

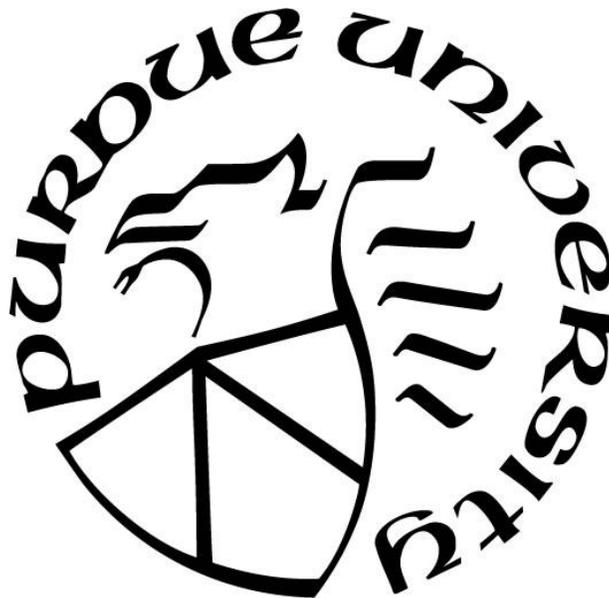
**DEVELOPMENT AND PRELIMINARY VALIDATION OF A SELF-  
COMPASSION MEASURE**

by  
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## ABSTRACT

Research and clinical interest in self-compassion has grown due to its positive links with a variety of physical and psychological health outcomes. This burgeoning interest calls for measures of self-compassion that are theoretically supported and empirically validated. The purpose of this project was to (1) develop a new self-compassion measure, the Self-compassion Inventory (SCI), and (2) test its psychometric properties. To obtain feedback on potential SCI items, a cognitive interviewing study was completed with cancer patients ( $n = 10$ ). Qualitative findings suggested that, in most cases, items were easily understood and participants' reasoning for their responses aligned with the intention of each item. After altering certain items based on participant feedback, the scale was then tested with a group of adults with breast, gastrointestinal, lung, and prostate cancer ( $n = 404$ ). Confirmatory factor analyses suggested a unidimensional structure and internal consistency reliability was excellent. Construct validity of the measure was established through correlations with other psychological variables hypothesized to be related to self-compassion. Evidence of the incremental validity of the SCI relative to the Self-Compassion Scale Short-Form (SCS-SF) also was obtained. For example, the SCI showed smaller correlations with negative psychological variables (e.g., depressive symptoms, anxiety) than the SCS-SF. In supplemental analyses, a 5-item version of the measure, the Brief Self-compassion Inventory (BSCI) was tested and found to have a unidimensional structure, excellent internal consistency, and evidence of validity. Furthermore, measurement invariance testing of the BSCI indicated that the measure could be used across populations of varying genders, cancer types, and stages of illness. Through robust testing, the SCI and BSCI were determined to be psychometrically sound and can be used in both clinical and research settings.

## INTRODUCTION

In recent years, the construct of self-compassion and its potential utility for enhancing well-being have been garnering attention among clinicians and researchers. Self-compassion has been defined as the capacity to acknowledge and approach one's own challenges and shortcomings with care, to recognize the universality of one's suffering, and to be open to difficult experiences without getting caught up in them (K. Neff, 2003a). Rooted in Buddhist philosophy, self-compassion was first operationally defined in the psychological literature as an interplay among three facets, each of which has a positive and a negative dimension (K. Neff, 2003a, 2003b). The first facet is *self-kindness*, which involves being gentle and compassionate towards oneself, versus *self-judgment*, which refers to reacting harshly to inner experiences and being self-critical. The second facet is *common humanity*, a shared understanding of human suffering, versus *isolation*, the feeling that one is alone in one's imperfection or suffering. Lastly, the third facet, *mindfulness*, refers to being aware of the present moment experience of suffering while holding such experience in balance. Conversely, *overidentification* involves getting caught up in difficult thoughts and feelings. In the original definition of self-compassion, the facets are described as interacting in a synergistic system. The Self-Compassion Scale (SCS) reflects this conceptualization. SCS items measuring both compassionate and uncompassionate behavior can be combined to comprise six separate dimensions, with three overarching facets and one overall self-compassion construct (K. Neff, 2003a, 2003b).

Self-compassion has been linked to increased psychological well-being and reduced psychopathology (MacBeth & Gumley, 2012; Zessin et al., 2015). Recent meta-analyses have found positive associations between self-compassion and cognitive, psychological, and affective well-being as well as negative associations with psychopathology (e.g., anxiety and depressive symptoms) in both clinical and non-clinical populations (MacBeth & Gumley, 2012; Zessin et al., 2015). Higher levels of self-compassion have also been linked to increased happiness, optimism, and positive affect (K. D. Neff & Vonk, 2009). In addition, self-compassion has been associated with greater engagement in various health behaviors (e.g., exercise, healthy eating habits, stress management) through reduced negative affect (Sirois, Kitner, et al., 2015). Specifically, research suggests that self-compassion might help mitigate negative emotions towards challenges and

setbacks (e.g., shame), and this improved emotional well-being might lead to healthy lifestyle changes (Terry & Leary, 2011). Across medical populations, greater self-compassion was linked to higher levels of medical adherence (Sirois & Hirsch, 2019). Self-compassion's effects on health-promoting behaviors have also been linked to reduced physical symptoms (Dunne et al., 2018). Furthermore, in a meta-analysis of 26 community and clinical samples, self-compassion was positively associated with self-reported physical health (Sirois, 2020), a construct correlated with objective health outcomes (Benyamini, 2011).

Evidence of self-compassion's health benefits has motivated the development of new clinical interventions rooted in self-compassion. The earliest compassion-based intervention in the psychological literature, compassion-focused therapy (CFT), was developed for individuals experiencing difficulties with shame and self-criticism (Gilbert, 2009, 2014). CFT focuses on improving emotion regulation by promoting compassion motivation and compassionate behaviors in response to self-criticism (Gilbert, 2009, 2014). A systematic review found that CFT showed promise for individuals with mood disorders (Leaviss & Uttley, 2015). Other compassion-based interventions include loving-kindness and compassion meditations, which integrate meditative techniques to treat psychopathology such as depression, anxiety, and negative symptoms associated with schizophrenia (Johnson et al., 2009; Van Gordon et al., 2013). Authors of a systematic review noted that loving-kindness and compassion meditations led to improvement in various psychopathology-relevant domains (e.g., distress), but also underscored the need for improved operational definitions of these interventions (Shonin et al., 2015). Another recent compassion-based intervention is Neff and Germer's (2013) mindful self-compassion (MSC) program, a group-based intervention designed for healthy individuals and certain clinical populations. It incorporates loving-kindness and compassionate meditations, with a focus on developing compassion through identifying one's inner critic and compassionate self. Preliminary studies of the full and brief versions of the MSC program found that it led to increases in self-compassion, mindfulness, and well-being (Albertson et al., 2015; K. D. Neff & Germer, 2013; Smeets et al., 2014). Recently, a variety of interventions have been tested that are grounded in self-compassion theory. A meta-analysis of 27 randomized controlled trials (RCTs) testing self-compassion-focused interventions demonstrated their efficacy for a number of psychological outcomes, including moderate improvements in anxiety, depression, stress, mindfulness, self-criticism, and self-compassion (Ferrari et al., 2019). However, the heterogeneity of the

interventions did not allow for subtype comparisons, and the researchers only included RCTs that explicitly introduced self-compassion using a three-component framework (i.e., self-kindness, mindfulness, and connection).

### **Relationships Between Self-compassion and Other Psychological Processes**

Self-compassion is theoretically linked to a number of psychological processes targeted in interventions. The first process is mindfulness, which refers to the capacity to approach present-moment experiences with openness and a nonjudgmental stance (Kabat-Zinn, 1990). Across studies, mindfulness has been defined as a facet of self-compassion or as a separate but interrelated construct (Birnie et al., 2010; Keng et al., 2012). Another related process is psychological inflexibility, which refers to patterns of behavior driven by internal reactions (e.g., unwanted thoughts and feelings) rather than personal values (Hayes et al., 1996). These behavior patterns are thought to be at the core of most human suffering (Hayes et al., 2013). Another process negatively associated with self-compassion is cognitive fusion, which refers to the tendency for behavior to be overly controlled by thoughts, which are not necessarily consistent with objective reality (Gillanders et al., 2014). Finally, self-compassion is conceptually related to values-based living, or behaving in a manner that matches stated values (Hayes et al., 2013). For example, people with higher levels of self-compassion may prioritize personally meaningful activities, such as self-care behaviors or time with family and friends.

Other psychological processes that are theoretically related to self-compassion include rumination, avoidant coping (denial of realities), and active coping. Rumination refers to the tendency to repetitively think about various aspects of situations that are upsetting, which does not lead to active problem solving (Nolen-Hoeksema et al., 2008; Trapnell & Campbell, 1999). Avoidant coping includes mental and behavioral disengagement from the stressor and denying the reality of the stressor (Carver, 1997). Self-compassion has been linked to more active coping approaches in college students experiencing failure and challenges (K. Neff et al., 2005) and chronic illness populations (Sirois, Molnar, et al., 2015). For example, self-compassion may promote greater acceptance of one's illness, which refers to a sense of peace in confronting potential losses associated with the illness (Mack et al., 2008). As self-compassion has a number

of hypothesized relationships to important intervention targets, more research on this construct is warranted.

### **Quality of Life Issues and Self-compassion in Cancer Patients**

In survey studies, increased self-compassion has been associated with better psychological adjustment to chronic illnesses, including cancer, HIV, inflammatory bowel disease, arthritis, and chronic pain (Brion et al., 2014; Costa & Pinto-Gouveia, 2013; Pinto-Gouveia et al., 2014; Sirois, Molnar, et al., 2015). Self-compassion may promote better emotion regulation in response to difficult thoughts and emotions surrounding the illness, which may lead to more adaptive reactions to the illness.

One of the most prevalent and serious illnesses is cancer, where clinical goals include not only cure or slowing disease progression, but also managing disabling symptoms. Commonly experienced symptoms among patients of all disease stages include fatigue, sleep disturbance, and pain (Cleeland et al., 2013). For some patients, these symptoms persist well beyond the end of their treatment (National Comprehensive Cancer Network, 2016). A recent report on cancer patients across the diagnosis and treatment trajectory found that one third rated at least three symptoms as moderate-to-severe in intensity (Cleeland et al., 2013). Symptoms often interfere with cancer patients' daily activities and social roles and can ultimately lead to a decline in their quality of life (Kokkonen et al., 2017).

Along with symptom burden, many cancer patients experience psychosocial challenges, including uncertainty about the disease course and its treatment, economic and social losses, and existential concerns surrounding mortality. About a quarter of cancer patients report clinically elevated anxiety and depressive symptoms following diagnosis (Boyes et al., 2011; Henselmans et al., 2010; Krebber et al., 2014), and nearly half of all patients routinely screened at cancer centers in the U.S. report clinically significant psychosocial distress (Carlson et al., 2019). Among patients with advanced cancer, depressive symptoms predicted the number and severity of physical symptoms, independent of cancer type, functional status, chemotherapy status, and survival time (Fitzgerald et al., 2015). Elevated anxiety and depressive symptoms in advanced cancer patients have also been associated with longer hospitalizations (Nipp et al., 2017). Furthermore, depressive

symptoms have predicted all-cause mortality risk in advanced cancer patients, even when relevant clinical factors were controlled in analyses (Satin et al., 2009).

In cancer populations, greater self-compassion has been related to lower levels of stress, anxiety, depressive symptoms, and body image concerns (Brown et al., 2020; Pinto-Gouveia et al., 2014; Todorov et al., 2019). A longitudinal study also found that the positive facets of self-compassion at the time of cancer diagnosis predicted anxiety, depression, and fatigue at treatment completion (Zhu et al., 2019). Although interest in self-compassion has grown exponentially over the last decade, few published intervention trials have specifically focused on fostering self-compassion in cancer patients. In one trial, breast cancer survivors who completed a self-compassion writing intervention for body image difficulties reported higher self-compassion and less negative affect compared to those assigned to a neutral writing control group (Przedziecki & Sherman, 2016). In another trial, breast cancer survivors who completed a cognitively-based compassion training (CBCT) program had significantly reduced depression, avoidance of intrusive thoughts, functional impairment associated with fear of cancer recurrence, and fatigue as well as increased mindfulness and vitality compared to those in the waitlist control group (Dodds et al., 2015). Another trial is currently underway to test this intervention against a cancer education control condition (Pace et al., 2019). Recently, a mindful self-compassion (MSC) program has been tested for feasibility and acceptability with two cancer populations (Brooker et al., 2020; Campo et al., 2017). Following completion of group-based MSC, adults with cancer reported improved self-compassion, mindfulness, and body image satisfaction, as well as decreased depressive symptoms, fear of cancer recurrence, stress, and loneliness relative to their baseline levels (Brooker et al., 2020). In another trial, young adult cancer survivors who participated in group-based MSC over videoconferencing had improved self-compassion, mindfulness, body image, and posttraumatic growth, along with reduced anxiety, depression, and social isolation compared to their baseline levels (Campo et al., 2017). Although compassion-focused interventions have shown evidence of feasibility and acceptability, more research is warranted to determine their efficacy.

Additionally, several mindfulness-based interventions have been found to promote self-compassion in cancer patients, although it was a secondary outcome. In a study of breast cancer patients undergoing biopsy or surgery, those who completed a loving-kindness meditation intervention during the peri-surgical period had improved mindfulness and self-compassion and

reduced anxiety, pain, emotional suppression, social isolation, and heart rate levels over time compared to those in the standard care condition (Wren et al., 2019). In a randomized trial with younger breast cancer survivors, the mindfulness-based intervention group reported increases in self-kindness post-intervention relative to wait-list controls, and self-kindness was found to mediate the effects of the intervention on depressive symptoms (Boyle et al., 2017). Two dyadic mindfulness interventions involving both cancer patients and caregivers were also found to increase self-compassion in patients over time (Hill, 2012; Schellekens et al., 2017). However, a mindful movement/dance program for metastatic breast cancer patients did not lead to changes in any facet of self-compassion (Crane-Okada et al., 2012). Given the limited but promising findings on mindfulness-based interventions to improve self-compassion in cancer patients, more research is warranted to test these approaches.

### **Measurement of Self-compassion**

Most of the research conducted on self-compassion has used the SCS or the Self-Compassion Scale-Short Form (SCS-SF) (K. Neff, 2003b; Raes et al., 2011). In the original measurement validation study, the SCS was found to have six factors--two components for each of the three proposed facets of self-compassion in the theoretical model (K. Neff, 2003b). These factors were hypothesized to either act independently or to interact within higher-order models: (a) a second-order model in which both the negative and positive components of each facet are combined, or (b) a third-order model that further combines all of the second-order factors. Since the original study, many other possible structures have been proposed and tested in different cohorts, with differing conclusions about the fit of these structures with the data (Cleare et al., 2018; Lopez et al., 2015; Montero-Marín et al., 2016; K. D. Neff et al., 2019; Williams et al., 2014). A major question that has repeatedly been raised is whether all six factors should be aggregated into a single score to represent self-compassion, or whether the negative and positive components should be separately aggregated to comprise self-compassion and self-criticism, respectively. Despite repeated testing of the SCS, researchers have not reached a consensus on this issue.

Other critiques of the SCS and SCS-SF have been raised. In our studies, cancer patients have frequently reported confusion regarding the wording of SCS items. In addition, researchers

have reported concerns about the construct validity of the SCS, as several items do not reflect the definition of the mindfulness facet of self-compassion described in Neff's own theoretical model (Muris & Petrocchi, 2017). For example, Muris and Petrocchi (2017) suggested that the mindfulness items reflect a sense of "balanced" awareness, as opposed to present-moment awareness and acceptance in Neff's original conceptualization and those of other researchers. Furthermore, associations of self-compassion with psychopathology may be artificially inflated due to measurement issues (Muris & Petrocchi, 2017); specifically, half of the SCS items assess the antithesis of Neff's self-compassion facets (self-judgment, isolation, over-identification)—measuring what self-compassion is *not*—rather than measuring the three facets themselves (self-kindness, common humanity, mindfulness).

Several alternative self-compassion measures have been developed, but evidence for their use is limited (Strauss et al., 2016). First, the Relational Compassion Scale (RCS; Hacker, 2008), grounded in a relational framework, assesses four domains: (1) compassion for others, (2) self-compassion, (3) beliefs about people's general tendency to be compassionate towards each other, and (4) beliefs about people's tendency to be compassionate towards them. The self-compassion subscale showed adequate internal consistency and was positively correlated with the SCS ( $r = 0.65$ ), but further research is needed to establish its validity and reliability. Additionally, the Sussex-Oxford Compassion Scales (SOCS; Gu, Baer, Cavanagh, Kuyken, & Strauss, 2020) includes scales assessing compassion (Sussex-Oxford Compassion for Others Scale [SOCS-O]) and self-compassion (Sussex-Oxford Compassion for the Self Scale [SOCS-S]). Each scale contains five subscales in alignment with the following five-factor conceptualization: (1) recognizing suffering, (2) understanding the universality of suffering, (3) feeling for the person suffering, (4) tolerating uncomfortable feelings, and (5) motivation to alleviate suffering (Gu et al., 2017). The SOCS showed preliminary evidence of reliability and validity (Gu et al., 2020), and positive SCS items were found to have larger associations with facets of the SOCS-S than negative SCS items (Muris & Otgaar, 2020). Finally, the Body Compassion Scale measures compassion for the physical self specifically, rather than the general self (Altman et al., 2020). Expanding on Neff's original conceptualization of self-compassion, this scale comprises the three dimensions of defusion, common humanity, and acceptance and demonstrated good internal consistency and preliminary evidence of validity. More research is needed to test the psychometric properties of these measures.

## Present Study

To address the limitations of the existing self-compassion measures, the first aim of the present study is to develop a new measure of self-compassion, the Self-compassion Inventory (SCI). Development of the item pool was completed by first reviewing theories of compassion and self-compassion (Gilbert, 2009, 2014; Gilbert et al., 2011; K. Neff, 2003b, 2003a) and previous self-compassion measures (K. Neff, 2003b; Raes et al., 2011). Following this literature review, we identified items that appeared to fit our operational definitions of self-compassion and each facet and edited them to enhance readability for those with lower literacy levels and clarity. Other items were generated through discussions between four research team members (Chinh, Johns, Mosher, and Stutz). This resulted in a new measure that contains only items designed to measure the three positive facets of self-compassion (i.e., common humanity, self-kindness, and mindful acceptance). Thus, the measure is not confounded with distress.

Although the SCI's facets resemble those of the original SCS, the operational definitions of these facets differ. First, items comprising the mindfulness facet of the original SCS reflect a notion of balance and control (e.g., "When something painful happens, I try to take a balanced view of the situation"), which contrasts with Neff's original conceptualization of mindfulness, as well as the typical definition of mindfulness in the psychological literature (Muris & Petrocchi, 2017). To address this conceptual issue, the mindfulness facet of our new measure (i.e., mindful acceptance), assesses the capacity to approach experiences with openness and curiosity, without getting caught up in judgment or unnecessary attempts to change or control them. This conceptualization reflects the broader psychological literature on mindfulness (Kabat-Zinn, 1990, 1994; Lindsay & Creswell, 2017).

Second, Neff (2003a) defined common humanity as perceiving one's experiences as part of the larger human experience rather than seeing them as isolating and unique. After reviewing the work of Paul Gilbert (2014), we expanded Neff's definition of common humanity to incorporate the construct of courage. To date, there is no consensus on the operational definition of courage in the psychological literature. Some psychologists define courage as a process that promotes continual action despite fear, or the behavior of acting meaningfully despite an acknowledged vulnerability (Jordan, 1990; Rachman, 2002). Gilbert (2015) suggests that courage in the context of compassion can be conceptualized in a number of ways, such as putting the self in harm's way in order to help another, feeling a sense of moral courage to promote social justice,

or facing painful experiences rather than avoiding them. In the context of compassion-focused group therapy, Veale, Gilbert, and colleagues (2015) discuss the necessity of promoting courage in group members to access the full benefits of therapy. We conceptualized courage as closely linked to common humanity. Specifically, the capacity to perceive one's experiences as part of the larger human experience generates courage or the ability to move towards challenges rather than turning away.

Third, Neff (2003a) defines self-kindness as an attitude of understanding and patience towards oneself, especially when faced with challenges. We expanded Neff's definition to incorporate the concept of self-forgiveness, defined as the willingness to recognize that one deserves kindness despite past mistakes. Additionally, self-forgiveness may involve acknowledging and processing feelings of guilt and shame. The concept of self-forgiveness has long been intertwined with compassion in the psychological literature (e.g., "a willingness to abandon self-resentment in the face of one's own acknowledged objective wrong, while fostering compassion, generosity, and love toward oneself") (Enright, 1996, p. 116).

Potential items for the SCI were submitted to three doctoral level experts in self-compassion and mindfulness for their review (Appendix A). The items were then revised based on their feedback. Revisions included edits to enhance the clarity of the language and its consistency with theory. Once the item pool was generated, the items were presented to cancer patients through cognitive interviews during which they provided feedback on the items. Cognitive interviewing is designed to identify otherwise unobservable problems with item comprehension and other cognitive processes that can be addressed through question rewording, reordering, or more extensive instrument revision. Items were then edited based on their qualitative feedback. The new self-compassion measure has a clear frame of reference (past 2 weeks) with scale anchors and instructions mirroring existing measures that have been developed and validated by the NIH-funded Patient-Reported Outcome Measurement Information System (PROMIS) team (Cella et al., 2010).

The second aim of the present study is to evaluate the psychometric properties of the SCI in a diverse sample of cancer patients with solid malignancies (i.e., breast, gastrointestinal, lung, and prostate cancer). Based on our proposed theory of self-compassion, the factor structure will be tested to determine the dimensionality of the measure, and if indicated, items will be assessed for internal consistency within a specified factor. I will also examine whether relationships

between the SCI and other psychological variables are consistent with theory. The specific aims are as follows:

*Qualitative Aim 1: To develop the Self-compassion Inventory (SCI), a new measure of self-compassion, and obtain feedback on the items from cancer patients.*

*Quantitative Aim 2: To evaluate the psychometric properties of the SCI in a diverse sample of cancer patients with solid malignancies (i.e., breast, gastrointestinal, lung, and prostate cancer).*

Goal 2.1: To conduct confirmatory factor analyses to test several different factor structures, including: (1) a single-factor model indicating an overall self-compassion factor, (2) a correlated three-factor model (self-kindness, common humanity, and mindful acceptance), (3) a hierarchical model with the three factors indicating an overall self-compassion factor, and (4) a bifactor model simultaneously modeling one general self-compassion factor and three factors (see Figures 1-4). Given that the SCI was grounded in Neff's original conceptual model, I tested factor structures based on this model, excluding components related to self-criticism (K. Neff, 2003a). These include model 2 (modification to Neff's proposal of three second-order factors) and model 3 (modification to Neff's proposal of one third-order factor). Model 1 was selected as a possible factor structure for the SCI based on empirical testing of the SCS (Williams et al., 2014). Model 4 was selected as a possible factor structure based on empirical testing of the SCS (K. D. Neff, 2016) and the possibility of orthogonal, uncorrelated components.

