG. Even temporary separation from an attachment figure (e.g., a romantic partner) is associated with elevations in hypothalamic-pituitary-adrenocortical axis activity (Diamond et al, 2008). Grief is associated with elevations in epinephrine and norepinephrine output (Jacobs et al, 1986) and symptoms of anxiety (e.g. restlessness, increased muscle tension, panic attacks; Parkes, 1972). Moreover, physiological reactivity to reminders of the loss and episodic ‘pangs’ or waves of severe anxiety and psychological pain are prominent features of CG (Horowitz et al, 1997; Parkes, 1972, p. 39; Shear et al, 2011).

Fear of the elevated physiological activity and anxiety sensations associated with grief may hinder recovery from loss by increasing the distress associated with grief reactions and by increasing the likelihood of maladaptive coping strategies and grief-related avoidance (cf. Boelen et al, 2006). To our knowledge, no prior studies have examined AS in CG.

Study 1

If AS contributes to the development or maintenance of CG symptoms, we would expect bereaved adults with CG to exhibit elevated AS relative to bereaved adults without CG. To test this hypothesis, we examined data from a sample of conjugally bereaved adults who participated in a study examining autobiographical memory and future event specificity and their association with CG (Robinaugh & McNally, 2013).

Method

Subjects—Subjects in this study were required to be between 21 and 65 years old and must have lost a spouse or life partner within the past 1 – 3 years. Subjects who completed all measures relevant to the current analyses (n = 32) and were included in the final sample.

Procedure and measures—Following provision of informed consent, subjects underwent two semi-structured clinical interviews: the Mini-International Neuropsychiatric Interview (MINI) to assess symptoms of psychopathology (Sheehan et al, 1998) and a semi-structured clinical interview for CG symptoms created for the purposes of this study from proposed criteria for CG (Prigerson et al, 2009). To qualify for CG, a subject had to endorse at least one symptom of separation distress and at least five of nine possible cognitive, emotional, or behavioral symptoms (Prigerson et al, 2009). Subjects then completed a battery of cognitive tasks and a packet of self-report measures, including the 19-item

Inventory for Complicated Grief (ICG; α = .94; Prigerson et al, 1995) and the 16-item Anxiety Sensitivity Index (α = .91; Reiss et al, 1986). The Harvard University Institutional Review Board approved the protocol and consent form for this study.

Results

Subjects—Of the 32 subjects who completed all measures relevant to the current study, 13 met the proposed criteria for current CG based on our clinical interview (Prigerson et al, 2009). The CG and bereaved control groups did not differ in age (CG: *M* = 48.54 years, *SD* = 9.26; Control: *M* = 53.30 years, *SD* = 9.91, *t*(30) = 1.37 , *p* =.18), time since death (CG: *M* =1.90 years, *SD* = .60; Control: *M* = 2.10 years, *SD* =.66, *t*(30) = .87, *p* =.39), relationship duration (CG: *M* =20.07 years, *SD* = 10.70; Control: 20.59 years, *SD* = 10.93, *t*(30) = .13, *p* =.90), gender (CG: 53.8% female; Control: 36.8 % female, $\chi^2(1) = .91$, *p* =.34), or race (CG: 61.5% Caucasian; Control: 78.9% Caucasian, $\chi^2(3) = 3.26$, *p* =.35).

Relative to the bereaved control group, bereaved adults with CG exhibited elevated rates of current depression (5.3% and 46.2%, respectively; $\chi^2(1) = 7.55$, *p* =.006), current post-traumatic stress disorder (5.3% and 30.8%; $\chi^2(1) = 3.81$, *p* =.051), and lifetime history of depression (36.8% and 84.6%; $\chi^2(1) = 7.16$, *p* =.007). There were no other differences between groups on the MINI, including for lifetime history of panic disorder (Control: 0% vs. CG: 7.7%; $\chi^2(1) = 1.51$, *p* =.219).

Complicated grief and anxiety sensitivity—Bereaved adults who met criteria for CG[1] exhibited elevated ASI scores (*M* = 30.46, *SD* = 12.92) relative to bereaved adults without CG (*M* = 15.05, *SD* = 8.88), *t*(30) = −4.01, *p* < .001, *r* = .59. In the full sample, there was a large correlation between CG symptom severity and AS (*r* = .57, *p* = .001). Among the subset of those who met criteria for CG (*n* = 13), there was a non-significant moderate association between AS and CG symptom severity (*r* = .32, *p* =.28), although power for this analysis was limited.

Study 2

The results from Study 1 provide initial support for the possibility that bereaved adults with CG exhibit elevated rates of AS. However, the sample size was small and restricted to bereaved adults who experienced the death of a spouse or partner. In Study 2, we aimed to replicate findings from Study 1 in a larger sample of bereaved adults that was not restricted to spousal loss. In addition, we examined three lower-order factors of AS: fear of physical sensations (ASI-Physical), fear of mental incapacitation (ASI-Cognitive), and fear of public displays of anxiety (ASI-Social; Zinbarg et al, 1999).

