

Complicated Grief and Deficits in Emotional Expressive Flexibility

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There is growing evidence that deficits in emotion regulation may be at the heart of maladaptive reactions after bereavement. Expressive flexibility, or the ability to flexibly enhance or suppress emotional expression, appears to be especially important for adjustment in the aftermath of highly aversive events (Bonanno, Papa, Lalande, Westphal, & Coifman, 2004). In this study, we compared expressive flexibility in a sample of bereaved adults who lost their spouse 1.5–3 years earlier and a comparable sample of married adults. Approximately half of the bereaved adults had Complicated Grief (CG) and half were asymptomatic. Using a within-subjects design, we asked all participants to either enhance or suppress their expressions of emotion or to behave normally while viewing evocative pictures at a computer screen. Observer ratings of expressiveness made blind to condition showed no group differences in overall emotion. However, bereaved adults suffering from CG exhibited deficits in expressive flexibility. Specifically, the CG group was less able to enhance and less able to suppress emotional expression relative to asymptomatic bereaved and married adults.

Keywords: complicated grief, expressive flexibility, emotion regulation, bereavement, loss

Bereavement is a painful event that most people experience at some point in their lives. While most bereaved people are able to resume normal functioning within a year after the loss, a small but important subset, usually around 10–15%, continue to suffer from prolonged grief symptoms for several years or longer (Bonanno, 2004; Bonanno & Kaltman, 2001). Although formal criteria for Complicated Grief (CG) are under consideration for inclusion in the next edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-V; American Psychiatric Association, 2010), research and theory on the disorder have proliferated for several decades (e.g., Horowitz et al., 1997; Horowitz, Bonanno, & Holen, 1993; Kim & Jacobs, 1991; Lichtenthal, Cruess, & Prigerson, 2004; Prigerson & Jacobs, 2001; Prigerson et al., 1999). An emergent consensus, generated from this research, suggests that CG can be characterized by a number of unique grief-related symptoms, including strong yearnings for the deceased loved one, disbelief at the loss, marked loneliness and detachment from others, and a pervasive sense that life is meaningless (Prigerson et al., 2009). Empirical research that defines CG in terms of these symptoms has supported its differentiation from uncomplicated grief reactions (Boelen & van den Bout, 2008) and from preexisting depression (Bonanno et al., 2002; Bonanno, Wortmann, & Nesse, 2004). Evidence also exists to support the incremental

validity of CG in predicting various aspects of functioning over and above symptoms of Major Depressive Disorder and Post-traumatic Stress Disorder (Bonanno et al., 2007).

Although relatively little research has yet explored the possible mechanisms of CG, there is good reason to suspect that deficits in emotion regulation play a role in the disorder. Difficulties with emotion regulation are characteristic of many forms of psychopathology (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Kring & Sloan, 2009). Grief, in particular, is characterized by intense emotional reactions centered on the lost loved one, and the failure to adequately regulate these emotions has been hypothesized to be one of the crucial factors leading to the development of CG (Bonanno, 2009; Bonanno, Goorin, & Coifman, 2008).

One component of emotion regulation increasingly implicated in psychopathology is the inability to vary emotion responses across changing contexts (Rottenberg, Gross, & Gotlib, 2005). Emotions are widely assumed to have evolved to promote survival in the face of environmental adversities by communicating intent and experience to others (Ekman, 1993; Keltner & Haidt, 1999; Turner, 2000). However, emotions are often maladaptive when they occur indiscriminately or in an inappropriate context (Cole, Michel, & Teti, 1994). This phenomenon, known as context insensitivity (Coifman & Bonanno, 2009), has been linked to the development and maintenance of depression (Allen, Trinder, & Brennen, 1999; Dichter, Tomarken, Shelton, & Sutton, 2004; Rottenberg, Kasch, Gross, & Gotlib, 2002). In the specific context of coping with loss, bereaved individuals with initially elevated levels of depression were less likely to show reductions in depression at 18 months of bereavement if they had failed to modulate negative emotion across contexts. By contrast, initially depressed bereaved people who evidenced more context sensitive emotion had reduced depression one year later (Coifman & Bonanno, 2010).

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Expressive Flexibility

A related component of emotion regulation with implications for grief-related psychopathology is suggested by the literature on expressive flexibility (Bonanno et al., 2004). The enhancement and suppression of facial expressions of emotion are a primary means by which to behaviorally modulate emotional responses to a situation (Bonanno, 2001; Consedine, Magai, & Bonanno, 2002; Barrett & Gross, 2001). However, depending upon the context, there are costs and benefits to both enhancing and suppressing emotion. The enhancement of emotion is helpful in maintaining social interactions (Ekman, 1993; Keltner, 1995), generating complementary responses from partners (Eibl-Eibesfeldt, 1989; Keltner & Kring, 1998), and regulating the internal states of the expresser (Ekman & Davidson, 1993; Izard, 1990; Zajonc, Murphy, & Inglehart, 1989). Yet the enhancement of emotions, particularly negative emotions, can also be maladaptive. For example, the expression of anger in contexts that require affiliation or the building of rapport may damage social bonds (Cole & Zahn-Waxler, 1992; Keltner, Ellsworth, & Edwards, 1993). Also, facial expressions of anger are associated with increased levels of coronary dysfunction (Rosenberg et al., 2001).

