

Does Repressive Coping Promote Resilience? Affective–Autonomic Response Discrepancy During Bereavement

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Traditional theories of coping emphasize the value of attending to and expressing negative emotion while recovering from traumatic life events. However, recent evidence suggests that the tendency to direct attention away from negative affective experience (i.e., repressive coping) may promote resilience following extremely aversive events (e.g., the death of a spouse). The current study extends this line of investigation by showing that both bereaved and nonbereaved individuals who exhibited repressive coping behavior—as measured by the discrepancy between affective experience and sympathetic nervous system response—had fewer symptoms of psychopathology, experienced fewer health problems and somatic complaints, and were rated as better adjusted by close friends than those who did not exhibit repressive coping. Results are discussed in terms of recent developments in cognitive and neuroimaging research suggesting that repressive coping may serve a protective function.

Keywords: affect, repressor, resilience, coping, trauma

During the normal course of their lives, most people are confronted with at least one and sometimes several events of potentially traumatic severity (e.g., a violent or life-threatening experience or the death of a close relation; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). It has become increasingly clear that people react to such events in markedly different ways. Some people struggle with chronic distress or depressive reactions and find it difficult to function at work or in close relationships, even years after the event has passed. Others suffer less intensely and for shorter periods of time. Still others appear to cope remarkably well, exhibiting no apparent disruption in functioning and showing the ability to move on from the event relatively quickly (Bonanno, 2004, 2005).

Evidence of the diversity of outcome patterns following potentially traumatic events has raised important new questions about the ways that coping processes might inform adjustment. Whereas traditional theories have tended to define broad coping styles that are either primarily desirable and adaptive or dysfunctional and maladaptive, a growing body of research has documented the multiple and often idiosyncratic ways that people might adaptively respond to threat (e.g., Bonanno, Keltner, Holen, & Horowitz, 1995; Bonanno, Moskowitz, Papa, & Folkman, 2005; Bonanno, Noll, Putnam, O’Neill, & Trickett, 2003; Cacioppo et al., 1992;

Gross, in press; Kosslyn, Cacioppo, et al., 2002; Skinner, Edge, Altman, & Sherwood, 2003). In the current study, we sought to replicate and extend previous research on a potentially adaptive form of coping that has been regarded historically in almost exclusively negative terms. Specifically, we measured a form of repressive coping behavior termed *affective–autonomic response discrepancy (AARD)*, defined as occurring when participants report relatively little negative affect during stressful laboratory tasks while simultaneously evidencing heightened physiological responses (e.g., Bonanno et al., 1995).¹ We examined AARD behavior in recently bereaved individuals following the untimely death of their spouse or child and in a comparison group of nonbereaved married adults and addressed a number of unresolved questions regarding this behavior, including its predictive utility in relation to various measures of adjustment.

Affective–Autonomic Response Discrepancy (AARD) as a Form of Repressive Coping

In the late 1940s, researchers began to explore the idea that when faced with threatening stimuli, individuals with a “defensive” orientation avoid threat and corresponding negative feelings, whereas individuals with a “sensitizing” orientation increase their vigilance to the threat and attend to their negative feelings (Bruner & Postman, 1947). Given the prominence of Freudian theory at that time and its accompanying assumption that a defensive avoidance of negative affect is maladaptive (Freud, 1915/1957), the

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¹ In the initial research in this area, the label *verbal–autonomic response dissociation* was used to describe this behavior (e.g., Bonanno et al., 1995; Newton & Contrada, 1992). This label is problematic for two reasons. First, the word *verbal* is a misnomer because verbal responses are not actually measured. Second, the word *dissociation* leads to confusion with the clinical concept of dissociation. To avoid these problems, Bonanno et al. (2003) adopted an alternative label *affective–autonomic response discrepancy*. We continue with this practice in the current study.

defensive orientation ultimately became synonymous with the term *repressive* (see Derakshan & Eysenck, 1997b) and was operationalized through questionnaire measures of the repression-sensitization dimension (Byrne, 1961). Although, as we discuss below, measurement of this dimension has been problematic, the distinction nonetheless stimulated an extensive body of research focused on understanding the negative implications of repressive coping (for reviews, see Derakshan & Eysenck, 1997b; Schwerdtfeger & Kohlmann, 2004; Weinberger, 1990).

Repressors appear to use an avoidant cognitive style that allows them to direct attention away from negative affect or threatening stimuli (e.g. Bonanno & Singer, 1990; Cook, 1985; Eysenck, 1997; Hock & Krohne, 2004; Krohne & Hock, 2004; Myers & Brewin, 1996; Myers & Derakshan, 2004; Tomarken & Davidson, 1994). For example, a signature behavior of repressors is that when confronted with psychological threat, they typically report little or no distress while simultaneously exhibiting threat reactivity on other response channels (e.g., rapid heart rate; Derakshan & Eysenck, 1997b).

Consistent with the notion that most avoidant tendencies derive from a motive to protect self-worth or the integrity of the self (see Sherman & Cohen, 2002), repressor behaviors are evidenced most clearly in situations that present a threat to self-evaluation (e.g., Barger, Kircher, & Croyle, 1997; Mendolia, 1999; Mendolia, Moore, & Tesser, 1996; Pauls & Stemmler, 2003). For example, repressors have shown inhibited attention to an emotional event (e.g., biased recall of emotion-laden words) in experimental conditions involving negative feedback but only when the relationship between the feedback and their performance has been made evident (Mendolia et al., 1996; see also, Houtveen, Rietveld, Schoutrop, Spiering, & Brosschot, 2001). Moreover, repressor behaviors emerge in response to prior evaluations of failure (Mendolia, 1999) and are highly sensitive to social context (Mendolia, 2002; Newton & Contrada, 1992). This considerable body of research supports the assumption that repressive coping occurs primarily as a means of preserving a self-image that is dependent on maintaining low levels of negative affectivity (Derakshan & Eysenck, 1999; Weinberger, 1990; Weinberger & Davidson, 1994).

Repressive coping behaviors are also thought to emerge in a relatively automatic and self-deceptive manner and are therefore qualitatively distinct from deliberate avoidant behaviors associated with emotion or thought suppression (e.g., Gross & John, 2003; Gross & Levenson, 1993, 1997; Myers, Vetere, & Derakshan, 2004; Wegner, 1994). In experimental studies, for example, repressors evidence a greater ability to attend away from threatening stimuli during tasks measuring seemingly automatic biases of attention (e.g., a dichotic listening task: see Bonanno, Davis, Singer, & Schwartz, 1991; a Stroop task: see Jansson, Lundh, & Oldenburg, 2005) but do not differ from other respondents on measures of deliberate emotional control or avoidance (e.g., Bonanno et al., 1995; Myers et al., 2004).

Because repressive coping appears to involve automatic biases and/or self-deceptive processes, the exclusive reliance on self-report measures—even and perhaps especially those with high face validity—in investigations of repressor behavior is problematic. For example, a previous investigation of repressor behavior in the context of bereavement revealed an inverse association between repressor behavior and self-reported avoidant coping (Bo-

nanno et al., 1995; see also Creswell & Myers, 2002). In an attempt to circumvent this issue, Weinberger, Schwartz, and Davidson (1979) operationally defined repressive coping using a combination of low levels of trait anxiety and high levels of defensiveness. Although this approach has generated a large body of research, it nonetheless is vulnerable to other psychometric concerns. For instance, defining high and low levels on each measure requires somewhat arbitrarily determined cutoff scores. What is more, the designation of repressor and nonrepressor categories precludes analyses of continuous data (see Mendolia, 2002). Finally, this approach, which uses a combination of two dichotomized continuous and correlated variables, is susceptible to spurious group assignment in which the repressor category may be overrepresented (Maxwell & Delaney, 1993).