[1]In Study 2, an ICG score of 30 or greater was used to identify those with CG. To facilitate the comparison of Study 1 and Study 2 results, we also examined the group differences in ASI between those who exceeded the ICG score of 30 and those who did not in Study 1. Grouping subjects in this way resulted in the reclassification of one subject (ICG score = 29) from the CG group to the control group. The group difference in ASI between those with CG (*M* = 30.58, *SD* = 13.49) and those without CG (*M* = 15.75, *SD* = 9.19) remained when we used ICG scores rather than clinical interview to group subjects, *t*(30) = 3.71, *p* = .001.

Method

Subjects—Subjects were adults age 18 and older who reported the loss of a close relative or significant other. Subjects were recruited through advertisements and clinical referral to the Center for Anxiety and Traumatic Stress Disorders at Massachusetts General Hospital (MGH). Exclusion criteria included acute suicide risk, alcohol or substance abuse or dependence within 6 months, a history of psychosis or bipolar disorder, pregnancy, lactation, or severe or unstable medical illness. Bereaved adults were eligible for the CG group if they scored a 30 or higher on the ICG (Prigerson et al, 1995). Bereaved adults without Axis I disorders were eligible for the bereaved control group if they scored less than 30 on the ICG.

Procedure and measures—After signing informed consent, subjects were administered either the Structured Clinical Interview for DSM-IV-TR (SCID; First et al, 1996) or the Mini-International Neuropsychiatric Interview (MINI; Sheehan et al, 1998) to assess for the presence of DSM-IV Axis I disorders. Subjects then completed a questionnaire packet including the ICG and the 16-item ASI (Reiss et al, 1986). The ICG (α = .95), ASI-Total (α = .93), AS-Physical (α = .90), and AS-Cognitive (α = .85) had good to excellent reliability. Consistent with past research (Zinbarg & Barlow, 1996), the AS-Social subscale exhibited poor reliability (α = .66). The Massachusetts General Hospital Institutional Review Board approved the protocol and consent form for this study.

Results

Subjects—The final sample comprised 59 bereaved adults with CG and 50 bereaved controls. Consistent with past research (e.g., Simon et al., 2007), bereaved adults with CG exhibited elevated rates of current depression (60.8%), post-traumatic stress disorder (68.6%), generalized anxiety disorder (33.3%), panic disorder (19.6%), social anxiety disorder (7.8%), and agoraphobia (6.0%), as well as elevated lifetime history of depression (78.4%), and panic disorder (25.5%).

The CG and bereaved control groups differed in age (CG: M = 49.21, SD = 16.86; Control: M = 38.88 SD = 15.65, $t(105) = -3.26$, p = .001); gender (CG: 82.8% female; Control: 53.1% female, $\chi^2(1) = 10.98$, p =.001); and race (CG 94.8% Caucasian; Control: 69.4% Caucasian, $\chi^2(3) = 13.94$, p =.003). Given these differences, we examined the relationship between each demographic variable and AS. There was no association between age and AS, r = .07, p = .50, and no differences in AS among races, $F(3,103) = .28$, p = .84. Women reported higher mean levels of AS (M = 18.77, SD = 13.27) than men (M = 14.213, SD = 10.51), but this difference was not statistically significant, $t(105) = 1.74$, p = .08, r = .17.

Complicated grief and anxiety sensitivity—The ASI-Total and subscale scores appear in Table 1. Bereaved adults with CG exhibited elevated ASI scores relative to those without CG. The largest difference between groups was on the ASI-Cognitive subscale. Among those with CG, ASI-Total scores were positively associated with CG symptom severity, r = .27, p = .04.

Discussion

Relative to bereaved adults without CG, those with CG reported elevated levels of AS. These group differences existed across domains of AS. Among those with CG, there was a moderate positive association between AS and CG severity.

To our knowledge, this study is the first to report a relationship between AS and CG. Our findings are consistent with the possibility that AS may hinder recovery from psychological distress following the death of a loved one. As noted above, we hypothesize that AS may lead to the maintenance of CG symptoms both by heightening the level of distress associated with grief-related physiological reactions and by increasing grief-related avoidance and maladaptive emotion regulation strategies (cf. Boelen et al, 2006).

Implications for understanding high comorbidity in CG

Our findings may illuminate the high comorbidity between CG and anxiety disorders. Individuals with anxiety disorders exhibit elevated rates of CG (Marques et al, in press). Conversely, adults with CG exhibit high rates of comorbid anxiety disorders (Simon et al, 2007). Our findings suggest that one possible source of this comorbidity may be elevated AS as a risk factor for both CG and anxiety disorders.