Similarly, the suppression of emotion, often thought to be harmful to psychological adjustment, carries both benefits and costs. Individuals who report using a high level of expressive suppression tend to experience less positive and more negative emotion, report lower levels of well-being, and receive lower peer ratings of closeness and likability (Gross & John, 2003). Emotional suppression is also associated with increased sympathetic nervous system activation and impaired memory (Cambell-Sills, Barlow, Brown, & Hofmann, 2006). While the costs of emotional suppression have been studied in detail, evolutionary theorists have argued for the survival value of concealment and deception (de Waal, 1989; Trivers, 1985). Reduced displays of negative emotions in adverse contexts have been found to predict better long-term functioning (Bonanno & Keltner, 1997), to help maintain and expand social networks (Coyne, 1976), and to facilitate close personal relationships (Levenson & Gottman, 1983).

The ability to flexibly modulate emotional expression appears to be especially important for adjustment in the aftermath of highly aversive or demanding life circumstances. Bonanno and colleagues (2004) first investigated expressive flexibility in a sample of New York City undergraduate students who began college just before the 9/11 terrorist attack. They measured expressive flexibility using a laboratory task conducted soon after the attack in which students rated their emotional reactions to evocative pictures while, they were told, another participant observed them from an adjacent room. The other participant's task, they were also told, was to guess their emotional reactions to the pictures. These instructions were couched in the context of three different within-subjects conditions. At different points the students were instructed to either suppress any outward expression of emotion, enhance their outward expression, or to behave normally while viewing the images. The normal viewing condition served as a baseline measure of expressiveness and allowed for within-subjects comparisons across conditions. The results showed that students who were best able to both enhance and suppress their expression of emotion, relative to their own baseline, were less distressed two years later. Importantly, clear ability in only one facet of expressive regula-

tion, either enhancement or expression, but not both failed to predict long-term adjustment.

A recent follow-up study (Westphal, Seivert, & Bonanno, 2010) suggested that expressive flexibility ability is relatively stable over time. In this study, the expressive flexibility task was repeated three years later in the same participants. Expressive flexibility scores from the two administrations were highly correlated and at a level similar to that observed for trait measures of personality. Additionally, the relationship between expressive flexibility and adjustment was moderated by the number of stressful life events the students had experienced. Replicating and extending the initial study, students who exhibited high expressive flexibility ability and experienced frequent stressful life events were rated as better adjusted by their close friends compared with students who experienced frequent stressful life events but did not exhibit expressive flexibility ability. In other words, expressive flexibility again appeared to buffer participants from the negative effects of demanding life circumstances.

The links between expressive flexibility and adjustment to adversity suggests an obvious application to the task of coping with bereavement. The loss of a loved one is typically followed by a mix of intense emotional reactions (Bonanno, Goorin, & Coifman, 2008). These include negative emotions, such as sadness, guilt, and anger, but also positive affect (Moskowitz, Folkman, & Acree, 2003) and expressions of genuine positive emotion (Bonanno & Keltner, 1997; Keltner & Bonanno, 1997). The presence of such divergent reactions is accommodated by the wave-like periodicity that characterizes bereavement and other stress reactions (Bonanno, 2009). An extremely stressful life event, such as bereavement, will tend to perturb emotional well-being away from the relative state of normal equilibrium and toward greater oscillation of positive and negative states (Bisconti, Bergeman, & Boker, 2004; Ong, Bergeman, & Bisconti, 2004). With time, these oscillations are gradually reduced, as suggested by the metaphor of a "pendulum with friction" (Bisconti, Bergeman, & Boker, 2004, p. 159). However, the variability in emotional states during bereavement is not entirely passive. The dual process models of coping with loss (Stroebe & Schut, 1999) and the data on context sensitivity (Coifman & Bonanno, 2009) suggest some situational contexts will pull for greater expression of emotion whereas others will tend to require dampening or suppression of grief-related emotions. For example, it may be necessary to suppress sad emotions when celebrating a child's birthday or to manage guilt and anger when requesting assistance from others (Coifman & Bonanno, 2010). In this regard, the ability to flexibly regulate emotional expression could be expected to be more prevalent among bereaved individuals who experienced a relatively mild or resilient grief course. By the same token, bereaved individuals suffering from CG could be expected to exhibit the relative absence of expressive flexibility.

