Personality-Related Risk and Resilience Factors in Coping with Daily Stress among Adult Cancer Patients

Manfred Diehl and **Elizabeth L. Hay**
Department of Human Development and Family Studies, Colorado State University

Abstract

We employed a diary design to study personality-related risk and resilience factors in adult cancer patients coping with daily stress. We focused on individuals' self-concept incoherence (SCI) as a personality-related risk factor and on psychological well-being (PWB) at baseline and daily beliefs of control as resilience factors. Reactivity to daily stress was assessed in terms of negative daily mood. Multilevel modeling analyses yielded significant main effects of daily stress, PWB at baseline, and daily control. These main effects were qualified by significant two- and three-way interactions. The significant Stress X Control interaction indicated that individuals reported more negative mood in response to daily stress on low-control days compared to high-control days. Similarly, a significant SCI X Control interaction suggested that individuals with a more coherent self-concept benefited more from feeling in control in terms of experiencing less increase in negative mood compared to individuals with a more incoherent self-concept. Significant three-way interactions also indicated that the associations between stress, control and negative daily mood differed by level of SCI and level of PWB at the beginning of the study. Overall, the findings from this study show the complex associations between risk and resilience factors and daily emotional well-being in a sample of adults who were affected by a life-threatening illness.

Keywords

Adult personality; daily stress; risk and resilience factors; negative daily mood

---

Personality-Related Risk and Resilience Factors in Coping with Daily Stress among Adult Cancer Patients

Personality psychology has been characterized by a schism between structural trait approaches and social-cognitive processing approaches (Fleeson, 2001). Whereas advocates of the former approach have emphasized the stable and enduring characteristics of human personality (McCrae & Costa, 2003), advocates of the latter approach have focused on its contextualized and dynamic nature (Mischel, 2004). This schism has also been reflected in the literature on adult personality development, with one camp arguing for stability and continuity in adult personality development, whereas the other camp has argued in favor of change and discontinuity. Recent decades of theoretical and empirical work have mostly ended these debates. On one hand, theoretical frameworks have been proposed that integrate structural trait and social-cognitive processing approaches (Hooker & McAdams, 2003; Mischel, 2004). On the other hand, data from multi-wave longitudinal studies have provided ample evidence in support of significant and meaningful mean-level changes in personality traits across the adult lifespan (Roberts, Walton, & Viechtbauer, 2006). Moreover, the

Correspondence concerning this article should be addressed to Manfred Diehl, Department of Human Development and Family Studies, Colorado State University, 1570 Campus Delivery, Fort Collins, CO, 80523-1570. manfred.diehl@colostate.edu.

introduction of new research designs and methods, such as measurement-burst designs (Sliwinski, 2011) and experience-sampling methods (Mehl & Conner, 2012), have also renewed the longstanding interest in the dynamic and context-relevant aspects of personality, such as the role of personality in the context of coping with stress.

The present study implemented this dynamic and contextualized approach and used a daily diary design to study personality-related risk and resilience factors in cancer patients coping with daily stress. Personality-related risk and resilience factors, such as an incoherent self-concept or beliefs of control, show "personality in action" when an individual is confronted with challenging situations. Furthermore, the present study is also a response to recent calls for studies and methodologies that capture the intraindividual variability in the coping processes of individuals with chronic illnesses (Stanton & Low, 2012). Studies that adopt an intraindividual variability approach may be particularly suited to shed light into the behaviors that result in successful coping with chronic illness and, potentially, into the factors that contribute to developmental growth in the face of adversity (Aldwin & Sutton, 1998; Diehl, 1999). The general assumption underlying the present study was that personality-related risk and resilience factors may become particularly relevant when individuals are challenged by a serious stressor, such as a life-threatening illness like cancer. In particular, we focused on individuals' self-concept incoherence (SCI) as a possible risk factor and on their perceptions of control as a potential resilience factor. We also examined whether individuals' general psychological well-being (PWB) at the beginning of the study served as a resource. Although the present study did not examine the effect of these risk and resilience factors on long-term developmental outcomes, it did focus on personality processes that may influence adjustment and developmental outcomes in the long run (Jahn, Herman, Schuster, Naik, & Moye, 2012).

Self-Concept Incoherence as a Risk Factor

The present study focused on *self-concept incoherence* (SCI) as the personality-related risk factor of choice. SCI was operationalized in terms of self-concept differentiation (SCD), which assesses the extent to which a person's self-representations differ across various social roles and situations (Block, 1961; Donahue, Robins, Roberts, & John, 1993). With regard to terminological clarity, it is important to note that we use the terms *self-concept* and *self-representations* interchangeably to refer to those attributes that are (a) part of a person's self-understanding and self-knowledge, (b) the focus of self-reflection, and (c) consciously acknowledged by the person through language or other means of communication.

We focused on SCI as a mid-level unit that permits an examination of how personality is manifested in specific situational contexts. Given that individuals' self-concept has both stable as well as malleable features (Markus & Wurf, 1987), we viewed it as a suitable concept to understand the role of personality in the context of coping with a life-threatening illness and daily stress. Also, consistent with the notion that a person's self-concept is a cognitive structure with important self-regulatory functions (Higgins, 1996), it has been shown that self-representations come into play when a person is confronted with life stress (Showers, Abramson,& Hogan, 1998). However, self-representations can serve their self-regulatory functions only if they are organized in a coherent and integrated fashion. Indeed a coherent and integrated organization allows a person to use his or her self-concept as a psychological resource to respond to stressful situations in a coordinated and effective way. For example, findings from several studies have shown that compartmentalized self-concept structures tend to be maladaptive, whereas integrated self-concept structures tend to be associated with more adaptive ways of coping and increased resilience (Showers & Zeigler-Hill, 2007).

Findings from cross-sectional studies have provided robust evidence that measures of SCD are indicative of an incoherent and fragmented self-concept. That is, higher levels of SCD are associated with greater anxiety and depression, as well as low self-esteem and PWB (Diehl, Hastings, & Stanton, 2001; Donahue et al., 1993). Given these findings, we refer to the measure of SCD as an index of *self-concept incoherence* (SCI). To date, very few studies have focused on the association between SCI and day-to-day indicators of well-being (Diehl & Hay, 2010). Thus, the present study represents a contextualized approach of SCI and examines whether and to what extent SCI is associated with individuals' intraindividual variability in negative daily mood as well as their reactivity to daily stress. Specifically, we hypothesized that greater SCI makes it more difficult for an individual to respond to daily stressful events in a coordinated and planful fashion, resulting in greater perturbation of the established person-environment fit. We expected that this greater perturbation of the person-environment fit would be observable as increased reactivity to daily stress, as measured in terms of negative daily mood. Thus, we hypothesized that a person with a high SCI score would respond to daily stress events with a more pronounced increase in negative mood compared to a person with a low SCI score (i.e., main effect of SCI). In addition, we expected that SCI would interact with individuals' daily beliefs of control and their overall PWB. Specifically, we expected that the effect of an incoherent self-concept on negative daily mood would be stronger on days when individuals reported low levels of control and for individuals with lower levels of PWB.

Personal Control as a Resilience Factor

Although there is an extensive body of work showing that personal control beliefs play an important role with regard to adjustment and well-being (Bandura, 1997; Lachman & Firth, 2004), research on the effects of control beliefs in the context of daily stress has been fairly limited and is literally non-existent in research with cancer patients. This is especially concerning given that a person's beliefs of control are very likely challenged and threatened as he or she assumes the role of a cancer patient and has to cope with a number of uncertainties (Stanton & Revenson, 2011). Moreover, the role of control beliefs has rarely been studied jointly with existing risk factors such as SCI.