Implications for treatment

Our findings also have potential treatment implications. If subsequent studies confirm that elevated AS contributes to CG symptoms, then psychosocial (Keough & Schmidt, 2012) or pharmacologic (Simon et al, 2004) interventions that reduce AS may improve outcomes for individuals with CG.

Limitations and Future Directions

Our studies have limitations. Both studies were cross-sectional, precluding inferences about causality. It may be that CG leads to heightened anxiety sensitivity or that both of these variables are caused by another vulnerability factor. This limitation is especially relevant for our findings in Study 2 as the groups differed in terms of age, gender, and race. However, there was no statistically significant relationship between these demographic variables and AS. Further, these demographic differences were not present in Study 1 yet the between-group difference in AS was still present.

Conclusion

Bereaved adults with CG exhibit elevated AS relative to those without CG. Among those with CG, AS is associated with greater severity of CG symptoms. These findings are consistent with the possibility that AS contributes to the development or maintenance of CG and underscores the importance of further examining the association between AS and CG.

Acknowledgments

This research was supported by NIMH grant 5R01MH085308-04 and a grant from the Highland Street Foundation to the Center for Anxiety and Traumatic Stress Disorders at Massachusetts General Hospital.

Donald Robinaugh received payment for manuscript preparation from Current Psychiatry *Eric Bui* received payment for manuscript preparation from Laboratoires Servier

Mireya Nadal-Vicens is supported by grants from the National Institute of Mental Health, payment for the development of educational presentations from Falcon Reviews, and the clinical investigator training program at Harvard Medical School which is partially funded by Merck and Pfizer.

Luana Marques is supported by grants from the National Institute of Mental Health, Department of Defense, Massachusetts General Hospital/Partners internal grant and payment for lectures through the Massachusetts General Hospital Psychiatry Academy.

Naomi Simon is supported by grants from the American Foundation for Suicide Prevention, National Institute of Mental Health, Department of Defense payment for lectures through the Massachusetts General Hospital Psychiatry Academy. In addition Naomi Simon has equity through her spouse in Elan, Dandreon, G Zero, Gatekeeper.

References

Boelen PA, Van Den Hout MA, Van Den Bout J. A Cognitive-Behavioral Conceptualization of Complicated Grief. Clin Psychol Sci Pract. 2006; 13:109–128.

Bonanno GA, Neria Y, Mancini A, Coifman KG, Litz B, Insel B. Is there more to complicated grief than depression and posttraumatic stress disorder? A test of incremental validity. J Abnorm Psychol. 2007; 116:342–51. [PubMed: 17516766]

Diamond LM, Hicks AM, Otter-Henderson KD. Every time you go away: Changes in affect, behavior, and physiology associated with travel-related separations from romantic partners. J Pers Soc Psychol. 2008; 95:385–403. [PubMed: 18665709]

First, MG.; Gibbon, M.; Spitzer, RL.; Williams, JB. Structured Clinical Interview for DSM IV. Biometric Research Department, New York State Psychiatric Institute; New York: 1996.

Horowitz MJ, Siegel B, Holen A, Bonanno GA. Diagnostic criteria for complicated grief disorder. Am J Psychiatry. 1997; 154:904–910. [PubMed: 9210739]

Jacobs SC, Mason JW, Kosten TR, Wahby V. Bereavement and catecholamines. J Psychosom Res. 1986; 30:489–496. [PubMed: 3761233]

Keough ME, Schmidt NB. Refinement of a brief anxiety sensitivity reduction intervention. J Consult Clin Psychol. 2012; 80:766–72. [PubMed: 22468909]

Kersting A, Brahler E, Glaesmer H, Wagner B. Prevalence of complicated grief in a representative population-based sample. J Affect Disord. 2011; 131:339–43. [PubMed: 21216470]

Latham AE, Prigerson HG. Suicidality and bereavement: complicated grief as psychiatric disorder presenting greatest risk for suicidality. Suicide Life Threat Behav. 2004; 34:350–62. [PubMed: 15585457]

Maller RG, Reiss S. Anxiety sensitivity in 1984 and panic attacks in 1987. J Anxiety Disord. 1992; 6:241–247.

Marques L, Leblanc NJ, Porter E, Robinaugh DJ, Dryman MT, Nadal-Vicens M, Worthington J, Simon N. Complicated grief symptoms in anxiety disorder patients: Prevalence and associated impairment. Depress Anxiety. (in press).

McNally RJ. Anxiety sensitivity and panic disorder. Biol Psychiatry. 2002; 52:938–46. [PubMed: 12437935]

Naragon-Gainey K. Meta-analysis of the relations of anxiety sensitivity to the depressive and anxiety disorders. Psychol Bull. 2010; 136:128. [PubMed: 20063929]

Ott CH. The impact of complicated grief on mental and physical health at various points in the bereavement process. Death Stud. 2003; 27:249–72. [PubMed: 12703505]

Parkes, CM. Bereavement: Studies of grief in adult life. International Universities Press; 1972.