Goal 2.2: To examine the internal consistency of the SCI.

Goal 2.3: To examine whether the following theoretical relationships are found to support the construct validity of the SCI:

- a. SCI will be positively associated with mindfulness (i.e., acting with awareness, nonjudging, and nonreactivity), quality of life, peaceful acceptance of cancer, active coping, and progress in values-based living.
- b. SCI will be negatively associated with depressive symptoms, anxiety, rumination, denial, struggle with illness, psychological inflexibility, cognitive fusion, and obstruction in values-based living.
- c. The SCI will be moderately associated with the existing Self-compassion Scale-Short Form (SCS-SF; Raes, Pommier, Neff, & Van Gucht, 2011).
- d. Compared to the existing SCS-SF measure, the SCI will have smaller associations with measures of depressive symptoms, anxiety, rumination, denial, struggle with

illness, psychological inflexibility, cognitive fusion, and obstruction in values-based living.

- e. Compared to the negative items (i.e., the items assessing uncompassionate responding) in the existing SCS-SF measure, the SCI will have smaller associations with measures of psychological symptoms (i.e., anxiety and depressive symptoms).

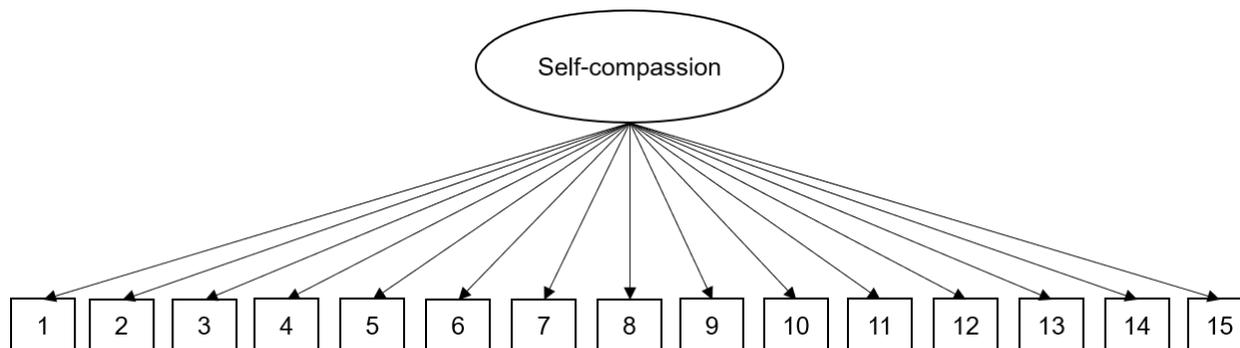


Figure 1. A single-factor model indicating an overall self-compassion factor.

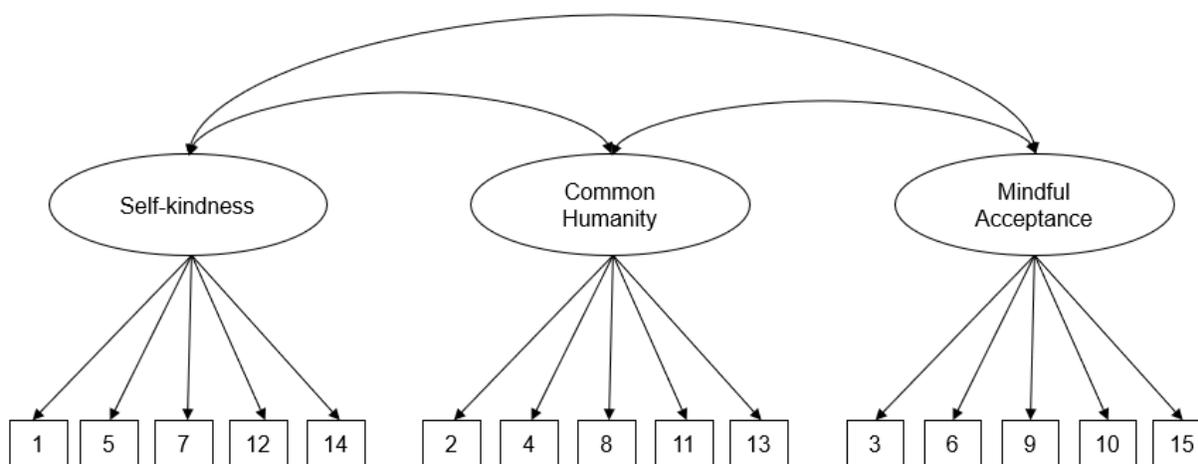


Figure 2. A correlated three-factor model (self-kindness, common humanity, and mindful acceptance).

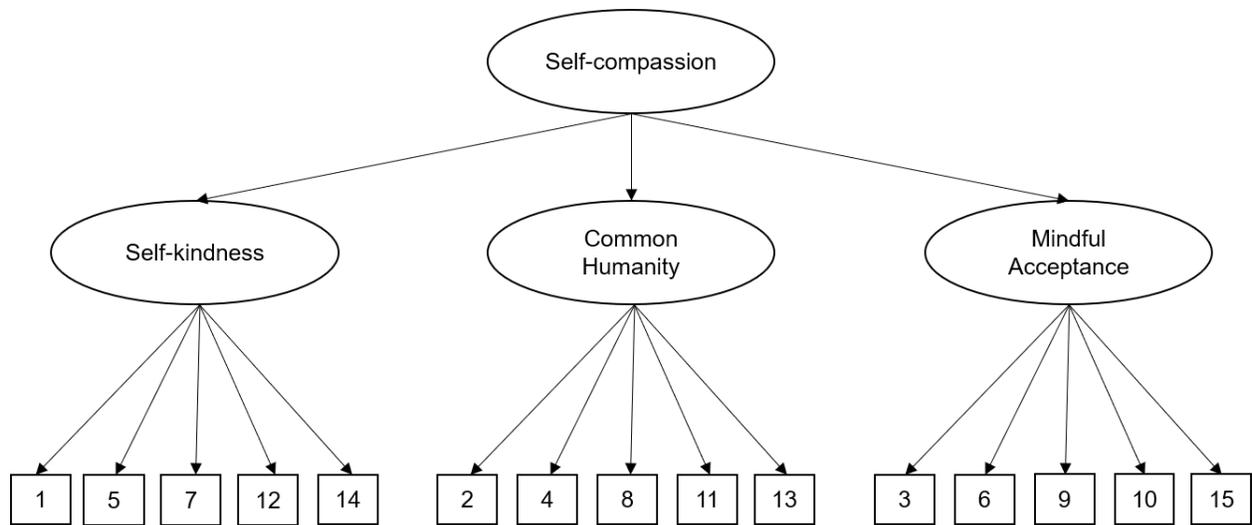


Figure 3. A hierarchical model with the three factors indicating an overall self-compassion factor.

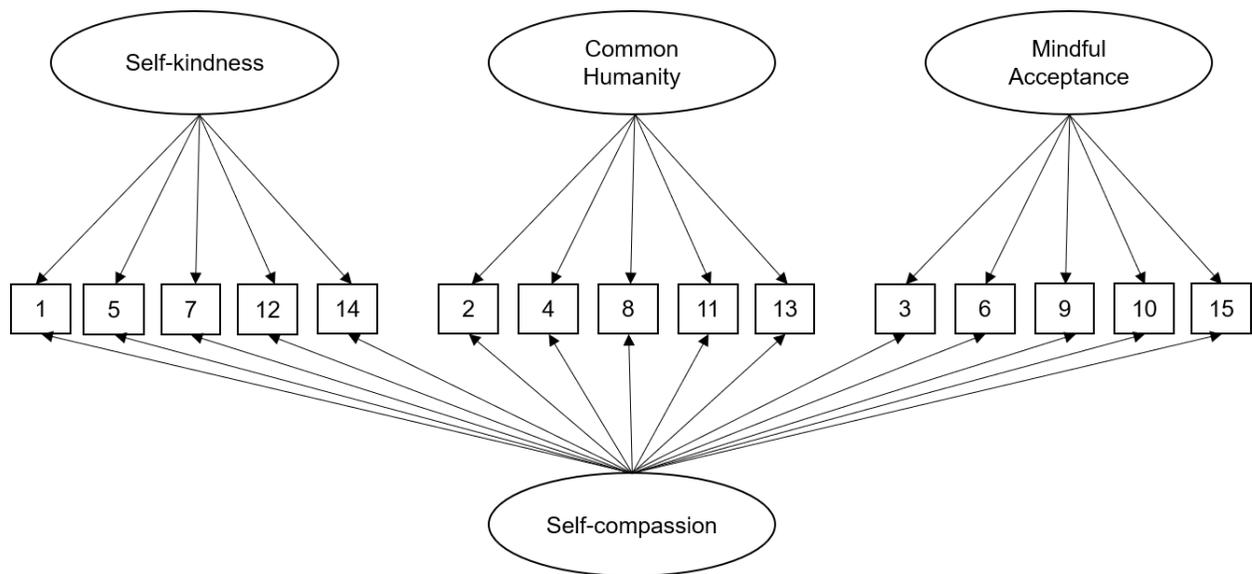


Figure 4. A bifactor model with one general self-compassion factor and three factors at the same level.

## QUALITATIVE STUDY (STAGE 1) METHODS

### Participants

**Overview of sample.** This project had two stages. During stage 1, I collected qualitative feedback from 10 cancer patients on the new self-compassion measure. Five participants were advanced cancer patients receiving anti-cancer therapy or supportive care, and five were cancer survivors who were at least six months post-treatment. The 10 patients were recruited from the clinics of two collaborating oncologists who specialized in hematologic and gastrointestinal cancers, respectively. The number of interviews was consistent with recommendations for cognitive interviews provided by the NIH PROMIS researchers (DeWalt et al., 2007). To ensure gender and age diversity, I used purposive sampling to enroll approximately equal numbers of men and women as well as individuals <65 years and  $\geq 65$  years of age.

**Patient eligibility.** Patients were identified as eligible following medical chart screening and review by collaborating oncologists. Eligible patients were: (1) at least 3 weeks post-diagnosis of a hematological or gastrointestinal cancer; (2) receiving care at Indiana University Simon Cancer Center (IUSCC); (3) 18 years of age or older; (4) fluent in English; (5) not exhibiting significant psychiatric or cognitive impairment as indicated by a score  $\geq 4$  on a 6-item cognitive screener (Callahan et al., 2002); and (6) not enrolled in hospice care. I chose to sample patients with hematological and gastrointestinal cancers, as these cancers affect both men and women and have heterogeneous trajectories and treatments.

### Procedure

**Screening.** Procedures were approved by the Indiana University institutional review board, and a waiver of HIPAA authorization was granted for reviewing medical records for recruitment purposes. Charts of patients who had upcoming appointments with collaborating oncologists were screened and the following information was reviewed to determine eligibility: (1) age; (2) cancer diagnosis; (3) date of diagnosis; and (4) treatment status (see Appendix B).

**Recruitment and data collection.** Following identification of potentially eligible patients, I contacted the collaborating oncologist to obtain approval for recruitment. Following oncologist

approval, a research assistant approached the patient before or after their oncology appointment at IUSCC. The research assistant met with the patient in a private clinic room to complete the informed consent process. Steps of this process included describing the study, reviewing the informed consent and HIPAA authorization forms, ensuring all questions were answered, and obtaining written consent. If the patient was interested in the study but unable to consent or participate that day, the research assistant collected their contact information to arrange a more convenient meeting time. If the patient declined to participate, the research assistant asked whether they would be willing to provide a reason for their decision. This reason, along with the patient's gender, age, and race/ethnicity were documented with the patient's permission. This information was used to assess for possible sample selection biases.

After obtaining consent, participants were asked to complete a 5-minute paper survey assessing demographic information along with anxiety and depressive symptoms using the 4-item PROMIS Anxiety and Depression measures (Pilkonis et al., 2011; see more details in the Measures subsection). Following administration of the paper survey, the research assistant conducted an audiotaped cognitive interview to obtain participants' feedback on the new self-compassion measure (Cella et al., 2010) (see Appendix C for items tested). The research assistant held up a card with each item from the new self-compassion measure printed in large letters, as well as a separate card with the measure's response options / anchors printed in large letters. The research assistant then asked the participant to read it aloud and provide their thoughts and first impressions of each question before answering. In accordance with cognitive interviewing principles, participants were asked follow-up questions about the language, comprehensibility, ambiguity, and relevance of each item using a semi-structured interview guide (Appendix D) (Willson & Miller, 2014). Such questions included, "What were you thinking of when you answered that question?," "How did you go about deciding on which answer to pick?," and "How easy or hard was it to tell the difference between each choice on the scale?" The cognitive interviews lasted about 30 minutes on average. Following completion of the interview, the participant was given a \$25 Target gift card along with a brochure containing contact information for psychosocial services at IUSCC.

**Data storage and data entry.** Regulatory files were maintained in offices of the IUPUI Department of Psychology. Electronic study data (i.e., recorded audio files and transcriptions of interviews) were stored on a secure network drive accessed through an encrypted computer.

Medical record information and pre-interview survey data were entered into the REDCap system, and paper copies were stored in a locked filing cabinet in a locked office. A second team member cross-checked data entry to ensure accuracy.

## Measures

**Demographic and medical information.** The pre-interview survey assessed the following demographic information: race/ethnicity, marital status, education level, income, and employment status. The following variables were extracted from medical records: age, gender, cancer type and stage, date of diagnosis, and cancer treatments received (Appendix E).

**Anxiety and depressive symptoms.** Anxiety and depressive symptoms were assessed using the 4-item PROMIS Anxiety and Depression measures (Choi et al., 2010; Pilkonis et al., 2011). Internal consistency reliabilities were excellent (anxiety  $\alpha = 0.93$ , depression  $\alpha = 0.95$ ) (Pilkonis et al., 2011). Both measures have shown evidence of reliability and validity with cancer patients (Adams et al., 2017; Cella et al., 2014; Jensen et al., 2017; Wagner et al., 2015). Paper survey items can be found in Appendix F.

## Data Analyses

**Preliminary analyses.** Descriptive statistics (e.g., means, standard deviations, frequencies) were calculated to characterize patients' demographic and medical information and anxiety and depressive symptoms.

**Analyses for Aim 1.** Aim 1 was to develop a new measure of self-compassion and obtain cancer patients' preliminary feedback on the items. Data collected during stage 1 of the study were used to determine whether alterations should be made to the self-compassion measure, which was then tested in stage 2. Qualitative interview data were analyzed using a basic content analysis, which is a systematic coding and categorization process to make inferences from qualitative data (Hsieh & Shannon, 2005). Our qualitative analysis included the following phases: (1) interview transcription by trained research assistants; (2) reading and coding of interview transcripts and categorization of concepts; and (3) generation of descriptive themes (DeWalt et al., 2007). Themes were used to identify potential alterations to the measure.

Using an inductive approach, coders first read transcripts of the audiotaped interviews before creating codes to categorize participants' feedback on the items (Lune & Berg, 2017). The team of four coders included two clinical health psychologists with experience in qualitative data analysis, a research assistant, and me. We divided the transcripts amongst ourselves, with each transcript being reviewed by at least two people. We then independently developed codes and met regularly to discuss them and reach a consensus. Next, we generated themes during team meetings by categorizing recurring codes. Inter-relationships among themes were also examined. We then assessed the salience of our thematic findings by evaluating the extent to which both coders had drawn similar conclusions during their independent review and synthesis of the coded interview data and the degree to which the themes recurred across the interviews (Lune & Berg, 2017). The themes were then checked to ensure that they were internally consistent and distinguishable from one another. Alterations were made to our self-compassion measure based on study findings.

## QUALITATIVE STUDY (STAGE 1) RESULTS

### Preliminary Analyses

Of the 15 patients identified as eligible and approached during an outpatient oncology visit, 10 consented to participate (67% response rate). Reasons for declining were time constraints (3/5), lack of interest (1/5), and privacy concerns (1/5). Qualitative study flow is detailed in Figure 5. As shown in Table 1, the sample was predominantly non-Hispanic White (8/10) with a mean age of 64 (SD = 11, range = 47-79). The sample was balanced in terms of gender, early vs. advanced stage diagnoses, and type of cancer. Average time since the cancer diagnosis was 5.4 years (SD = 3.9 years, range = 0.1-12.3 years). On average, participants reported low levels of anxiety (mean = 5.4, SD = 1.4, range = 4-8) and depressive symptoms (mean = 5.1, SD = 2.0, range = 4-10).

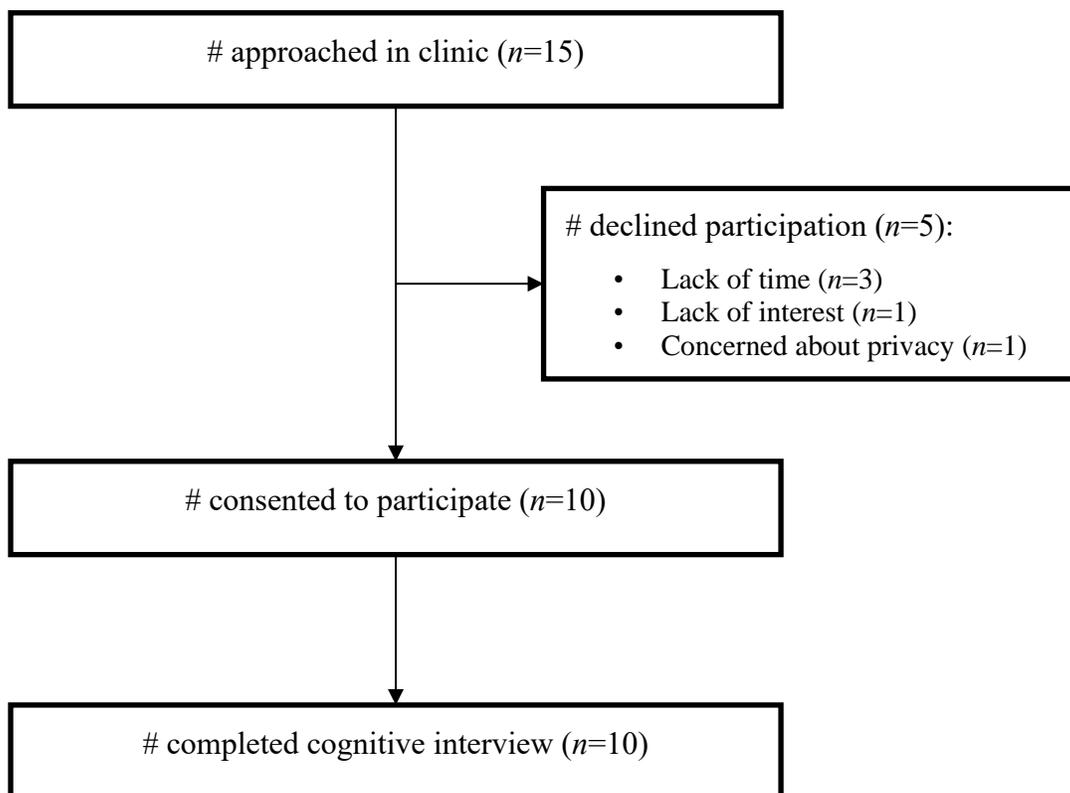


Figure 5. Qualitative study flow chart.

Table 1. Stage 1 Qualitative Sample Characteristics ( $N = 10$ )

<b>Characteristic</b>	<b><i>N</i> (%)</b>	<b><i>M</i> (<i>SD</i>)</b>	<b>Range</b>
Age	--	63.8 (11.0)	47.0-79.0
Male gender	6 (60.0)		
Race/ethnicity			
Non-Hispanic White	8 (80.0)		
Black/African American	2 (20.0)		
Relationship status			
Single	1 (10.0)		
Married	7 (70.0)		
Divorced	2 (20.0)		
Education level			
High school graduate	1 (10.0)		
Some college or technical school	5 (50.0)		
College graduate	2 (20.0)		
Graduate school	2 (20.0)		
Employment status			
Employed full-time	2 (20.0)		
Employed part-time	2 (20.0)		
Retired	4 (40.0)		
Unemployed due to disability	2 (20.0)		
Household income			
< \$21,000	2 (20.0)		
\$21,000 - \$39,999	0 (0)		
\$40,000 - \$65,999	4 (40.0)		
\$66,000 - \$105,999	2 (20.0)		
≥ \$106,000	2 (20.0)		
Cancer type			
Gastrointestinal	5 (50.0)		
Hematological	5 (50.0)		
Cancer stage			
Early stage (I or II)	5 (50)		
Advanced stage (III or IV)	5 (50)		
Time since diagnosis (years)	--	5.4 (3.9)	0.1-12.3
Cancer treatments			
Surgery	4 (40.0)		
Chemotherapy	9 (90.0)		

Table 1 continued

Radiation therapy	2 (20.0)		
Chemoradiation	1 (10.0)		
Hormone therapy	1 (10.0)		
Autologous stem cell transplant	3 (30.0)		
Anxiety symptoms	--	5.4 (1.4)	4.0-8.0
Depressive symptoms	--	5.1 (2.0)	4.0-10.0

*Note.* Cutoffs for clinically significant levels of anxiety and depressive symptoms (T-scores  $\geq$  60) correspond to raw scores of 11 and 12, respectively, as determined by cancer population norms for the Patient-Reported Outcome Measurement Information System (PROMIS) measures.

### Feedback on the New Self-compassion Items

Overall, participants noted that most self-compassion items were easily understood, and the time frame for the measure was considered appropriate. In addition, some participants found the response scale to be suitable for the items. However, suggestions for improving the measure were provided. Regarding specific items, participants reported wording issues, such as the valence of certain words (e.g., too negative), and had differing interpretations of the same item. Regarding response options, some participants preferred different response anchors (e.g., frequency anchors), and others preferred having additional response options. Key themes are described in further detail.

**Use of the phrase “gave me comfort.”** Regarding the item, “Knowing that others have faced challenges similar to mine gave me comfort,” multiple participants took issue with the phrase “gave me comfort.” They noted that it felt wrong to experience comfort in response to another’s challenges or problems. For example, one participant, a 60-year-old male cancer survivor, stated that he “[did] not like the thought of others having to face challenges with their health or life.” Similarly, a 63-year-old female survivor stated that “it would be pretty *bad* on my part if I was finding comfort in the fact that others were facing challenges.” Other participants felt that it was not possible to derive comfort from others’ experiences because their circumstances and cancer experiences were unique. One participant, a 55-year-old female cancer survivor, stated:

Even though people have faced challenges similar to mine, I haven’t actually been exposed to those people. What I have is pretty rare, like 1 in 13 million people get

it, so not a lot of us floating around. I've never met anybody that has had this problem.