The Current Investigation

The current investigation was designed to examine the relation of expressive flexibility and CG. Because no formal diagnosis for CG currently exists, we aimed to minimize diagnostic uncertainty by recruiting bereaved individuals who had lost a spouse between 1.5 years and 3 years ago. By even the most conservative accounts, bereaved individuals exhibiting elevated grief symptoms more than a year and a half after the death of a spouse could be assumed

to evidence grief-related psychopathology. By the same token, prolonged grief reactions often begin to abate at longer intervals and, thus, elevated symptoms beyond 3 years are less likely to reflect the loss event and more likely to reflect a preexisting depressive condition (Bonanno et al., 2002; Boerner, Wortman, & Bonanno, 2005). To examine expressive flexibility and CG in relative terms, we compared the CG group with a demographically similar sample of bereaved adults who had lost a spouse in the same time period but were currently asymptomatic, and a demographically similar group of married (nonbereaved) adults. We hypothesized that the CG group would exhibit relatively less expressive flexibility than the married and asymptomatic bereaved groups and that these two groups would evidence relatively similar levels of expressive flexibility. In addition, based on previous research showing that people tend to rate the nonverbal behavior of females as more emotionally expressive than males (e.g., Barr & Kleck, 1995; Riggio & Friedman, 1986; for review see Kring & Gordon, 1998), we conducted exploratory analyses of gender effects in the relationship between CG and expressive flexibility.

Method

Participants

Bereaved participants were recruited from the New York City metro area through Internet and newspaper advertisements, fliers, support group referrals, and letters mailed based on public death listings. Married participants were recruited through fliers and Internet advertisements.

Inclusion criteria stated that participants be younger than 65 years of age and that bereaved participants have a lost a spouse in the last 1.5–3 years. Also, because participants were invited to complete other experimental tasks as part of a broader research agenda, we limited our sample to those with an annual family income of at least \$15,000 and education beyond high school. Furthermore, we excluded participants who reported chronic depression before bereavement.

Our final sample was composed of 64 bereaved participants and 54 demographically similar, married participants. Bereaved participants were assigned to the CG group if they had four or more CG symptoms. Twenty-four bereaved participants met this criterion. The remaining bereaved participants ($n = 40$) were assigned to the asymptomatic bereaved group. The mean age was 49.5 ($SD = 9.8$) and the mean length of marriage was 17.7 years ($SD = 11.8$). About 2/3 of the sample was female ($n = 79$) and 1/3 male ($n = 40$). The racial-ethnic composition of participants was 63.0% Caucasian, 22.7% African American, 7.6% Hispanic, and 3.4% Asian American. Among participants, 39.5% attended some college, 30.3% earned a bachelor's degree, and 30.3% had began/completed graduate education. The median family income for the year before participation was \$80,000.

Procedure

Respondents meeting inclusion criteria were scheduled for two sessions, approximately two weeks apart, in the laboratory offices as part of a larger bereavement study. These sessions included a structured clinical interview and the expressive flexibility task

described below. Participants were compensated \$200 for participation in the larger study.

Structured Clinical Interview

During the first laboratory session, participants were asked a series of questions corresponding to the *DSM-IV-TR* (American Psychiatric Association, 2000) symptoms for Major Depressive Disorder (MDD; 9 items, $\alpha = .87$). Bereaved participants were also asked questions corresponding to symptoms associated with CG (Bonanno et al., 2007; Horowitz et al., 1997; Prigerson et al., 1999; Prigerson et al., 2009): strong yearning for the deceased; recurrent and intrusive recollections of the death event; intense distress over symbolic reminders of the loss; preoccupation with thoughts about the loss; recurrent regrets or self-blame about behavior toward the deceased; difficulty accepting the finality of the loss; marked loneliness; pervasive sense that life is meaningless; unusual difficulty developing new relationships; efforts to avoid thoughts, feelings, or conversations associated with the loss; and efforts to avoid activities, places, or people that arouse recollections of the loss (11 items, $\alpha = .82$). These structured clinical interviews assessed current symptoms (i.e., past month).

Interviews were conducted by a team of clinical psychologists and advanced doctoral candidates in clinical psychology. Interviews were videotaped, and each interviewer coded a randomly selected set of five additional interviews. Interrater reliability for the symptom items was very high (average $\kappa = .91$). Bereaved participants were categorized in the CG group ($n = 24$) if they were assigned four or more of the 11 CG symptoms.

Additionally, as part of the interview, bereaved participants were shown a graphic representation of longitudinal trajectories of bereavement outcome representing resilience, recovery, chronic grief, and chronic depression (Bonanno, 2004; Bonanno et al., 2002). Each trajectory was accompanied by a brief narrative description and participants were asked to select the trajectory that best captured their experience of grief symptoms over time. Participants who endorsed the chronic grief trajectory were reporting minimal depression before the loss and chronic grief after the loss. Participants who endorsed the chronic depression trajectory were reporting a history of elevated depression that predated the loss and continued afterward.