The AARD score represents an alternative behavioral measure of repressive coping that shows moderate overlap with self-report questionnaire measures of repressive coping (see Bonanno et al., 1995; Newton & Contrada, 1992) but allows investigators to avoid the psychometric problems inherent in the questionnaire measure by capitalizing on repressors' tendency to exhibit discrepancies across response channels. Behavioral measures of repressive discrepancy have typically involved comparisons between a self-report measure of subjective distress and a more objective measure of threat responsivity, such as facial activity or autonomic responding (for a review, see Schwerdtfeger & Kohlmann, 2004). When defined by measures of autonomic responding, as in the AARD score, repressors are those who report relatively low levels of negative affect following exposure to threat while simultaneously exhibiting relatively high levels of physiological reactivity, including elevated heart rate or skin conductance response (e.g., Barger et al., 1997; Bonanno et al., 1995; Newton & Contrada, 1992).

Some researchers have compared the two indexes (e.g., subjective distress vs. a behavioral dimension) by entering their product as an interaction term in linear regression (e.g., Warrenburg et al., 1989). However, in using this approach, one may fail to fully capture repressive effects because it is sensitive primarily to disordinal (i.e., crossover) interactions and relatively insensitive to ordinal or asymmetrical effects (see Mendolia, 2002; Weinberger & Schwartz, 1990). The measurement of repressive coping in terms of discrepancies between differing indexes (e.g., anxiety vs. defensiveness or distress vs. arousal) typically manifests in ordinal or noncrossover interactions. For example, repressors, by definition, experience relatively little distress but at the same time exhibit elevated levels of arousal. By contrast, highly anxious individuals or sensitizers typically experience disproportionately greater distress relative to their level of arousal. A disordinal interaction would imply that these disparate groups evidence similar scores on a dependent measure when, in fact, they tend to show opposite patterns of performance or behavior (e.g., Derakshan & Eysenck, 1998; Gudjonsson, 1981; Krohne & Hock, 2004; for a review, see Schwerdtfeger & Kohlmann, 2004).

Although we explored the use of the AARD measures as an interaction term, our primary measure of repressive coping in the current investigation was a single score based on the discrepancy between the two indexes. This method has been used effectively in previous studies (e.g., Bonanno et al., 1995; Newton & Contrada, 1992; Weinberger et al., 1979) and has the advantage that it allows for both categorical and continuous definitions of repressive coping. The discrepancy score also has important conceptual as well

as practical utility because it effectively collapses the association between these two variables (i.e., distress and arousal) onto one linear continuum; repressors (low distress, high arousal) have negative scores, and sensitizers (high distress, low arousal) have positive scores.

Repressive Coping Behavior (AARD) and Resilience to Extreme Adversity

Contrary to traditional theoretical assumptions about the exclusively maladaptive nature of repressive coping (e.g., Schwartz, 1990), recent research has suggested that repressor behavior, measured as AARD scores, can be a pragmatic form of coping that helps people deal effectively with extremely aversive events (Bonanno, 2005). Individuals with repressive AARD scores, both in the laboratory and in naturalistic studies of coping with major life stressors (e.g., bereavement, chronic illness, childhood sexual abuse), exhibited fewer symptoms of psychopathology and better psychological adjustment over time (e.g., Bonanno et al., 1995, 2003; Bonanno, Znoj, Siddique & Horowitz, 1999; Newton & Contrada, 1992). For example, in one longitudinal investigation, bereaved adults who exhibited the repressive AARD pattern (i.e., less self-reported negative affect relative to level of autonomic responding) while discussing their loss in the early months of bereavement, exhibited fewer symptoms of grief as well as other types of psychopathology when assessed at various points over the next 5 years (Bonanno et al., 1995, 1999; Bonanno & Field, 2001). Similar findings emerged in a cross-sectional sample of adolescent and adult women, approximately half of whom had documented histories of childhood sexual abuse (Bonanno et al., 2003). Although survivors of child sexual abuse who had AARD scores in the direction of repressive coping were less likely to voluntarily disclose a past abuse experience, they exhibited fewer internalizing symptoms (e.g., depression) and fewer externalizing symptoms (e.g., aggressive behavior).

As compelling as these findings are, the idea that repressive coping may lead to better rather than worsened psychological adaptation raises a number of important but as yet unresolved issues. For example, much of the evidence linking repressive coping with favorable adjustment following adversity has been garnered with self-report measures. However, the self-deceptive nature of repressive coping, reviewed earlier, suggests that repressors may think (and thus report) that they are coping better than they actually are. Investigators circumvented this problem in only one previous study (Bonanno et al., 1995) by using symptom scores from structured clinical interviews that were independently validated by experienced psychotherapists familiar with bereavement. Although on both measures, repressors evidenced better psychological adjustment following the loss than did nonrepressors, it will be important to replicate these findings across multiple and relatively objective measures of outcome.

A further and still more complex issue pertains to the potential health costs of repressive coping. Several studies have suggested that repressors' tendency to attend away from negative affect may foster adaptation to stress because it allows them to engage in more active coping or goal-directed behavior (Contrada, Czarnecki, & Li-Chern Pan, 1997; Langens & Moerth, 2003; Mendolia et al., 1996; Tomarken & Davidson, 1994). However, this same avoidant habit may also extract a serious health cost (Contrada et al., 1997;

Schwartz, 1990). For example, although bereaved repressors exhibit fewer psychological symptoms over time, they have reported greater levels of somatic complaints in the early months of bereavement (e.g., Bonanno et al., 1995). Moreover, the repressor style has been associated with lowered immune function (e.g., Esterling, Antoni, Kumar, & Schneiderman, 1993), greater cardiovascular responding, and increased salivary cortisol (Barger, Marsland, Bachen, & Manuck, 2000; Brown, Tomarken, Orth, Loosen, & Davidson, 1996; King, Taylor, Albright, & Haskell, 1990; Weinberger, Schwartz, & Davidson, 1979), suggesting a greater susceptibility to cardiovascular, immune-related, and other diseases (Derakshan & Eysenck, 1997b; Giese-Davis, Sephton, Abercrombie, Duran, & Spiegel, 2004). Repressors' ostensible biases to turn away from the perception of or attention to unpleasant information (including affect and bodily sensation) may contribute to a lack of awareness or attention to their physical health care (for reviews, see Considine, Magai & Bonanno, 2002; Schwerdtfeger & Kohlmann, 2004), and thus they may strike a costly bargain. However, inconsistent findings and methodology relevant to this question again indicate a need for further research.