As result of this feedback, the item was changed to read, "Knowing that others have faced challenges similar to mine gave me courage."

**Use of the word "weaknesses."** After reading the item, "When I noticed my weaknesses, I remembered that nobody is perfect," some participants stated that the word "weaknesses" was too vague, which led to multiple interpretations of this word. One participant, a 52-year-old female survivor, stated that "it'd be hard to... specify everything that could be a weakness. It might have to be explained like...an ability to do things or not." She interpreted weaknesses as deficits in physical functioning and recalled a recent event where she felt physically weak:

I guess the other night when my husband started a project and I'm trying to help put things back together, which they're still not...and I got just totally exhausted. And, I'm like, "I *should* be able to do more," and I had to stop and say "No, this is okay, I can go lay down, I'm exhausted and I need to take care of myself."

Another participant, a 63-year-old female survivor, also interpreted weakness as physical illness: "I think... that nobody is perfect. I'm looking at my weakness as part of my...well, having the cold. But with my cancer and stuff, my immune system is down. So I'm run down to begin with." Because of varying interpretations of the word, weakness, the item was changed to "When I noticed my flaws, I remembered that nobody is perfect."

**Social support vs. common humanity.** In response to the item, "I realized that I was not alone in my struggles," some participants based their answer on their social support system rather common humanity, which was our intended meaning of the item. For example, one participant noted, "I'm thinking that my family is going through this with me, and my friends... so I'm not out there without a support system" (52-year-old female survivor). Similarly, another participant stated that "I've got a good support group, and with my husband around . . . he seems to know when I am struggling and not feeling good" (63-year-old female survivor). Other participants interpreted this item as a general feeling of identifying with others, particularly other cancer survivors and caring individuals around them: "There are other people that have had the experiences I have had, or other people that are rooting for me. There are other people that are praying for me, and I know that I'm not alone" (55-year-old female survivor). In response to this mixed feedback, the item was changed to, "I recognized that my struggles are also experienced by others."

**Use of the word “allowed.”** One participant raised concerns about the word “allowed” in the item, “I allowed myself to experience my painful thoughts and feelings instead of trying to avoid them.” One survivor, a 55-year-old woman, expressed the following about her emotions:

... I’m not touchy-feely, so my feelings don’t come into it much... I don’t really *have* them, so it’s not a matter of avoiding them. It’s a matter of not having them. I don’t really have intrusive thoughts... I don’t really *allow* myself to experience. I just *experience* it. So it’s like...you’re asking if I gave myself permission.

This item also seemed to elicit responses detailing intrusive and distressing experiences surrounding death and dying:

Any concerns I have for cancer, I try not to think about. So, I would say 'somewhat;' I avoid them...When I was first diagnosed, I couldn’t think about anything other than death. Um, example: went to out to dinner with my family the day after my diagnosis and there was a painting on the wall of two tables, like dining tables, with white tablecloths in the restaurant. And my first image when I saw it was two bodies on gurneys, covered up. Like, that’s how intense the thoughts were (47-year-old male survivor).

Another participant described some recent distressing thoughts about her lack of treatment options:

When I’m honest, it's 'somewhat.' Sometimes, I, I’ve really tried to put them out of my consciousness so that they don’t overwhelm me, they don’t rule me and I can go on.... a few days ago... I just felt like I wasn’t making any progress with our treatment and stuff. And I found myself thinking about what happens if it doesn’t work and where we’re going with that . . . And I, I, I just had to avoid that because... [choking up] I was at a point that I could not deal with it (52-year-old female survivor).

The word “allowed” was omitted, changing the item to “I experienced my painful thoughts and feelings instead of trying to avoid them.”

**Confusion with “overwhelmed by [feelings].”** Participants had different interpretations of the original item, “I noticed my difficult feelings without being overwhelmed by them.” A 55-year-old female survivor said:

My interpretation of what you’re asking is that I’ve been emotional about my circumstance, and therefore my emotions could overwhelm me, or I could deal with it... I noticed my difficult feelings '*quite a bit.*' But I was overwhelmed '*not at all.*'

This participant felt that this item had two parts, and that the answers could be different depending on one’s focus of attention. Other participants suggested that the language seemed to

be too strong. A 73-year-old male survivor said in response to this item, “‘Overwhelmed?’ See, I take the word ‘overwhelmed’ to mean that it is *all* I’m thinking about, and I’m being *crippled* by difficult feelings.” Other participants expressed similar sentiments; although they acknowledged having challenges and problems, they denied having *overwhelming* problems. With this interpretation, they selected answers that were on the lower end of the response options, even though it may not reflect a low level of self-compassion. In response to this feedback, the item was changed to “I noticed my difficult feelings without dwelling on them.”

**Tying emotions to unchangeable circumstances.** In response to the item, “When I had difficult feelings, I realized that these emotions would change,” several participants selected answers on the lower end of the scale and provided examples of seemingly immutable situations that would lead to enduring feelings. One participant discussed how he felt towards his advanced, incurable cancer:

I don’t think things are going to change... [things being] how I feel and my situation with cancer... I’m stage four... this is my fourth time dealing with it... I think cancer is gonna be something I am going to have to face and deal with every day for the rest of my life... My feelings of my illness and how it affects my life... my family, my work... the emotions I have because of it I don’t think are going to change (47-year-old male survivor).

Another participant gave an example of his emotions being linked to others’ actions (or lack thereof) in his social circle:

I realized that these emotions would change... eh, 'somewhat.' ... ‘cause sometimes they change and sometimes they don’t change. I’m also the superintendent of the Sunday school ...and I’d like for people to come out, but a lot of times, that doesn’t change... Or people com[ing] to church instead of going out partying and stuff all the time (60-year-old male survivor).

One participant named a specific feeling (guilt) and noted that this does not go away because it is tied to chronic pain:

Well, I do always feel bad about the fact that I hardly do anything around the house to help my wife out. I always feel bad about that. Guilty, you know. The thing is, it doesn’t change because... it’s something that can’t change. Well, I suppose if I somehow were to get rid of my back pain, then things would change, you know. I’d be able to do more (72-year-old male survivor).

These responses seemed to be aligned with lower mindful awareness of emotions; thus, the item was largely unchanged. To enhance item clarity, “over time” was added to the end, making the final item “When I had difficult feelings, I realized that these feelings would change over time.”

**Change response options.** Several participants raised suggestions for changing the response scale options. One participant, a 60-year-old male survivor, suggested adding a “does not apply” response option as well as the option to explain his responses: “I would tell 'em that I didn't feel like I was going through a hard time, but I still was kind to myself.” This statement suggests that the response options did not capture his response, and he wanted more space to elaborate on his answer.

Another participant, a 55-year-old female survivor, felt that the scale was not balanced on both ends, stating

... I'd rather have 'always' than 'very much.' Because whatever the scale is, it has to be balanced. It has to be this extreme paired with that, and so on. And 'very much' does not mean the opposite of 'not at all' to me.

Others preferred a frequency scale. For example, a 52-year-old female survivor suggested response anchors that corresponded to numerical frequency for each item: “...I guess you could put... 'in the past two weeks...' 'not at all,' and then maybe 'one to two times,' 'three to five times,' 'six to ten times,' 'more than ten.’” Overall, given the variety of preferences for response options and the existing responses being suitable for most participants, the original response scale was retained for further testing.

## QUALITATIVE STUDY (STAGE 1) DISCUSSION

The goal of this qualitative study was to obtain feedback from a diverse sample of cancer patients on the items developed for a new self-compassion scale. The cognitive interviews provided an in-depth look at each participant's thought process as they completed the questionnaire. Through these interviews, valuable insights were gleaned with respect to how well each participant understood the items and how they arrived at their response selection, leading to key revisions in the questionnaire. In the following sections, I will summarize participant feedback on (1) word choice, (2) varying interpretation of items, and (3) questionnaire set-up (i.e., time frame for items, response scale options) and discuss limitations and implications for future research.

### **Feedback on the New Self-compassion Items**

**Word choice.** Although most items made sense and were acceptable to participants, several concerns about word choice were raised. Some phrases, such as knowing that others faced similar challenges “gave me comfort,” elicited strong negative reactions from participants. The cognitive interviews allowed us to identify aspects of items that led many participants to provide extreme ratings.

**Varying interpretation of items.** Although minor individual differences in interpretation of items are to be expected, some items elicited considerably different interpretations. For example, some participants thought that “weaknesses” referred strictly to physical weaknesses or declining physical functioning, whereas others thought of weaknesses as shortcomings in one's character. Items were revised to reduce variation in interpretation (e.g., changing “weaknesses” to “flaws”).

**Questionnaire set-up.** Overall, most participants found the questionnaire to be acceptable in terms of the time frame and response options. Participants found the two-week time frame generally acceptable for all items tested, and most felt that their answers would remain the same even if the time frame was altered. There were varied suggestions for editing the response scale options, with one participant preferring a frequency-based scale, another preferring a “not applicable” response option with additional space for explanation, and another preferring changes to the wording of the response options. Given the varying preferences and the prior testing of the

current response scale for other measures (e.g., PROMIS scales) (DeWalt et al., 2007), it was retained.

### **Limitations**

Limitations of this study should be noted. Although purposive sampling was utilized and participants were relatively diverse in terms of gender, cancer type, cancer stage, and treatment status, the majority were White and all were recruited from a single academic cancer center in the midwestern United States. Thus, future research may be conducted at other sites across the country for increased representation. Although the cognitive interviews were semi-structured and detailed, additional questions may have been helpful. For example, participants' overall understanding of the construct being measured was not assessed (e.g., what they believed we were measuring and if they had a prior understanding of self-compassion). In addition, it may have been helpful to ask participants about items from the existing SCS to understand potential qualitative differences compared to our new item pool. Finally, this study was a one-time interview; thus, perceived self-compassion is limited to data collected at a single time point and does not capture potential changes in this perception.

### **Implications for Future Research**

This qualitative study provided important data on cancer patients' understanding of newly developed items for the measurement of self-compassion. The feedback obtained from patients about the items informed many key revisions to the item pool. Future studies may explore patients' understanding of self-compassion at different points in the disease trajectory or in the context of compassion-focused and/or mindfulness-based interventions. As a next step, I examined the revised scale's psychometric properties, including its factor structure, reliability, and validity, in a diverse cancer sample.

## QUANTITATIVE STUDY (STAGE 2) METHODS

### Participants

**Overview of sample.** During stage 2, I administered the new self-compassion measure to samples of 200 post-treatment cancer survivors and 200 advanced-stage cancer patients for measure validation. Both samples had approximately equal numbers of adults diagnosed with breast, gastrointestinal, lung, and prostate cancer. To ensure representation of demographic subgroups based on the National Cancer Institute's Surveillance, Epidemiology, and End Results [SEER] data (Howlader et al., 2018), I used purposive sampling based on race and gender. I invited approximately equal numbers of male and female patients to participate.

**Patient eligibility.** Eligible patients for stage 2 were identified via medical record review and confirmation with attending oncologists. Eligible patients were: (1) at least 3 weeks post-diagnosis of stage IV breast, gastrointestinal, lung, and prostate cancer or had completed treatment  $\geq 6$  months ago for stage I or II breast, gastrointestinal, lung, and prostate cancer (ongoing endocrine therapy was allowed); (2) receiving care at Eskenazi Health, IUSCC, IU Health University Hospital, or IU Health Spring Mill Clinic; (3) 18 years of age or older; (4) fluent in English; and (5) not exhibiting significant psychiatric or cognitive impairment as indicated by a score  $\geq 4$  on a 6-item cognitive screener (Callahan et al., 2002).

### Procedure

**Screening.** For stage 2, I requested a list of potentially eligible patients (adults who had been diagnosed with breast, gastrointestinal, lung, and prostate cancer) from the IU Health and Eskenazi Health tumor registrars. The Regenstrief Data Core extracted lists of patients for each hospital system, along with medical record numbers, demographic information, dates of cancer diagnoses, cancer types, and staging information. IU Health and Eskenazi Health medical records were then reviewed to check the accuracy of the registrar data and identify eligible patients (see Appendix G).

**Recruitment and data collection.** After eligible patients were identified, I mailed recruitment packets to invite patients to participate. These packets included a study introductory

letter, study brochure, informed consent form, and HIPAA authorization form. The study introductory letter informed patients that study staff would contact them via telephone over the next few weeks. It also provided information for opting out of the study, such that patients could call or email the research team to indicate that they did not wish to be contacted further.

Research assistants called patients who did not opt out approximately 1-2 weeks after the packet had been mailed to explain the study and review the informed consent and HIPAA authorization forms. With the patient's permission, the 6-item cognitive screener (Callahan et al., 2002) was administered to determine eligibility. Patients had the opportunity to ask questions prior to providing verbal consent to participate and verbal authorization to collect medical record information (see Appendix H for information collected). Following consent, the research assistant asked for their survey preference (i.e., email survey link to complete online or mail a paper copy) and collected their contact information. If a patient declined to participate, the research assistant asked if they would be willing to provide a reason for declining. This reason, along with their gender, age, and race/ethnicity were noted with their permission. If a patient did not answer the phone, the research assistant left a brief voicemail message and then called the patient up to 10 times within 1-4 weeks after the first phone call. If the research assistant still could not reach the patient, a second voicemail message was left about 2 weeks after the first.

Following informed consent, the survey was distributed via email or postal mail. If the participant preferred to complete it online, the research assistant emailed a link specific to each individual to complete the survey on the Research Electronic Data Capture (REDCap) platform. If the participant preferred to complete the survey on paper, the research assistant sent a paper copy of the same survey via postal mail, along with a self-addressed stamped envelope to return the survey. Participants were asked to refrain from providing their name or other identifying information on the survey, as they were identified by a unique study ID. They were also asked to complete the survey within 2 weeks. If the survey was not completed by that time, a research assistant contacted the participant to provide reminders, speaking to them on a maximum of five occasions. Participants who preferred the online survey were also emailed automated reminders from REDCap every 4 days for up to 20 days following the initial survey invitation.

**Data storage and data entry.** Regulatory files were maintained in offices of the IUPUI Department of Psychology. Surveys completed online through REDCap were accessible only to authorized study staff. Other electronic study data were stored on a secure network drive accessed

through an encrypted computer. Medical record information and paper survey data were entered into the REDCap system, and paper copies were stored in a locked filing cabinet in a locked office. All entered data were checked by two members of the study team.

## Measures

See Appendix I for the questionnaire administered in stage 2.

**Demographic and medical information.** The following demographic and medical information was retrieved from patients' medical records: age, gender, cancer type(s) and stage(s), date(s) of diagnosis, and cancer treatments received (e.g., surgery, radiation, chemotherapy). Participants self-reported the following demographic and medical information: marital status, race/ethnicity, education level, income level, and employment status. Participants also reported whether they had been diagnosed with or treated for other medical comorbidities in the last three years (Kroenke et al., 2009). This 8-item medical comorbidities checklist has been used with cancer patients and has shown evidence of validity through associations with health outcomes such as number of hospitalizations (Kroenke et al., 2010; Perkins et al., 2004).

**Self-compassion.** The 12-item Self-Compassion Scale-Short Form (SCS-SF; Raes, Pommier, Neff, & Van Gucht, 2011) and our new measure were used to assess self-compassion. The SCS-SF and its full-length counterpart (K. Neff, 2003b) are the most widely used measures of self-compassion, and recent studies using the SCS-SF with cancer populations found high internal consistency ( $\alpha=0.91$ ) (Sherman et al., 2017). It contains six subscales—self-kindness, self-judgment, common humanity, isolation, mindfulness, and over-identification—and a 5-point Likert scale with two opposing anchors of “Almost never” and “Almost always.” A global self-compassion score was computed and used for analyses. In the current study, internal consistency was good ( $\alpha = 0.86$ ).

The new self-compassion measure, the SCI, initially included 15 items, which was subject to change after analyses. There were five items for each potential subscale--self-kindness, common humanity, and mindful acceptance. In addition, the new measure had a clear time reference (“In the past 2 weeks...”) and a Likert scale often used in PROMIS measures with five distinct choices ranging from 1 (not at all) to 5 (very much). All items were positively worded and, thus, higher scores represented greater self-compassion.

**Anxiety and depressive symptoms.** The 4-item PROMIS Anxiety and Depression measures were used to assess anxiety and depressive symptoms, respectively (Choi et al., 2010; Pilkonis et al., 2011). Sample items include “In the past 7 days, my worries overwhelmed me” to assess anxiety and “In the past 7 days, I felt hopeless” to assess depressive symptoms. Both measures use a 5-point Likert scale with responses ranging from “never” to “always.” Both measures had excellent internal consistency reliability, with Cronbach’s alphas of 0.93 and 0.95 for the anxiety and depression measures, respectively (Pilkonis et al., 2011). PROMIS measures have undergone rigorous psychometric testing (Magasi et al., 2012; Pilkonis et al., 2011, 2014) and have shown evidence of reliability and validity in cancer patients (Adams et al., 2017; Cella et al., 2014; Jensen et al., 2017; Wagner et al., 2015). In the current study, internal consistency reliabilities were excellent (anxiety  $\alpha = 0.90$ , depression  $\alpha = 0.91$ ).

**Quality of life.** The McGill single item scale (SIS; Cohen, Mount, Tomas, & Mount, 1996) was used to assess quality of life. Patients were asked to rate their overall quality of life, considering all aspects of their life, on an 11-point scale (0 = “very bad” to 10 = “excellent”). The SIS is highly correlated ( $r = 0.73$ ) with total scores on the long-form McGill Quality of Life Questionnaire for cancer patients (Cohen et al., 1996).

**Mindfulness.** Subscales of the Five Facet Mindfulness Questionnaire-Short Form (FFMQ-SF; Bohlmeijer, ten Klooster, Fledderus, Veehof, & Baer, 2011) were used to assess mindfulness. The FFMQ-SF (Baer et al., 2006) consists of the following five subscales: Observing, Describing, Acting with Awareness, Nonjudging of inner experience, and Nonreactivity to inner experience. The latter three subscales were administered in our survey, as they were most predictive of mental health and symptom outcomes in prior studies with cancer survivors and the general population (Cash & Whittingham, 2010; Poulin et al., 2016). The measure uses a 5-point Likert scale with responses ranging from “never or very rarely true” to “very often or always true.” The FFMQ has been used with cancer populations, with excellent internal consistency (e.g.,  $\alpha = 0.92$  for the total instrument) (Nakamura et al., 2013). In the current study, internal consistency reliabilities for each subscale were good (Acting with Awareness  $\alpha = 0.84$ , Nonjudging  $\alpha = 0.80$ , Nonreactivity  $\alpha = 0.80$ ).

**Psychological inflexibility.** Psychological inflexibility was assessed with the 7-item Acceptance and Action Questionnaire-II (AAQ-II; Bond et al., 2011). Psychological inflexibility is defined as patterns of behavior driven by internal reactions (e.g., unwanted thoughts and feelings)

rather than personal values (Hayes et al., 1996). Participants were asked to rate the degree to which painful thoughts and feelings interfered with daily life and coping on a 7-point Likert scale, with anchors ranging from “never true” to “always true.” Research has supported the reliability and validity of the AAQ-II for use with cancer patients, with alphas ranging from 0.78 to 0.87 (Feros et al., 2013; Hulbert-Williams et al., 2014). In the current study, internal consistency was excellent ( $\alpha = 0.94$ ).

**Values-based living.** The 10-item Valuing Questionnaire (VQ; Smout, Davies, Burns, & Christie, 2014) was used to assess progress and obstruction in values-based living. Half of the questionnaire’s items are negative (Obstruction subscale, e.g. “Difficult thoughts, feelings or memories got in the way of what I really wanted to do”), and the other half are positively worded (Progress subscale, e.g. “I worked toward my goals even if I didn’t feel motivated to”). Respondents rated how true each item was for them on a 7-point Likert scale with anchors ranging from “Not true at all” to “Completely true.” During initial testing, both subscales showed good internal consistency (obstruction,  $\alpha = 0.79$ ; progress,  $\alpha = 0.81$ ) (Smout et al., 2014). The VQ has been widely used by researchers studying a variety of medical populations, including cancer patients (Donald et al., 2016; Mosher et al., 2017; Romero-Moreno et al., 2017). In a study of advanced cancer patients, higher symptoms levels were correlated with less engagement in valued activities (Mosher et al., 2017). In the current study, internal consistency reliabilities for both subscales were good (obstruction  $\alpha = 0.81$ , progress  $\alpha = 0.85$ ).

**Cognitive fusion.** The 7-item Cognitive Fusion Questionnaire (CFQ; Gillanders et al., 2014) was used to assess cognitive fusion, or the tendency to become entangled in thoughts that lead to overregulation of one’s behavior. The CFQ contains statements about the participant’s thoughts (e.g., “My thoughts cause me emotional pain”) and asks them to rate how true the statement is for them on a 7-point Likert scale ranging from “never true” to “always true.” The questionnaire was found to have strong internal consistency ( $\alpha=0.88$ ) and good test-retest reliability ( $r=0.80$ ) (Gillanders et al., 2014). The CFQ has demonstrated construct validity and has been widely used in medically diverse populations, including cancer patients (Gillanders et al., 2015; Levin et al., 2017; McCracken et al., 2014). In the current study, internal consistency was found to be excellent ( $\alpha = 0.95$ ).

**Acceptance of cancer.** The 12-item Peace, Equanimity, and Acceptance in the Cancer Experience (PEACE; Mack et al., 2008) measure was used to assess patients’ acceptance of their

cancer. Used widely in cancer research, the measure contains two subscales—Struggle with Illness (7 items) and Peaceful Acceptance (5 items). All items are asked in question form (e.g., “To what extent are you able to accept your diagnosis of cancer?”) with options on a 4-point Likert scale ranging from “not at all” to “to a large extent.” The Struggle with Illness and Peaceful Acceptance subscales showed good internal consistency reliability when tested with advanced cancer patients, with Cronbach’s alphas of 0.81 and 0.78, respectively (Mack et al., 2008). Both subscales also demonstrated good criterion validity, as they were associated with reported coping, spirituality, and peace and harmony (Mack et al., 2008). In the current study, both subscales also showed good internal consistency (Struggle with Illness  $\alpha = 0.85$ , Peaceful Acceptance  $\alpha = 0.84$ ).

**Denial and active coping.** Two of the 14 subscales from the Brief COPE (Carver, 1997) measure—denial and active coping—were used to assess coping responses. Each subscale contains two items and uses a 4-point Likert scale with anchors ranging from “I haven’t been doing this at all” to “I’ve been doing this a lot.” The Brief COPE is derived from the full COPE, which showed good construct validity and internal consistency reliability (Carver et al., 1989). The Brief COPE showed evidence of construct validity, and alphas for the subscales of denial and active coping were 0.54 and 0.68, respectively (Carver, 1997). In the current study, alphas were 0.63 for the denial subscale and 0.81 for the active coping subscale.