Expressive Flexibility Task

In the second laboratory session, participants completed the expressive flexibility task. Participants were seated before a desktop computer and recorded from an unobtrusive camera positioned to the side of the computer monitor. A graduate student experimenter guided participants to read instructions displayed on the computer monitor. First, participants were presented with sets of five digitized picture stimuli from the International Affective Picture System (IAPS; Lang, Bradley, & Cuthbert, 1995) to familiarize them with the experiment. Within each block, each picture was presented for seven seconds, with four seconds between pictures. For practice, subjects viewed randomly presented blocks of positive or negative stimuli and after each block rated the degree to which they felt "negative emotion (e.g., anger, revulsion, sadness, distress)," by typing a number between 1 (no negative emotion) and 7 (extreme negative emotion), and then the degree to which

they felt “positive emotion (e.g., happiness, joy, amusement, interest),” using a similar scale. We gave participants examples of negative and positive emotions rather than simply stating “negative emotion” and “positive emotion” to increase clarity of these constructs and to ensure participants were interpreting the constructs in a similar way.

After practice trials, the experimenter told participants that there was another participant in the adjacent room who would also take part in the experiment (another participant was not actually present in the adjacent room); that they would not see the other person, but the other person would sometimes be able to view them on a video monitor; that they would always be informed when the monitor was on and when it was off; and that the other person could not hear them nor see the picture stimuli but would attempt to guess their emotions for each block of stimuli. The experimenter further explained that when the experiment began, the computer would (a) sometimes ask participants to enhance their expression of emotion so the observer could more easily guess what they were feeling, (b) sometimes ask them to suppress their expression of emotion so the observer could not easily guess what they were feeling, and (c) sometimes inform them that the monitor was turned off and that the observer would be unable to see them, in which case they should behave as they would normally. Participants were then shown three paragraphs on the computer monitor, one describing each condition.

The paragraph for the expression condition was as follows:

Shortly, you will be presented with a set of images. Please view each image carefully. While viewing the images, please do your best to EXPRESS AS FULLY AS POSSIBLE THE EMOTIONS you feel while viewing the images. Remember that the person viewing you on the monitor can only see your head and neck, and cannot hear you. It is important for the sake of this study that you do your best to communicate what you are feeling. So please do the best you can to BEHAVE IN SUCH A WAY THAT THE PERSON VIEWING YOU ON A MONITOR WILL BE ABLE TO GUESS FROM YOUR FACIAL EXPRESSIONS what you are feeling while viewing the images. Before each image, focus your attention on the ‘X’ in the middle of the screen. After viewing each set of images, you will be asked to rate the emotional reactions you had to the images.

The suppression condition was described as follows:

Shortly, you will be presented with a set of images. Please view each image carefully. While viewing the images, please do your best to SUPPRESS AS FULLY AS POSSIBLE ANY EXPRESSION OF THE EMOTIONS you feel while viewing the images. Remember that the person viewing you on the monitor can only see your head and neck, and cannot hear you. It is important for the sake of this study that you do your best to conceal what you are feeling. So please do the best you can to BEHAVE IN SUCH A WAY THAT THE PERSON VIEWING YOU ON A MONITOR WILL NOT BE ABLE TO GUESS FROM YOUR FACIAL EXPRESSIONS what you are feeling while viewing the images. Before each image, focus your attention on the ‘X’ in the middle of the screen. After viewing each set of images, you will be asked to rate the emotional reactions you had to the images.

The third paragraph described the monitor-off condition:

Shortly, you will be presented with a set of images. Please view each image carefully. NO ONE WILL BE VIEWING YOU FOR THIS SET OF IMAGES. Simply view the images and behave as you would naturally do so. Before each image, focus your attention on the ‘X’ in

the middle of the screen. After viewing each set of images, you will be asked to rate the emotional reactions you had to the images.

Subjects were informed that one of the instruction paragraphs would precede each block of stimuli, and that emotion ratings would follow each block of stimuli. Six blocks of experimental trials (enhancement, suppression, or monitor off instruction using positive or negative stimuli) were then presented in random order. Stimulus blocks were randomized for each participant and each expressive flexibility condition (i.e., negative set A was given for the suppression task in Participant 1 and for the expression task in Participant 2). The blocks of stimuli were balanced for valiance ratings within like valances (e.g., equally negative compared to other blocks of negative stimuli), based on norms for the IAPS set.¹

The participants’ video-recorded emotional expressions were rated by 32 graduate psychology students who were blind to condition. Each participant was rated by three different observers (total of 354 ratings were recorded). Observers used the same positive and negative scales as those that the participants used. Onset and offset of each block of trials were indicated by an auditory signal, and observers had no knowledge of the subject’s instructions for any given block. Overall observer agreement was high (ICC, two-way random model, consistency type = .89) and did not differ significantly by expression condition or stimulus valence. Final scores for observer-rated expression were calculated by averaging across three raters.