A large body of research has provided evidence that perceptions of personal control are associated with a variety of positive outcomes, such as better physical and mental health, PWB, and lower mortality (Bandura, 1997; Eizenman, Nesselroade, Featherman, & Rowe, 1997). Greater personal control has also been shown to be associated with lower reactivity to stressors in daily life (Neupert, Almeida, & Charles, 2007; Ong, Bergeman, & Bisconti, 2005). For example, Neupert et al. reported findings from the National Study of Daily Experiences showing that lower levels of perceived control were related to greater emotional and physical reactivity to stressors in the interpersonal and work domain and to greater emotional reactivity to network stressors. Ong et al. showed in a daily diary study with bereaved women that the stress-anxiety association was significantly reduced on days of greater perceived control. Taken together, these findings suggest that beliefs of personal control not only matter as a between-person characteristic, but that they also play an important role as a within-person characteristic when individuals cope with daily stress (see also Eizenman et al., 1997).

On the basis of these previous studies and some of our own research (Diehl & Hay, 2010), we hypothesized that perceived daily control would be directly associated with daily negative mood (i.e., main effect of control) and would also moderate the impact of daily stress on daily negative mood, such that reactivity to stress would be increased on days on which participants perceived lower levels of control (i.e., Stress X Control interaction). In addition, we hypothesized that the moderating effect of perceived control on reactivity to stress would differ by level of SCI (i.e., SCI X Stress X Control interaction). Specifically,

we expected that the moderating effect of perceived daily control on the stress-mood association would be significantly stronger for individuals with high SCI compared to individuals with low SCI (Showers & Zeigler-Hill, 2007). We did not have any specific hypotheses in terms of any interactions of daily control with baseline PWB; however, intuitively we expected that high PWB and high levels of perceived personal control should have a positive synergistic effect.

Psychological Well-Being as a Resilience Factor

Because we expected that cancer patients' general PWB at baseline would serve as a psychological resource in coping with daily stress, we assessed PWB as a potential resilience factor. In doing so, we adopted a strength-based rather than a deficit-oriented definition of PWB (Ryff & Singer, 1998). In particular, we adopted a definition and operationalization that goes beyond the notion that health and well-being are simply defined by the absence of illness, but instead incorporates aspects of flourishing and positive experiences, such as personal growth or positive relationships with others (Ryff & Singer). Thus, we included measures that assessed the six key dimensions of PWB as defined by Ryff, including Autonomy, Environmental Mastery, Personal Growth, Positive Relations with Others, Purpose in Life, and Self-Acceptance. The other indicators of PWB included the absence of depressive symptoms and emotional instability, positive affectivity, and self-esteem. Assessing PWB in this way allowed us to (a) establish a robust indicator of individuals' overall psychological health and well-being at the beginning of the diary study and (b) examine its role as a between-person predictor vis-à-vis SCI and perceived control. Overall, we hypothesized that greater PWB at baseline would be associated with lower levels of daily negative mood (i.e., main effect of PWB). In addition, we also expected that PWB would interact with perceived personal control and SCI; yet, because of a lack of previous findings, we did not make any specific predictions.

Method

Participants

The sample consisted of 24 men with prostate cancer and 31 women with breast cancer. Participants were recruited through medical practitioners located in North Central Florida. Specifically, 38 participants (69%) were recruited through a university-affiliated hospital and 19 participants (36%) were recruited through a community-based physician. An additional 3 participants (5%) were recruited through word-of-mouth. Potential participants were identified by their medical professionals and were given announcements containing information about the study and/or were mailed letters of invitation and received follow-up phone calls from project personnel.

We recruited participants who were relatively newly diagnosed and in a time period when they were either actively receiving treatment or deciding on a course of treatment with their doctors. At the same time, however, it was necessary to recognize that most adults need some time to adjust to a cancer diagnosis before they are willing to participate in an intensive study such as this one. Thus, we focused on recruiting participants who had been diagnosed within the preceding 6 to 9 months. A brief phone interview screened whether potential participants had any metastatic disease, significant comorbidities unrelated to cancer (e.g., heart disease), major sensory impairments, concurrent depression, a history of mental illness or substance abuse, or had experienced the death of a loved one within the past 6 months. Such comorbidities and life events precluded participation in the study. The screening interview also included a short version of the mini-mental state exam (MMSE; Folstein, Folstein, & McHugh, 1975). Individuals who exhibited signs of cognitive impairment, as defined by the established cut-off score, were not included in the study. In

total, 60 individuals entered the study. To be included in the final sample, participants had to complete a minimum of 23 interviews and 23 diaries. Fifty-five participants completed sufficient baseline and daily data to be included in the final sample.

The 24 men ranged in age from 44 – 87 years ($M = 67.5$ years, $SD = 10.1$ years), the 31 women ranged in age from 34 – 80 years ($M = 56.7$ years, $SD = 11.1$ years). Eighty-nine percent of the participants identified themselves as Caucasian, 5% as Black, 2% as Hispanic, 2% as Asian, and 2% as "other." All participants spoke English as their primary language. On average, participants reported 15.6 years of education ($SD = 3.9$ years) and 62% had a college degree or higher. The median reported annual income was $60,000–$69,999. The majority of the men were married (92%); 1 was divorced (4%) and 1 was widowed (4%). Of the women 61% were married, 29% were divorced or single, and 10% were widowed.

Thirty-seven percent of the men were employed (full-or part-time) and 62% were retired. Seventy-four percent of the women were employed (full-or part-time), 20% were retired, and 6% were unemployed. On average, participants described themselves as being in good health ($M = 4.8$, $SD = 0.6$; $1 = very\ poor$, $6 = very\ good$) and being satisfied with their lives ($M = 5.2$, $SD = 0.8$; $1 = extremely\ unhappy$; $6 = extremely\ happy$).

Treatment modalities (and combinations thereof) varied for participants with different cancer diagnoses. Among men, 7 had prostatectomies, 13 had radiation treatment, 3 were undergoing hormone therapy, and 3 were not in treatment and engaged in watchful waiting. All 31 women either had undergone lumpectomies or mastectomies ($n = 28$) or were scheduled to have these procedures in the near future ($n = 3$). In addition, 13 of the women were undergoing radiation therapy, 7 were undergoing chemotherapy, and 4 had radiation and chemotherapy. Given the small size of the sample, it is not possible for us to examine how treatment modalities and variations in diagnoses played a role in the daily stress experience. In addition, given the design of the study, the participants' cancer type (i.e., breast or prostate) cannot be disentangled from gender. Nonetheless, it is important to point out that these participants had relatively common profiles of early breast and prostate cancer diagnoses and treatment plans. Furthermore, none of the study participants had metastatic cancer and all had diagnoses with positive expectations for 5-year survival.

Procedure

Participants first attended a 2 to 3 hour individual baseline session at the Adult Development and Aging laboratory at the University of Florida. The day following the baseline session, participants began 30 consecutive daily assessments, consisting of an evening phone interview and a diary. Baseline sessions and daily phone interviews were conducted by trained research assistants. The length of the phone interviews varied from a few minutes, if no stressors were reported, to over 30 minutes, if multiple stressors were described. The average phone interview lasted 9.5 minutes. The daily diaries were self-administered and were designed to take approximately 15–20 minutes to complete. Participants completed diaries each day at approximately the same time (i.e., late afternoon or early evening) and mailed the diaries in pre-paid envelopes the following day.

Phone interview and diary methods were chosen for two reasons. First, we wanted to get detailed and objective descriptions of the daily stressors, using a method that had been developed in the context of a nationally representative survey (Almeida, Wethington, & Kessler, 2002). Second, we decided to collect other relevant information with diaries to give participants the privacy necessary to reveal potentially sensitive and highly personal information (e.g., sexual symptoms related to the diagnosis or treatment).

The 55 participants were in the study for a total of 1,650 days (30 days each). Given that participants occasionally missed days and we used only days with complete data on all measures of interest in our analyses, the presented analyses are based on 1,543 days of data (an average of 28 days of data per person, $SD = 2.2$ days, $Range = 23$–30 days).