Prigerson HG, Horowitz MJ, Jacobs SC, Parkes CM, Aslan M, Goodkin K, Raphael B, Marwit SJ, Wortman CB, Neimeyer RA, Bonanno GA, Block SD, Kissane D, Boelen P, Maercker A, Litz BT, Johnson JG, First MB, Maciejewski PK. Prolonged Grief Disorder: Psychometric Validation of Criteria Proposed for DSM-V and ICD-11. PLoS Med. 2009; 6

Prigerson HG, Maciejewski PK, Reynolds CF 3rd, Bierhals AJ, Newsom JT, Fasiczka A, Frank E, Doman J, Miller M. Inventory of Complicated Grief: a scale to measure maladaptive symptoms of loss. Psychiatry Res. 1995; 59:65–79. [PubMed: 8771222]

Reiss S, Peterson RA, Gursky DM, McNally RJ. Anxiety sensitivity, anxiety frequency and the prediction of fearfulness. Behav Res Ther. 1986; 24:1–8. [PubMed: 3947307]

Robinaugh DJ, McNally RJ. Remembering the past and envisioning the future in bereaved adults with and without complicated grief. Clinical Psychological Science. 2013; 1:290–300.

Schmidt NB, Lerew DR, Jackson RJ. Prospective evaluation of anxiety sensitivity in the pathogenesis of panic: Replication and extension. J Abnorm Psychol. 1999; 108:532–537. [PubMed: 10466277]

Schmidt NB, Zvolensky MJ, Maner JK. Anxiety sensitivity: Prospective prediction of panic attacks and Axis I pathology. J Psychiatr Res. 2006; 40:691–699. [PubMed: 16956622]

Shear MK, Simon N, Wall M, Zisook S, Neimeyer R, Duan N, Reynolds C, Lebowitz B, Sung S, Ghesquiere A, Gorscak B, Clayton P, Ito M, Nakajima S, Konishi T, Melhem N, Meert K, Schiff M, O'Connor MF, First M, Sareen J, Bolton J, Skritskaya N, Mancini AD, Keshaviah A. Complicated grief and related bereavement issues for DSM-5. Depress Anxiety. 2011; 28:103–17. [PubMed: 21284063]

Sheehan DV, Lecrubier Y, Sheehan KH, Amorim P, Janavs J, Weiller E, Hergueta T, Baker R, Dunbar GC. The Mini-International Neuropsychiatric Interview (M.I.N.I.): The development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. J Clin Psychiatry. 1998; 59(Suppl 20):22–33. [PubMed: 9881538]

Simon NM, Otto MW, Fischmann D, Racette S, Nierenberg AA, Pollack MH, Smoller JW. Panic disorder and bipolar disorder: Anxiety sensitivity as a potential mediator of panic during manic states. J Affect Disord. 2005; 87:101–105. [PubMed: 15894380]

Simon NM, Otto MW, Smits JA, Nicolaou DC, Reese HE, Pollack MH. Changes in anxiety sensitivity with pharmacotherapy for panic disorder. J Psychiatr Res. 2004; 38:491–5. [PubMed: 15380399]

Simon NM, Shear KM, Thompson EH, Zalta AK, Perlman C, Reynolds CF 3rd, Frank E, Melhem NM, Silowash R. The prevalence and correlates of psychiatric comorbidity in individuals with complicated grief. Compr Psychiatry. 2007; 48:395–399. [PubMed: 17707245]

Zinbarg RE, Barlow DH. Structure of anxiety and the anxiety disorders: a hierarchical model. J Abnorm Psychol. 1996; 105:181–93. [PubMed: 8722999]

Zinbarg, RE.; Mohlman, J.; Hong, NN. Dimensions of anxiety sensitivity. In: Taylor, S., editor. Anxiety sensitivity: Theory, research, and treatment of the fear of anxiety. Lawrence Erlbaum Associates Publishers; Mahwah, NJ US: 1999. p. 83-114.

Table 1

Means and standard deviations for anxiety sensitivity total and subscale scores

	CG	Control	*t*	*df* [1]	*r*
ASI-Total	**21.32 (13.88)**	**12.36 (8.63)**	**−4.11*****	**98.72**	**.38**
ASI-Physical	10.97 (7.71)	5.68 (5.45)	−4.18***	103.83	.38
ASI-Cognitive	3.97 (3.89)	1.06 (1.78)	−5.14***	84.06	.49
ASI-Social	6.81 (3.33)	5.62 (2.81)	−2.00*	107	.19

Note. ASI= Anxiety Sensitivity Index; CG = Complicated Grief.

[1] Degrees of freedom vary due to inequality of variances between groups.

* $p < .05$,

** $p < .001$