Results

Group Differences and Manipulation Check

There were no meaningful differences across the CG ($n = 24$), asymptomatic bereaved ($n = 40$), and married ($n = 54$) groups for age, gender, years of education, length of marriage, and family income between the three groups ($ps > .10$ for all demographic variables). Participants in the asymptomatic bereaved group did not significantly differ from married participants on symptoms of MDD, $F(1, 92) = .30, p = .59$. Not surprisingly, the CG group differed from the other groups on symptoms of MDD, $F(2, 117) = 24.72, p < .001$, and CG, $F(1, 63) = 94.39, p < .001$. Participants in the CG group endorsed significantly more MDD symptoms ($M = 3.79, SD = 1.93$) than asymptomatic bereaved ($M = 1.05, SD = 1.57$) and married adults ($M = .85, SD = 1.86$). Likewise, participants in the CG group endorsed significantly more symptoms of CG ($M = 3.75, SD = 1.85$) than asymptomatic bereaved adults ($M = .53, SD = .78$). As an additional validity check, we examined the self-reported trajectories and found that most participants who endorsed the Chronic Grief trajectory were in the CG group (83.3%), $\chi^2 = 22.91, p < .001$.

¹ A total of 40 pictures (10 practice, 30 experimental) were presented to each participant. Stimulus blocks were not repeated, and each picture was shown only once. During the practice portion, the positive IAPS stimuli presented were 1710, 1999, 4614, 5480, 8033, and the negative stimuli presented were 1201, 2120, 2700, 9911, 9622. In the positive experimental blocks, the IAPS stimuli included 2170, 4659, 8470, 8030, 2510, 2160, 2530, 2340, 8350, 4250, 2311, 8461, 4660, 2070, 2030. In the negative experimental blocks, the IAPS stimuli included 9410, 6838, 6571, 2053, 9102, 9452, 6212, 2710, 2800, 8230, 2205, 3022, 2141, 3053, 9042.

We also explored for differences between the CG and asymptomatic group in terms of characteristics related to loss. First, we examined type of loss. We categorized causes of death as prolonged versus sudden (Kaltman & Bonanno, 2003). Prolonged deaths were defined as those attributable to persistent, continuous illness (e.g., cancer), whereas sudden deaths were defined as those that came without forewarning (e.g., car accident, heart attack). We further categorized sudden deaths as violent (e.g., result of accident, homicide) versus nonviolent (e.g., heart attack). There were no significant differences between the bereaved groups on prolonged versus sudden deaths, $\chi^2 = 1.93, p = .19$. In terms of violent deaths experienced, however, there were significant differences between bereavement groups, $\chi^2 = 5.36, p = .04$. One third ($n = 8$) of the complicated grief group experienced a loss resulting from violence, whereas 10% ($n = 4$) of the asymptomatic bereaved participants experienced a loss resulting from violence. Next, we examined for differences in time since the loss. There were no significant differences between the bereaved groups on time since loss, $F(1, 62) = 2.66, p = .11$.

We examined differences in subjective ratings of affect across negative and positive valence stimuli. As expected, the subjective affect ratings matched the valence of the stimuli. Participants rated the positive valence stimuli as significantly more positive than negative across all experimental conditions: enhancement, $t(117) = 33.41, p < .001$; suppression, $t(117) = 32.02, p < .001$; and monitor off, $t(117) = 31.01, p < .001$. Similarly, they rated negative valence stimuli as significantly more negative than positive across all conditions: enhancement, $t(117) = 45.04, p < .001$; suppression, $t(117) = 33.80, p < .001$; and monitor off, $t(117) = 31.06, p < .001$. The participant's ratings for opposite-valence stimuli (e.g., negative ratings after positive stimuli) were relatively low across all conditions ($M = 2.67, SD = .91$). Accordingly, only the matched valence-ratings were used in subsequent analysis, which followed with previous studies (Bonanno et al., 2004; Westphal, Seivert, & Bonanno, 2010).

Further analyses of subjective and observer ratings also validated the manipulation of expressive regulation strategies. As anticipated, a repeated measures analysis of variance revealed a significant two-way interaction for rating source (participant, observer) and expressive regulation condition (enhancement, suppression, monitor off), $F(2, 234) = 141.50, p < .001$. Similar to previous studies using the same paradigm (Bonanno et al., 2004; Westphal, Seivert, & Bonanno, 2010), a graph of the interaction shows that the experimental conditions had little impact on subjective ratings of affect but influenced observers' ratings of emotion. Observers rated the greatest emotional expression in the enhancement condition and the least emotional expression in the suppression condition (see Figure 1). As in previous studies, because there was no condition effect for subjective ratings of affect, subsequent analyses focused only on observer ratings of emotion.

Enhancement and Suppression Ability

To examine the predicted relationships of expressive flexibility and CG, we conducted a group (CG, asymptomatic bereaved, married) \times condition (enhancement, suppression, monitor off) repeated measures ANOVA on the observer ratings of emotion.