Finally, it is not clear whether the salutary nature of repressive coping is context specific. Repressive coping is typically conceptualized as a trait dimension. Consistent with this idea, repeated assessments of AARD have proven reliable over an 8-month period (Bonanno et al., 1995). However, behaviors associated with repressive coping are also responsive to situational constraints. Repressive coping has been found to increase, for example, following the diagnosis of cancer (e.g., Kreitler, Chaitchik, & Kreitler, 1993; Phipps, Fairclough, & Mulhern, 1995; Phipps, Steel, Hall, & Leigh, 2001; Zacharie et al., 2004). Moreover, numerous laboratory studies have shown that repressive coping is easily manipulated, particularly when there is a threat to the self (e.g., Barger et al., 1997; Krohne & Hock, 2004; Mendolia et al., 1996; Newton & Contrada, 1992; Pauls & Stemmler, 2003). However, the potential context specificity of repressive coping has not yet been examined in laboratory studies allowing for more naturalistic behavior. For example, the evidence for the adaptive benefits of repressive coping during bereavement was garnered from interview data that did not allow for distinctions between the self-focused and other-focused or interpersonal content (see Bonanno et al., 1995). Moreover, some evidence suggests that repressive coping might foster general psychological benefits independent of context. For example, in the aforementioned study of childhood sexual abuse (Bonanno et al., 2003), repressive coping predicted better psychological adjustment regardless of whether participants had a history of childhood sexual abuse

The Current Investigation

In the current investigation, we addressed these issues by examining the impact of repressive coping, as measured by AARD, in a sample of recently bereaved individuals approximately 4 and 18 months after the death of either a spouse or child as well as in a matched sample of nonbereaved married people. Following the methods used in previous research (Bonanno et al., 1995, 2003), we calculated AARD scores by measuring participants' level of negative affect and autonomic responsivity during interviews in which they spoke uninterrupted about stressful topics in their lives. Comparisons between bereaved and nonbereaved respondents

were examined cross-sectionally, whereas comparisons of AARD scores to long-term adjustment involved analyses of the bereaved sample at 4 and 18 months postloss.

We sought to replicate and extend previous evidence in support of the adaptive benefits of repressive coping during bereavement in four ways. First, we examined whether the context-specific nature of repressive coping extended to naturalistic behavior during a laboratory interview. We addressed this issue both by comparing the association of repressive coping and adjustment across bereaved and nonbereaved samples and by exploring how the prevalence and predictive utility of repressive AARD scores varied by interview context; specifically, we compared interview segments in which participants talked about either themselves, their current psychological state, and their level of functioning (self topic) or the quality of their past relationship to the deceased (relationship topic). On the basis of previous research (e.g., Bonanno et al., 1995, 1999), we predicted that repressive AARD scores would be associated with better concurrent adjustment across samples and measures and better long-term adjustment among the bereaved sample. However, given the convincing theoretical (Derakshan & Eysenck, 1999; Weinberger, 1990; Weinberger & Davidson, 1994) and empirical evidence (Barger et al., 1997; Mendolia, 1999; Mendolia et al., 1996) suggesting the emergence of repressor behaviors when a threat to the self is experienced, we also explored whether these links would differ for AARD scores obtained in the two contexts. Specifically, we suspected that repressors might experience greater threat in the self topic while describing their current state and functioning because they would perceive a self-evaluatory component not present when discussing their loss during the relationship topic. Second, because previous studies have thus far been limited to relatively simple assessment of outcome, we included longitudinal measures of both psychiatric symptoms coded from well-validated structured clinical interviews and ratings of participants' adjustment provided anonymously by their close friends. Third, we further examined the links between repressive coping and health outcome by assessing participants' medical history for key cardiovascular-related difficulties and by measuring their somatic complaints across time. Fourth, we further investigated the presumed automatic, self-deceptive features of repressive coping by comparing AARD scores with measures of deliberate or intentional grief processing and grief avoidance. Because previous direct evidence (e.g., Bonanno et al., 1991, 1995) suggested that repressors had a relative lack of awareness of their own coping processes, we anticipated that repressive coping would be either uncorrelated or inversely correlated with these measures.

Method

Participants and Procedure

We recruited bereaved participants as part of a larger research project (see Bonanno, Moskowitz, et al., 2005) by disseminating information about the study and encouraging bereaved and nonbereaved individuals interested in participating to contact the researchers (Bonanno et al., 1995; Penslar, 1993). Information about the study was made available to potential bereaved participants living in the Washington, DC, area via letters describing the study that were sent to (a) recently be-

reaved individuals who were listed as surviving parents or spouses in newspaper obituary notices and (b) individuals likely to have contact with bereaved individuals (e.g., medical and mental health professionals, clergy). The letters encouraged bereaved individuals younger than 65 years who met recruitment criteria—having lost either a spouse or a child—to contact the researchers by phone or mail. Nonbereaved participants were recruited from posted notices describing the study in public locations and encouraging married individuals younger than 65 years who were interested in participating to contact the researchers. The present study used only participants from the parent study for whom physiological data were available. The final sample consisted of 120 participants: 66 bereaved (conjugal bereaved = 52, parentally bereaved = 14) and 54 nonbereaved. The combined bereaved and nonbereaved sample was on average 47.3 years old ($SD = 9.4$ years), primarily female (women = 75, men = 45), and European American (European American = 91, African American = 15, Hispanic American = 8, other = 6) with a median income of \$87,500 ($M = \$108,000$, $SD = \$94,000$).

For analysis involving a comparison between the bereaved and nonbereaved individuals, we selected 61 bereaved participants (conjugal bereaved = 47, parentally bereaved = 14) and 45 nonbereaved participants for comparison on the basis of matching demographic characteristics (age and gender).

The same initial (T1) data were collected from both bereaved and nonbereaved participants: bereaved participants at 4 months postloss and nonbereaved participants immediately following enrollment. T1 data consisted of a packet of mail-in questionnaires and a laboratory session that included both a structured clinical interview (Structured Clinical Interview for *Diagnostic and Statistical Manual of Mental Disorders* [4th ed., *DSM-IV*; American Psychiatric Association, 1994] Disorders [SCID]; Spitzer, Gibbon, Skodol, Williams & First, 1994) and a semistructured narrative interview (SSI) during which measures of autonomic activity, self-reported affect, health, and medical history were also collected. Following each interview, every participant was provided with three envelopes containing questionnaires to give to their close friends. These envelopes were coded to match the participant and included a stamped, return-addressed envelope so that the friends could return the completed questionnaires anonymously to our research team.

Longitudinal follow-up (T2) data were collected only from bereaved participants at approximately 18 months postloss. T2 data consisted of the same packet of mail-in questionnaires used at T1, a laboratory session that included only the SCID, a measure of self-reported somatic complaints, and friend rating reports. Bereaved participants also completed self-report measures of grief processing at T1 and T2 as part of the packet of mail-in questionnaires.

All participants were paid \$60 for each interview session. Friends providing anonymous ratings were not compensated.

Self-Report Questionnaires

Grief Processing and Deliberate Grief Avoidance

A 13-item grief processing scale and a 9-item deliberate grief avoidance scale were developed in a previous study (Bonanno,

Papa, Lalande, Nanping, & Noll, 2005) and administered to bereaved participants at both T1 and T2. The grief processing scale measured three behaviors (thinking about the deceased, searching for meaning, having positive memories of the deceased) phrased for three contexts (with family, with close friends, and alone) and two behaviors (talking about the deceased and expressing feelings about the deceased) phrased for two contexts (with family and with close friends). The 9-item deliberate grief avoidance scale measured two behaviors (avoiding talking about the deceased and avoiding expressing feelings about the deceased) phrased for two contexts (with family and with friends) and one behavior (avoiding thinking about the deceased) phrased for three contexts (with family, with friends, and alone). Each item for the grief processing and grief avoidance measures was rated on a 5-point scale for frequency of occurrence in the past month (from 1 = *almost never* to 5 = *almost constantly*). Internal consistency was adequate for both grief processing ($\alpha = .88$) and grief avoidance ($\alpha = .83$). These measures showed no significant association with each other, either at T1, $r = -.20$, *ns*, or at T2, $r = -.07$, *ns*. Moreover, correlations between T1 and T2 scores indicated adequate test-retest reliability over time for both grief processing, $r = .75$, $p < .01$, and grief avoidance, $r = .52$, $p < .01$.