**Rumination.** The Rumination subscale of the Rumination-Reflection Questionnaire (RRQ; Trapnell & Campbell, 1999) was used to assess rumination, or a frequent focus on self-critical thoughts. A sample item is “My attention is often focused on aspects of myself I wish I’d stop thinking about.” Participants were asked to provide their level of agreement on a 5-point Likert scale, with anchors ranging from “strongly disagree” to “strongly agree.” In its initial validation, the Rumination subscale demonstrated excellent internal consistency reliability ( $\alpha=0.90$ ) (Trapnell & Campbell, 1999). In a study of cancer patients, increased rumination as assessed by the RRQ was associated with greater depressive symptoms, intrusive thoughts, and avoidance (Thomsen et al., 2013). Internal consistency was excellent ( $\alpha = 0.92$ ) in the current study.

## Data Analyses

**Preliminary analyses.** To begin, descriptive statistics (e.g., means, standard deviations, frequencies) were calculated to characterize patients' demographic and medical information (i.e., age, gender, race/ethnicity, marital status, education level, employment status, income, cancer type and stage, time since diagnosis, treatment types) and other characteristics (e.g., depressive and anxiety symptoms). Using an independent samples t-test and chi-square tests, data were examined for differences in demographic variables (age, gender, and race) between those who completed surveys and those who refused to participate. The data were also examined for normality, linearity, skewness, and kurtosis. Parameters for skewness and kurtosis were set as absolute values of 3 and 10, respectively (Kline, 2011).

**Analyses for Aim 2.** Analyses for Aim 2 evaluated the item quality and psychometric properties of the SCI. First, I planned to eliminate items that were performing poorly. Poor performance is indicated by floor or ceiling effects, low factor loadings (i.e.,  $<0.40$ ), or low item-total correlations (i.e.,  $<0.30$ ) (DeVellis, 2016). The full range of response categories for each item was visually examined with histograms, means, and standard deviations. The following indicate poor item quality and were used as criteria for elimination: (1) one category receives less than 5% of responses; or (2) more than 80% endorse the highest or lowest category (i.e., there is a ceiling or floor effect) (e.g., Monahan, Lane, Hayes, McHorney, & Marrero, 2009).

To achieve Goal 2.1, I ran confirmatory factor analyses in Mplus to test several factor structures (Muthen & Muthen, Los Angeles, CA). Missing values were handled with the maximum likelihood estimation procedure with robust standard errors to account for nonnormality and to generate estimated values for missing values based on the sample data (Enders, 2001a, 2001b). The following factor structures were tested: (1) a single-factor model indicating an overall self-compassion factor; (2) a correlated three-factor model (self-kindness, common humanity, and mindful acceptance); (3) a hierarchical model with the three factors indicating an overall self-compassion factor; and (4) a bifactor model simultaneously modeling one general self-compassion factor and three factors. The following fit indices were used to determine model fit: (1) chi-square test; (2) comparative fit index (CFI); (3) root-mean-square error of approximation (RMSEA); (4) standardized root mean square residual (SRMR); and (5) Akaike information criterion (AIC). Although model fit guidelines vary, I will define acceptable model fit as: (1) a non-significant  $\chi^2$  statistic; (2)  $CFI > 0.95$ ; (3)  $RMSEA < 0.08$ ; and (4)  $SRMR < 0.06$  (Hu & Bentler, 1999; Kline,

2011). Regarding the AIC, lower values indicate a better fit; thus, the model with the lowest AIC was considered the best fitting model. If needed to further improve model fit, the model can be respecified by requesting modification index (MI) values and freeing one parameter at a time, starting with the parameter with the highest MI value that is justified by theory (Tabachnick & Fidell, 2001).

To achieve Goal 2.2, internal consistency reliability of the SCI was examined using SPSS statistical software (IBM Corp., Armonk, NY, USA). Cronbach's alpha coefficients were computed.

To achieve Goal 2.3, which is to assess the construct validity of the SCI, I examined hypothesized correlations between variables. I conducted these analyses in Mplus using the maximum likelihood estimation procedure with robust standard errors to address missing data. Total scores were calculated by summing all items for the SCI; thus, observed scores were utilized for these analyses. Evidence of construct validity would include positive associations of the SCI with mindfulness (i.e., acting with awareness, nonjudging, and nonreactivity), quality of life, peaceful acceptance of cancer, active coping, and progress in value-based living and negative associations with depressive symptoms, anxiety, rumination, denial, struggle with illness, psychological inflexibility, cognitive fusion, and obstruction in value-based living. Additional evidence of construct validity would include a moderate correlation between the SCI and the existing SCS-SF (K. Neff, 2003b). The six negatively worded items in the SCS-SF measure were reverse-scored and summed prior to analyses. Furthermore, using descriptive comparisons, incremental validity would be demonstrated by smaller associations of the SCI with depressive symptoms, anxiety, rumination, denial, struggle with illness, psychological inflexibility, cognitive fusion, and obstruction in values-based living, as compared to their associations with the SCS-SF. To further examine incremental validity, I descriptively compared the strength of associations between anxiety and depressive symptoms and the negative items of the SCS-SF versus the SCI.

## QUANTITATIVE STUDY (STAGE 2) RESULTS

### Sample Characteristics

The study flow is shown in Figure 6. To summarize, 701 patients were found to meet initial eligibility criteria following medical chart review and were mailed recruitment materials and then contacted via phone. Of these, 109 (16%) patients could not be reached, 29 (4%) were found to be ineligible, and 99 (14%) declined to participate. Primary reasons for ineligibility prior to consent were declining health ( $n = 7$ ) and not meeting disease stage or treatment criteria ( $n = 6$ ). Primary reasons for refusal were lack of interest ( $n = 64$ ) and lack of time ( $n = 9$ ). Of the 464 consenting patients, 9 (2%) patients chose to withdraw from the study, 1 (<1%) patient died prior to returning the survey, and 24 (5%) were lost to follow-up. Of the 430 participants who returned surveys, 16 were found to be ineligible due to not meeting disease stage or treatment criteria and 10 submitted surveys with significant missingness; thus, 26 participants were omitted from the analyses, resulting in a final sample of 404. Patients who completed the survey ( $n = 404$ ) were on average younger ( $M = 63$  years,  $SD = 11$ ) compared to those who refused to participate ( $n = 99$ ) ( $M = 68$  years,  $SD = 10$ ;  $t(160.2) = 4.7$ ,  $p < .01$ ). Gender also differed between those who completed the survey versus those who refused ( $\chi^2 = 8.58$ ,  $p < .01$ ), such that a greater proportion of refusers were men (66% vs. 49%). There was no difference between these groups in terms of race ( $\chi^2 = .17$ ,  $p = .92$ ).

The final sample characteristics are shown in Table 2. The sample was predominantly White (80%) and non-Hispanic/Latino/a (93%) with a mean age of 63 ( $SD = 11$ , range = 28-89). About half of the participants were female (51%), and the majority were married or living with a partner (68%). Many participants reported post-secondary education, with 30% completing some college or technical education, 23% completing college, and 18% completing graduate school. Most participants were either employed full- or part-time (39%) or retired (40%). Reported household income varied, though about half of participants reported incomes of \$66,000 - \$105,999 (23%) or >\$106,000 (23%). Due to purposive sampling, cancer type was evenly split between breast, gastrointestinal, lung, and prostate cancer. There were also even numbers of patients with early-stage and advanced-stage cancer in this sample. The average time since

diagnosis was 3.3 years ( $SD = 3.0$ , range = 0.1-23 years). Common cancer treatments included surgery (80%), chemotherapy (48%), radiation therapy (36%), and hormone therapy (33%).

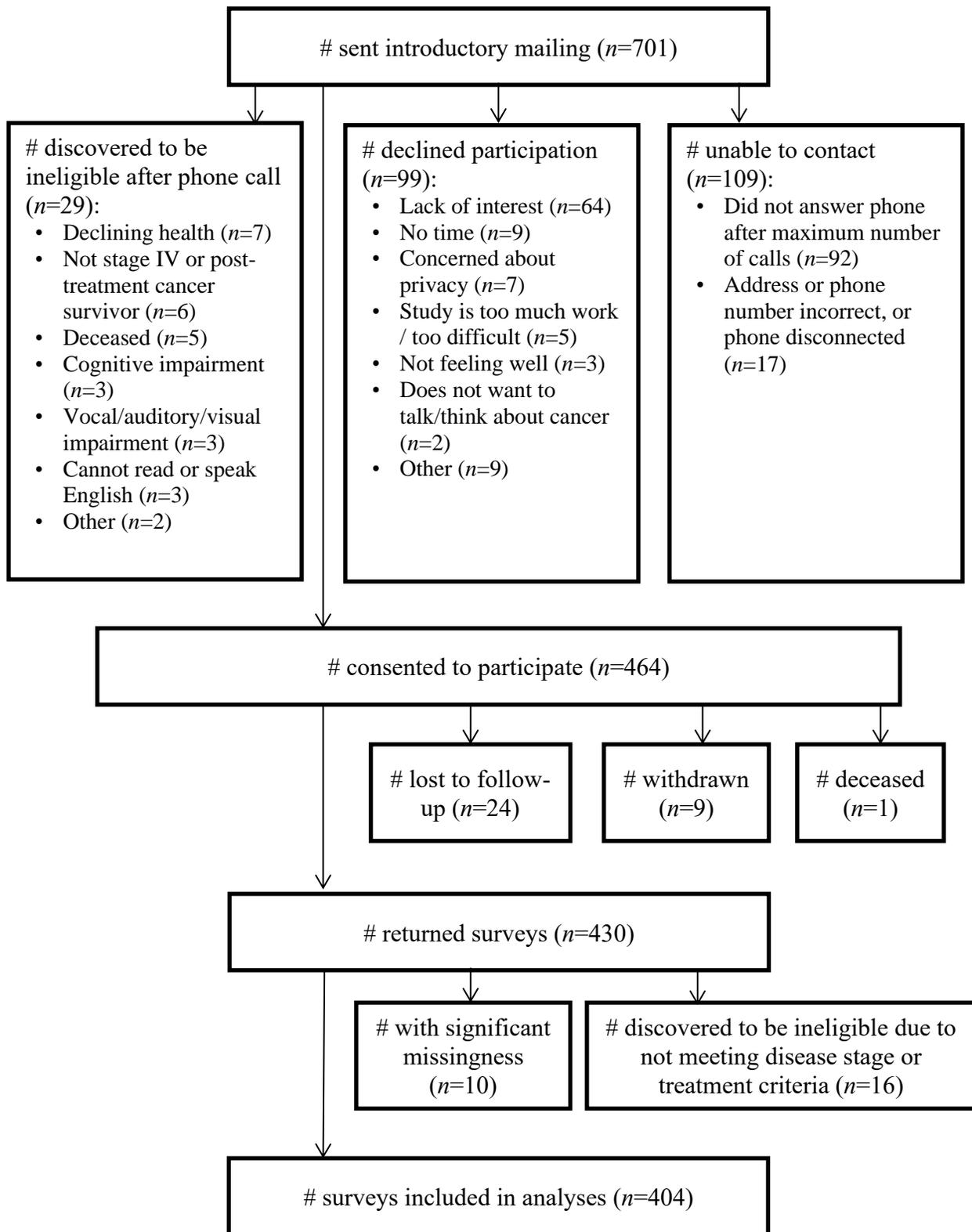


Figure 6. Quantitative study flow chart.

Table 2. Stage 2 Quantitative Sample Characteristics ( $N = 404$ )

<b>Characteristic</b>	<b><i>N</i> (%)</b>	<b><i>M</i> (<i>SD</i>)</b>	<b>Range</b>
Age	--	62.6 (11.1)	28.0-89.0
Female gender	205 (50.7)		
Race			
White	325 (80.4)		
Black/African American	60 (14.9)		
Native American or Alaska Native	8 (2.0)		
Asian American	10 (2.5)		
Native Hawaiian or Pacific Islander	2 (0.5)		
Other	6 (1.5)		
Ethnicity			
Non-Hispanic/Latino/a	374 (92.6)		
Hispanic/Latino/a	14 (3.5)		
Missing	9 (2.2)		
Relationship status			
Single	48 (11.9)		
Living with partner	14 (3.5)		
Married	261 (64.6)		
Separated	5 (1.2)		
Divorced	48 (11.9)		
Widowed	27 (6.7)		
Education level			
Elementary	5 (1.2)		
Some high school	19 (4.7)		
High school graduate	88 (21.8)		
Some college or technical school	122 (30.2)		
College graduate	94 (23.3)		
Graduate school	74 (18.3)		
Missing	2 (0.5)		
Employment status			
Employed full-time	124 (30.7)		
Employed part-time	34 (8.4)		
Homemaker	6 (1.5)		
Retired	160 (39.6)		
Unemployed, looking for work	3 (0.7)		
Unemployed due to disability	67 (16.6)		
Other	8 (2.0)		

Table 2 continued

Household income			
< \$21,000	67 (16.6)		
\$21,000 - \$39,999	75 (18.6)		
\$40,000 - \$65,999	69 (17.1)		
\$66,000 - \$105,999	92 (22.8)		
≥ \$106,000	91 (22.5)		
Missing	10 (2.5)		
Cancer type			
Breast	101 (25)		
Gastrointestinal	100 (24.8)		
Lung	102 (25.2)		
Prostate	101 (25)		
Cancer stage			
I	97 (24)		
II	106 (26.2)		
IV	201 (49.8)		
Time since diagnosis (years)	--	3.3 (3.0)	0.1-23
Cancer treatments			
Surgery	324 (80.2)		
Chemotherapy	194 (48)		
Radiation therapy	147 (36.4)		
Chemoradiation	31 (7.7)		
Hormone therapy	135 (33.4)		
Autologous stem cell transplant	1 (0.2)		

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## Descriptive Statistics

Descriptive statistics for main study variables are presented in Table 3. Regarding the SCI, participants reported an average rating of 3.6 per item on a 1-5 scale from “almost never” to “almost always” (overall  $M = 43.3$ ,  $SD = 8.5$ , range = 18-60). On average, participants reported low levels of psychological inflexibility ( $M = 14.6$ ,  $SD = 8.3$ , range = 7-49) and moderate levels of nonreactivity ( $M = 15.6$ ,  $SD = 5.2$ , range = 5-25), nonjudging ( $M = 19.4$ ,  $SD = 4.2$ , range = 5-25), and acting with awareness ( $M = 20.12$ ,  $SD = 4.0$ , range = 7-25). Participants’ rating of their rumination was, on average, 2.62 out of 5 ( $SD = 0.86$ , range = 1-5). In addition, participants reported moderate levels of progress in values-based living ( $M = 20.9$ ,  $SD = 6.5$ , range = 0-30) and relatively low levels of obstruction in values-based living ( $M = 6.7$ ,  $SD = 6.0$ , range = 0-27). Participants reported that, on average, statements regarding cognitive fusion were “very seldom true” to “seldom true” ( $M = 17.4$ ,  $SD = 8.9$ , range = 7-49). On average, levels of peaceful acceptance of cancer ( $M = 16.5$ ,  $SD = 3.5$ , range = 5-20) were similar to those found in previous studies (Mack et al., 2008), whereas levels of struggle with cancer ( $M = 12.7$ ,  $SD = 4.6$ , range = 7-28) were similar to those found in cancer samples without a history of psychiatric illness (Mack et al., 2008). On average, participants rated their quality of life as 7.4 on a 0 to 10 scale ( $SD = 2.1$ , range 0-10). Furthermore, participants reported levels of anxiety and depressive symptoms that were lower than those of the general U.S. population (anxiety:  $M = 6.8$ ,  $SD = 3.1$ , range = 4-16; depressive symptoms:  $M = 6.4$ ,  $SD = 3.2$ , range = 4-18).

Table 3. Descriptive Statistics for Main Study Variables

	<i>n</i>	Mean	SD	Range	Skewness	Kurtosis	$\alpha$
Self-compassion (SCS-SF)	390	43.3	8.5	18-60	-0.1	-0.6	0.86
Psychological inflexibility	396	14.6	8.3	7-49	1.5	2.0	0.94
Nonreactivity	397	15.6	5.2	5-25	-0.4	-0.5	0.84
Nonjudging	391	19.4	4.2	5-25	-0.5	-0.4	0.80
Acting with awareness	396	20.2	4.0	7-25	-0.6	-0.4	0.84
Rumination	390	2.6	0.9	1-5	0.3	-0.5	0.92
Values-based living - Obstruction	402	6.7	6.0	0-27	0.8	0.0	0.81
Values-based living - Progress	398	20.9	6.5	0-30	-0.7	0.2	0.85
Cognitive fusion	397	17.4	8.9	7-49	1.0	1.0	0.94
Struggle with illness	398	12.7	4.6	7-28	0.9	0.2	0.84
Peaceful acceptance of illness	397	16.5	3.5	5-20	-1.1	0.7	0.85
Active coping	401	5.1	2.0	2-8	-0.1	-1.1	0.81
Denial	397	2.6	1.2	2-8	2.2	5.1	0.63
Quality of life	403	7.4	2.1	0-10	-0.7	0.1	--
Anxiety symptoms	397	6.8	3.1	4-16	1.0	0.1	0.90
Depressive symptoms	390	6.4	3.2	4-18	1.3	1.0	0.91

*Note.* SCS-SF = Self-compassion Scale – Short Form.

*Ns* differ due to missing items; however, there was no clear pattern of missing items.

## **Item Selection**

Following descriptive analyses, item-total correlations (see Table 4) and inter-item correlations (see Table 5) were examined to determine performance of the SCI items. Good performance was indicated by high item-total correlations for all items. Additionally, all 15 items had each of the five response options endorsed. Responses tended to be on the higher end of the response scale, with >50% of respondents selecting a 4 (quite a bit) or 5 (very much) for a particular item. Thus, no items were eliminated.

Table 4. Descriptive Statistics for Self-compassion Inventory Items ( $N = 372$ )

<b>Item</b>	<b>Mean</b>	<b>SD</b>	<b>Item-Total Correlation</b>
1. I was kind to myself even when I was going through a tough time.	3.68	1.14	0.66
2. Knowing that others have faced challenges similar to mine gave me courage.	3.78	1.16	0.65
3. I noticed my difficult feelings without dwelling on them.	3.45	1.13	0.60
4. When I noticed my flaws, I remembered that nobody is perfect.	3.71	1.17	0.72
5. I was patient and understanding towards myself when I faced challenges.	3.67	0.99	0.72
6. I accepted my thoughts and feelings without needing to change them.	3.57	1.03	0.73
7. Even though I've failed before, I gave myself some slack.	3.58	1.05	0.74
8. I recognized that others experience times of stress like I do.	4.00	1.04	0.70
9. When I had difficult feelings, I realized that these feelings would change over time.	3.76	1.08	0.78
10. I experienced my painful thoughts and feelings instead of trying to avoid them.	3.55	1.11	0.66
11. When I faced a challenge, I reminded myself that challenges are a part of every human life.	3.97	1.06	0.75
12. I forgave myself for my mistakes.	3.76	1.07	0.72
13. I recognized that my struggles are also experienced by others.	4.02	1.05	0.77
14. I was able to soothe myself during times of stress.	3.67	1.00	0.73
15. I accepted my painful thoughts and feelings as a natural part of life.	3.85	1.05	0.73

Table 5. Inter-item Correlations for the Self-compassion Inventory ( $N = 404$ )

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	--														
2	0.52	--													
3	0.51	0.43	--												
4	0.50	0.48	0.55	--											
5	0.59	0.46	0.48	0.57	--										
6	0.56	0.43	0.47	0.54	0.73	--									
7	0.51	0.49	0.44	0.62	0.62	0.67	--								
8	0.42	0.54	0.46	0.58	0.47	0.51	0.50	--							
9	0.53	0.57	0.50	0.59	0.54	0.57	0.62	0.65	--						
10	0.48	0.49	0.49	0.49	0.43	0.50	0.51	0.53	0.64	--					
11	0.46	0.50	0.41	0.58	0.53	0.55	0.52	0.58	0.63	0.55	--				
12	0.50	0.44	0.36	0.54	0.57	0.54	0.62	0.48	0.56	0.43	0.64	--			
13	0.47	0.58	0.44	0.60	0.49	0.49	0.52	0.71	0.65	0.49	0.70	0.67	--		
14	0.47	0.45	0.43	0.50	0.58	0.57	0.57	0.47	0.56	0.48	0.64	0.62	0.61	--	
15	0.52	0.48	0.43	0.50	0.55	0.54	0.54	0.47	0.57	0.48	0.63	0.64	0.65	0.74	--

*Note.* All correlations are significant at  $p < .01$ .

## Factor Structure

Several factor structures for the SCI were tested: (1) 1 first-order factor (unidimensional), (2) 1 second-order factor, 3 first-order factors, (3) 3 correlated first-order factors, and (4) a bifactor model. Fit indices for each tested model are provided in Table 6. Models 1 and 2 had adequate absolute fit, comparative fit, and model parsimony (Model 1: SRMR = 0.05, CFI = 0.89, RMSEA = 0.08; Model 2: SRMR = 0.05, CFI = 0.91, RMSEA = 0.08), whereas Model 4 only converged with pathway modifications (i.e., Item 1 fixed to equal 0). Model 3 had the same goodness of fit indices as Model 2 due to the identical number of pathways. Model 3 was not selected, however, because theory supports measuring an overall first-order factor as found in Model 2. Between Models 1 and 2, the AIC comparative fit indices suggested that Model 2 (AIC = 14370.94) may be superior to Model 1 (AIC = 14428.74). Given similar fit indices for Models 1 and 2 and the nesting of Model 1 within Model 2 (i.e., the less complex model is nested within the more complex model), the Satorra-Bentler scaled chi-square difference test was used to examine the two models. Using loglikelihood values and scaling correction factors obtained from the maximum likelihood robust estimator, the chi-square test indicated a difference between the two models ( $\text{TRd} = 28.98$ ,  $p < .01$ ), such that Model 2 was superior in fit. However, large significant correlations were observed between the three factors in Model 2 ( $r_s = .90-.99$ ,  $p_s < .01$ ). These high intercorrelations may cause collinearity problems and suggest that the three factors are not distinct; rather, a single factor may be the best representation of the data. Thus, Model 1 (1 first-order factor, unidimensional) was selected.

Table 6. Goodness of Fit Indices for Proposed Factor Structures for the Self-compassion Inventory

Model	Model Description	Fit Indices			
		SRMR	CFI	RMSEA	AIC
1	1 first-order factor (unidimensional)	0.06	0.89	0.08	14428.74
2	1 second-order factor, 3 first-order factors	0.05	0.91	0.08	14370.94
3	3 correlated first-order factors	0.05	0.91	0.08	14370.94
4	Bifactor model <sup>a</sup>	N/A	N/A	N/A	N/A

*Note.* SRMR = standardized root mean square residual; CFI = comparative fit index; RMSEA = root mean square error of approximation; AIC = Akaike information criterion.

<sup>a</sup>The standard, unadjusted model did not converge. Thus, no fit indices were produced.