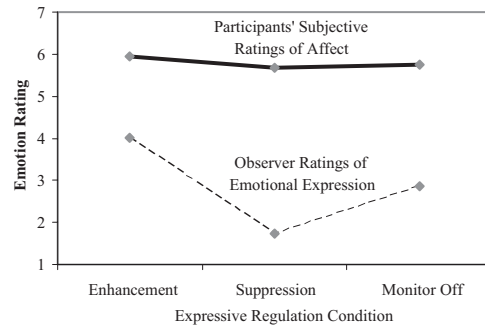


Figure 1. Subjective and Observer ratings of emotion by condition.

This analysis revealed a significant main effect for condition, $F(2, 114) = 187.21, p < .001$, and a significant condition \times group interaction, $F(2, 115) = 8.02, p = .001$. To depict the interaction, we plotted observer-rated emotion by group for each condition. As can be seen from Figure 2, participants in the CG group expressed less emotion than the other two groups in the enhancement condition (i.e., were less able to enhance expression of emotion) and expressed more emotion than the other two groups in the suppression condition (i.e., were less able to suppress expression of emotion). By contrast, baseline levels of observed-rated emotion in the monitor off condition were similar across groups.

These impressions were supported by analyses of simple main effects for group and for condition. Analyses of simple effects at the group level (CG, asymptomatic, and married) indicated significant differences in observed emotion across conditions for each group (all $ps < .001$). Analyses of simple effects at the condition level (enhancement, suppression, monitor off) indicated marginally significant group differences in observed emotion in the enhancement condition, $F(2, 116) = 2.39, p = .09$, and in the suppression condition, $F(2, 116) = 2.69, p = .07$, whereas group differences in the baseline monitor off condition did not approach significance, $F(2, 116) = 1.38, p = .25$.

Together these analyses showed that CG, asymptomatic bereaved, and married (nonbereaved) participants evidenced approximately the same level of emotion in the baseline monitor off condition, and also that members of each group of participants were able to modulate emotional expression by enhancing or suppressing the outward signs of emotion when instructed to do so. Importantly, however, CG participants evidenced relatively less ability to enhance emotional expressions and suppress emotional expressions (i.e., less expressive flexibility) relative to the asymptomatic bereaved and married groups. By contrast, the asymptomatic bereaved and married participants evidenced approximately the same level of expressive flexibility.

Following previous studies, we examined expressive flexibility more directly by creating separate variables for expressive enhancement ability and expressive suppression ability (Bonanno et al., 2004; Westphal, Seivert, & Bonanno, 2010). Enhancement ability was calculated by subtracting each participant's expression scores in the monitor enhancement condition from their expression score in the monitor off (baseline) condition. In other words, enhancement ability is the extent that a participant's expressiveness in the enhancement condition was greater than that participant's expressiveness in the baseline condition. Suppression ability

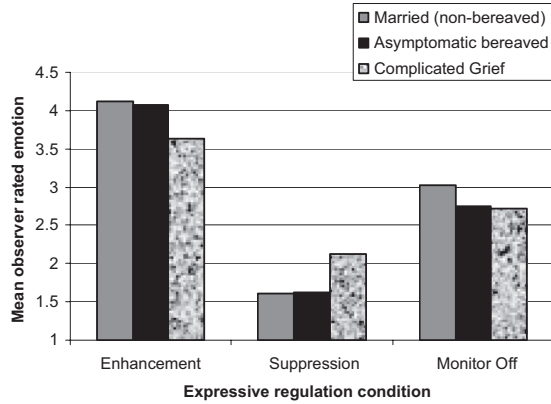


Figure 2. Observer ratings of emotional expression by condition and group.

was similarly calculated by subtracting each participant's expression score in the monitor suppression condition from their expression score in the monitor off (baseline) condition. In this case, suppression ability is the extent that a participant's expressiveness in the suppression condition is less than that participant's score in the baseline condition.

Consistent with previous studies (Bonanno et al., 2004; Westphal, Seivert, & Bonanno, 2010), enhancement ability and suppression ability were moderately inversely correlated ($r = -.36$, $p < .001$). Additionally, suppression ability was mildly correlated with income ($r = .19$, $p = .05$) and female participants demonstrated significantly greater suppression ability compared to males, $F(1, 117) = 5.67$, $p = .02$. There were no notable relationships between other variables.

To examine the predicted relationships of ability and group, we conducted another repeated measures ANOVA using the enhancement ability and suppression ability scores described above. As anticipated, this analysis failed to detect a significant effect of ability. This indicated that when collapsing across groups, enhancement ability was observed to the same extent as suppression ability. The interaction of ability and group was also not significant, indicating that suppression and enhancement ability were proportional to each other, or symmetrical, in each group. As predicted, however, and consistent with the flexibility hypothesis, we observed a significant main effect for group on overall ability, $F(2, 115) = 6.81$, $p = .002$, $\eta_p^2 = .11$. Group accounted for 11% of the overall variance in expression and suppression ability. In this case, a group difference in overall ability (enhancement and suppression ability combined) in the absence of an interaction effect indicates flexibility. In other words, the group difference in flexibility was similar for enhancement and suppression ability. Pairwise comparison tests confirmed that the CG group had significantly less overall ability (e.g., less enhancement ability and less suppression ability) than the asymptomatic bereaved group (mean difference = .46, $p = .002$) and the married group (mean difference = .50, $p < .001$). The married and asymptomatic bereaved group did not significantly differ in overall (expression and suppression) ability (mean difference = .04, $p = .76$). The effect size for these pairwise comparisons was modest ($\eta_p^2 = .11$).^{2,3}