Health and Medical History

Self-reported somatic complaints were measured at T1 and T2 waves of data collection from a checklist developed in previous bereavement research (Bonanno et al., 1995). Both bereaved and nonbereaved participants indicated (*yes* or *no*) whether they had experienced any of 18 symptoms (e.g., diarrhea, sore throat, shortness of breath) during the past 2 weeks. Responses were summed for a total score. In addition, at T1 only, all participants completed a health inventory consisting of 16 items describing their current and past medical history, including individual questions about specific medical illnesses (e.g., cardiovascular, respiratory), medication use (e.g., total number of active prescriptions), and indexes of lifestyle activities (e.g., number of times they exercised each week, number of times they engaged in relaxation activity each week).

Friend Ratings

Each participant distributed rating materials to three close friends whom they felt knew them well and with whom they had relatively consistent contact. The materials asked the friend to rate the participant's current level of adjustment in relation to "most other people" using a 7-point scale (1 = *much worse than most people*, 4 = *about the same as most people*, 7 = *much better than most people*) for five dimensions: mental health, physical health, quality of social interactions, ability to accomplish goals, and coping ability ($\alpha = .89$). The scores for these five dimensions were then aggregated to create one current adjustment score. Nonbereaved participants administered these forms to friends at T1 only. Bereaved participants administered these forms both at T1 and T2.

A participant's friend data were used only if data from at least two friends were available. There were no significant demographic

differences (i.e., age, income, ethnicity) between participants with usable friend data ($n = 75$) and the remainder of the sample ($n = 45$). Correlations between ratings from different friends for the same participant were all significant and in the moderate range (r ranging from .26 to .40). We averaged the friend ratings of adjustment for each participant to increase reliability.

Participants also completed an identical set of ratings about themselves. They rated their own current level of adjustment in relation to "most other people" on a 7-point scale (1 = *much worse than most people*, 4 = *about the same as most people*, 7 = *much better than most people*) for the same five dimensions identified above ($\alpha = .89$). The scores for these five dimensions were then aggregated to create one current adjustment score. Mean friend ratings of adjustment were correlated with participants' self-report for ratings of current adjustment ($r = .41$).

Interview Protocols

Interviews were conducted in an 8 ft \times 10 ft (2.4 m \times 3.0 m) room. Participants were seated in a comfortable chair facing a similar chair occupied by an interviewer and a mirrored window, behind which was one wall-mounted camera. Participants were informed that the interview would consist of a structured segment (SCID) and a more open-ended, narrative, semistructured segment (SSI) and that a portion of either interview segment might be videotaped.

SCID

All participants were asked a series of questions corresponding to the *DSM-IV* symptoms for generalized anxiety disorder (9 items, $\alpha = .78$), major depressive disorder (8 items, $\alpha = .92$), and symptoms of posttraumatic stress disorder (PTSD) that did not overlap with major depression (14 items, $\alpha = .82$). Symptoms assessed from each domain were combined to create a total symptom score that we used as an estimate of psychological adjustment. Each symptom was coded as present or absent. Specifically, every item included an explicit scoring criterion (e.g., markedly diminished interest of pleasure in all, or almost all activities; excessive anxiety and worry, occurring more days than not, about a number of events or activities) and a set of standard questions designed to elicit information relevant to the criterion (Bonanno et al., 1995; Horowitz et al., 1997). The interviewer's decision as to whether the criterion was met for each item was based on a combination of a participant's verbal self-report during the interview as well as the interviewer's observations of participant behavior during the interview. The interviews were conducted by seven doctoral candidates in clinical psychology. Interviewers received extensive training in the procedures but were blind to the goals and hypotheses of the current study. For computation of interrater reliability, the interviews were videotaped, and each interviewer coded a randomly selected set of five additional interviews. Interrater reliability was very high (average $\kappa = .97$). The structured interview data were used to create continuous variables for depression, anxiety, and PTSD symptoms, as well as a total symptom score.

SSI

After a short break, participants returned to their seats, and we attached physiological sensors. Participants were instructed to sit

quietly and to relax for a few minutes. The baseline period lasted 5 min. After baseline, the interviewer reentered and read a script informing participants that they would be asked to speak in an open-ended manner about specified persons and aspects of their lives, that the interviewer would keep track of the time, that the best way to approach the task was to “try to relate as openly as possible whatever comes to your mind,” and that the interviewer would seldom speak other than to ask clarifying questions. To encourage spontaneous discourse, the interviewer stated, “If at any time you go blank, or run out of things to say, just relax and give yourself time to think about something else related to the topic.” The specified topics were (a) relationship (their relationship with either the deceased [for bereaved participants] or their spouse [for nonbereaved participants]) and (b) self (their current coping and future outlook since the loss [for bereaved participants] and their current view of their life over the last 6 months as well as their future outlook [for nonbereaved participants]).

The instructions for the relationship topic were, “The first question is about your relationship with (insert spouse’s name). I’d like you to tell me what the relationship was like. Is that clear? Please begin whenever you’re ready.” If participant got off track or ran out of things to say, the interviewer was instructed to prompt using specific phrases, including, “What else comes to mind about the relationship?” “What else comes to mind about (spouse)?” “Can you tell me more about what (he or she) was like when you were together?” “How well would you say the two of you got along?”

The interviewer’s instructions for the self topic were as follows:

Next, I’d like you to tell me in your own words how you currently see your own life. In other words, I’d like you to speak about how you’ve been doing lately, what your life is like now, and where you see your life going. Is that clear? Please begin when you are ready.

If the participant got off track or ran out of things to say, the interviewer was instructed to prompt the participant using specific phrases, including, “What else comes to mind about what your life has been like recently?” “What else comes to mind about your life at present?” “What do you see in your own future?”

Each interview topic lasted 6 min. A random check of interview footage, following the completion of data collection, indicated that both bereaved and nonbereaved participants responded to topics as expected; this included speaking for the majority of each interview period on topics consistent with the interview context (e.g., if bereaved, speaking about the deceased during the relationship segment, or if nonbereaved, speaking about their spouse during the relationship segment; speaking about their work or life plans during the self segment).

Negative affect. After each interview topic of the SSI, participants were asked to rate on a 7-point scale (from 0 = *not at all* to 7 = *almost constantly*) how often during the discussion they had experienced four negative affects (fear, guilt, anger, sadness). These self-ratings were then aggregated for an overall negative affect score² ($\alpha = .72$). Affect ratings were made following each of the two interview topics (i.e., relationship and self) but not following the 5-min baseline period.³ In previous studies (e.g., Bonanno et al., 1995), a similar measure has proven to be a reliable indicator of subjective emotional experience.