Measures

Self-Concept Incoherence (SCI)—Following the approach first introduced by Block (1961), participants rated how characteristic (1 = *extremely uncharacteristic*, 8 = *extremely characteristic*) 40 self-attributes (e.g., selfish, considerate) were of (a) their true self and themselves with their (b) family, (c) spouse or significant other, (d) a close friend, and (e) a colleague. Participants who did not currently have a significant other or colleague were instructed to think of what they were like in those relationships in the past. Each participant's set of ratings were correlated and the resulting 5×5 correlation matrix was subjected to a *within-person* principal components analysis (i.e., the principal components analysis was done for each person separately). The first principal component extracted represents the variance shared by the 5 self-representations and the SCI index was calculated by subtracting that shared variance from 1.00. That is, the SCI index represents the proportion of variance that is *not* shared by the 5 self-representations. Consequently, a person who sees him- or herself very differently *across* the 5 self-representations will have a high SCI score, indicating an incoherent self-concept. In contrast, a person who sees him- or herself very similarly *across* the 5 self-representations will have a low SCI score, indicating a fairly coherent self-concept. The reliability and criterion validity of this index has been established in a number of studies (Diehl et al., 2001; Donahue et al., 1993).

Psychological Well-Being (PWB)—In measuring psychological well-being (PWB) we followed Keyes' (2002) approach which represents PWB as a continuum, with flourishing mental health at one end and languishing mental health at the other. Keyes' conceptualization is very similar to other positive definitions of PWB (Jahoda, 1958; Ryff x00026; Singer, 1998), yet he extends these definitions by explicating the combination of emotional, psychological, and social variables that contribute to PWB. Because we wanted to limit the response burden for the participants, we did not replicate Keyes' measurement approach exactly. Thus, our index of PWB included Ryff's PWB scales, an index of depressive symptoms, and dispositional indicators of well-being (e.g., neuroticism, extraversion, and self-esteem).

Ryff's Short Psychological Well-Being Scales: The Short Psychological Well-Being (SPWB) scales (Ryff, 1989) were used to assess six dimensions of PWB. The six dimensions were derived from the literatures on lifespan development, clinical psychology and mental health and include Autonomy, Environmental Mastery, Personal Growth, Positive Relations with Others, Purpose in Life, and Self-Acceptance. Each dimension was measured with a 14-item scale of positively and negatively phrased items that alternated in their order across dimensions. Participants responded to each item on a 6-point scale (1 = *strongly disagree*, 6 = *strongly agree*). The SPWB has good internal consistency (all α's .80) and test-retest reliability. In this study, Cronbach's α ranged from .81 for the Autonomy scale to .93 for the Self-Acceptance scale.

Depressive symptoms: The frequency of depressive symptoms was assessed using the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). Participants indicated on a scale of 0 (rarely or none of the time) to 3 (most or all of the time) how often, in the past week, they experienced a variety of depressive symptoms (e.g., felt sad or blue). Respondents' answers were summed into a total score (range 0–60), with higher scores indicating greater frequency of depressive symptoms. The CES-D has been specifically

recommended for use with community-based samples and its psychometric properties are well established (Radloff). The internal reliability in this study was .85.

Extraversion and neuroticism: Participants' levels of extraversion and neuroticism were assessed using the 12-item scales from the NEO-Five Factor Inventory (NEO-FFI; Costa & McCrae, 1992). Besides being sociable, extraversion refers to personal attributes such as being upbeat, cheerful, and optimistic. The items on the neuroticism scale assess a person's tendency to experience fear, anxiety, worry, sadness, embarrassment, etc. For both personality traits, participants respond to each item on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Higher scores indicate higher extraversion and neuroticism. The NEO-FFI has high internal consistency, test-retest reliability, and convergent and discriminant validity (Costa & McCrae). The reliability of the extraversion and the neuroticism scales, as assessed by Cronbach's α, were .80 and .88 respectively.

Self-esteem: Participants completed the Rosenberg Self-Esteem Scale (Rosenberg, 1989), a 10-item questionnaire measuring an individual's degree of positive self-regard. Participants rated items on a 4-point scale (1 = *strongly disagree*, 4 = *strongly agree*); higher scores indicate higher self-esteem. The reliability and validity of this scale has been extensively documented. The coefficient of internal consistency in the present study was .83.

Daily Stress

During daily phone interviews, participants completed the Daily Inventory of Stressful Events (DISE; Almeida et al., 2002). The DISE is a semi-structured interview that was developed on a nationally representative sample of adults ranging in age from 25 to 74 years. The original DISE consists of 7 stem questions assessing the occurrence of stressors, including having or avoiding arguments, as well as stressors that occur in various domains of life (e.g., at work/school/volunteering, in personal health). For the purposes of this study, the DISE was modified from its original format in two ways. First, we did not ask participants about daily stressors involving discrimination. The other 6 original questions were unchanged. In addition, we included 2 questions assessing whether participants had experienced any health stressors. Specifically, one question inquired about stressors related to having breast or prostate cancer and the second asked participants if they experienced any other health-related stressors that day. For each type of stressor, participants were asked if they had experienced that type of stressor "in the past 24 hours" or "since their previous interview." Consistent with other studies that have assessed daily stressors (e.g., Neupert et al., 2007), we used the DISE data and created a dichotomous variable to indicate whether a day was a stress day (1) or a non-stress day (0).[1]

Daily Perceptions of Personal Control

Participants' perceptions of personal control were assessed each day in the daily diaries using the locus of control (LOC) subscale from Eizenman et al.'s (1997) perceived control scale. Items were modified to assess participants' perceptions of personal control for the past 24 hours (e.g., "In the past 24 hours, I have felt I am being pushed around in my life"— reverse coded). Participants indicated how much they agreed with 4 items on a 6-point scale (1 = *disagree strongly*; 6 = *agree strongly*). Higher scores indicate that participants' perceived greater control. We estimated the internal consistency coefficient on the 5th day of

---

[1]We would like to point out that other studies have used the number of stressors (e.g., Diehl & Hay, 2010) or stress severity as the daily stress measure (e.g., Sliwinski, Almeida, Smyth, & Stawski, 2009). We examined whether our findings would change if we applied these alternative operationalizations of daily stress. This examination revealed that because adults (a) typically reported no stressors or only 1 stressor per day and (b) tended to rate the majority of the stressors as relatively low in terms of their severity, the dichotomous variable captured individuals' daily stress experiences equally well.

assessment and every 10 days thereafter (see Eizenman et al.). The resulting coefficients for the 5th, 15th, and 25th day of assessment were .64, .64, and .68, respectively.

Daily Mood

Each day, as part of their daily diary, participants completed the Short Form of the Profile of Mood States (POMS-SF; Curran, Andrykowski, & Studts, 1995). The POMS-SF is a 37-item version of the original POMS (McNair, Lorr, & Droppleman, 1981) that assesses 6 mood states: Fatigue-inertia, tension-anxiety, depression-dejection, anger-hostility, confusion-bewilderment, and vigor-activity. Participants indicated on a 5-point scale (0 = *not at all*, 4 = *extremely*) how much they felt a particular way (e.g., energetic, confused) during the past 24 hours. Items are summed to create 6 subscale scores and a total mood score is created by summing the 5 negative states and subtracting the vigor-activity subscale score. The POMS-SF has well established psychometric properties, including high reliability, and is frequently used in cancer research (Baker, Denniston, Zabora, Polland, & Dudley, 2002; Curran et al, 1995). Daily total scores can range from 0 to 124, with higher scores being indicative of mood states that are, on the balance, more negative in nature. We estimated the internal consistency coefficient of the total score, with items tapping vigor-activity reverse scored, on the 5th, 15th, and 25th day of measurement. The resulting Cronbach's α's were .94, .89, and .93, respectively.