Gender as a Moderator

We conducted a secondary analysis to explore for possible gender effects in the relationship between expressive flexibility and CG. We repeated the original group (CG, asymptomatic bereaved, married) \times condition (enhancement, suppression, monitor off) repeated measures ANOVA and also added gender. This analysis revealed an interaction effect for gender and condition, $F(2, 224) = 6.43$, $p = .002$. Observers rated females as expressing significantly more emotion than males in the enhancement condition (mean difference = .80; $t = 4.03$, $p = .02$). There were no significant gender differences in observer ratings of emotion in the suppression condition (mean difference = .13; $t = .94$, $p = .11$) and monitor off condition (mean difference = .60; $t = 3.16$, $p = .02$). The repeated measures ANOVA also revealed that the interaction of gender \times Condition \times group was not significant, $F(4, 224) = .54$, $p = .71$. In other words, gender did not moderate our main findings on the relationship between CG and deficits in expressive flexibility.

Discussion

This study provided important preliminary evidence that persons suffering from Complicated Grief are less able to flexibly enhance and suppress their expressions of emotion compared to asymptomatic bereaved and nonbereaved adults. Our study used a within-subjects design to measure expressive flexibility among a sample of adults who lost their spouse and a control sample of married adults. We asked all participants to either enhance or suppress their expressions of emotion or to behave normally while viewing evocative pictures at a computer screen. Actual observer ratings of expressiveness made blind to the goals and conditions of the study showed that bereaved adults suffering from CG, as compared with asymptomatic bereaved and married adults, were less able to flexibly enhance and suppress their expressions of emotion when instructed to do so. In other words, adults suffering from CG exhibited deficits in emotional expressive flexibility. These findings follow previous research associating deficits in expressive flexibility with poorer adjustment in the aftermath of highly aversive events (Bonanno et al., 2004; Westphal, Seivert, & Bonanno, 2010).

² We repeated the expression and suppression ability ANOVA using an alternative CG category following Prigerson and colleagues (1997). Participants were required to have at least one symptom of separation distress (yearning, preoccupation, regrets) in addition to at least four other CG symptoms ($n = 15$). The results of this analysis were similar to those using our original CG category. The repeated measures ANOVA failed to detect a significant effect for ability or for the interaction of group and ability. Again consistent with the flexibility hypothesis, we observed a significant main effect for group on overall ability, $F(2, 115) = 5.01$, $p = .008$, $\eta_p^2 = .08$. The alternative CG group still had significantly less overall ability (e.g., less enhancement ability and less suppression ability combined) than the asymptomatic bereaved group (mean difference = .43, $p = .01$) and the married group (mean difference = .54, $p = .002$).

³ We also repeated the expression and suppression ability ANOVA with depression included as covariate, either as continuous symptom score or as categorical variable representing. Our results were the same as the final ANOVA reported in the manuscript.

A strength of our study is the use of a relatively objective measure of expressive flexibility. This paradigm goes beyond a measure of observable emotion and more precisely measures emotional *flexibility* via a within-subjects design that considers each individual participant's ability to modulate observable emotion up and down relative to their own baseline level of expressiveness. Importantly, we found no significant differences in baseline emotional expressiveness. In other words, bereaved individuals with CG were not more or less expressive in the baseline (monitor off) condition relative to either asymptomatic bereaved or nonbereaved participants. This finding rules out the possibility that the CG group was devoid of affect or had a low baseline level of emotional expression. Rather, it was the inability to modulate emotional expression from baseline that was the key difference between the CG group and other groups.

Although the current study advanced previous research on emotion and CG, there were limiting factors that warrant discussion. First, the use of a relatively objective, experimental measure of expressive flexibility comes at a cost in terms of ecological validity. In everyday life, bereaved adults must enhance or suppress emotional expression across a range of situational contexts. In many cases, they may be unaware of doing so, or may do so with limited conscious intent. By contrast, the expressive flexibility paradigm requires deliberate behavioral control and as such may only capture one component of normal expressive flexibility. It would be informative for future studies to measure expressive flexibility and other forms of emotion regulation in contexts that more closely mimic real-life social situations.

Another limitation of our study involved the categorization of CG. While we used highly reliable, structured clinical interviews to assess for symptoms CG, the formal criterion for CG has yet to be formally recognized and is under consideration for the DSM-V (American Psychiatric Association, 2010). We attempted to minimize this concern by recruiting participants who had been bereaved for at least 18 months but less than three years. Based on previous research (e.g., Bonanno et al., 2002), this window suggested an optimal interval for capturing bereavement-related pathology and for distinguishing CG from more normative forms of grief reaction and from more enduring bereavement-independent forms of dysfunction.