Bodily reaction. After each SSI interview topic, participants were also asked to rate the extent to which they experienced a bodily reaction during the discussion (from 1 = *not at all* to 7 = *strong*) and the extent to which that reaction was pleasant or unpleasant (from 1 = *not at all* to 7 = *strong*; $\alpha = .73$). This measure was included to explore the possibility that some participants may have focused on the valence of affective experience (e.g., positive vs. negative), whereas others may have focused on the arousal dimension (e.g. high vs. low arousal; see Feldman, 1995; Feldman Barrett, Quigley, Bliss-Moreau, & Aronson, 2004). To minimize presentation concerns, interviewers informed participants that they (the interviewers) would not view their responses.

Autonomic activity. In previous AARD studies, heart rate has been used to index autonomic activity (e.g., Bonanno et al., 1995; Newton & Contrada, 1992). However, electrodermal activity is considered to be a more discriminating measure of behavioral inhibition and threat response (Fowles, 1980). More specifically, skin conductance response (SCR) rate has been found to be sensitive to threat cues (Phelps et al., 2001; Szpiller & Epstein, 1976) and to uniquely differentiate between repressors and nonrepressors (Barger et al., 1997; Gudjonsson, 1981; Tomaka, Blascovich, & Kelsey, 1992). We measured SCR rate during T1 interviews by passing a constant voltage (0.5 V) between two electrodes (Beckman Coulter, Fullerton, CA) filled with an electrolyte of sodium chloride in Unibase (Parke-Davis, New York, NY). Electrodes were applied to the palmar surface of the distal phalanges of the first and third fingers of the nondominant hand. The signal was sampled at 400 Hz with an isolated bioelectric amplifier system (Model CUA-07BA, SA Instrumentation, Encinitas, CA). SCRs were identified as any rate exceeding 0.02 μ S. The signal was filtered with a 60-Hz notch filter, and customized software was used to reduce the data and remove artifacts (Wilhelm, Grossman, & Roth, 1999). Period averages were created for the 5-min baseline period and for each of the 6-min speaking periods. We regressed each participant’s baseline SCR on their SCR measurements from each speaking period, maintaining the standardized residual to account for the change in SCR rate (Bonanno et al., 1995; Linden, Earle, Gerin, & Christenfeld, 1997).

Results

AARD Analyses

Preliminary Analyses

AARD scores were created from the self-report and physiological data available from the T1 interviews. We calculated AARD

² This particular measure has been used frequently in investigations of bereavement because these emotions—anger, fear, sadness, and guilt—are most often reported by grieving individuals and offer an effective means to approximate their experience (see Bonanno & Kaltman, 1999).

³ In previous use of this paradigm (i.e., Bonanno et al., 1995), less than 15% of participants reported any affective experience during the baseline period and most expressed confusion about the nature of affective reporting without a specific topic or task on which to report. Therefore, in this investigation, we dropped affective reporting during the baseline period.

scores⁴ separately for each interview topic (relationship and self) by (a) standardizing the participants' level of negative affect during the topic and their change in physiological responding (SCR rate) relative to baseline during the topic discussion and then (b) subtracting the standardized change in physiological responding from the standardized negative affect score for each topic. We found significant differences in AARD by gender: Men had significantly lower AARD scores (indicative of repressive coping behavior) than did women during discussions of both interview topics (e.g., relationship topic: $t(91) = -3.356, p < .01$; women's $M = 0.42, SD = 1.34$; men's $M = -0.53, SD = 1.27$). However, no significant association was found between AARD scores and age. Moreover, neither age nor gender showed meaningful effects as either a mediator or moderator variable in the analyses reported below, and thus neither were considered further.

Following methods used in previous studies (Bonanno et al., 1995; Cacioppo & Tassinari, 1990; Newton & Contrada, 1992), we adopted two criteria for the valid use of the AARD to confirm the independence of the two component variables. First, as is almost always the case (e.g., Edelman & Baker, 2002; Mauss, Levenson, McCarter, Wilhelm, & Gross, 2005; Mauss, Wilhelm, & Gross, 2004; for a review, see Russell, 2003; Schwerdtfeger, 2004), we expected the self-report and autonomic variables to be relatively uncorrelated with one another. This criterion was satisfied in both the relationship topic, $r = .07$, and the self topic, $r = .05, p < .40$. The second criterion was that the self-report and autonomic variables should show an opposite predictive relationship to symptoms from the SCID. This criterion was also satisfied. In separate analyses for each interview topic, we regressed total symptoms (depression, anxiety, and PTSD) at T2 on total symptoms at T1, the standardized self-reported negative affect score, the standardized physiological (SCR) change scores, and the appropriate interaction term. Irrespective of interview topic, self-reported negative affect and SCR standardized change score each significantly predicted T2 total symptoms and in the opposing direction. However, consistent with the discrepancy findings described in detail below, the interaction term was significant only in the self topic discussion (see Table 1).

In addition, because previous evidence has suggested that the relative absence of awareness of negative affect may be in part due to individual differences in the focus on arousal (high or low) versus valence (positive or negative; see Feldman, 1995; Feldman Barrett et al., 2004), we explored the possibility of using a second AARD score that was based on the discrepancy between physiological change (SCR) and self-reported unpleasant bodily reaction (instead of on negative affect). The ratings of negative affect and unpleasant bodily reaction were moderately to highly correlated (relationship topic, $r = .40$; self topic, $r = .56$). However, the discrepancy between SCR and unpleasant bodily reaction was highly correlated with the discrepancy between SCR and negative affect (relationship topic, $r = .65$; self topic, $r = .74$). Owing to the redundancy in these measures, we limited subsequent analyses to AARD scores that were based on self-rated negative affect.

Comparison of Interview Topics

We compared mean AARD scores and their constituent components across the self and relationship topics. No significant difference between the two topics was found for level of physio-

Table 1
Summary of Hierarchical Regression Analysis for Variable Components of Affective–Autonomic Response Discrepancy Scores Predicting Total Symptoms of Psychopathology at T2

Topic	B	SE B	β
Relationship ^a			
Total symptoms at T1	0.846	0.063	.853**
SCR	-1.104	0.309	-.210**
Negative affect	0.733	0.339	.138*
SCR \times Negative Affect	-0.146	0.375	-.025
Self ^b			
Total symptoms at T1	0.828	0.063	.834**
SCR	-1.303	0.288	-.248**
Negative affect	0.772	0.354	.138*
SCR \times Negative Affect	-0.726	0.343	-.113*

Note. Dependent variable = T2 total symptoms from the Structured Clinical Interview for DSM-IV Disorders. T1 = data collection at Time 1 (4 months postloss for bereaved; at recruitment for nonbereaved); T2 = data collection at Time 2 (18 months postloss, bereaved only); SCR = skin conductance response rate.

^a $F(3, 36) = 84.176^{**}, R^2 = 0.884$. ^b $F(3, 38) = 100.307^{**}, R^2 = 0.896$. * $p < .05$. ** $p < .01$.

logical response, $t(94) = 1.133, p = .21$; level of negative affect, $t(95) = -0.111, p = .91$; or AARD score, $t(86) = 0.132, p = .90$.