## Reliability and Construct Validity

Following identification of the unidimensional factor structure, item loadings were examined. Standardized estimates of the 15 items (see Table 7) were all above the recommended loading of 0.4 (range = 0.62 – 0.81); thus, all items were considered to contribute to the overall measurement of self-compassion. Internal consistency was then examined and determined to be excellent ( $\alpha = 0.95$ ).

Construct validity of the SCI was demonstrated through significant correlations with other variables hypothesized to be associated with self-compassion (see Table 8). As hypothesized, the SCI was positively associated with mindfulness (i.e., acting with awareness [ $r = 0.21, p < .001$ ], nonjudging [ $r = 0.17, p = .003$ ], and nonreactivity [ $r = 0.35, p < .001$ ]), quality of life ( $r = 0.39, p < .001$ ), peaceful acceptance of cancer ( $r = 0.38, p < .001$ ), active coping ( $r = 0.18, p = .001$ ), and progress in value-based living ( $r = 0.50, p < .001$ ). Furthermore, as hypothesized, the SCI was also negatively associated with depressive symptoms ( $r = -0.39, p < .001$ ), anxiety ( $r = -0.36, p < .001$ ), rumination ( $r = -0.33, p < .001$ ), denial ( $r = -0.17, p < .001$ ), struggle with illness ( $r = -0.31, p < .001$ ), psychological inflexibility ( $r = -0.40, p < .001$ ), cognitive fusion ( $r = -0.38, p < .001$ ), and obstruction in value-based living ( $r = -0.37, p < .001$ ). A moderate positive correlation was found between the SCI and the existing SCS-SF (K. Neff, 2003b) ( $r = 0.58, p < .001$ ).

Incremental validity of the SCI was established through descriptively comparing correlations between this measure and negative psychological variables vs. correlations between the existing SCS-SF and these variables (see Table 8). As hypothesized, compared to associations with the SCS-SF, associations were smaller between scores on the new self-compassion measure and depressive symptoms ( $r = -0.39, p < .001$ ; SCS-SF:  $r = -0.50, p < .001$ ), anxiety ( $r = -0.36, p < .001$ ; SCS-SF:  $r = -0.49, p < .001$ ), rumination ( $r = -0.33, p < .001$ ; SCS-SF:  $r = -0.68, p < .001$ ), denial ( $r = -0.17, p < .001$ ; SCS-SF:  $r = -0.31, p < .001$ ), struggle with illness ( $r = -0.31, p < .001$ ; SCS-SF:  $r = -0.52, p < .001$ ), psychological inflexibility ( $r = -0.40, p < .001$ ; SCS-SF:  $r = -0.61, p < .001$ ), cognitive fusion ( $r = -0.38, p < .001$ ; SCS-SF:  $r = -0.70, p < .001$ ), and obstruction in values-based living ( $r = -0.37, p < .001$ ; SCS-SF:  $r = -0.61, p < .001$ ).

Additionally, correlations between the negative items of the SCS-SF (SCS-SF<sub>neg</sub>) and anxiety and depressive symptoms were descriptively compared to correlations between the SCI and these symptoms (see Table 8). As hypothesized, compared to associations with the SCS-SF negative items, associations were smaller between the SCI and anxiety ( $r = -0.36, p < .001$ ; SCS-SF<sub>neg</sub>:  $r = -0.52, p < .001$ ) and depressive symptoms ( $r = -0.39, p < .001$ ; SCS-SF<sub>neg</sub>:  $r = -0.52, p < .001$ ).

Table 7. Item Loadings for the Self-compassion Inventory

<b>Item</b>	<b>Standardized Estimates</b>
1. I was kind to myself even when I was going through a tough time.	0.67
2. Knowing that others have faced challenges similar to mine gave me courage.	0.66
3. I noticed my difficult feelings without dwelling on them.	0.62
4. When I noticed my flaws, I remembered that nobody is perfect.	0.75
5. I was patient and understanding towards myself when I faced challenges.	0.74
6. I accepted my thoughts and feelings without needing to change them.	0.76
7. Even though I've failed before, I gave myself some slack.	0.77
8. I recognized that others experience times of stress like I do.	0.74
9. When I had difficult feelings, I realized that these feelings would change over time.	0.81
10. I experienced my painful thoughts and feelings instead of trying to avoid them.	0.68
11. When I faced a challenge, I reminded myself that challenges are a part of every human life.	0.79
12. I forgave myself for my mistakes.	0.77
13. I recognized that my struggles are also experienced by others.	0.79
14. I was able to soothe myself during times of stress.	0.77
15. I accepted my painful thoughts and feelings as a natural part of life.	0.77

Table 8. Correlations for Assessing the Construct Validity of the 15-Item Self-Compassion Inventory

	<i>n</i>	SCI	<i>p</i>	SCS-SF Total	<i>p</i>	SCS-SF Positive Items	<i>p</i>	SCS-SF Negative Items	<i>p</i>
Anxiety symptoms	396	-0.36	0.000	-0.49	0.000	-0.27	0.000	-0.52	0.000
Depressive symptoms	390	-0.39	0.000	-0.50	0.000	-0.30	0.000	-0.52	0.000
Quality of life	403	0.39	0.000	0.47	0.000	0.28	0.000	0.48	0.000
Psychological inflexibility	397	-0.40	0.000	-0.61	0.000	-0.30	0.000	-0.67	0.000
Nonreactivity	397	0.35	0.000	0.15	0.002	0.34	0.000	-0.05	0.344
Nonjudging	391	0.17	0.003	0.45	0.000	0.18	0.001	0.54	0.000
Acting with awareness	396	0.21	0.000	0.44	0.000	0.20	0.000	0.51	0.000
Rumination	390	-0.33	0.000	-0.68	0.000	-0.38	0.000	-0.72	0.000
Values-based living - Obstruction	402	-0.37	0.000	-0.61	0.000	-0.32	0.000	-0.65	0.000
Values-based living - Progress	398	0.50	0.000	0.57	0.000	0.56	0.000	0.40	0.000
Cognitive fusion	397	-0.38	0.000	-0.70	0.000	-0.38	0.000	-0.75	0.000
Struggle with illness	398	-0.31	0.000	-0.52	0.000	-0.26	0.000	-0.58	0.000
Peaceful acceptance of illness	397	0.38	0.000	0.45	0.000	0.34	0.000	0.40	0.000
Active coping	401	0.18	0.001	0.09	0.082	0.26	0.000	-0.08	0.110
Denial	397	-0.17	0.000	-0.31	0.000	-0.13	0.002	-0.35	0.000
SCS-SF Total	390	0.58	0.000	-0.49	0.000	--	--	--	--

*Note.* SCI = Self-compassion Inventory. SCS-SF = Self-compassion Scale – Short Form. No estimated correlation coefficients are reported between the SCS-SF Total score, SCS-SF Positive Items, and SCS-SF Negative Items, as all three cannot be simultaneously entered in the model due to collinearity issues.

### **Supplemental Analyses: 5-Item Short-Form Version**

Given the length of the new self-compassion scale, I shortened the measure to reduce participant burden. The five items with the highest item-total correlations were retained for the shortened version (items 9, 11, 13, 14, 15). I then calculated fit indices for Model 1, the structure with 1 first-order factor (unidimensional). The model demonstrated good absolute fit, comparative fit, and parsimony (SRMR = 0.03, CFI = 0.98, RMSEA = 0.07). The goodness of fit indices for the 5-item version, the Brief Self-compassion Inventory (BSCI), were better than those for all models tested with the 15-item measure. Thus, the 1 first-order factor structure was retained.

Next, I examined associations between the BSCI and the SCI. After summing each item response for both versions, the correlation between the two versions was found to be high ( $r = 0.94$ ). Item-total correlations (see Table 9) and inter-item correlations (see Table 10) were also examined, and no problematic items were found. Item loadings (see Table 11) were then examined for the BSCI to determine whether items contributed to the single overall factor. Standardized loadings all met the recommended cut-off of 0.4 (range = 0.76 - 0.83). Internal consistency reliability was also found to be excellent ( $\alpha = 0.90$ ).

Table 9. Descriptive Statistics for the Brief Self-compassion Inventory Items (5 items;  $N = 393$ )

<b>Item</b>	<b>Mean</b>	<b>SD</b>	<b>Item-Total Correlation</b>
9. When I had difficult feelings, I realized that these feelings would change over time.	3.77	1.08	0.71
11. When I faced a challenge, I reminded myself that challenges are a part of every human life.	3.98	1.05	0.77
13. I recognized that my struggles are also experienced by others.	4.01	1.05	0.76
14. I was able to soothe myself during times of stress.	3.67	1.00	0.74
15. I accepted my painful thoughts and feelings as a natural part of life.	3.85	1.04	0.75

Table 10. Inter-item Correlations for the Brief Self-compassion Inventory (5 items;  $N = 404$ )

	<b>9</b>	<b>11</b>	<b>13</b>	<b>14</b>	<b>15</b>
9	--				
11	0.64	--			
13	0.65	0.70	--		
14	0.57	0.63	0.60	--	
15	0.57	0.63	0.63	0.73	--

*Note.* All correlations are significant at  $p < .01$ .

Table 11. Item Loadings for the Brief Self-compassion Inventory (5 items)

<b>Item</b>	<b>Standardized Estimates</b>
9. When I had difficult feelings, I realized that these feelings would change over time.	0.76
11. When I faced a challenge, I reminded myself that challenges are a part of every human life.	0.83
13. I recognized that my struggles are also experienced by others.	0.82
14. I was able to soothe myself during times of stress.	0.80
15. I accepted my painful thoughts and feelings as a natural part of life.	0.81

To test the construct validity of the BSCI, correlations were computed between the measure and the same variables hypothesized to be associated with self-compassion (see Table 12). Total scores were again calculated for the BSCI; thus, observed scores were utilized for these analyses. Similar to the SCI, the BSCI was positively associated with mindfulness (i.e., acting with awareness [ $r = 0.21, p < .001$ ], nonjudging [ $r = 0.16, p = .003$ ], and nonreactivity [ $r = 0.21, p < .001$ ]), quality of life ( $r = 0.40, p < .001$ ), peaceful acceptance of cancer ( $r = 0.39, p < .001$ ), active coping ( $r = 0.16, p = .002$ ), and progress in value-based living ( $r = 0.43, p < .001$ ). Significant negative associations were also found between the BSCI and depressive symptoms ( $r = -0.37, p < .001$ ), anxiety ( $r = -0.36, p < .001$ ), rumination ( $r = -0.32, p < .001$ ), denial ( $r = -0.15, p = .001$ ), struggle with illness ( $r = -0.30, p < .001$ ), psychological inflexibility ( $r = -0.39, p < .001$ ), cognitive fusion ( $r = -0.36, p < .001$ ), and obstruction in value-based living ( $r = -0.36, p < .001$ ). Additionally, a moderate positive correlation was found between the BSCI and the existing SCS-SF ( $r = 0.55, p < .001$ ).

Incremental validity of the BSCI was established through descriptively comparing correlations between this measure and negative psychological variables vs. correlations between the existing SCS-SF and these variables (see Table 12). As hypothesized, compared to associations with the SCS-SF, associations were smaller between scores on the BSCI and depressive symptoms ( $r = -0.37, p < .001$ ; SCS-SF:  $r = -0.50, p < .001$ ), anxiety ( $r = -0.36, p < .001$ ; SCS-SF:  $r = -0.49, p < .001$ ), rumination ( $r = -0.32, p < .001$ ; SCS-SF:  $r = -0.68, p < .001$ ), denial ( $r = -0.15, p = .001$ ; SCS-SF:  $r = -0.31, p < .001$ ), struggle with illness ( $r = -0.30, p < .001$ ; SCS-SF:  $r = -0.52, p < .001$ ), psychological inflexibility ( $r = -0.39, p < .001$ ; SCS-SF:  $r = -0.61, p < .001$ ), cognitive fusion ( $r = -0.36, p < .001$ ; SCS-SF:  $r = -0.70, p < .001$ ), and obstruction in values-based living ( $r = -0.36, p < .001$ ; SCS-SF:  $r = -0.61, p < .001$ ).

Associations between negative items of the SCS-SF and psychological symptoms were compared to associations between the BSCI and the same psychological symptoms (see Table 12). Findings were comparable to those found with the SCI. Compared to associations with the negative SCS-SF items, the associations were smaller between the BSCI and anxiety ( $r = -0.36, p < .001$ ; SCS-SF<sub>neg</sub>:  $r = -0.52, p < .001$ ) and depressive symptoms ( $r = -0.37, p < .001$ ; SCS-SF<sub>neg</sub>:  $r = -0.52, p < .001$ ).

Table 12. Correlations for Assessing the Construct Validity of the Brief Self-compassion Inventory (5 items)

	<i>n</i>	<b>BSCI</b>	<i>p</i>	<b>SCS-SF Total</b>	<i>p</i>	<b>SCS-SF Positive Items</b>	<i>p</i>	<b>SCS-SF Negative Items</b>	<i>p</i>
Anxiety symptoms	397	-0.36	0.000	-0.49	0.000	-0.26	0.000	-0.52	0.000
Depressive symptoms	397	-0.37	0.000	-0.50	0.000	-0.30	0.000	-0.52	0.000
Quality of life	403	0.40	0.000	0.47	0.000	0.27	0.000	0.48	0.000
Psychological inflexibility	396	-0.39	0.000	-0.61	0.000	-0.30	0.000	-0.67	0.000
Nonreactivity	397	0.28	0.000	0.15	0.002	0.35	0.000	-0.05	0.340
Nonjudging	391	0.16	0.003	0.45	0.000	0.18	0.001	0.54	0.000
Acting with awareness	396	0.21	0.000	0.44	0.000	0.20	0.000	0.51	0.000
Rumination	390	-0.32	0.000	-0.68	0.000	-0.38	0.000	-0.72	0.000
Values-based living - Obstruction	402	-0.36	0.000	-0.61	0.000	-0.32	0.000	-0.65	0.000
Values-based living - Progress	398	0.43	0.000	0.57	0.000	0.56	0.000	0.40	0.000
Cognitive fusion	397	-0.36	0.000	-0.70	0.000	-0.38	0.000	-0.75	0.000
Struggle with illness	398	-0.30	0.000	-0.52	0.000	-0.26	0.000	-0.58	0.000
Peaceful acceptance of illness	397	0.39	0.000	0.45	0.000	0.34	0.000	0.40	0.000
Active coping	401	0.16	0.002	0.09	0.082	0.26	0.000	-0.08	0.110
Denial	397	-0.15	0.001	-0.31	0.000	-0.13	0.002	-0.35	0.000
SCS-SF Total	390	0.55	0.000	-0.49	0.000	--	--	--	--

*Note.* BSCI = Brief Self-compassion Inventory. SCS-SF = Self-compassion Scale – Short Form. Correlation coefficients between SCS-SF positive items and SCS-SF negative items and psychological variables may differ from those of Table 8 due to estimation error between models. In addition, no estimated correlation coefficients are reported between SCS-SF Total, SCS-SF Positive Items, and SCS-SF Negative Items, as all three cannot be simultaneously entered in the model due to collinearity issues.

## Supplemental Analyses: Measurement Invariance Testing of the BSCI

Measurement invariance testing was also included in this project to assess the performance of the measure in assessing self-compassion across various population groups, given the same latent ability of the measure. In other words, measurement invariance testing provides information as to whether the construct measured is the same across different population subgroups, or whether there is bias in the measure for different groups.

To examine measurement invariance across cancer stages, cancer types, and gender, models were tested in stepwise order, starting from the least restrictive level to the most restrictive level, with one additional equality constraint at each consecutive level. The first level, the configural invariance model, tests the baseline model (1 first-order factor, unidimensional) simultaneously across the groups and does not contain any parameter constraints. The second level is the metric invariance (weak invariance) model where factor loadings are constrained to be equal across the groups. The third level is scalar invariance (strong invariance) where both factor loadings and intercepts are constrained to be equal across the groups. Finally, the fourth and most restrictive level is the strict invariance model where factor loadings, intercepts, and error variances are all constrained to be equal across the groups. Each model was compared to the model immediately preceding it. These models were tested using the maximum likelihood robust estimator. Scaled Satorra-Bentler chi-square difference tests were conducted to evaluate the sequences of measurement invariance models, with the preceding, less restrictive model nested within the next model. A nonsignificant chi-square difference test indicates that invariance was held. Because the chi-square difference test may be sensitive to large sample sizes (i.e., large samples provide increased power to detect significant differences in models, which can lead to conclusions of non-invariance), researchers have started reporting alternative fit indices (Putnick, Diane & Bornstein, Mark, 2016). Thus, other fit indices that are becoming more common in the literature (e.g.,  $\Delta$ CFI,  $\Delta$ RMSEA) (Chen, 2007; Cheung & Rensvold, 2002) are also available for reference in Table 13, which includes a summary of all models examined.

**Cancer stages.** Measurement invariance was examined between the early and advanced-stage cancer groups (see Table 13 for a summary of results). The configural model demonstrated good fit (CFI = 0.974, RMSEA = 0.078). The scaled chi-square difference test between the

configural and metric models was nonsignificant, indicating that metric invariance was held ( $\Delta\chi^2 = 3.893, p = 0.42$ ). Next, the nested chi-square test was run to compare the metric and scalar models, and there was no statistically significant difference ( $\Delta\chi^2 = 9.446, p = 0.05$ ), indicating that scalar invariance had been met. Finally, the scalar and strict models were compared, and there was no significant difference ( $\Delta\chi^2 = 5.969, p = 0.99$ ), indicating that strict invariance was also met.

**Cancer types.** Next, measurement invariance was examined between the breast, gastrointestinal, lung, and prostate cancer groups (see Table 13 for a summary of results). The configural model demonstrated adequate fit (CFI = 0.957, RMSEA = 0.109). Scaled chi-square difference testing to compare the configural and metric models demonstrated that metric invariance was held ( $\Delta\chi^2 = 14.557, p = 0.27$ ). The nested chi-square test was then used to compare the metric and scalar model; again, there was no significant difference ( $\Delta\chi^2 = 16.938, p = 0.15$ ), indicating that scalar invariance was held. Lastly, the scalar and strict models were compared and there was no significant difference ( $\Delta\chi^2 = 16.543, p = 0.74$ ), indicating all levels of invariance had been met.

**Gender.** Measurement invariance was examined between male and female participants (see Table 13 for a summary of results). Based on fit indices, the configural model demonstrated adequate fit (CFI = 0.965, RMSEA = 0.094). Once again, the configural and metric models were compared and the nonsignificant difference test indicated that metric invariance had been met ( $\Delta\chi^2 = 3.002, p = 0.56$ ). Next, a nonsignificant difference test comparing the metric and scalar models demonstrated that scalar invariance also held ( $\Delta\chi^2 = 3.840, p = 0.43$ ). Finally, the scalar and strict models were compared and the difference test was also nonsignificant, indicating that strict invariance had been met ( $\Delta\chi^2 = 11.490, p = 0.12$ ).

Table 13. Measurement Invariance Across Cancer Stage, Cancer Type, and Gender

	$\chi^2$ (df)	CFI	$\Delta$ CFI	RMSEA [90% CI]	$\Delta$ RMSEA	Sequential Model Comparison $\chi^2$ (df)	<i>p</i>
<b>Cancer Stage</b>							
Configural	22.239 (10)	0.974	--	0.078 [0.033-0.122]	--	--	
Metric	29.147 (14)	0.968	-0.006	0.073 [0.035-0.111]	-0.005	3.893 (4)	0.42
Scalar	38.051 (18)	0.957	-0.011	0.074 [0.041-0.107]	0.001	9.446 (4)	0.05
Strict	43.812 (35)	0.960	0.003	0.061 [0.029-0.090]	-0.013	5.969 (17)	0.99
<b>Cancer Type</b>							
Configural	43.952 (20)	0.957	--	0.109 [0.065-0.153]	--	--	
Metric	63.183 (32)	0.944	-0.013	0.098 [0.062-0.134]	-0.011	14.557 (12)	0.27
Scalar	82.461 (44)	0.931	-0.013	0.093 [0.061-0.124]	-0.005	16.938 (12)	0.15
Strict	93.047 (65)	0.949	0.018	0.065 [0.031-0.094]	-0.028	16.543 (21)	0.74
<b>Gender</b>							
Configural	27.869 (10)	0.965	--	0.094 [0.054-0.136]	--	--	
Metric	35.213 (14)	0.959	-0.006	0.087 [0.051-0.123]	-0.007	3.002 (4)	0.56
Scalar	41.701 (18)	0.954	-0.005	0.081 [0.049-0.113]	-0.006	3.840 (4)	0.43
Strict	52.940 (25)	0.946	-0.008	0.074 [0.046-0.102]	-0.007	11.490 (7)	0.12

Note. CFI = comparative fit index; RMSEA = root mean square error of approximation.

## QUANTITATIVE STUDY (STAGE 2) DISCUSSION

The aim of the present study was to develop and evaluate the psychometric properties of a new self-compassion measure, the SCI. Findings support a unidimensional factor structure and demonstrated good psychometric properties (i.e., factor structure, reliability, and validity) of the 15-item measure. Excellent psychometric properties also were found for a 5-item short-form, the BSCI. Furthermore, results support the configural, metric, scalar, and strict invariance of the BSCI across cancer stages, cancer types, and genders, indicating psychometric equivalence for use across various subgroups. Overall, the SCI and BSCI address limitations of existing self-compassion measures and will serve as useful tools in clinical and research settings.

Psychometric testing demonstrated excellent reliability and construct validity of the SCI. The measure was found to be unidimensional, with one overall self-compassion factor. This factor structure may have emerged for several reasons. First, the SCI expanded upon the original conceptual model of self-compassion for the SCS, which has been characterized as having three intercorrelated dimensions, three pairs of contrasting dimensions (six dimensions total), or measuring one general, overarching construct of self-compassion as part of a bifactor model (K. Neff, 2003a; K. D. Neff, 2016; Tóth-Király et al., 2017). Modifications to the SCS included the addition of items reflecting self-forgiveness, courage, and a standard conceptualization of mindfulness in the literature. The unidimensional factor structure of the SCI suggests the relevance of these concepts in our understanding of self-compassion. Furthermore, the omission of negatively worded items in the SCI may have also contributed to its factor structure. Although negatively worded or reverse worded items have been added to measures with the intention of preventing acquiescence bias, or the tendency to endorse items, these types of items have not been found to prevent this bias (Savalei & Falk, 2014). In fact, negatively worded items may lead to errors due to careless responding or elicit a different response pattern than positively worded items (DiStefano & Motl, 2006; Woods, 2006). Researchers have noted that should 10% of participants engage in careless responding with such items, a unidimensional structure is likely to be rejected (Woods, 2006). Thus, by excluding negatively worded items, the SCI avoids potential concerns associated with participant responding and shows a unidimensional factor structure.