Preliminary Analyses and Data Manipulation

First we created a baseline measure of overall PWB. Using principal axis factor analyses, we examined the factor structure of the 10 measures of PWB at baseline (i.e., all 6 SPWB scales, CES-D, neuroticism, extraversion, and self-esteem). A 2-factor solution emerged with 9 of the 10 subscale scores loading on the first factor. This factor accounted for 56% of the variance. The 10th subscale score, Personal Growth from the SPWB, was the only variable that loaded highly on the second factor, which accounted for 11.7% of the variance. Given that a single variable is not considered sufficient for reliably defining a factor (Gorsuch, 1983) and given that Personal Growth also had a relatively high loading on the first factor, we opted for a one-factor solution. Thus, using all 10 scale scores, we calculated an index of baseline PWB by reversing the 2 negatively valenced variables (i.e., CES-D and neuroticism) and summing the 10 scale scores using the method of unit weighting.

Next, we focused on preparing our variables for the multilevel analyses to examine the associations between participants' daily negative mood and within-person variables (e.g., daily stress; daily perceptions of control) and between-person variables (e.g., SCI; PWB). Prior to estimating any models, we centered the continuous independent variables on either the person's own mean (i.e., perceptions of control) or the sample mean (i.e. SCI and PWB). Centering each participant's continuous daily scores on his or her individual mean ensures that the within-person scores reflect primarily within-person variance, whereas deviating between-person continuous variables around the sample mean allows the resulting parameters to indicate the average intercept and the average association between the independent and dependent variables (Singer & Willett, 2003). In terms of daily stress, the estimated parameters indicate the change in daily mood on a day characterized by stress compared to a day with no stress.

Statistical Analyses

All hypotheses were tested using multilevel modeling (MLM; Raudenbush & Bryk, 2002). Multilevel models allowed us to simultaneously model the effect of within- and between-person variables on daily mood. We modeled associations between daily mood and the *within-person* predictors (i.e., daily stress and daily control) at level 1. The within-person model was:

$$\text{Mood}_{ij}=\beta_{0j}+\beta_{1j}\,\text{Stress}_{ij}+\beta_{2j}\,\text{Control}_{ij}+\beta_{3j}\,(\text{Stress}_{ij}\ \text{X}\ \text{Control}_{ij})+\text{e}_{ij} \quad (1)$$

In Equation 1, β_{0j} is a person's daily mood on a day when he or she experiences no stress and reports an average level of perceived control; β_{1j} is the association between daily stress and daily mood for person j and indicates his or her reactivity to stress. Analogously, β_{2j} is the association between control and daily mood for person j and indicates his or her sensitivity to control. Finally, β_{3j} is the interaction of stress and control for person j; this effect indicates whether the person's perceptions of control buffer his or her reactivity to stress. The random residual component or error in the equation is represented by e_{ij}.

The level 2 equations model the associations between daily mood and the *between-person* predictors (i.e., SCI and PWB) as well as the role of the between-person variables as moderators of the level-1 associations (e.g., testing whether SCI moderates the association between stress and daily mood). Given that testing some of the hypothesized moderation effects required 3-way interactions, all possible 2-way interactions were included. Together the within- and between-person equations simultaneously tested the complete model (Raudenbush & Bryk, 2002) in the following way:

$$
\begin{aligned}
\text{Mood}_{ij}=\ &\gamma_{00}+\gamma_{10}\,\text{Stress}_{ij}\\
&+\gamma_{20}\,\text{Control}_{ij}\\
&+\gamma_{30}\,(\,\text{Stress}_{ij}\ \text{X}\ \text{Control}_{ij})\\
&+\gamma_{01}\text{SCI}+\gamma_{02}\text{PWB}+\gamma_{03}\,(\text{SCI X PWB})\\
&+\gamma_{11}\,(\text{SCI X Stress}_{ij})\\
&+\gamma_{12}\,(\text{PWB X Stress}_{ij})\\
&+\gamma_{21}\,(\text{SCI X Control}_{ij})\\
&+\gamma_{22}\,(\text{PWB X Control}_{ij})\\
&+\gamma_{13}\,(\text{PWB X SCI X Stress}_{ij})\\
&+\gamma_{31}\,(\text{SCI X Stress}_{ij}\ \text{X Control}_{ij})\\
&+\gamma_{32}\,(\text{PWB X Stress}_{ij}\ \text{X Control}_{ij})+\mu_{0j}+\text{e}_{ij}
\end{aligned}
\quad (2)
$$

Specifically, the term γ_{00} represents the grand mean for daily mood. Focusing on the terms that tested our hypothesized effects, γ_{10} is a test of the average effect of daily stress on mood (i.e., whether, on average, daily stress influences daily mood) and γ_{20} is a test of the average effect of daily control on mood (i.e., whether, on average, daily control influences daily mood). γ_{30} tested whether adults' daily perceptions of control moderated the association between daily stress and daily mood. Regarding the main effects of SCI and PWB, γ_{01} and γ_{02} tested whether adults' SCI scores and PWB, respectively, were associated with their average mood. γ_{11} and γ_{12} tested the interaction of SCI and PWB, respectively, with daily stress. That is, these effects tested whether SCI and PWB moderated adults' reactivity to stress. Finally, the parameters γ_{13}, γ_{31}, and γ_{32} tested our hypotheses regarding the interactions of SCI, PWB, control, and stress reactivity. Specifically, γ_{13} tested whether PWB moderated the effect of SCI on reactivity to stress, γ_{31} tested whether SCI moderated the stress buffering effect of daily perceptions of control, and γ_{32} tested whether PWB moderated the stress buffering effect of daily perceptions of control. The parameters γ_{03}, γ_{21} and γ_{22} did not test any hypothesized effects but needed to be included in the model because of the inclusion of the hypothesized higher-order effects. Finally, μ_{0j} represents the unexplained variance in participants' random intercepts.[2]

We began with models that decomposed the variance into within- and between-person variance. Then we tested our hypotheses regarding the fixed effects. It is important to note that the estimation of effect sizes in multilevel modeling is not straightforward and different methods of approximating effect sizes have been proposed (cf. Singer & Willett, 2003). Here we adopt the model building and pseudo-R^2 approach described by Singer and Willet. This approach allowed us to estimate the percentage of variance that was explained by the independent variables. The estimation of such pseudo-R^2 values requires that each variable be added to the model in a step-by-step process of increasing model complexity. Given space constraints, we do not provide all the details of that process here. Rather, we present (a) the results of our final model, (b) the proportion of variance in daily negative mood that was explained when significant predictors of negative mood were added to the model, and (c) the 95% confidence interval of the estimates. The Proc Mixed procedure in SAS was used to estimate the models (SAS Institute, 2000).

Results

Descriptive Statistics

Table 1 presents descriptive statistics of the between-person (i.e., SCI and baseline PWB) and the within-person variables (i.e., mean proportion of stress days, mean daily control and mean daily negative mood). Included in Table 1 is also information regarding the types of stressors reported by men and women. Although we did not analyze our data by stressor type, we included this information because few studies have examined the types of daily stressors experienced by men and women who were recently diagnosed with cancer. As Table 1 shows, there were some significant gender differences. The women in the sample had slightly higher SCI scores, and reported a greater proportion of stress days than men. The greater proportion of stress days reported by women reflected a higher proportion of days with arguments, work/school/volunteer stress, home stress, and stress related to cancer. Indeed, the majority of daily stressors reported were not related to the diagnosis of or treatment for cancer.

Baseline PWB, Self-Concept Incoherence, and Daily Control in Daily Mood and Reactivity to Stress

Unconditional models revealed that 63% of the variance in daily mood was between-person ($\tau_{00} = 131.9$, $z = 5.11$, $p < .001$) and 37% was within-person ($\sigma^2 = 95.0$, $z = 27.2$, $p < .001$). Thus, there was sufficient variability at both the between- and within-person levels to justify multilevel analyses.