Comparison of Bereaved and Nonbereaved Samples

Parental and conjugally bereaved samples did not differ significantly in T1 symptoms, negative affect, or physiological responding. Therefore, parental and conjugal bereavement samples were collapsed into a single bereaved group for subsequent analyses. Comparisons between the bereaved sample and nonbereaved sample for symptoms of depression, anxiety, and PTSD, a total symptom score from the SCID, and AARD scores for each SSI topic are presented in Table 2. As expected, nonbereaved individuals had significantly fewer symptoms than did bereaved individuals. Bereaved–nonbereaved sample differences in AARD scores were significant for the relationship topic, with AARD–relationship scores in the direction of repressive coping for the nonbereaved sample ($M = -0.34, SD = 1.39$) and in the direction of affective sensitization for the bereaved sample ($M = 0.43, SD = 1.29$),

⁴ AARD scores were calculated as the discrepancy between self-reported affect and physiological response rather than as the product of these terms because, as others have noted (e.g., Weinberger & Schwartz, 1990), the product term is not sensitive to asymmetrical effects. Nonetheless, we incorporated the product term in analyses predicting longitudinal adjustment (T2 symptoms assessed from the SCID) by including standardized affect and arousal scores in the first step. The results were significant ($\beta = -.113, p < .05$), indicating an additive effect for the combination of affect and arousal in the self topic only. Moreover, a graph of the interaction showed the anticipated relationship (i.e., less negative affect coupled with greater physiological response was associated with fewer symptoms). In other analyses of outcome variables, the inclusion of the product term for either the relationship or the self topic did not approach significance in regression analysis involving friend ratings of adjustment, health and medical history, and grief processing variables.

Table 2
Index of Symptoms, Affect, and Autonomic Activity for the Bereaved and Nonbereaved Samples

Interview		Bereaved		Nonbereaved		<i>t</i>	<i>p</i>
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
SCID							
Depression	T1	2.20	2.15	0.62	1.33	<i>t</i> (103) = 4.317	<.01
	T2	1.23	1.88				
Anxiety	T1	0.56	1.64	0.41	1.35	<i>t</i> (103) = 0.507	—
	T2	0.61	1.68				
PTSD	T1	3.62	2.84	0.85	1.51	<i>t</i> (103) = 5.890	<.01
	T2	2.35	2.53				
Total symptoms	T1	6.38	5.79	1.88	3.01	<i>t</i> (103) = 4.715	<.01
	T2	4.19	5.21				
Semistructured interview							
Relationship topic							
Negative affect	T1	2.37	0.95	1.59	0.90	<i>t</i> (96) = 4.135	<.01
	SCR	T1	0.01	1.01	-0.14	0.96	<i>t</i> (97) = .736
AARD	T1	0.43	1.29	-0.34	1.39	<i>t</i> (91) = 2.747	<.01
Self topic							
Negative affect	T1	2.34	1.25	1.89	0.95	<i>t</i> (94) = 1.947	—
	SCR	T1	0.05	1.03	-0.16	0.94	<i>t</i> (98) = 1.010
AARD	T1	0.21	1.43	-0.18	1.27	<i>t</i> (88) = 1.322	—

Note. Dashes indicate nonsignificant *p* values. T1 = data collection at Time 1; T2 = data collection at Time 2; SCID = Structured Clinical Interview for *DSM-IV* Disorders; PTSD = posttraumatic stress disorder; SCR = skin conductance response rate; AARD = affective-autonomic response discrepancy.

t(91) = 2.75, *p* < .01. Group differences in AARD scores in the self topic did not approach significance.

AARD Scores and Adjustment

Having established the validity of the AARD scores, we conducted a series of regression analyses to examine the association of continuous AARD scores to measures of concurrent (T1) adjustment in both bereaved and nonbereaved participants and to longitudinal (T2) adjustment in the bereaved sample. In each regression, we included AARD scores from both interview topics in order to explore contextual differences in the expression of repressive coping relative to adjustment. For the T1 analyses, each adjustment variable was regressed onto bereavement status (bereaved or nonbereaved), the continuous AARD-relationship and AARD-self scores, and the appropriate interaction terms. For the T2 analyses, each adjustment variable was regressed onto T1 scores for the adjustment variable and the continuous AARD-relationship and AARD-self scores. These analyses are summarized in Table 3 and are described in detail below.

Total Symptoms

In a regression for total concurrent (T1) symptoms from the SCID, AARD-self emerged as a significant positive predictor, $\beta = .35$, *p* < .01. Neither AARD-relationship scores nor the interaction of the AARD scores with bereavement status approached significance. In a regression for total symptoms at T2 in the bereaved sample, again only AARD-self was a significant positive predictor, $\beta = .20$, *p* < .05.⁵ Together, these results support our hypothesis that that AARD scores in the direction of repressive coping (i.e., less self-reported negative affect relative to physiological responding) would predict fewer concurrent symp-

toms of psychopathology regardless of bereavement status and fewer symptoms over time among bereaved participants. These results also extend and clarify previous research by indicating that these predictive associations were only apparent when participants described the self, their own current life, and their future outlook, not their relationship with the (living or deceased) spouse.

Friend Ratings of Participants' Adjustment.

A regression analysis for friend ratings of participants' adjustment at T1 revealed no significant findings. However, in the analysis predicting T2 friend ratings with only bereaved participants, AARD-self emerged as a significant inverse predictor of adjustment, $\beta = -.29$, *p* < .05; AARD scores at T1 in the direction of repressive coping predicted higher T2 friend ratings of adjustment.

⁵ We derived AARD scores from negative affect and autonomic scores that were standardized using data from the combined bereaved and nonbereaved samples. It is possible that the association of AARD with reduced symptoms may reflect, to some extent, the systematic bias between greater AARD scores in the less symptomatic, nonbereaved sample. To examine this possibility, we restandardized the negative affect and arousal scores separately for the bereaved and nonbereaved groups and then recalculated the AARD scores using this more group-specific measure. The group-specific AARD scores were extremely highly correlated with the AARD scores for the entire sample in both the self, *r* = .97, *p* < .001, and relationship, *r* = .99, *p* < .001, topics. Furthermore, when we repeated the regression analysis for T1 symptoms, the results were almost exactly the same as those with the AARD scores created for the entire sample. Together, these additional analyses suggest that systematic group bias was not a plausible explanation for the association of AARD and reduced symptoms.

Table 3
*Summary of Regression Analyses for Affective–Autonomic Response Discrepancy (AARD)
 Predicting T1 and T2 Outcome Measures*

Variable	<i>B</i>	<i>SE B</i>	β
Total symptoms from SCID			
T1—concurrent adjustment (<i>N</i> = 87) ^a			
Bereavement status	−3.796	.926	−.397**
AARD—relationship	−0.153	.448	−.046
AARD—self	1.203	.445	.351**
Bereavement Status × AARD—relationship	−0.988	.906	−.459
Bereavement Status × AARD—self	0.796	.929	.336
T2—longitudinal adjustment (<i>N</i> = 37) ^b			
Total symptoms at T1	0.799	.059	.805**
AARD—relationship	0.427	.308	.111
AARD—self	0.761	.322	.196*
Mean friend ratings			
T1—concurrent functioning (<i>N</i> = 66) ^c			
Bereavement status	0.528	.225	.287*
AARD—relationship	−0.044	.114	−.068
AARD—self	−0.081	.116	−.119
Bereavement Status × AARD—relationship	0.170	.231	.386
Bereavement Status × AARD—self	−0.010	.248	−.020
T2—longitudinal functioning (<i>N</i> = 61) ^d			
T1 friend rating	0.759	.089	.732**
AARD—relationship	0.058	.080	.094
AARD—self	−0.198	.090	−.285*
Perceived health			
Concurrent—T1 somatic complaints (<i>N</i> = 85) ^e			
Bereavement status	−2.077	.729	−.305**
AARD—relationship	−0.444	.351	−.180
AARD—self	0.944	.345	.373**
Bereavement Status × AARD—relationship	0.380	.714	.246
Bereavement Status × AARD—self	−0.723	.718	−.424
Longitudinal—T2 somatic complaints (<i>N</i> = 42) ^f			
T1 somatic complaints	0.445	.122	.483**
AARD—relationship	−0.085	.443	−.032
AARD—self	0.947	.456	.358*

Note. T1 = data collection at Time 1; T2 = data collection at Time 2; SCID = Structured Clinical Interview for *DSM-IV* Disorders.