Construct validity was established through confirmed theory-driven relationships between the SCI and psychological variables. As hypothesized, the SCI was positively associated with mindfulness, specifically the facets of nonreactivity, nonjudging, and acting with awareness. Mindfulness involves full awareness of present-moment experiences with an accepting posture (Kabat-Zinn, 1994), which is one aspect of a compassionate response. Indeed, mindful acceptance, rooted in the monitor and acceptance theory (MAT) of mindfulness (Lindsay & Creswell, 2017), is a key component of self-compassion in our conceptualization. Consistent with this view, past research has associated the original SCS with mindfulness (e.g., Carvalho, Gillanders, Palmeira, Pinto-Gouveia, & Castilho, 2018), and self-compassion has also been identified as a potential mediator of mindfulness-based interventions (e.g. Duarte & Pinto-Gouveia, 2017). Additionally, mindfulness has mediated the effects of self-compassion interventions on psychosocial outcomes (Ferrari et al., 2019).

Other psychosocial factors showed theory-driven relationships with our new self-compassion measure. First, the new measure was positively associated with quality of life, consistent with previous studies linking self-compassion to well-being (e.g., Voci, Veneziani, & Fuochi, 2019). The new self-compassion measure was also positively associated with peaceful acceptance of cancer and progress in value-based living and negatively associated with their counterparts, struggle with illness and obstruction in value-based living. The relationships between self-compassion and acceptance and struggle with illness are consistent with theory. Specifically, acceptance of cancer requires one to recognize the difficult experience and turn towards it with kindness rather than attempting to avoid it (Secinti et al., 2019). It is also theoretically expected that more self-compassion will result in prioritizing actions that benefit the self, such as living more consistently with personal values. In addition, self-compassion showed small significant associations with active coping and avoidant coping (i.e., denying or avoiding realities), consistent with previous literature on self-compassion and coping styles (e.g., Sirois, Molnar, et al., 2015). Researchers have suggested that self-compassion promotes greater illness acceptance (Sirois, Molnar, et al., 2015), which encourages a focus on aspects of life that one can reasonably change or address (e.g., health behaviors) in the context of one's illness. In addition, self-compassion may reduce the impact of negative illness cognitions (e.g., self-blame) associated with turning away from the realities of the illness.

As hypothesized, the new self-compassion measure was also negatively associated with rumination, psychological inflexibility, and cognitive fusion. The link between self-compassion and rumination is supported by existing research (Brown et al., 2020; Raes, 2010). For example, greater self-compassion has been linked to decreased rumination about illness threats in breast cancer survivors (Brown et al., 2020). Other studies have found that rumination mediates the link between self-compassion and anxiety and depressive symptoms (Raes, 2010). In addition, our theory suggests that patients with lower levels of self-compassion may judge or criticize their thoughts and feelings rather than recognizing the universality of such experiences. According to contextual behavioral science theory, this judgment of internal experiences is associated with greater psychological inflexibility and fusion with thoughts (Hayes et al., 2013). Individuals may take their judgmental thoughts about internal experiences at face value (e.g., “I shouldn’t feel anxious about my cancer diagnosis”) and become entangled (fused) with them, which leads to unhelpful behaviors (e.g., stopping activities that may remind them of losses resulting from cancer) (Hayes et al., 2013). Psychological inflexibility emerges when individuals engage in ineffective behaviors to avoid unwanted experiences, losing connection with what matters in the present (e.g., avoiding family gatherings in fear that others might ask about cancer).

Consistent with hypotheses, associations between SCS-SF total scores and “negative” psychological constructs were larger than associations between the SCI and those same constructs. Specifically, the latter associations were smaller for depressive symptoms, anxiety, rumination, denial, struggle with illness, psychological inflexibility, cognitive fusion, and obstruction in values-based living. These findings support the incremental validity of the new scale, suggesting that it is not confounded with distress or overly correlated with “negative” psychological processes.

One critique of the SCS is that total scores are inflated with psychopathology due to the inclusion of negative items that assess *uncompassionate* responding, or the opposite of self-compassion (Muris et al., 2018; Muris & Petrocchi, 2017). Consistent with this notion, negatively worded items on the SCS-SF were found to have higher correlations with anxiety and depressive symptoms compared to the SCI. Thus, items assessing uncompassionate responding may contribute to overestimation of the link between self-compassion and distress.

## **Supplemental Findings**

Findings suggest that a short-form version of the new self-compassion measure, the BSCI, is valid and suitable for use across various populations. Results showed that the unidimensional model fit this 5-item measure best, consistent with the long-form version of the scale. Internal consistency of the measure was excellent, and the measure showed evidence of construct validity that was comparable to that for the long version.

Measurement invariance, including strict invariance, was established for the BSCI across cancer stages, cancer types, and genders. The establishment of configural invariance suggests that the pattern of item loadings to the latent factor of self-compassion across subgroups is not significantly different. In other words, the structural integrity of the measure appears to be valid across subgroups. Establishment of metric invariance suggests that factor loadings are equal or not significantly different across subgroups. Establishment of scalar invariance indicates that the meaning of the latent factor, self-compassion, is consistent across subgroups and there are no indications of systematic influences on subgroups' responses to items. Finally, establishment of strict invariance suggests that any observed differences in self-compassion between subgroups are true group differences rather than the result of biased measurement. Thus, the BSCI is acceptable for use with varying cancer stages (early- vs. advanced-stage), major cancer types (breast, gastrointestinal, lung, and prostate cancer), and both men and women and can be used to make meaningful comparisons between these subgroups.

## **Limitations**

Limitations of this study should be noted. Although purposive sampling based on cancer prevalence rates ensured more representative numbers of racial and ethnic minorities in the sample, the final sample was still primarily non-Hispanic White, which is representative of the recruitment sites in the midwestern United States. Thus, generalizability of the results may be limited due to geographical restrictions. In addition, this study was cross-sectional, which does not allow for an examination of test-retest reliability. There may also be differences in self-compassion at different points in the cancer trajectory. Furthermore, in consideration of participant burden, I was unable to assess other constructs for the validity analyses, such as self-criticism, empathy, and compassion for others.

Limitations related to biased responding and measurement error should also be considered. Although response and completion rates for the study were high, there were differences in age and gender between those who completed the survey versus those who refused participation. Other differences between participants and non-participants may have affected the results. For example, 10 patients declined participation due to illness, belief that the study was too difficult, or a desire to not think about their cancer. In addition, levels of anxiety and depressive symptoms in our current sample were low compared to cancer patient norms (Jensen et al., 2017). Because psychological symptoms are associated with fewer physical symptoms and poor adjustment (McFarland et al., 2018), the resulting sample may have a disproportionate number of participants with lower symptom burden and better coping skills. Although qualitative responses to items were appropriately varied in Stage 1, it is possible that social desirability biases may have affected responses to interview questions and standard questionnaires. Also, although participants were asked to complete the questionnaire independently, it is possible that family members could have assisted them, influencing responses on questions about difficult thoughts and emotions.

### **Implications and Directions for Future Research**

Findings indicate that the SCI and BSCI may be useful tools for both research and clinical settings. The new measures address concerns with existing self-compassion measures, such as the confounding of negative items with distress. Findings also provide additional evidence for the conceptual overlap between different aspects of self-compassion.

Future directions include testing the SCI and BSCI with diverse samples, including cancer patients from varying geographic areas and sociocultural backgrounds. Given that compassionate responding is thought to be at its core a universal human reaction, these measures should also be cross-validated with other medical and nonclinical populations to further assess their psychometric properties and determine similarities and differences in their properties across samples. The construct of self-compassion has also been discussed as a buffering factor or process protecting against psychological distress. Thus, administration of these measures in longitudinal studies may be important to establish temporal relationships between self-compassion and distress. Collecting clinician or informant reports or observable, behavioral data, such as using self-accepting rather than self-critical language or engaging in self-care behaviors during a stressful period, would

enhance the rigor of the study designs. The SCI or BSCI could also be tested in the context of intervention studies intended to promote self-compassion to understand the measure's sensitivity to change and test mechanistic theory underlying these interventions.

### **Conclusions**

Increased interest in self-compassion from clinicians and researchers alike has stemmed from the growing number of studies pointing to its many health benefits (MacBeth & Gumley, 2012; Sirois, 2020; Terry et al., 2013). Thus, improving the measurement of self-compassion is necessary for advancing the science. By following gold-standard practices for measure development and testing, this project produced a new self-compassion measure, the SCI, and a 5-item short-form version, the BSCI, with robust psychometric properties. The BSCI was also tested for measurement invariance and was found to be acceptable for use across populations of varying cancer stages, cancer types, and genders. Overall, use of this brief measure will reduce participant burden and will allow for examination of theory underlying interventions aimed at improving the health and well-being of cancer and other populations.

## APPENDIX A. SELF-COMPASSION MEASURE FOR EXPERT REVIEW PRIOR TO STAGE 1

Please respond to each item by marking one box per row.

In the past 7 days...		Not at all	A little bit	Somewhat	Quite a bit	Very much
C.H.1	I recognized that I was not alone in my struggles.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
C.H.2	Knowing that others have fought similar battles gave me comfort.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
C.H.3	When I thought about my weaknesses, I remembered that nobody is perfect.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
C.H.4	I reminded myself that others are suffering like I am.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
S.F.1	I did not feel guilt or shame for my failures.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
S.F.2	Even though I've failed before, I was able to let go of my past.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
S.F.3	When I made mistakes, I believed that I deserved a second chance.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
S.F.4	I forgave myself for my mistakes.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
M.A.1	When I had difficult feelings, I reminded myself that these emotions would pass.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
M.A.2	I accepted my thoughts and feelings without needing to change them.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
M.A.3	I noticed my negative feelings without letting them overwhelm me.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
M.A.4	I faced my painful thoughts and feelings instead of trying to avoid them.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

# APPENDIX B. MEDICAL RECORD SCREENING FORM FOR STAGE 1

## IRB Protocol 1711987955: Development of a Self-Compassion Questionnaire for Cancer Patients

### Eligibility Screening Form

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

MRN: \_\_\_\_\_

Screening ID: \_\_\_\_\_

Patient's Name: \_\_\_\_\_

Eligibility Screening: Record Review and Physician Approval	Yes	No
1) Person who is at least 3 weeks post-diagnosis of a gastrointestinal or hematological cancer and is receiving care at IUSCC?		
2) At least 18 years of age?		
3) Can speak and read English?		
4) <b>NO</b> severe cognitive impairment?		
5) <b>NOT</b> receiving hospice care?		
6) Attending physician contacted and confirmed eligibility? <input type="checkbox"/> Attending: _____ <input type="checkbox"/> Date of confirmation: _____		

**Patient agreed to participate:**

Consent Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

/OR/

**Patient declined to participate (please check ALL that apply):**

- (1) \_\_\_ \*No time today *but was otherwise interested*
- (2) \_\_\_ Not interested
- (3) \_\_\_ Not feeling well or has other health reasons
- (4) \_\_\_ Study participation is too much work/Too difficult
- (5) \_\_\_ No time
- (5) \_\_\_ Other, specify: \_\_\_\_\_

Patient age: \_\_\_\_\_

Patient gender: \_\_\_\_\_

Patient race: \_\_\_\_\_

## APPENDIX C. SELF-COMPASSION ITEMS TESTED FOR STAGE 1

### New Self-Compassion Measure

Please respond to each item by marking one box per row.

In the past 2 weeks...		Not at all	A little bit	Somewhat	Quite a bit	Very much
SK1	I was kind to myself even when I was going through a hard time.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
CH2	Knowing that others have faced challenges similar to mine gave me comfort.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
MA3	I noticed my difficult feelings without being overwhelmed by them.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
CH3	When I noticed my weaknesses, I remembered that nobody is perfect.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
SK4	I forgave myself for my mistakes.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
MA2	I accepted my thoughts and feelings without needing to change them.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
SK2	Even though I've failed before, I was able to let go of my past.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
CH1	I recognized that I was not alone in my struggles.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
MA4	I allowed myself to experience my painful thoughts and feelings instead of trying to avoid them.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
MA1	When I had difficult feelings, I realized that these emotions would change.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
CH4	I reminded myself that others experience times of difficulty like I do.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
SK3	I was patient and understanding towards myself when facing challenges.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

## APPENDIX D. SEMI-STRUCTURED QUALITATIVE INTERVIEW GUIDE FOR STAGE 1

### Introduction and Procedures

Once we get started, do I have your permission to audio record our conversation like we discussed? Your answers will be kept anonymous and will only be used for this study.

I'd like to talk with you about a short questionnaire that we are developing. We're going to discuss some questions that will ask about your thoughts, feelings, and actions over the past 2 weeks. In particular, the questions will ask you to think back to times when you weren't feeling your best to see how you handled those tougher times. *(Pause and gauge for level of understanding. At the end of each of the following paragraphs, participants will have the opportunity to interject, ask questions, etc.)*

The questions aren't perfect, and we would like your help in improving them. Each question is printed here on a notecard. I'll hand you one card at a time, and I'd like you to read the question aloud. Then, immediately start thinking out loud by saying what's going through your head as you decide on your answer. *(Pause and gauge for level of understanding and address/restate parts of above procedure as needed.)*

After you choose your answer on the scale, I'll ask you a few more questions before we move on to the next card. Does that make sense? *(Pause and gauge for level of understanding and address/restate parts of above procedure as needed.)*

During our conversation please feel free to point out any words or questions that are unclear, difficult to read, don't make sense to you, or seem to be missing something. If a question or word has ANY problems with it, voice your thoughts as soon as you have them. There are no right or wrong answers in this interview—we want to know exactly what YOU think and how YOU understand the question. So if you ask me a question during the interview, I may not be able to answer.

Do you have any questions before we start? *(Pause and gauge for level of understanding and address/restate parts of above procedure as needed.)*

*(Begin audio recording here.)*

Here's the first question.

*(Hand subject the first notecard to be read aloud, and encourage thinking aloud until they arrive at their answer. Keep an eye on time. Time permitting, follow up with 4-5 verbal probes on the next page. Repeat this procedure until all 12 questions have been answered or until 30 minutes have gone by.)*

### Follow-up Verbal Probes

1. (*SKIP if patient gave clear line of thinking during think-aloud.*) What were you thinking of when you answered that question? What was going through your head?
2. (*SKIP if patient cited specific instance or example.*) If possible, please describe a specific time or experience that you thought back to when you answered that. (*Probe for more specific details and rationale as needed.*)
3. How might your answer change if it asked about the past **30 days** instead of the past **2 weeks**? What about the past **7 days**? How would that timeframe make it easier or harder to choose an answer or think of a relevant experience?
4. For this question, how easy or hard was it to tell the difference between each choice on the scale? (e.g. “Quite a bit” versus “Very much” & “A little bit” versus “Somewhat”) *For discrepancies between answer choice and rationale:* “Okay, so you chose the answer \_\_\_\_, but then told me that \_\_\_\_\_.”
5. **Which words** in the question might be seen as unclear or confusing, either to you or to others? How could it be reworded? How else could the question be improved to make more sense?

### Retrospective Probe (to be asked after all items discussed)

1. Finally, what else could we do to improve these questions when we use them in the future with other people?
2. (*SKIP if patient’s answers clearly reflected interpretation*) How did you interpret these questions overall as a survey? Did they come across as cancer-specific, or did they seem more generally referring to life?

### Other Potential Probes

- Can you tell me in your own words what the question means to you?
- Was the question easy or hard to answer for the “past **2 weeks**”? Why?
- When you read the words “past **2 weeks**” which specific days did you think of (e.g., from which day to which day)?
- How did you choose between some of the answer choices (e.g. “Quite a bit” versus “Very much” & “A little bit” versus “Somewhat”)?
- You chose (*quote their answer*) as your answer. What does (*quote their answer*) mean to you?
- If you could change the answers or scale, what would you change?
- Did you think mostly about particular experiences on specific days, or more generally over the last **2 weeks**? (*if specific days/events*): Can you tell me more about what made you think back to those specific times?

### Study Wrap-up

Alright, well that concludes our interview and the study! We really appreciate your feedback and effort on this, and I want to thank you for taking the time to participate in the study today. Here's your \$25 Target gift card.

I also want to leave you with this brochure, which contains some additional support services and resources offered right here at the IU Simon Cancer Center in case you ever need them. It was a pleasure meeting you! Have a great rest of the day.

**APPENDIX E. MEDICAL RECORD INFORMATION FORM FOR  
ENROLLED PATIENTS IN STAGE 1**

**Medical Record Information (for Consenting Patients Only)**

**Participant Number:** \_\_\_\_\_

**Patient's Demographics:**

Age: \_\_\_\_\_

Gender:  Male  Female

**Patient's Cancer History:**

Cancer Type #1: \_\_\_\_\_

Date(s) of Diagnosis: _____	Stage(s): I	II	III	IV
_____	Stage(s): I	II	III	IV
_____	Stage(s): I	II	III	IV

Cancer Type #2: \_\_\_\_\_

Date(s) of Diagnosis: _____	Stage(s): I	II	III	IV
_____	Stage(s): I	II	III	IV
_____	Stage(s): I	II	III	IV

**Treatments for Cancer (check all that have been received):**

- Surgery
- Chemotherapy
- Radiation
- Chemoradiation (concurrent chemotherapy and radiation)
- Hormonal therapy
- Stem cell transplant
  - Autologous SCT
  - Allogeneic SCT
- Other: \_\_\_\_\_

## APPENDIX F. QUESTIONNAIRE FOR STAGE 1

### In-Clinic Survey

Please respond to each item by marking one box per row.

In the past 7 days...		Never	Rarely	Sometimes	Often	Always
1	I felt fearful.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
2	I found it hard to focus on anything other than my anxiety.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
3	My worries overwhelmed me.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
4	I felt uneasy.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

Please respond to each item by marking one box per row.

In the past 7 days...		Never	Rarely	Sometimes	Often	Always
1	I felt worthless.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
2	I felt helpless.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
3	I felt depressed.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
4	I felt hopeless.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

1. What race or ethnicity do you consider yourself to be?

\_\_\_ White

\_\_\_ Black or African American

\_\_\_ Asian American or Pacific Islander

\_\_\_ Native American

\_\_\_ Hispanic or Latino

\_\_\_ Multi-racial

\_\_\_ Other (please specify): \_\_\_\_\_

2. Relationship status:
- Single
  - Living with partner
  - Married
  - Separated
  - Divorced
  - Widowed
3. Employment status:
- Employed full-time
  - Employed part-time
  - Student
  - Homemaker
  - Retired
  - Unemployed, looking for work
  - Unemployed, due to disability
  - Other (please specify): \_\_\_\_\_
4. What is the highest grade or year of school you completed?
- Never attended school or only attended kindergarten
  - Grades 1 through 8 (Elementary)
  - Grades 9 through 11 (Some high school)
  - Grade 12 or GED (High school graduate)
  - College 1 year to 3 years (Some college or technical school)
  - College 4 years or more (College graduate)
  - Graduate school (Master's degree, Doctorate, etc.)
5. What is the annual, combined income range for all family members in your household?
- Less than \$21,000
  - \$21,000 - \$39,000
  - \$40,000 - \$65,999
  - \$66,000 - \$105,999
  - \$106,000 or more

## APPENDIX G. MEDICAL RECORD SCREENING FORM FOR STAGE 2

### Screening Form

Screening ID: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

Patient's Name: \_\_\_\_\_

MRN: \_\_\_\_\_

<b>Eligibility Screening: Record Review</b>	<b>Yes</b>	<b>No</b>
1) Is an advanced-stage (IV) cancer patient $\geq 3$ weeks post-diagnosis? <input type="checkbox"/> <i style="text-align: center;">/or/</i> Is an early-stage (I or II) cancer survivor $\geq 6$ months post-treatment (excludes ongoing or recent endocrine therapy)? <input type="checkbox"/> (if yes, check one)		
2) Has received care at IU Health University Hospital, IUSCC, IU Health Spring Mill, or Eskenazi Health hospital?		
3) Has GI, prostate, breast, or lung cancer?		
4) Is 18 years of age or older?		
5) Can speak and read English? (see page 2 below for literacy question)		
6) Has <b>NO</b> severe cognitive impairment? (see page 2 below for cognitive screener)		
<i>All boxes must be checked "Yes" for patient to be eligible for the study.</i>		

**Patient agreed to participate:**

Consent Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

**Patient declined participation (please check ALL that apply):**

- (1) \_\_\_ Not interested
- (2) \_\_\_ Not feeling well or has other health reasons
- (3) \_\_\_ No time
- (4) \_\_\_ Study participation is too much work/Too difficult
- (5) \_\_\_ Other (specify): \_\_\_\_\_

Patient Age: \_\_\_\_\_

Patient Gender: \_\_\_\_\_

Patient Race: \_\_\_\_\_

**APPENDIX H. MEDICAL RECORD INFORMATION FORM FOR  
ENROLLED PATIENTS IN STAGE 2**

Medical Record Information (for consenting patients only)

**Study ID:** \_\_\_\_\_

**Patient's Demographics:**

(1) Age: \_\_\_\_\_

(2) Gender:  Male  Female  Other: \_\_\_\_\_

**Patient's Cancer History:**

Primary Cancer Type: \_\_\_\_\_ (i.e., breast, prostate, GI, lung)

1<sup>st</sup> date of diagnosis: \_\_\_\_/\_\_\_\_/\_\_\_\_ Stage: I    II    III    IV

2<sup>nd</sup> date of diagnosis: \_\_\_\_/\_\_\_\_/\_\_\_\_ Stage: I    II    III    IV

3<sup>rd</sup> date of diagnosis: \_\_\_\_/\_\_\_\_/\_\_\_\_ Stage: I    II    III    IV

Second Cancer Type: \_\_\_\_\_

1<sup>st</sup> date of diagnosis: \_\_\_\_/\_\_\_\_/\_\_\_\_ Stage: I    II    III    IV

2<sup>nd</sup> date of diagnosis: \_\_\_\_/\_\_\_\_/\_\_\_\_ Stage: I    II    III    IV

3<sup>rd</sup> date of diagnosis: \_\_\_\_/\_\_\_\_/\_\_\_\_ Stage: I    II    III    IV

Third Cancer Type: \_\_\_\_\_

1<sup>st</sup> date of diagnosis: \_\_\_\_/\_\_\_\_/\_\_\_\_ Stage: I    II    III    IV

2<sup>nd</sup> date of diagnosis: \_\_\_\_/\_\_\_\_/\_\_\_\_ Stage: I    II    III    IV

3<sup>rd</sup> date of diagnosis: \_\_\_\_/\_\_\_\_/\_\_\_\_ Stage: I    II    III    IV

Fourth Cancer Type: \_\_\_\_\_

1<sup>st</sup> date of diagnosis: \_\_\_\_/\_\_\_\_/\_\_\_\_ Stage: I    II    III    IV

2<sup>nd</sup> date of diagnosis: \_\_\_\_/\_\_\_\_/\_\_\_\_ Stage: I    II    III    IV

3<sup>rd</sup> date of diagnosis: \_\_\_\_/\_\_\_\_/\_\_\_\_ Stage: I    II    III    IV

**Treatments for Cancer(s) (check all that apply):**

- Surgery
- Chemotherapy
- Radiation
- Chemoradiation (concurrent chemotherapy and radiation)
- Hormonal therapy
- Stem cell transplant
  - Autologous SCT
  - Allogeneic SCT
- Other: \_\_\_\_\_

**APPENDIX I. QUESTIONNAIRES FROM STAGE 2 INCLUDED IN THIS  
DISSERTATION**



# Indiana University Health

**Study ID:** \_\_\_\_\_

We deeply appreciate you taking the time to complete this survey. Please be assured that the completed questionnaires are kept strictly confidential; to help ensure this, please **do not write your name or any other identifying information anywhere on this packet**. We will identify you using your Study ID above, so please do not remove this page.