Next, we tested our hypotheses regarding the role of SCI, baseline PWB, daily stress, and daily control on daily mood. All effects were examined in one model (Table 2). Focusing first on the role of between-person predictors and negative daily mood, it can be seen that the effect of PWB (γ_{02}) was significant and indicated that individuals who reported better PWB at baseline reported lower negative daily mood. Baseline PWB accounted for 18.7% of the between-person variation in negative daily mood. There was no significant main effect of SCI on daily mood.

Turning to the association between within-person predictors and daily mood, consistent with our expectations, individuals reported more negative daily mood (i.e., higher POMS total) on stress days (γ_{10}) and on days they experienced less control than they typically did (γ_{20}).

---

[2]Given the small sample size and because our primary objective was to examine the hypothesized associations for the sample as a whole, we did not include participants' random slopes in the model, but rather focused on the fixed effects (see Singer & Willet, 2003).

Including the fixed effects of daily stress and daily control accounted for 7.1% and 13.3%, respectively, of the within-person variation in participants' negative daily mood.

There were also a number of significant two-way interactions. Notably, there was a significant SCI X Daily Control interaction (γ_{21}) and a significant Daily Control X Daily Stress interaction (γ_{30}). To decompose and illustrate these interactions, we followed methods outlined by Aiken and West (1991) and Preacher, Curran, and Bauer (2006). Specifically, we estimated the association between daily control and daily mood among individuals with SCI scores 1 SD above and below the mean. Figure 1a depicts this interaction. The pattern revealed that the association between daily control and negative daily mood was significantly stronger among adults with low SCI ($b = -1.70$, $p < .05$) compared to adults with high SCI ($b = -0.47$, *ns*). Thus, adults with a more coherent self-concept (i.e., low SCI) benefitted more from feeling in control in terms of experiencing a greater decrease in daily negative mood compared to adults with a more incoherent self-concept (i.e., high SCI). The inclusion of this interaction accounted for 1% of the within-person variation in adults' daily negative mood.

With respect to the Daily Control X Daily Stress interaction (γ_{30}), Figure 1b depicts how the association between daily stress and daily negative mood was moderated by daily control. As hypothesized, on days characterized by low perceived control (i.e., 1 SD below the mean level of control), stress was associated with a higher daily negative mood score ($b = 8.90$, $p < .05$), whereas on days with high perceived control (i.e., 1 SD above the mean level of control), stress was not associated with elevated negative mood ($b = 1.50$, *ns*). The inclusion of this interaction accounted for 2.5% of the within-person variation in adults' daily negative mood.

Both these 2-way interactions, however, were modified by significant 3-way interactions. Specifically, both the SCI X Stress X Control and the PWB X Stress X Control interactions were significant (γ_{31} and γ_{32}). Regarding the role of SCI as a moderator of the association between daily control and daily stress and their effect on mood, this interaction accounted for 1.5% of the variation in within-person negative mood. We decomposed this interaction for adults 1 SD above and 1 SD below the mean SCI on stress and non-stress days on which they experienced low and high control (1 SD above and 1 SD below mean control). This interaction is depicted in Figure 2a. As Figure 2a shows, the follow-up analysis revealed that among adults with a coherent self-concept (i.e., low SCI), daily stress was associated with a similar increase in daily negative mood on both low- and high-control days ($b = 5.22$ and $b = 4.20$, respectively; both $p's < .05$). Among adults with an incoherent self-concept (i.e., high SCI), however, daily stress was associated with an increase in negative mood on low-control days ($b = 12.69$, $p < .05$), but was not associated with a rise in negative mood on high-control days ($b = -1.28$, *ns*).

Regarding the role of baseline PWB as a moderator of the association between daily control and daily stress and their effect on mood, this interaction accounted for 1% of the variation in within-person negative mood. Again, we decomposed this interaction for adults' 1 SD above and 1 SD below the mean baseline PWB score on stress and non-stress days on which individuals experienced low and high control (1 SD above and 1 SD below mean control). This interaction is depicted in Figure 2b. As Figure 2b shows, among adults with low PWB at baseline, daily stress was associated with a rise in negative daily mood on both low- and high-control days ($b = 6.75$ and $b = 3.81$, respectively; both $p's < .05$), with the association being somewhat more pronounced on low-control days. Among adults with high PWB at baseline, stress was only associated with an increase in negative daily mood on low-control days ($b = 11.16$, $p < .05$), but not on days of high control ($b = -0.89$, *ns*).

Discussion

The overall objective of this study was to examine the role of personality-related risk and resilience factors in coping with daily stress in a sample of adult cancer patients. We believe that using a diary design to study the effects of daily stressors on the variability in negative mood in individuals diagnosed with cancer can shed light on the role of personality-related risk and resilience factors in the short- and long-term adjustment to chronic illness (Stanton & Revenson, 2011), and potentially into pathways that lead to developmental growth in the face of adversity (Aldwin & Sutton, 1998; Diehl, 1999). This approach is also consistent with theoretical models in personality research emphasizing the distinction between personality structures and processes (Hooker & McAdams, 2003; Mischel, 2004). Moreover, focusing on individuals who cope with a chronic illness, including the diagnosis with and treatment of cancer, takes into account that this scenario has become a normative "developmental task" for many adults (American Cancer Society, 2012). For example, the most recent cancer statistics indicate that about 77% of all cancers are diagnosed in individuals age 55 and older (American Cancer Society). Thus, knowledge on how personal and social resources may impede or facilitate the adjustment to chronic illness is very much needed and may provide insights into the long-term developmental outcomes of cancer survivors (Stanton & Revenson, 2011).

We applied multilevel modeling analyses to examine the within- and between-person associations of the risk and resilience factors with stress reactivity in terms of daily negative mood. These analyses showed in terms of the between-person variables that better general PWB at baseline was associated with lower negative daily mood, whereas the main effect of SCI was not statistically significant. Thus, a more incoherent self-concept *per se* was not associated with higher negative mood in this sample of cancer patients. This latter finding was contrary to our expectations for two reasons. First, our previous work with fairly healthy adults had shown a significant main effect of SCI and, second, the mean levels of SCI in the two samples were almost identical (Diehl & Hay, 2010). Thus, the non-significant finding in the cancer sample could potentially be a function of limited statistical power, because the sample of healthy individuals was considerably larger.

However, the hypotheses that SCI would show significant interactions with the within-person variables were mostly supported by our findings. Specifically, the data revealed a significant SCI X Daily Control interaction and a significant SCI X Daily Stress X Daily Control interaction. Regarding the SCI X Daily Control interaction, the data suggested that adults with a more coherent self-concept benefited more from feeling in control in terms of experiencing a greater decrease in negative daily mood compared to adults with a more incoherent self-concept. This finding suggests that individuals with a more incoherent self-concept do not derive the same benefits from psychological resources (e.g., beliefs of control) as individuals with coherent self-concepts do. This finding also suggests that this inability of individuals with an incoherent self-concept to benefit from psychological resources may put them at greater risk for maladaptive outcomes, and possibly the development of stress-related disorders, in the long run.

The significant two-way interaction, however, may not tell the entire story because the significant SCI X Daily Stress X Daily Control interaction suggests that additional considerations need to be taken into account. In particular, when the day-to-day stress experience of adults was taken into account, adults with a coherent self-concept (i.e., low SCI scores) showed a similar increase in negative daily mood in response to daily stressors irrespective of their level of daily control beliefs. In contrast, in adults with an incoherent self-concept (i.e., high SCI scores) daily stress was associated with an increase in negative mood on low-control days but not on high-control days (see Figure 2a). This finding

suggests that when individuals with an incoherent self-concept experience stressors and can activate their control beliefs, such perceptions of control can provide a buffer against the negative effects of stress. This pattern is consistent with the view that having an incoherent self-concept is a risk factor associated with a variety of detrimental outcomes (e.g., Showers et al., 1998; Showers & Zeigler-Hill, 2007) and our view that adults with an incoherent self-concept may experience a greater perturbation of the person-environment in response to daily stress. This finding, however, suggests that the role of SCI may be most apparent when it is considered in context with other risk and resilience factors. Indeed, this finding suggests that for adults with incoherent self-concepts, stressors experienced in the context of low control are particularly detrimental. Although this finding will require further validation, it suggests that interventions that focus on increasing the control beliefs of individuals with an incoherent self-concept may hold promise.