^a $F(3, 86) = 11.334^{**}$; $R^2 = 0.291$. ^b $F(3, 36) = 98.129^{**}$; $R^2 = 0.899$. ^c $F(3, 65) = 3.032^*$; $R^2 = 0.128$.

^d $F(3, 60) = 27.058^{**}$; $R^2 = 0.587$. ^e $F(3, 84) = 5.863^{**}$; $R^2 = 0.178$. ^f $F(3, 41) = 10.338^{**}$; $R^2 = 0.449$.

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

AARD Scores and Health and Medical History

In the analysis for concurrent (T1) somatic complaints, AARD—self emerged as a positive predictor of somatic complaints, $\beta = .37$, $p < .01$ (see Table 3). The interactions of the AARD scores and bereavement status did not approach significance. In the longitudinal analysis for T2 somatic complaints among bereaved participants, again only AARD—self scores emerged as a predictor of somatic complaints, $\beta = .36$, $p < .05$. These findings indicate that AARD—self scores in the direction of repressive coping predicted fewer T1 somatic complaints in all participants and fewer somatic complaints over time among bereaved people. Together, these results contrast with previous findings linking repressive coping during bereavement with initial elevations in somatic complaints.

We examined AARD in relation to three medical history variables measured at T1, relating to frequency of high blood pressure,

cardiovascular disease, and respiratory illness. AARD—self was a significant predictor of respiratory illness, $\beta = .30$, $p < .05$, and a marginally significant predictor of a history of cardiovascular disease, $\beta = .25$, $p = .09$. AARD—self was not related to a history of high blood pressure, and AARD—relationship scores were not related to any medical history variables. These data indicate that AARD—self scores in the direction of repressive coping were associated with a reduced frequency of significant respiratory or cardiovascular disease and, thus, contrast with previous findings linking repressor coping with increased susceptibility to cardiovascular and respiratory diseases.

AARD Scores and Deliberate Grief Processing and Avoidance

Previous research has indicated that repressive coping is a relatively automatic behavior that is either unrelated or inversely

related to measures of deliberate or intentional avoidance. We examined whether this pattern would extend to measures of deliberate grief processing and grief avoidance. In separate analyses involving bereaved participants only, we regressed AARD scores for each topic onto T1 participant ratings of grief processing and grief avoidance. We then conducted two additional regressions to examine AARD scores for each topic and T2 ratings of grief processing and grief avoidance. As anticipated, the results indicated no significant association between measures of deliberate grief processing and grief avoidance with repressor behavior as measured by AARD scores (i.e., AARD-self: T1 grief processing, $\beta = .243, p = .09$; T1 grief avoidance, $\beta = -.172, p = .23$; $F(2, 48) = 2.32, p = .11$; T2 grief processing, $\beta = .238, p = .16$; T2 grief avoidance, $\beta = .091, p = .57$; $F(2, 36) = 1.15, p = .33$. AARD-relationship: T1 grief processing, $\beta = .033, p = .82$; T1 grief avoidance, $\beta = .011, p = .94$; $F(2, 48) = 0.027, p = .97$; T2 grief processing, $\beta = .097, p = .58$; T2 grief avoidance, $\beta = .076, p = .67$; $F(2, 34) = 0.231, p = .80$). However, these results do indicate a trend towards a positive association between grief processing and AARD scores, suggesting that bereaved people who exhibit repressor behavior tend to process their grief (i.e., think and talk about the loss) less than other bereaved people.

Discussion

Although repressive coping has been viewed almost exclusively as a maladaptive behavior, concrete evidence for this characterization is lacking. A small and relatively inconsistent body of evidence has associated repressive coping with health costs. However, several recent studies have also associated repressive coping with favorable adjustment, particularly in the context of extreme adversity. The present study replicated and extended the previous evidence for the adaptive benefits of repressive coping while finding no evidence of its health costs.

We defined repressive coping in this study using the most psychometrically sound behavioral measure currently available, the continuous AARD score; the repressive pole of this AARD continuum was represented by relatively low levels of negative affect coupled with relatively high levels of autonomic responding (SCR rate) observed while participants discussed a potentially threatening topic. Defined this way, repressive coping predicted fewer psychological symptoms (depression, anxiety, and PTSD) coded from well-validated structured clinical interviews, ratings of better adjustment from close friends, fewer somatic complaints, and a less significant medical history. These effects were observed in both bereaved participants and a matched sample of non-bereaved married participants, suggesting that repressive coping exerts a generally salubrious influence. However, repressive coping was also predictive of better longitudinal adjustment among bereaved participants, suggesting that it may serve as a buffer from acute distress. The latter finding was observed even when initial levels of psychological symptoms were statistically controlled.

One of the ways that the current study extended previous research on repressive coping was to clarify the context in which it is most relevant to important outcomes. In an earlier investigation of repressive coping during bereavement, Bonanno et al. (1995) measured AARD scores while participants discussed their relationship with their recently deceased spouse and how they had been coping with the loss of that relationship. Experimental studies have shown, however,

that repressive coping may be instigated during either negative or positive events and is triggered most reliably when there is a threat to the self or self-concept (e.g., Davis, 1987; Mendolia, 2002, 1999; Mendolia et al., 1996). To clarify this issue in the current study, we measured repressive coping from two different interview segments, effectively parsing the context of the relationship with the spouse (living or deceased) and the self. Consistent with the experimental findings, only AARD scores that were obtained when participants discussed the self were predictive of adjustment in these analyses.

The results of the current study were also consistent with recent investigations suggesting that repressive coping behaviors are generated relatively automatically and outside conscious awareness (e.g., Boden & Baumeister, 1997) and thus are distinct from the more deliberate types of avoidant behaviors, such as those measured by self-report coping scales (see also Stone et al., 1998). These findings are further consistent with studies suggesting that automatic emotion regulation (self-regulation that modulates emotional responding and yet is not effortful or activated by conscious intention) can be associated with adaptive rather than maladaptive outcomes (Mauss, Evers, Wilhelm, & Gross, 2006).

A previous bereavement study (Bonanno et al., 1995) had reported the compatible finding that repressive coping was inversely related to a deliberate measure of avoidant coping. In the current investigation, bereaved repressors were neither more nor less likely to report deliberate grief avoidance (e.g., avoiding thinking or talking about the loss) but showed a trend toward reporting less deliberate grief processing (e.g., thinking or talking about the loss). Although this type of evidence is indirect, it is consistent with the myriad of research findings on personality and cognitive processing (e.g., MacLeod, Rutherford, Campbell, Ebsworthy, & Holker, 2002), which we discuss in detail below, as well as with the theoretical conceptualization of repressors as self-deceivers (e.g., Weinberger, 1990). Moreover, these findings are consistent with recent investigations distinguishing repressive coping behavior from the construct of suppression (Derakshan, Myers, Hansen, & O'Leary, 2004; Giese-Davis & Spiegel, 2001; Myers et al., 2004), which is a deliberate act of affect avoidance associated with potentially maladaptive consequences (see Bonanno, Papa, Lalande, Westphal, & Coifman, 2004; Gross & John, 2003; Gross & Levenson, 1993, 1997; Richards & Gross, 2000).