Please read all the instructions carefully as they vary from page to page, and provide the most honest and accurate answers possible. This survey will likely take 30-40 minutes to complete. You may notice that some of the items seem repetitive; however, each item is uniquely important.

If you have any questions or concerns, please call the research team at (317) 278-4009 or email us at [cancerq@iu.edu](mailto:cancerq@iu.edu).

Please respond to the following items by marking one line per question, except where instructed otherwise.

1. What ethnicity do you consider yourself to be?  
 Hispanic or Latino/a  
 non-Hispanic or Latino/a
  
2. What race do you consider yourself to be? Check all that apply.  
 White  
 Black or African American  
 Asian American  
 Native American or Alaska Native  
 Native Hawaiian or Other Pacific Islander  
 Other (please specify): \_\_\_\_\_
  
3. Relationship Status:  
 Single  
 Living with partner  
 Married  
 Separated  
 Divorced  
 Widowed
  
4. Employment status:  
 Employed full-time  
 Employed part-time  
 Student  
 Homemaker  
 Retired  
 Unemployed, looking for work  
 Unemployed, due to disability  
 Other (please specify): \_\_\_\_\_

5. What is the highest grade or year of school you completed?
- Never attended school or only attended kindergarten
  - Grades 1 through 8 (Elementary)
  - Grades 9 through 11 (Some high school)
  - Grade 12 or GED (High school graduate)
  - College 1 year to 3 years (Some college or technical school)
  - College 4 years or more (College graduate)
  - Graduate school (Master's degree, Doctorate, etc.)
6. What is the annual, combined income range for all family members in your household?
- Less than \$21,000
  - \$21,000 - \$39,999
  - \$40,000 - \$65,999
  - \$66,000 - \$105,999
  - \$106,000 or more
7. Besides cancer, indicate all medical conditions that a doctor or other health care worker has diagnosed you with or treated you for during the past 3 years. Check all that apply.
- Asthma, emphysema, or chronic bronchitis
  - High blood pressure or hypertension
  - High blood sugar or diabetes
  - Arthritis or rheumatism (inflammation of the joints)
  - Angina, heart failure, or other types of heart disease
  - Strokes, seizures, Parkinson's disease, or other neurological condition
  - Liver disease
  - Kidney or renal disease
  - Chronic Fatigue Syndrome
  - Fibromyalgia
  - Anemia
  - Thyroid disease (hypothyroidism, hyperthyroidism, goiter, Grave's disease)
  - Other (please specify): \_\_\_\_\_

Please respond to each question or statement by marking one box per row.

<b>In the past 7 days...</b>		<b>Never</b>	<b>Rarely</b>	<b>Sometimes</b>	<b>Often</b>	<b>Always</b>
1	I felt fearful.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
2	I found it hard to focus on anything other than my anxiety.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
3	My worries overwhelmed me.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
4	I felt uneasy.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
5	I felt worthless.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
6	I felt helpless.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
7	I felt depressed.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
8	I felt hopeless.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

Please read the statement carefully and then choose the number which is most true for you.

		<b>Very bad</b>										<b>Excellent</b>	
1	Considering all parts of my life—physical, emotional, social, spiritual, and financial— <u>over the past two days</u> the quality of my life has been:	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9	<input type="checkbox"/> 10	

Please think back to the past 2 weeks, and then respond to each item by marking one option per row.

<b>In the past 2 weeks...</b>		<b>Not at all</b>	<b>A little bit</b>	<b>Somewhat</b>	<b>Quite a bit</b>	<b>Very much</b>
1	I was kind to myself even when I was going through a tough time.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
2	Knowing that others have faced challenges similar to mine gave me courage.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
3	I noticed my difficult feelings <i>without</i> dwelling on them.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
4	When I noticed my flaws, I remembered that nobody is perfect.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
5	I was patient and understanding towards myself when I faced challenges.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
6	I accepted my thoughts and feelings without needing to change them.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
7	Even though I've failed before, I gave myself some slack.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
8	I recognized that others experience times of stress like I do.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
9	When I had difficult feelings, I realized that these feelings would change over time.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
10	I experienced my painful thoughts and feelings instead of trying to avoid them.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
11	When I faced a challenge, I reminded myself that challenges are a part of every human life.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
12	I forgave myself for my mistakes.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
13	I recognized that my struggles are also experienced by others.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
14	I was able to soothe myself during times of stress.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
15	I accepted my painful thoughts and feelings as a natural part of life.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

Below you will find a list of statements. Please rate how true each statement is for you by choosing a number using the scale below.

		<b>never true</b>	<b>very seldom true</b>	<b>seldom true</b>	<b>sometimes true</b>	<b>frequently true</b>	<b>almost always true</b>	<b>always true</b>
1	My painful experiences and memories make it difficult for me to live a life that I would value.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
2	I'm afraid of my feelings.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
3	I worry about not being able to control my worries and feelings.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
4	My painful memories prevent me from having a fulfilling life.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
5	Emotions cause problems in my life.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
6	It seems like most people are handling their lives better than I am.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
7	Worries get in the way of my success.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7

These items deal with ways you've been coping with any stress in your life that may have resulted from your cancer. Please choose the number that best shows how much you use each of these ways of coping.

		<b>I haven't been doing this at all</b>	<b>I've been doing this a little bit</b>	<b>I've been doing this a medium amount</b>	<b>I've been doing this a lot</b>
1	I've been concentrating my efforts on doing something about the situation I'm in.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
2	I've been saying to myself, "This isn't real."	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
3	I've been taking action to try to make the situation better.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
4	I've been refusing to believe that it has happened.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4

Below is a collection of statements about your everyday experience. Using the 1–5 scale below, please indicate how frequently or infrequently you have had each experience in the last month.

<b>In the last month...</b>		<b>never or very rarely true</b>	<b>rarely true</b>	<b>sometimes true</b>	<b>often true</b>	<b>very often or always true</b>
1	I watch my feelings without getting carried away by them.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
2	I tell myself that I shouldn't be feeling the way I'm feeling.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
3	I make judgments about whether my thoughts are good or bad.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
4	I find it difficult to stay focused on what's happening in the present moment.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
5	When I have distressing thoughts or images, I don't let myself be carried away by them.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
6	It seems I am "running on automatic" without much awareness of what I'm doing.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
7	When I have distressing thoughts or images, I feel calm soon after.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
8	I tell myself I shouldn't be thinking the way I'm thinking.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
9	I rush through activities without being really attentive to them.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
10	Usually when I have distressing thoughts or images I can just notice them without reacting.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
11	I think some of my emotions are bad or inappropriate and I shouldn't feel them.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
12	When I have distressing thoughts or images, I just notice them and let them go.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
13	I do jobs or tasks automatically without being aware of what I'm doing.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
14	I find myself doing things without paying attention.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
15	I disapprove of myself when I have illogical ideas.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

Please read each statement carefully and then choose the number which best describes how true the statement was for you during the past week including today.

<b>During the past week including today...</b>		<b>Not at all true</b>							<b>Completely true</b>
1	I spent a lot of time thinking about the past or future, rather than being engaged in activities that mattered to me.	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	
2	I was basically on “auto-pilot” most of the time.	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	
3	I worked toward my goals even if I didn’t feel motivated to.	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	
4	I was proud about how I lived my life.	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	
5	I made progress in the areas of my life I care most about.	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	
6	Difficult thoughts, feelings or memories got in the way of what I really wanted to do.	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	
7	I continued to get better at being the kind of person I wanted to be.	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	
8	When things didn’t go according to plan, I gave up easily.	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	
9	I felt like I had a purpose in life.	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	
10	It seemed like I was just “going through the motions” rather than focusing on what was important to me.	<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	

For each of the statements, please rate your level of agreement using the scale below.

		<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly Agree</b>
1	My attention is often focused on aspects of myself I wish I'd stop thinking about.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
2	I always seem to be rehashing in my mind recent things I've said or done.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
3	Sometimes it is hard for me to shut off thoughts about myself.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
4	Long after an argument or disagreement is over with, my thoughts keep going back to what happened.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
5	I tend to "ruminate" or dwell over things that happen to me for a really long time afterward.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
6	I don't waste time rethinking things that are over and done with.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
7	Often I'm playing back over in my mind how I acted in a past situation.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
8	I often find myself reevaluating something I've done.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
9	I never ruminate or dwell on myself for very long.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
10	It is easy for me to put unwanted thoughts out of my mind.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
11	I often reflect on episodes in my life that I should no longer concern myself with.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
12	I spend a great deal of time thinking back over my embarrassing or disappointing moments.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

The following items ask about how you typically act towards yourself in difficult times. Please read each statement carefully before answering. To the right of each item, please select one box to indicate how often you behave in the stated manner.

		Almost Never			Almost Always	
1	When I fail at something important to me I become consumed by feelings of inadequacy.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
2	I try to be understanding and patient towards those aspects of my personality I don't like.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
3	When something painful happens I try to take a balanced view of the situation.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
4	When I'm feeling down, I tend to feel like most other people are probably happier than I am.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
5	I try to see my failings as part of the human condition.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
6	When I'm going through a very hard time, I give myself the caring and tenderness I need.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
7	When something upsets me I try to keep my emotions in balance.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
8	When I fail at something that's important to me, I tend to feel alone in my failure.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
9	When I'm feeling down I tend to obsess and fixate on everything that's wrong.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
10	When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
11	I'm disapproving and judgmental about my own flaws and inadequacies.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
12	I'm intolerant and impatient towards those aspects of my personality I don't like.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

Below you will find a list of statements. Please rate how true each statement is for you by choosing a number using scale below.

		<b>never true</b>	<b>very seldom true</b>	<b>seldom true</b>	<b>sometimes true</b>	<b>frequently true</b>	<b>almost always true</b>	<b>always true</b>
1	My thoughts cause me distress or emotional pain.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
2	I get so caught up in my thoughts that I am unable to do the things that I most want to do.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
3	I over-analyze situations to the point where it's unhelpful to me.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
4	I struggle with my thoughts.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
5	I get upset with myself for having certain thoughts.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
6	I tend to get very entangled in my thoughts.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7
7	It's such a struggle to let go of upsetting thoughts even when I know that letting go would be helpful.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7

Choose the number for the answer that best describes how you are feeling now.

		<b>Not at all</b>	<b>To a slight extent</b>	<b>To some extent</b>	<b>To a large extent</b>
1	To what extent do changes in your physical appearance upset you?	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
2	To what extent does worry about your illness make it difficult for you to live from day to day?	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
3	To what extent do you feel that it is unfair for you to get cancer now?	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
4	To what extent do you feel that your life, as you know it, is now over?	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
5	To what extent do you feel angry because of your illness?	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
6	To what extent do you think your illness has beaten you down?	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
7	To what extent do you feel ashamed of, or embarrassed by, your current condition?	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
8	To what extent are you able to accept your diagnosis of cancer?	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
9	To what extent would you say you have a sense of inner peace and harmony?	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
10	To what extent do you feel that you have made peace with your illness?	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
11	Do you feel well loved now?	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
12	To what extent do you feel a sense of inner calm and tranquility?	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4

## REFERENCES

- Adams, R. N., Mosher, C. E., Rand, K. L., Hirsh, A. T., Monahan, P. O., Abonour, R., & Kroenke, K. (2017). The Cancer Loneliness Scale and Cancer-related Negative Social Expectations Scale: Development and validation. *Quality of Life Research, 1*(26), 1901–1913. <https://doi.org/10.1007/s11136-017-1518-4>
- Albertson, E. R., Neff, K. D., & Dill-Shackleford, K. E. (2015). Self-compassion and body dissatisfaction in women: A randomized controlled trial of a brief meditation intervention. *Mindfulness, 6*(3), 444–454. <https://doi.org/10.1007/s12671-014-0277-3>
- Altman, J. K., Linfield, K., Salmon, P. G., & Beacham, A. O. (2020). The body compassion scale: Development and initial validation. *Journal of Health Psychology, 25*(4), 439–449. <https://doi.org/10.1177/1359105317718924>
- Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment, 13*(1), 27–45. <https://doi.org/10.1177/1073191105283504>
- Benyamini, Y. (2011). Why does self-rated health predict mortality? An update on current knowledge and a research agenda for psychologists. *Psychology & Health, 26*(11), 1407–1413. <https://doi.org/10.1080/08870446.2011.621703>
- Birnie, K., Speca, M., & Carlson, L. E. (2010). Exploring self-compassion and empathy in the context of mindfulness-based stress reduction (MBSR). *Stress and Health, 26*(5), 359–371. <https://doi.org/10.1002/smi.1305>
- Bohlmeijer, E., ten Klooster, P. M., Fledderus, M., Veehof, M., & Baer, R. (2011). Psychometric properties of the Five Facet Mindfulness Questionnaire in depressed adults and development of a short form. *Assessment, 18*(3), 308–320. <https://doi.org/10.1177/10731911111408231>
- Bond, F. W., Hayes, S. C., Baer, R. A., Carpenter, K. M., Guenole, N., Orcutt, H. K., Waltz, T., & Zettle, R. D. (2011). Preliminary psychometric properties of the Acceptance and Action Questionnaire-II: A revised measure of psychological inflexibility and experiential avoidance. *Behavior Therapy, 42*(4), 676–688. <https://doi.org/10.1016/j.beth.2011.03.007>

- Boyes, A. W., Girgis, A., D'Este, C., & Zucca, A. C. (2011). Flourishing or floundering? Prevalence and correlates of anxiety and depression among a population-based sample of adult cancer survivors 6 months after diagnosis. *Journal of Affective Disorders, 135*(1–3), 184–192. <https://doi.org/10.1016/j.jad.2011.07.016>
- Boyle, C. C., Stanton, A. L., Ganz, P. A., Crespi, C. M., Bower, J. E., Boyle, C. C., Stanton, A. L., Ganz, P. A., Crespi, C. M., & Bower, J. E. (2017). Improvements in emotion regulation following mindfulness meditation: Effects on depressive symptoms and perceived stress in younger breast cancer survivors. *Journal of Consulting and Clinical Psychology, 85*(4), 397–402. <https://doi.org/10.1037/ccp0000186>
- Brion, J. M., Leary, M. R., & Drabkin, A. S. (2014). Self-compassion and reactions to serious illness: The case of HIV. *Journal of Health Psychology, 19*(2), 218–229. <https://doi.org/10.1177/1359105312467391>
- Brooker, J., Julian, J., Millar, J., Prince, H. M., Kenealy, M., Herbert, K., Graham, A., Smith, R., Kissane, D., Taylor, K., Frydenberg, M., Porter, I., Fletcher, J., Haines, I., & Burney, S. (2020). A feasibility and acceptability study of an adaptation of the Mindful Self-Compassion program for adult cancer patients. *Palliative and Supportive Care, 18*(2), 130–140. <https://doi.org/10.1017/S1478951519000737>
- Brown, S. L., Hughes, M., Campbell, S., & Cherry, M. G. (2020). Could worry and rumination mediate relationships between self-compassion and psychological distress in breast cancer survivors? *Clinical Psychology and Psychotherapy, 27*(1), 1–10. <https://doi.org/10.1002/cpp.2399>
- Callahan, C. M., Unverzagt, F. W., Hui, S. L., Perkins, A. J., & Hendrie, H. C. (2002). Six-item screener to identify cognitive impairment among potential subjects for clinical research. *Medical Care, 40*(9), 771–781. <https://doi.org/10.1097/00005650-200209000-00007>
- Campo, R. A., Bluth, K., Santacroce, S. J., Knapik, S., Tan, J., Gold, S., Philips, K., Gaylord, S., & Asher, G. N. (2017). A mindful self-compassion videoconference intervention for nationally recruited posttreatment young adult cancer survivors: Feasibility, acceptability, and psychosocial outcomes. *Supportive Care in Cancer, 25*(6), 1759–1768. <https://doi.org/10.1007/s00520-017-3586-y>

- Carlson, L. E., Zelinski, E. L., Toivonen, K. I., Sundstrom, L., Jobin, C. T., Damaskos, P., & Zebrack, B. (2019). Prevalence of psychosocial distress in cancer patients across 55 North American cancer centers. *Journal of Psychosocial Oncology*, *37*(1), 5–21.  
<https://doi.org/10.1080/07347332.2018.1521490>
- Carvalho, S. A., Gillanders, D., Palmeira, L., Pinto-Gouveia, J., & Castilho, P. (2018). Mindfulness, selfcompassion, and depressive symptoms in chronic pain: The role of pain acceptance. *Journal of Clinical Psychology*, *74*(12), 2094–2106.  
<https://doi.org/10.1002/jclp.22689>
- Carver, C. S. (1997). You want to measure coping but your protocol's too long: Consider the Brief COPE. *International Journal of Behavioral Medicine*, *4*(1), 92–100.  
[https://doi.org/10.1207/s15327558ijbm0401\\_6](https://doi.org/10.1207/s15327558ijbm0401_6)
- Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology*, *56*(2), 267–283. <https://doi.org/10.1037/0022-3514.56.2.267>
- Cash, M., & Whittingham, K. (2010). What facets of mindfulness contribute to psychological well-being and depressive, anxious, and stress-related symptomatology? *Mindfulness*, *1*(3), 177–182. <https://doi.org/10.1007/s12671-010-0023-4>
- Cella, D., Choi, S., Garcia, S., Cook, K. F., Rosenbloom, S., Lai, J. S., Tatum, D. S., & Gershon, R. (2014). Setting standards for severity of common symptoms in oncology using the PROMIS item banks and expert judgment. *Quality of Life Research*, *23*(10), 2651–2661.  
<https://doi.org/10.1007/s11136-014-0732-6>
- Cella, D., Riley, W., Stone, A., Rothrock, N., Reeve, B., Yount, S., Amtmann, D., Bode, R., Buysse, D., Choi, S., Cook, K., DeVellis, R., DeWalt, D., Fries, J. F., Gershon, R., Hahn, E. A., Lai, J.-S., Pilkonis, P., Revicki, D., ... Hays, R. (2010). The Patient-Reported Outcomes Measurement Information System (PROMIS) developed and tested its first wave of adult self-reported health outcome item banks: 2005–2008. *Journal of Clinical Epidemiology*, *63*(11), 1179–1194. <https://doi.org/10.1016/j.jclinepi.2010.04.011>
- Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Structural Equation Modeling*, *14*(3), 464–504.  
<https://doi.org/10.1080/10705510701301834>

- Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling, 9*(2), 233–255.  
<https://doi.org/10.1207/S15328007SEM0902>
- Choi, S. W., Reise, S. P., Pilkonis, P. A., Hays, R. D., & Cella, D. (2010). Efficiency of static and computer adaptive short forms compared to full-length measures of depressive symptoms. *Quality of Life Research, 19*(1), 125–136. <https://doi.org/10.1007/s11136-009-9560-5>
- Cleare, S., Gumley, A., Cleare, C. J., & O'Connor, R. C. (2018). An investigation of the factor structure of the Self-Compassion Scale. *Mindfulness, 9*(2), 618–628.  
<https://doi.org/10.1007/s12671-017-0803-1>
- Cleeland, C. S., Zhao, F., Chang, V. T., Sloan, J. A., O'Mara, A. M., Gilman, P. B., Weiss, M., Mendoza, T. R., Lee, J. W., & Fisch, M. J. (2013). The symptom burden of cancer: Evidence for a core set of cancer-related and treatment-related symptoms from the Eastern Cooperative Oncology Group Symptom Outcomes and Practice Patterns study. *Cancer, 119*(24), 4333–4340. <https://doi.org/10.1002/cncr.28376>
- Cohen, S. R., Mount, B. M., Tomas, J. J. N., & Mount, L. F. (1996). Existential well-being is an important determinant of quality of life: Evidence from the McGill Quality of Life Questionnaire. *Cancer, 77*(3), 576–586. [https://doi.org/10.1002/\(SICI\)1097-0142\(19960201\)77:3<576::AID-CNCR22>3.0.CO;2-0](https://doi.org/10.1002/(SICI)1097-0142(19960201)77:3<576::AID-CNCR22>3.0.CO;2-0)
- Costa, J., & Pinto-Gouveia, J. (2013). Experiential avoidance and self-compassion in chronic pain. *Journal of Applied Social Psychology, 43*(8), 1578–1591.  
<https://doi.org/10.1111/jasp.12107>
- Crane-Okada, R., Kiger, H., Sugerman, F., Uman, G. C., Shapiro, S. L., Wyman-McGinty, W., & Anderson, N. L. R. (2012). Mindful movement program for older breast cancer survivors: A pilot study. *Cancer Nursing, 35*(4), 1–13.  
<https://doi.org/10.1097/NCC.0b013e3182280f73>
- DeVellis, R. F. (2016). *Scale development: Theory and applications*. Sage Publications.
- DeWalt, D. A., Rothrock, N., Yount, S., & Stone, A. A. (2007). Evaluation of item candidates: The PROMIS qualitative item review. *Medical Care, 45*(S1), 116–125.  
<https://doi.org/10.1038/nrm2621>

- DiStefano, C., & Motl, R. W. (2006). Further investigating method effects associated with negatively worded items on self-report surveys. *Structural Equation Modeling: A Multidisciplinary Journal*, 13(3), 440–464. [https://doi.org/10.1207/s15328007sem1303\\_6](https://doi.org/10.1207/s15328007sem1303_6)
- Dodds, S. E., Pace, T. W. W., Bell, M. L., Fiero, M., Negi, L. T., Raison, C. L., & Weihs, K. L. (2015). Feasibility of Cognitively-Based Compassion Training (CBCT) for breast cancer survivors: A randomized, wait list controlled pilot study. *Supportive Care in Cancer*, 23(12), 3599–3608. <https://doi.org/10.1007/s00520-015-2888-1>
- Donald, J. N., Atkins, P. W. B., Parker, P. D., Christie, A. M., & Ryan, R. M. (2016). Daily stress and the benefits of mindfulness: Examining the daily and longitudinal relations between present-moment awareness and stress responses. *Journal of Research in Personality*, 65, 30–37. <https://doi.org/10.1016/j.jrp.2016.09.002>
- Duarte, J., & Pinto-Gouveia, J. (2017). Mindfulness, self-compassion and psychological inflexibility mediate the effects of a mindfulness-based intervention in a sample of oncology nurses. *Journal of Contextual Behavioral Science*, 6(2), 125–133. <https://doi.org/10.1016/j.jcbs.2017.03.002>
- Dunne, S., Sheffield, D., & Chilcot, J. (2018). Brief report: Self-compassion, physical health and the mediating role of health-promoting behaviours. *Journal of Health Psychology*, 23(7), 993–999. <https://doi.org/10.1177/1359105316643377>
- Enders, C. K. (2001a). A primer on maximum likelihood algorithms available for use with missing data. *Structural Equation Modeling*, 8(1), 128–141. [https://doi.org/10.1207/S15328007SEM0801\\_7](https://doi.org/10.1207/S15328007SEM0801_7)
- Enders, C. K. (2001b). The performance of the full information maximum likelihood estimator in multiple regression models with missing data. *Educational and Psychological Measurement*, 61(5), 713–740. <https://doi.org/10.1177/0013164401615001>
- Enright, R. D. (1996). Counseling within the forgiveness triad: On forgiving, receiving forgiveness, and self-forgiveness. *Counseling and Values*, 40(2), 107–126. <https://doi.org/10.1002/j.2161-007X.1996.tb00844.x>
- Feros, D. L., Lane, L., Ciarrochi, J., & Blackledge, J. T. (2013). Acceptance and commitment therapy (ACT) for improving the lives of cancer patients: A preliminary study. *Psycho-Oncology*, 22(2), 459–464. <https://doi.org/10.1002/pon.2083>