Consistent with many other studies, our data showed that individuals reported more negative daily mood on stress days and on days on which they felt less in control than usual (e.g., Neupert et al., 2007). Indeed, a solid body of research suggests that long-term physiological and health-related consequences of daily stress are influenced by adults' emotional responses to daily stressors (Seeman & Gruenewald, 2006). Our findings, however, also showed that the associations of daily stress and beliefs of control with negative daily mood were moderated by the risk factor of SCI, as described above, and by the resilience factor of general PWB at baseline. Specifically, among individuals with low PWB at baseline, daily stress was associated with an increase in negative daily mood on both low- and high-control days. In contrast, among individuals with high PWB at baseline, daily stress was only associated with a rise in negative daily mood on low-control days, but not on high-control days. Thus, individuals' level of overall PWB played a moderating role regarding their emotional responses to daily stressors and how they activated psychological resources as they coped with daily stress. Although our measure of PWB was a summary score of different dimensions of PWB, we speculate that aspects such as positive relationships with others, knowing one's purpose in life, and having a sense of environmental mastery may be particularly instrumental for individuals who cope with cancer (Stanton, Bower, & Low, 2006).

To our knowledge, this is only the second study that has examined the effect of daily stressors on cancer patients' daily mood and well-being. Constanzo, Stawski, Ryff, Coe, and Almeida (2012) reported similar findings based on 111 cancer survivors who participated in the National Study of Daily Experiences (NSDE). Notably, these authors concluded that "daily stressors can have a significant impact on survivors' mood and physical symptoms and therefore may be an important intervention target" (p. 360). The findings from this study support this conclusion and also point to possible areas for intervention.

Limitations

Several limitations need to be acknowledged. First, the sample size of the present study was fairly small and, hence, some of the analyses may have lacked the statistical power to reveal significant effects if they exist in the general population of breast and prostate cancer patients. Replication of the current study on a larger and representative sample of breast and prostate cancer patients is definitely desirable.

Second, the study's findings also need to be interpreted with caution, because of a potential self-selection bias. While the data collection was ongoing, the Privacy Rule of the Federal Health Insurance Portability and Accountability Act (HIPAA) was implemented (effective compliance date April 14, 2003) and introduced a number of hurdles to participant recruitment. Overall, the implementation of the Privacy Rule very likely resulted in a higher non-response rate from individuals in poorer health, with higher levels of daily stress, and

with poorer coping resources. Indeed, as noted earlier, the majority of our participants described themselves as being in good overall health and as satisfied with their lives. This likely reflects a degree of self-selection into the study whereby adults who were not faring as well may have been more reluctant to participate in our time-intensive protocol. It should be pointed out, however, that this selection effect very likely makes our effort a *conservative* test of the hypotheses. That is, we might expect to see stronger associations among the variables of interest among adults whose living conditions may be less favorable. Overall, it is important to keep this potential self-selection bias in mind when interpreting the findings of the current study.

Third, it should also be acknowledged that the findings of the present study cannot be generalized to racially diverse groups of cancer patients. Despite concerted efforts to recruit more African-American and Hispanic men and women into our study, these minority groups were not well represented.

Fourth, although we had a robust measure of SCI as a mid-level unit of personality (Markus & Wurf, 1987), because of the time-consuming procedure involved in deriving this measure, we were not able to assess SCI on a daily basis. This is a disadvantage because the lack of a daily measure of SCI limits our insights into the potentially more dynamic nature of SCI and its role in the context of coping with daily stress.

Overall Conclusion

We believe that the present study contributes to the literature on personality-related risk and resilience factors in coping with stress by showing how specific risk and resilience factors interact with daily stress and preexisting conditions, such as a person's general psychological well-being, to affect individuals' emotional well-being. We also believe that studies such as this one are needed to shed more light at the associations between different structures and processes of personality and short- and long-term correlates and outcomes in adult development and aging.

Acknowledgments

References

Aiken, LS.; West, SG. Multiple regression: Testing and interpreting interactions. Newbury Park, CA: Sage; 1991.

Aldwin, CM.; Sutton, KJ. A developmental perspective on posttraumatic growth. In: Tedeschi, RG.; Park, CL.; Calhoun, LG., editors. Posttraumatic growth: Positive changes in the aftermath of crisis. Mahwah, NJ: Erlbaum; 1998. p. 43-63.

Almeida DM, Wethington E, Kessler RC. The Daily Inventory of Stressful Experiences (DISE): An interview-based approach for measuring daily stressors. Assessment. 2002; 9:41–55. [PubMed: 11911234]

American Cancer Society. Cancer facts and figures 2012. Atlanta, GA: Author; 2012.

Baker F, Denniston M, Zabora J, Polland A, Dudley WN. A POMS short form for cancer patients: Psychometric and structural evaluation. Psycho-Oncology. 2002; 11:273–281. [PubMed: 12203741]

Bandura, A. Self-efficacy: The exercise of control. New York, NY: Freeman; 1997.

Block J. Ego-identity, role variability, and adjustment. Journal of Consulting and Clinical Psychology. 1961; 25:392–397.

Curran SL, Andrykowski MA, Studts JL. Short form of the Profile of Mood States (POMS-SF): Psychometric information. Psychological Assessment. 1995; 7:80–83.

Costa, PT., Jr; McCrae, RR. NEO PI-R: Revised NEO Personality Inventory and NEO Five-Factor Inventory (NEO-FFI). Odessa, FL: Psychological Assessment Resources; 1992.

Costanzo ES, Stawski RS, Ryff CD, Coe CL, Almeida DM. Cancer survivors' responses to daily stressors: Implications for quality of life. Health Psychology. 2012; 31:360–370. [PubMed: 22268712]

Diehl, M. Self-development in adulthood and aging: The role of critical life events. In: Ryff, CD.; Marshall, VW., editors. The self and society in aging processes. New York, NY: Springer Publishing; 1999. p. 150-183.

Diehl M, Hastings CT, Stanton JM. Self-concept differentiation across the adult life span. Psychology and Aging. 2001; 16:643–654. [PubMed: 11766918]

Diehl M, Hay EL. Risk and resilience factors in coping with daily stress in adulthood: The role ofage-self-concept incoherence, and personal control. Developmental Psychology. 2010; 46:1132–1146. [PubMed: 20822228]

Donahue EM, Robins RW, Roberts BW, John OP. The divided self: Concurrent and longitudinal effects of psychological adjustment and social roles on self-concept differentiation. Journal of Personality and Social Psychology. 1993; 64:834–846. [PubMed: 8505712]

Eizenman DR, Nesselroade JR, Featherman DL, Rowe JW. Intraindividual variability in perceived control in an older sample: The MacArthur Successful Aging Studies. Psychology and Aging. 1997; 12:489–502. [PubMed: 9308096]

Fleeson W. Toward a structure- and process-integrated view of personality: Traits as density distribution of states. Journal of Personality and Social Psychology. 2001; 80:1011–1027. [PubMed: 11414368]

Folstein MF, Folstein SE, McHugh PR. Mini-mental state: A practical method of grading the cognitive state of patients for the clinician. Journal of Psychiatric Research. 1975; 12:189–198. [PubMed: 1202204]

Fredrickson BL, Losada MF. Positive affect and the complex dynamics of human flourishing. American Psychologist. 2005; 60:678–686. [PubMed: 16221001]

Gorsuch, RL. Factor analysis. 2nd ed.. Hillsdale, NJ: Erlbaum; 1983.