Finally, it should be noted that our study relied upon a cross-sectional design. An important concern in research on emotion and psychopathology is to determine whether emotional disturbances are antecedents, concomitants, or consequences of mental disorders (Kring, 2008). Because we used a cross-sectional design in the current study, we were unable to discern whether deficits in expressive flexibility played a causal role in the development of CG, resulted from CG, or simply co-occurred with CG. We speculate that expressive flexibility may play a causal role in the development of CG. Previous research on expressive flexibility showed that, in an undergraduate sample, expressive flexibility scores were stable over three years and appeared to buffer the students from potentially negative adjustment following stressful life events (Westphal, Seivert, & Bonanno, 2010). In defense of our current research design, however, we note that our study represented a first step in a planned longer-term investigation of CG and emotion regulation. We are currently preparing future studies that will allow us to determine whether deficits in expressive flexibility detected earlier in bereavement might inform the

development of CG and also whether deficits in expressive flexibility are amenable to grief-related treatments targeted at CG.

A key question for future research is whether deficits in expressive flexibility are unique to CG or whether they co-occur in other forms of psychopathology. A growing body of literature supports a transdiagnostic approach to emotion regulation difficulties that examines common emotion regulation processes across mental disorders to better understand etiology and inform treatment (Barlow, Allen, & Choate, 2004; Gruber, Eidelman, & Harvey, 2008; Kring, 2008; Kring & Sloan, 2009). Given that deficits in emotion regulation are associated with several types of psychopathology, it is feasible that deficits in expressive flexibility may characterize a number of different forms of psychopathology. Unfortunately, assessing several forms of psychopathology was beyond the scope of our current study. However, future research should test for expressive flexibility deficits among adults suffering from various mental disorders associated with dysfunctional patterns of emotion regulation such as depression, anxiety, and eating disorders (Aldao, Nolen-Hoeksema, & Schweizer, 2010).

Within the specific context of bereavement, however, there is room for speculation as to why deficits in expressive flexibility were associated with elevated grief symptoms. Several researchers have posited theories about the function of emotion during bereavement. For example, Bonanno and Kaltman (1999) concluded that the regulation of emotions during bereavement helps in maintaining high levels of daily functioning and contributes to healthy retrospective reappraisals about the loss (e.g., "compared to last week, I am gradually getting better"). It follows then that problems with emotion regulation, including deficits in expressive flexibility, would contribute to difficulties in daily functioning and perhaps ruminative worry about failure to move beyond the loss (Bonanno et al., 2008).

In their dual-process model of bereavement, Stroebe and Schut (1999) suggest that bereaved adults oscillate between sad, painful emotions related to reflections about their loss and present-oriented thoughts about everyday tasks and needs. Other theorists have suggested that oscillatory processes in bereavement occur with great rapidity, beginning soon after a loss and gradually reducing within the first few weeks of normal bereavement (Bisconti, Bergeman, & Boker, 2004; Bonanno, 2009). In this context, it is plausible that bereaved persons who experience deficits in expressive flexibility may be less able to flexibly oscillate between grief-related states and more normative states associated with the demands of daily activities (Coifman & Bonanno, 2010). For example, bereaved adults who have difficulties suppressing their emotional expressions may wallow in sad, painful emotions in inappropriate contexts that require them to be alert and present in the moment. Similarly, such bereaved adults may have difficulties enhancing their emotional expression when they try to communicate their deep sadness and seek help from others.

As a final point, we noted that females in our sample were rated as expressing greater emotion than males when instructed to do so in the enhancement condition. This follows previous empirical research showing that people tend to rate the nonverbal behavior of females as more emotionally expressive than males (e.g., Barr & Kleck, 1995; Riggio & Friedman, 1986; for review see Kring & Gordon, 1998). Previous studies of expressive flexibility in college students have not reported gender differences (DeCicco, Hajcak, Bonanno, & Dennis, 2010). These contrasting findings may be

attributable in part to the sample differences—community adults in our study versus undergraduates in previous studies. Although we did not observe gender differences in expressive flexibility, it will be interesting for future studies to continue to explore possible gender differences in emotional expressiveness and whether they might in some way inform expressive flexibility.

In sum, the current investigation reports the first empirical efforts to examine whether deficits in expressive flexibility might inform grief-related psychopathology. The results demonstrated that bereaved individuals who continued to experience elevated grief symptoms 1.5 to 3 years after the death of their spouse did in fact evidence deficits in expressive flexibility relative to asymptomatic bereaved individuals who had lost a spouse during the same period and a comparable group of married individuals. Future research is needed to replicate these findings, to examine whether deficits in expressive flexibility early in bereavement might predict the later development of grief-related pathology, and to examine whether deficits in expressive flexibility might characterize other forms of psychopathology.

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