In contrast with findings from previous studies, no evidence linking repressive coping to negative health consequences was found in our investigation. In an earlier phase of research on this dimension, investigators had assumed that the elevated levels of physiological responding that repressors exhibit in threatening situations coupled with their apparent lack of awareness of threat contributed to psychophysiological dysregulation (e.g., Jamner, Schwartz, & Leigh, 1988; Schwartz, 1990) and ultimately the increased development of cardiovascular or other stress-related disease (e.g. Barger et al., 2000; King et al., 1990). However, it is important to note that previous studies associating aspects of the repressor style with potential health risks (see Leventhal & Patrick-Miller, 2000) have been strikingly inconsistent, and there remains a paucity of clear and direct associations between repressor behaviors and long-term health consequences. For example, despite theoretical speculation that repressors may exhibit somatosensory biases (e.g., Derakshan & Eysenck, 1997a), there is evidence suggesting greater capacity for accurate symptom perception among repressors (e.g., Fritz, McQuaid, Spirito, & Klein, 1996), which is consistent with their potential for active coping behaviors in

times of stress. Because of the confluence of this evidence, we are cautiously optimistic that future investigations incorporating longer term assessments will show that despite their elevated level of physiological responding, repressors nonetheless benefit from their capacity to attend away from their negative feelings and toward goal-directed and other self-preserving behaviors.

Limitations

Although the current investigation advanced research on repressive coping in the context of adversity in several ways, there were also a number of limitations to the study. Of greatest significance was the relatively small sample size, particularly for analysis of the bereaved sample over time. Another limitation was our use of one autonomic index: SCR rate. Although found to be an effective discriminator of repressors versus nonrepressors (Barger et al., 1997; Gudjonsson, 1981), SCRs index only one of the many response systems that are activated by threat or challenge. Moreover, in previous research, other autonomic indexes have been used to identify individuals exhibiting repressor behavior, most notably heart rate. It is possible that AARD scores constructed with different indexes may signal different psychological experiences, and thus future research might benefit from an investigation into more diverse indexes of physiological responding in consort. Another important limitation was that, apart from the anonymous ratings by participants' close friends and the SCID measures, the health and grief processing measures were susceptible to the influence of possible self-presentational bias. Given the confluence of evidence suggesting that those exhibiting repressor behaviors underreport, these findings, particularly those related to self-reported somatic complaints and a participant's history of cardiovascular-related disease, should be taken with caution. Further research will need to continue to address these issues with more objective markers of health. Finally, the evidence presented in this and previous investigations (i.e., Bonanno et al., 1995; 1999; 2003) clearly suggests an adaptive benefit to repressive coping behavior in the context of highly stressful and relatively uncontrollable events (i.e., bereavement and childhood sexual abuse). However, repressor behavior may not be adaptive in all stressful contexts. Because it may occur across contexts and life events, this behavior should be explored in future research, so that its adaptive as well as its potentially maladaptive parameters may be better delineated.

Implications

Within the context of these limitations, the results of the current investigation as well as those of other recent studies linking repressive coping to better adjustment in the context of loss (Bonanno et al., 1995, 1999; Bonanno & Field, 2001) or childhood sexual abuse (Bonanno et al., 2003) raise the question of why transient affect-avoidant behaviors might be salutary, particularly in the context of potentially traumatic situations.

One possible explanation comes from studies in which the type of cognitive biases (i.e., perceptual, attention, processing, memory) implicated in the development and maintenance of emotional disorders (for a review, see Mathews & MacLeod, 2005) have been examined. For example, experimentally increasing participants' vigilance to threat cues in the laboratory leads to increased

stress and later emotional vulnerability (MacLeod et al., 2002). By contrast, repressors show the opposite bias; their attention is easily focused away or disengaged from negative threat cues (e.g., Bonanno et al., 1991; Broomfield & Turpin, 2005; Derakshan & Eysenck, 1998) and from pessimistic or negative self-attributions (e.g., Creswell & Myers, 2002; Myers & Steed, 1999) and are focused toward positive or illusory biases (e.g. Myers & Brewin, 1996). Moreover, a large and convincing body of evidence consistently associates memory biases in favor of negative events or stimuli (e.g., negative facial expressions) with emotional disorders including depression and anxiety (see Mathews & MacLeod, 2005; but also see Ridout, Astell, Reid, Glen, & O'Carroll, 2003). Again, repressors have been shown to exhibit the opposite bias and a tendency to remember less negative events or stimuli than other individuals (e.g., Boden & Baumeister, 1997; Cutler, Larsen, & Bunce, 1996; Hansen & Hansen, 1988; Krohne & Hock, 2004). Thus, the extensive body of cognitive processing research linking particular perceptual and processing biases to emotional disorders as well as the emerging evidence attributing the opposite biases to repressors clearly suggests the idea that repressive coping may serve as a protective buffer from emotional disorders, particularly in the context of adverse life events.

Another way to understand the adaptive value of the repressor orientation is to consider its links to the experience and expression of positive emotion and other approach-related behaviors (i.e., appetitive and or engagement behaviors, see Carver, Sutton, & Scheier, 2000; Gray, 1990) in the context of the day-to-day tasks and challenges. Although we did not measure positive emotion in the current study, previous studies have linked repressive coping with greater positive affect (Boden & Baumeister, 1997) and with a greater frequency of Duchenne smiles or genuine expressions of positive emotion (i.e., facial expressions that include contraction of the orbicularis oculi muscles around the eyes; see Ekman & Friesen, 1978; also see Bonanno et al., 2003; Bonanno & Keltner, 1997; Keltner & Bonanno, 1997). Together, these findings are consistent with recent evidence underscoring the coping benefits of positive emotion (Bonanno & Kaltman, 1999; Folkman & Moskowitz, 2000; Fredrickson, 2001; Fredrickson & Joiner, 2002; Gable, Reis, Impett, & Asher, 2004; Updegraff, Gable, & Taylor, 2004).

Finally, the association of repressive coping and increased positive affect is consistent with evidence from neuroimaging research linking repressive coping with left anterior resting brain activation (e.g., Tomarken & Davidson, 1994). This type of hemispheric asymmetry is associated with approach-related behaviors, including goal-directed activity, the amplification of positive affect, and self-esteem (for reviews, see Cacioppo, Berntson, Larsen, Poehlmann, & Ito, 2000; Davidson, 1998) and is consistent with evidence from several investigations of repressor behavior, including those showing repressors' increased cognitive capacity (e.g., higher levels of working memory; Derakshan & Eysenck, 1998), their tendency to invoke positive memories or experiences (e.g., Boden & Baumeister, 1997), and their capacity to invoke active coping strategies (e.g., Langens & Moerth, 2003) in times of stress. Whether this link to improved task performance and goal-directed behavior directly informs the type of resilience that repressors have shown in the face of aversive life events will be an important area for future investigation.

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