Higgins ET. The "self digest": Self-knowledge serving self-regulatory functions. Journal of Personality and Social Psychology. 1996; 71:1062–1083. [PubMed: 8979379]

Hooker K, McAdams DP. Personality reconsidered: A new agenda for aging research. The Journals of Gerontology, Series B: Psychological Sciences. 2003; 58B:P296–P304.

Jahn AL, Herman L, Schuster J, Naik A, Moye J. Distress and resilience after cancer in veterans. Research in Human Development. 2012; 9:229–247.

Jahoda, M. Current concepts of positive mental health. New York, NY: Basic Books; 1958.

Keyes CLM. The mental health continuum: From languishing to flourishing in life. Journal of Health and Social Behavior. 2002; 43:207–222. [PubMed: 12096700]

Lachman, ME.; Firth, KMP. The adaptive value of feeling in control during midlife. In: Brim, OG.; Ryff, CD.; Kessler, RC., editors. How healthy are we? A national study of well-being at midlife. Chicago, IL: University of Chicago Press; 2004. p. 320-349.

Markus HR, Wurf E. The dynamic self-concept: A social psychological perspective. Annual Review of Psychology. 1987; 38:299–337.

McCrae, RR.; Costa, PT, Jr. Personality in adulthood: A five-factor theory perspective. 2nd ed.. New York, NY: Guilford; 2003.

McNair, DM.; Lorr, M.; Droppleman, LF. Manual for the Profile of Mood States. San Diego, CA: Educational and Industrial Testing Services; 1981.

Mehl, MR.; Conner, TS., editors. Handbook of research methods for studying daily lives. New York, NY: Guilford; 2012.

Mischel W. Toward an integrative science of the person. Annual Review of Psychology. 2004; 55:1–22.

Neupert SD, Almeida DM, Charles ST. Age differences in reactivity to daily stressors: The role of personal control. The Journals of Gerontology, Series B: Psychological Sciences. 2007; 62B:P216–P225.

Ong AD, Bergeman CS, Bisconti TL. Unique effects of daily perceived control on anxiety symptomatology during conjugal bereavement. Personality and Individual Differences. 2005; 38:1057–1067.

Preacher KJ, Curran PJ, Bauer DJ. Computational tools for probing interaction effects in multiple linear regression, multilevel modeling, and latent curve analysis. Journal of Educational and Behavioral Statistics. 2006; 31:437–448.

Radloff LS. The CES-D scale: A self-report depression scale for research in the general population. Applied Psychological Measurement. 1977; 1:385–401.

Raudenbush, SW.; Bryk, AS. Hierarchical linear models: Applications and data analysis methods. 2nd ed.. Thousand Oaks, CA: Sage; 2002.

Roberts BW, Walton KE, Viechtbauer W. Patterns of mean-level change in personality traits across the life course: A meta-analysis of longitudinal studies. Psychological Bulletin. 2006; 132:1–25. [PubMed: 16435954]

Rosenberg, M. Society and the adolescent self-mage. Revised edition. Middletown, CT: Wesleyan University Press; 1989.

Ryff CD. Happiness is everything, or is it? Explorations on the meaning of psychological well-being. Journal of Personality and Social Psychology. 1989; 57:1069–1081.

Ryff CD, Singer B. The contours of positive human health. Psychological Inquiry. 1998; 9:1–28.

SAS Institute. SAS Version 9.1 [Computer Software]. Cary, NC: SAS Institute Inc.; 2000.

Seeman, TE.; Gruenewald, TL. Allostasis and allostatic load over the life course. In: van Lange, PAM., editor. Medical and psychiatric comorbidity over the life course. Washington, DC: American Psychiatric Association; 2006. p. 179-196.

Showers CJ, Abramson LY, Hogan ME. The dynamic self: How the content and structure of the self-concept change with mood. Journal of Personality and Social Psychology. 1998; 75:478–493. [PubMed: 9731320]

Showers CJ, Zeigler-Hill V. Compartmentalization and integration: The evaluative organization of contextualized selves. Journal of Personality. 2007; 75:1181–1204. [PubMed: 17995462]

Singer, JD.; Willett, JG. Applied longitudinal data analysis: Modeling change and event occurrence. New York: Oxford University Press; 2003.

Sliwinski, MJ. Approaches to modeling intraindividual and intraindividual facets of change for developmental research. In: Fingerman, KL.; Berg, CA.; Smith, J.; Antonucci, TC., editors. Handbook of life-span development. New York, NY: Springer Publishing; 2011. p. 1-25.

Sliwinski MJ, Almeida DM, Smyth J, Stawski RS. Intraindividual change and variability in daily stress processes: Findings from two measurement-burst diary studies. Psychology and Aging. 2009; 24:828–840. [PubMed: 20025399]

Stanton, AL.; Bower, JE.; Low, CA. Posttraumatic growth after cancer. In: Calhoun, LG.; Tedeschi, RG., editors. Handbook of posttraumatic growth. Mahwah, NJ: Erlbaum; 2006. p. 138-175.

Stanton AL, Low CA. Dispositional and stressor-related emotion regulation in the context of a chronic, life-limiting stressor. Journal of Personality. 2012; 80:287–311. [PubMed: 21446946]

Stanton, AL.; Revenson, TA. Adjustment to chronic disease: Progress and promise in research. In: Friedman, HS., editor. Oxford handbook of health psychology. New York, NY: Oxford University Press; 2011. p. 241-268.

Zakowski SG, Harris C, Krueger N, Laubmeier KK, Garrett S, Flanigan R, Johnson P. Social barriers to emotional expression and their relations to distress in male and female cancer patients. British Journal of Health Psychology. 2003; 8:271–286. [PubMed: 14606973]

a. The influence of daily control and SCI on negative daily mood.
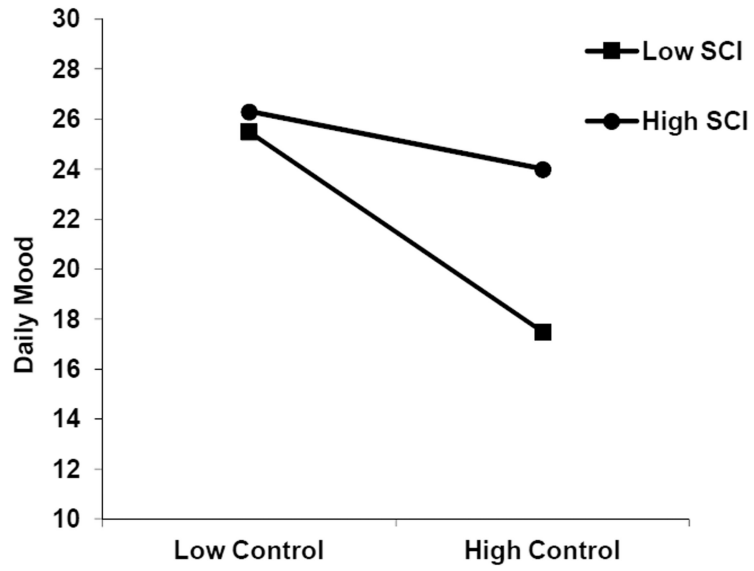
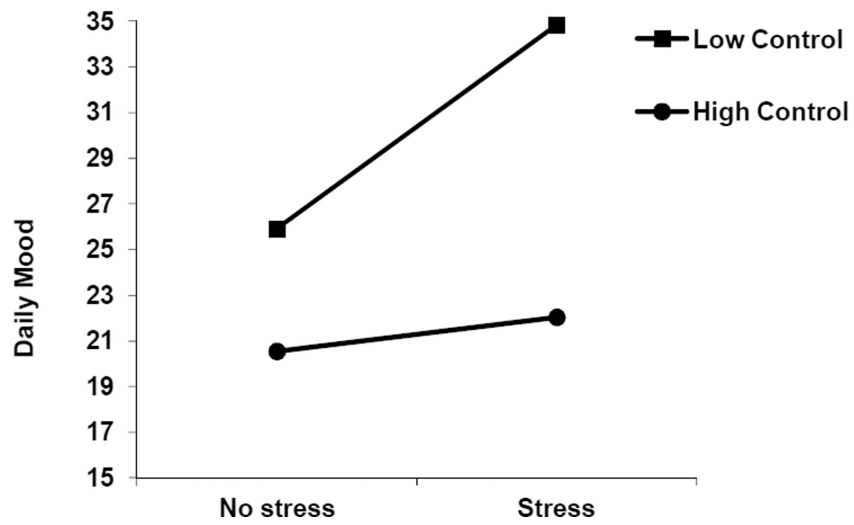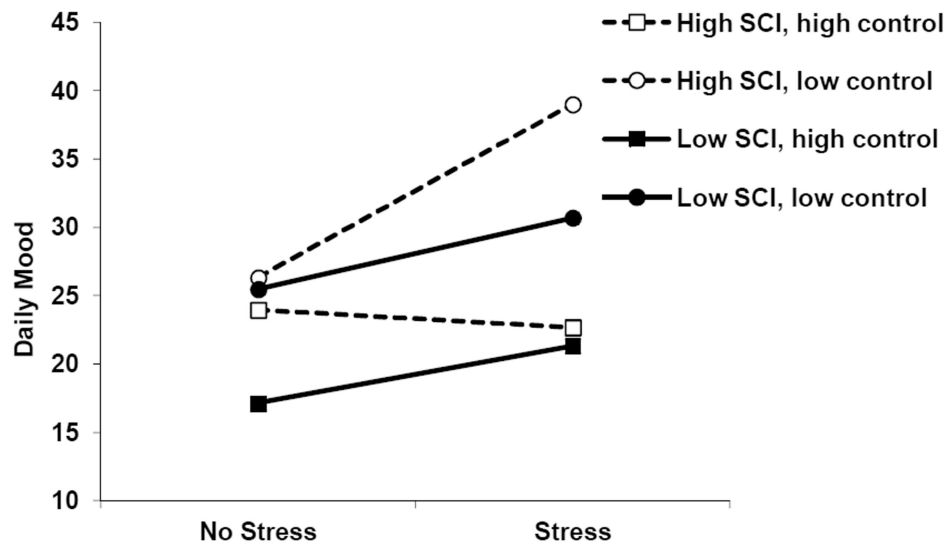*b.* The influence of daily control and stress on negative daily mood.

Figure 1.

a. The influence of daily control and SCI on reactivity to daily stressors.

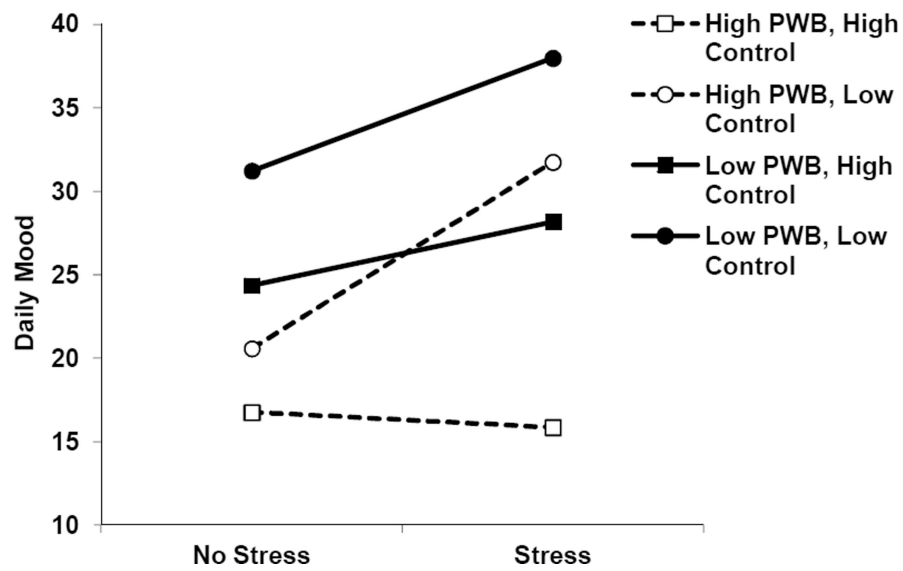*b.* The influence of daily control and baseline PWB on reactivity to daily stressors

Figure 2.

Table 1

Descriptive Statistics and Percentage of Days with Different Stressor Types by Gender

	Women ($n = 31$)	Men ($n = 24$)	t	Cohen's d
Mean				
Self-concept incoherence (SCI)	0.19 (0.10)	0.12 (.07)	−2.30*	−0.64
Psychological well-being (PWB)	−0.23 (7.3)	0.11 (8.2)	0.17	
Mean proportion stress days[1]	0.53 (0.2)	0.32 (.23)	−3.47***	−0.95
Mean daily control[1]	18.2 (2.4)	18.2 (2.8)	−0.04	
Mean daily negative affect[1]	27.1 (12.8)	24.4 (13.2)	−0.71	
Type of Stressor				
Argument/disagreement	.07 (.08)	.02 (.08)	−2.73***	.77
Avoided argument/disagreement	.09 (.08)	.05 (.07)	−1.82	
Work/school/volunteer stress	.08 (.10)	.03 (.04)	−2.35*	.67
Home stress	.11 (.08)	.05 (.00)	−2.44*	.66
Cancer-related stress	.17 (.15)	.09 (.07)	−2.15*	.59
Health stress (non-cancer)	.08 (.09)	.06 (.07)	−0.74	
Network stress	.07 (.09)	.04 (.06)	−1.11	
Other stress	.07 (.06)	.04 (.05)	−1.51	

Note. Standard deviations are in parentheses.

[1]Mean values reflect averages across within-person study days.

Table 2

Unstandardized Estimates, Standard Errors, and the 95% Confidence Intervals of Within- and Between-Person Differences in Negative Daily Mood

Variable	Parameter	Unstandardized Estimates	95% Confidence Interval
Estimates Examining Average Level of Mood			
Intercept	γ_{00}	23.23 (1.61)***	(19.9, 26.4)
SCI	γ_{01}	17.42(14.5)	(−11.8, 46.5)
PWB	γ_{02}	−0.60 (0.21)**	(−1.0, −0.2)
SCI X PWB	γ_{03}	−0.96 (2.21)	(−5.4, 3.5)
Estimates Examining Reactivity to Stress			
Stress_{ij}	γ_{10}	5.21 (0.58)***	(4.1, 6.4)
SCI X Stress_{ij}	γ_{11}	4.49 (6.42)	(−8.1, 17.1)
PWB X Stress_{ij}	γ_{12}	−0.01 (0.07)	(−0.2, 0.13)
SCI X PWB X Stress_{ij}	γ_{13}	−0.13 (0.88)	(−1.9, 1.6)
Estimates Examining the Within-person Influence of Control			
Control_{ij}	γ_{20}	−1.07 (0.23)***	(−1.5, −0.6)
SCI X Control_{ij}	γ_{21}	5.43 (1.95)**	(−1.6, 9.3)
PWB X Control_{ij}	γ_{22}	0.04 (0.03)	(0.0, 0.1)
SCI X PWB X Control_{ij}	γ_{23}	−0.11 (0.21)	(−0.5, 0.3)
Estimates Examining the Buffering Role of Control on Stress			
Stress_{ij} X Control_{ij}	γ_{30}	−1.50 (0.28)***	(−2.0, −0.9)
SCI X Stress_{ij} X Control_{ij}	γ_{31}	−11.77 (3.12)***	(−17.9, −5.6)
PWB X Stress_{ij} X Control_{ij}	γ_{32}	−0.12 (0.04)**	(−0.2, 0.0)

Note. Within-person effects of stress and control are indicated with the subscript *ij*.

*
$p < .05$,

**
$p < .01$,

***
$p < .001$.