- Ferrari, M., Hunt, C., Harrysunker, A., Abbott, M. J., Beath, A. P., & Einstein, D. A. (2019). Self-compassion interventions and psychosocial outcomes: A meta-analysis of RCTs. *Mindfulness, 10*(8), 1455–1473. <https://doi.org/10.1007/s12671-019-01134-6>
- Fitzgerald, P., Lo, C., Li, M., Gagliese, L., Zimmermann, C., & Rodin, G. (2015). The relationship between depression and physical symptom burden in advanced cancer. *BMJ Supportive and Palliative Care, 5*(4), 381–388. <https://doi.org/10.1136/bmjspcare-2012-000380>
- Gilbert, P. (2009). Introducing compassion-focused therapy. *Advances in Psychiatric Treatment, 15*(3), 199–208. <https://doi.org/10.1192/apt.bp.107.005264>
- Gilbert, P. (2014). The origins and nature of compassion focused therapy. *British Journal of Clinical Psychology, 53*(1), 6–41. <https://doi.org/10.1111/bjc.12043>
- Gilbert, P. (2015). The evolution and social dynamics of compassion. *Social and Personality Psychology Compass, 9*(6), 239–254. <https://doi.org/10.1111/spc3.12176>
- Gilbert, P., McEwan, K., Matos, M., & Rivis, A. (2011). Fears of compassion: Development of three self-report measures. *Psychology and Psychotherapy: Theory, Research and Practice, 84*(3), 239–255. <https://doi.org/10.1348/147608310X526511>
- Gillanders, D. T., Bolderston, H., Bond, F. W., Dempster, M., Flaxman, P. E., Campbell, L., Kerr, S., Tansey, L., Noel, P., Ferenbach, C., Masley, S., Roach, L., Lloyd, J., May, L., Clarke, S., & Remington, B. (2014). The development and initial validation of the Cognitive Fusion Questionnaire. *Behavior Therapy, 45*(1), 83–101. <https://doi.org/10.1016/j.beth.2013.09.001>
- Gillanders, D. T., Sinclair, A. K., MacLean, M., & Jardine, K. (2015). Illness cognitions, cognitive fusion, avoidance and self-compassion as predictors of distress and quality of life in a heterogeneous sample of adults, after cancer. *Journal of Contextual Behavioral Science, 4*(4), 300–311. <https://doi.org/10.1016/j.jcbs.2015.07.003>
- Gu, J., Baer, R., Cavanagh, K., Kuyken, W., & Strauss, C. (2020). Development and psychometric properties of the Sussex-Oxford Compassion Scales (SOCS). *Assessment, 27*(1), 3–20. <https://doi.org/10.1177/1073191119860911>
- Gu, J., Cavanagh, K., Baer, R., & Strauss, C. (2017). An empirical examination of the factor structure of compassion. *PLoS ONE, 12*(2), 1–17. <https://doi.org/10.1371/journal.pone.0172471>

- Hacker, T. (2008). *The Relational Compassion Scale: Development and validation of a new self-rated scale for the assessment of self-other compassion* [Doctoral dissertation, University of Glasgow]. University of Glasgow Repository.  
<http://theses.gla.ac.uk/462/1/2008hackerDclinpsy.pdf>
- Hayes, S. C., Levin, M. E., Plumb-Villardaga, J., Villatte, J. L., & Pistorello, J. (2013). Acceptance and Commitment Therapy and contextual behavioral science: Examining the progress of a distinctive model of behavioral and cognitive therapy. *Behavior Therapy, 44*(2), 180–198. <https://doi.org/10.1016/j.beth.2009.08.002>
- Hayes, S. C., Wilson, K. G., Gifford, E. V., Follette, V. M., & Strosahl, K. (1996). Experimental avoidance and behavioral disorders: A functional dimensional approach to diagnosis and treatment. *Journal of Consulting and Clinical Psychology, 64*(6), 1152–1168.  
<https://doi.org/10.1037/0022-006X.64.6.1152>
- Henselmans, I., Helgeson, V. S., Seltman, H., de Vries, J., Sanderman, R., & Ranchor, A. V. (2010). Identification and prediction of distress trajectories in the first year after a breast cancer diagnosis. *Health Psychology, 29*(2), 160–168. <https://doi.org/10.1037/a0017806>
- Hill, A. D. *Compassionate communication training with cancer patients and caregivers: Empathy, self-compassion, and well-being* [Doctoral dissertation, California School of Professional Psychology – San Francisco]. ProQuest, LLC.
- Howlader, N., Noone, A. M., Krapcho, M., Miller, D., Brest, A., Yu, M., Ruhl, J., Tatalovich, Z., Mariotto, A., Lewis, D. R., Chen, H. S., Feuer, E. J., & Cronin, K. A. (2018). SEER Cancer Statistics Review, 1975-2016. National Cancer Institute.  
[https://seer.cancer.gov/csr/1975\\_2016/](https://seer.cancer.gov/csr/1975_2016/)
- Hsieh, H. F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research, 15*(9), 1277–1288.  
<https://doi.org/10.1177/1049732305276687>
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*(1), 1–55.  
<https://doi.org/10.1080/10705519909540118>

- Hulbert-Williams, N. J., Storey, L., & Wilson, K. G. (2014). Psychological interventions for patients with cancer: Psychological flexibility and the potential utility of Acceptance and Commitment Therapy. *European Journal of Cancer Care*, *24*(1), 15–27.  
<https://doi.org/10.1111/ecc.12223>
- Jensen, R. E., Potosky, A. L., Moinpour, C. M., Lobo, T., Cella, D., Hahn, E. A., Thissen, D., Smith, A. W., Ahn, J., Luta, G., & Reeve, B. B. (2017). United States population-based estimates of patient-reported outcomes measurement information system symptom and functional status reference values for individuals with cancer. *Journal of Clinical Oncology*, *35*(17), 1913–1920. <https://doi.org/10.1200/JCO.2016.71.4410>
- Johnson, D. P., Penn, D. L., Fredrickson, B. L., Meyer, P. S., Kring, A. M., & Brantley, M. (2009). Loving-kindness meditation to enhance recovery from negative symptoms of schizophrenia. *Journal of Clinical Psychology*, *65*(5), 499–509.  
<https://doi.org/10.1002/jclp.20591>
- Jordan, J. V. (1990). Courage in connection: Conflict, compassion, creativity. *Stone Center Colloquium*, *1*(C).
- Kabat-Zinn, J. (1990). *Full catastrophe living: Using the wisdom of your body and mind to face stress, pain, and illness*. Dell Publishing.
- Kabat-Zinn, J. (1994). *Wherever you go, there you are: Mindfulness meditation in everyday life*. Hyperion.
- Keng, S.-L., Smoski, M. J., Robins, C. J., Ekblad, A. G., & Brantley, J. G. (2012). Mechanisms of change in mindfulness-based stress reduction: Self-compassion and mindfulness as mediators of intervention outcomes. *Journal of Cognitive Psychotherapy*, *26*(3), 270–280.  
<https://doi.org/10.1891/0889-8391.26.3.270>
- Kline, R. B. (2011). *Principles and practice of structural equation modeling* (3rd ed.). The Guilford Press.
- Kokkonen, K., Saarto, T., Mäkinen, T., Pohjola, L., Kautio, H., Järvenpää, S., & Puustjärvi-Sunabacka, K. (2017). The functional capacity and quality of life of women with advanced breast cancer. *Breast Cancer*, *24*(1), 128–136. <https://doi.org/10.1007/s12282-016-0687-2>

- Krebber, A. M. H., Buffart, L. M., Kleijn, G., Riepma, I. C., De Bree, R., Leemans, C. R., Becker, A., Brug, J., Van Straten, A., Cuijpers, P., & Verdonck-De Leeuw, I. M. (2014). Prevalence of depression in cancer patients: A meta-analysis of diagnostic interviews and self-report instruments. *Psycho-Oncology*, *23*(2), 121–130.  
<https://doi.org/10.1002/pon.3409>
- Kroenke, K., Theobald, D., Norton, K., Sanders, R., Schlundt, S., McCalley, S., Harvey, P., Iseminger, K., Morrison, G., Carpenter, J. S., Stubbs, D., Jacks, R., Carney-Doebbeling, C., Wu, J., & Tu, W. (2009). The Indiana Cancer Pain and Depression (INCPAD) trial: Design of a telecare management intervention for cancer-related symptoms and baseline characteristics of study participants. *General Hospital Psychiatry*, *31*(3), 240–253.  
<https://doi.org/10.1016/j.genhosppsych.2009.01.007>
- Kroenke, K., Zhong, X., Theobald, D., Wu, J., Tu, W., & Carpenter, J. S. (2010). Somatic symptoms in patients with cancer experiencing pain or depression. *Archives of Internal Medicine*, *170*(18), 1686–1694. <https://doi.org/10.1001/archinternmed.2010.337>
- Leaviss, J., & Uttley, L. (2015). Psychotherapeutic benefits of compassion-focused therapy: An early systematic review. *Psychological Medicine*, *45*(5), 927–945.  
<https://doi.org/10.1017/S0033291714002141>
- Levin, M. E., Haeger, J. A., Pierce, B. G., & Twohig, M. P. (2017). Web-based Acceptance and Commitment Therapy for mental health problems in college students. *Behavior Modification*, *41*(1), 141–162. <https://doi.org/10.1177/0145445516659645>
- Lindsay, E. K., & Creswell, J. D. (2017). Mechanisms of mindfulness training: Monitor and Acceptance Theory (MAT). *Clinical Psychology Review*, *51*, 48–59.  
<https://doi.org/10.1016/j.cpr.2016.10.011>
- Lopez, A., Sanderman, R., Smink, A., Zhang, Y., Van Sonderen, E., Ranchor, A., & Schroevers, M. J. (2015). A reconsideration of the self-compassion scale's total score: Self-compassion versus self-criticism. *PLoS ONE*, *10*(7), 1–12. <https://doi.org/10.1371/journal.pone.0132940>
- Lune, H., & Berg, B. L. (2017). An introduction to content analysis. In H. Lune & B. L. Berg (Eds.), *Qualitative research methods for the social sciences* (9th ed., pp. 181–200). Pearson Education.

- MacBeth, A., & Gumley, A. (2012). Exploring compassion: A meta-analysis of the association between self-compassion and psychopathology. *Clinical Psychology Review, 32*(6), 545–552. <https://doi.org/10.1016/j.cpr.2012.06.003>
- Mack, J. W., Nilsson, M., Balboni, T., Friedlander, R. J., Block, S. D., Trice, E., & Prigerson, H. G. (2008). Peace, Equanimity, and Acceptance in the Cancer Experience (PEACE): Validation of a scale to assess acceptance and struggle with terminal illness. *Cancer, 112*(11), 2509–2517. <https://doi.org/10.1002/cncr.23476>
- Magasi, S., Ryan, G., Revicki, D., Lenderking, W., Hays, R. D., Brod, M., Snyder, C., Boers, M., & Cella, D. (2012). Content validity of patient-reported outcome measures: Perspectives from a PROMIS meeting. *Quality of Life Research, 21*(5), 739–746. <https://doi.org/10.1007/s11136-011-9990-8>
- McCracken, L. M., DaSilva, P., Skillicorn, B., & Doherty, R. (2014). The Cognitive Fusion Questionnaire: A preliminary study of psychometric properties and prediction of functioning in chronic pain. *The Clinical Journal of Pain, 30*(10), 894–901. <https://doi.org/10.1097/AJP.0000000000000047>
- McFarland, D. C., Shaffer, K. M., Tiersten, A., & Holland, J. (2018). Physical symptom burden and its association with distress, anxiety, and depression in breast cancer. *Psychosomatics, 59*(5), 464–471. <https://doi.org/10.1016/j.psych.2018.01.005>
- Monahan, P. O., Lane, K. A., Hayes, R. P., McHorney, C. A., & Marrero, D. G. (2009). Reliability and validity of an instrument for assessing patients' perceptions about medications for diabetes: The PAM-D. *Quality of Life Research, 18*(7), 941–952. <https://doi.org/10.1007/s11136-009-9510-2>
- Montero-Marín, J., Gaete, J., Demarzo, M., Rodero, B., Serrano Lopez, L. C., & García-Campayo, J. (2016). Self-criticism: A measure of uncompassionate behaviors toward the self, based on the negative components of the self-compassion scale. *Frontiers in Psychology, 7*, 1–15. <https://doi.org/10.3389/fpsyg.2016.01281>
- Mosher, C. E., Tometich, D. B., Hirsh, A., Rand, K. L., Johns, S. A., Matthias, M. S., Outcalt, S. D., Bricker, J., Schneider, B., Mina, L., Storniolo, A. M., Newton, E., & Miller, K. (2017). Symptom experiences in metastatic breast cancer patients: Relationships to activity engagement, value-based living, and psychological inflexibility. *Psycho-Oncology, 26*(11), 1944–1951. <https://doi.org/10.1002/pon.4283>

- Muris, P., & Otgaar, H. (2020). The process of science: A critical evaluation of more than 15 years of research on self-compassion with the Self-Compassion Scale. *Mindfulness*, *11*(6), 1469–1482. <https://doi.org/10.1007/s12671-020-01363-0>
- Muris, P., & Petrocchi, N. (2017). Protection or vulnerability? A meta-analysis of the relations between the positive and negative components of self-compassion and psychopathology. *Clinical Psychology and Psychotherapy*, *24*(2), 373–383. <https://doi.org/10.1002/cpp.2005>
- Muris, P., van den Broek, M., Otgaar, H., Oudenhoven, I., & Lennartz, J. (2018). Good and bad sides of self-compassion: A face validity check of the Self-Compassion Scale and an investigation of its relations to coping and emotional symptoms in non-clinical adolescents. *Journal of Child and Family Studies*, *27*(8), 2411–2421. <https://doi.org/10.1007/s10826-018-1099-z>
- Nakamura, Y., Lipschitz, D. L., Kuhn, R., Kinney, A. Y., & Donaldson, G. W. (2013). Investigating efficacy of two brief mind-body intervention programs for managing sleep disturbance in cancer survivors: A pilot randomized controlled trial. *Journal of Cancer Survivorship*, *7*(2), 165–182. <https://doi.org/10.1007/s11764-012-0252-8>
- National Comprehensive Cancer Network. (2016). *NCCN Clinical Practice Guidelines in Oncology: Survivorship*.
- Neff, K. (2003a). Self-compassion: An alternative conceptualization of a healthy attitude toward oneself. *Self and Identity*, *2*(3), 85–101. <https://doi.org/10.1080/15298860390129863>
- Neff, K. (2003b). The development and validation of a scale to measure self-compassion. *Self and Identity*, *2*(3), 223–250. <https://doi.org/10.1080/15298860390209035>
- Neff, K. D. (2016). The Self-Compassion Scale is a valid and theoretically coherent measure of self-compassion. *Mindfulness*, *7*(1), 264–274. <https://doi.org/10.1007/s12671-015-0479-3>
- Neff, K. D., & Germer, C. K. (2013). A pilot study and randomized controlled trial of the Mindful Self-Compassion Program. *Journal of Clinical Psychology*, *69*(1), 28–44. <https://doi.org/10.1002/jclp.21923>

- Neff, K. D., Tóth-Király, I., Yarnell, L. M., Arimitsu, K., Castilho, P., Ghorbani, N., Guo, H. X., Hirsch, J. K., Hupfeld, J., Hutz, C. S., Kotsou, I., Lee, W. K., Montero-Marin, J., Sirois, F. M., De Souza, L. K., Svendsen, J. L., Wilkinson, R. B., & Mantzios, M. (2019). Examining the factor structure of the Self-Compassion Scale in 20 diverse samples: Support for use of a total score and six subscale scores. *Psychological Assessment, 31*(1), 27–45.  
<https://doi.org/10.1037/pas0000629>
- Neff, K. D., & Vonk, R. (2009). Self-compassion versus global self-esteem: Two different ways of relating to oneself. *Journal of Personality, 77*(1), 23–50. <https://doi.org/10.1111/j.1467-6494.2008.00537.x>
- Neff, K., Hsieh, Y.-P., & Dejitterat, K. (2005). Self-compassion, achievement goals, and coping with academic failure. *Self and Identity, 4*(3), 263–287.  
<https://doi.org/10.1080/13576500444000317>
- Nipp, R. D., El-Jawahri, A., Moran, S. M., D’Arpino, S. M., Johnson, P. C., Lage, D. E., Wong, R. L., Pirl, W. F., Traeger, L., Lennes, I. T., Cashavelly, B. J., Jackson, V. A., Greer, J. A., Ryan, D. P., Hochberg, E. P., & Temel, J. S. (2017). The relationship between physical and psychological symptoms and health care utilization in hospitalized patients with advanced cancer. *Cancer, 123*(23), 4720–4727. <https://doi.org/10.1002/cncr.30912>
- Nolen-Hoeksema, S., Wisco, B. E., & Lyubomirsky, S. (2008). Rethinking rumination. *Perspectives on Psychological Science, 3*(5), 400–424. <https://doi.org/10.1111/j.1745-6924.2008.00088.x>
- Pace, T. W. W., Dodds, S. E., Sikorskii, A., Badger, T. A., Segrin, C., Negi, L. T., Harrison, T., & Crane, T. E. (2019). Cognitively-Based Compassion Training versus cancer health education to improve health-related quality of life in survivors of solid tumor cancers and their informal caregivers: Study protocol for a randomized controlled pilot trial. *Trials, 20*(1), 1–15. <https://doi.org/10.1186/s13063-019-3320-9>
- Perkins, A. J., Kroenke, K., Unützer, J., Katon, W., Williams, J. W., Hope, C., & Callahan, C. M. (2004). Common comorbidity scales were similar in their ability to predict health care costs and mortality. *Journal of Clinical Epidemiology, 57*(10), 1040–1048.  
<https://doi.org/10.1016/j.jclinepi.2004.03.002>

- Pilkonis, P. A., Choi, S. W., Reise, S. P., Stover, A. M., Riley, W. T., & Cella, D. (2011). Item banks for measuring emotional distress from the Patient-Reported Outcomes Measurement Information System (PROMIS®): Depression, anxiety, and anger. *Assessment, 18*(3), 263–283. <https://doi.org/10.1177/1073191111411667>
- Pilkonis, P. A., Yu, L., Dodds, N. E., Johnston, K. L., Maihoefer, C. C., & Lawrence, S. M. (2014). Validation of the depression item bank from the Patient-Reported Outcomes Measurement Information System (PROMIS®) in a three-month observational study. *Journal of Psychiatric Research, 56*(1), 112–119. <https://doi.org/10.1016/j.jpsychires.2014.05.010>
- Pinto-Gouveia, J. J., Duarte, C., Matos, M., & Fráguas, S. (2014). The protective role of self-compassion in relation to psychopathology symptoms and quality of life in chronic and in cancer patients. *Clinical Psychology and Psychotherapy, 21*(4), 311–323. <https://doi.org/10.1002/cpp.1838>
- Poulin, P. A., Romanow, H. C., Rahbari, N., Small, R., Smyth, C. E., Hatchard, T., Solomon, B. K., Song, X., Harris, C. A., Kowal, J., Nathan, H. J., & Wilson, K. G. (2016). The relationship between mindfulness, pain intensity, pain catastrophizing, depression, and quality of life among cancer survivors living with chronic neuropathic pain. *Supportive Care in Cancer, 24*(10), 4167–4175. <https://doi.org/10.1007/s00520-016-3243-x>
- Przedziecki, A., & Sherman, K. A. (2016). Modifying affective and cognitive responses regarding body image difficulties in breast cancer survivors using a self-compassion-based writing intervention. *Mindfulness, 7*(5), 1142–1155. <https://doi.org/10.1007/s12671-016-0557-1>
- Putnick, Diane, L., & Bornstein, Mark, H. (2016). Measurement invariance conventions and reporting: The state of the art and future directions for psychological research. *Developmental Review, 41*, 71–90. <https://doi.org/10.1016/j.dr.2016.06.004>. Measurement
- Rachman, S. J. (2002). Fear and courage: A psychological perspective. *Social Research: An International Quarterly, 71*(1), 149–177.
- Raes, F. (2010). Rumination and worry as mediators of the relationship between self-compassion and depression and anxiety. *Personality and Individual Differences, 48*(6), 757–761. <https://doi.org/10.1016/j.paid.2010.01.023>

- Raes, F., Pommier, E., Neff, K., & Van Gucht, D. (2011). Construction and factorial validation of a short form of the Self-Compassion Scale. *Clinical Psychology & Psychotherapy, 18*(3), 250–255. <https://doi.org/10.1002/cpp.702>
- Romero-Moreno, R., Gallego-Alberto, L., Márquez-González, M., & Losada, A. (2017). Psychometric properties of the Valued Living Questionnaire adapted to dementia caregiving. *Aging & Mental Health, 21*(9), 983–990. <https://doi.org/10.1080/13607863.2016.1191055>
- Satin, J. R., Linden, W., & Phillips, M. J. (2009). Depression as a predictor of disease progression and mortality in cancer patients: A meta-analysis. *Cancer, 115*(22), 5349–5361. <https://doi.org/10.1002/cncr.24561>
- Savalei, V., & Falk, C. F. (2014). Recovering substantive factor loadings in the presence of acquiescence bias: A comparison of three approaches. *Multivariate Behavioral Research, 49*(5), 407–424. <https://doi.org/10.1080/00273171.2014.931800>
- Schellekens, M. P. J., van den Hurk, D. G. M., Prins, J. B., Donders, A. R. T., Molema, J., Dekhuijzen, R., van der Drift, M. A., & Speckens, A. E. M. (2017). Mindfulness-based stress reduction added to care as usual for lung cancer patients and/or their partners: A multicentre randomized controlled trial. *Psycho-Oncology, 26*(12), 2118–2126. <https://doi.org/10.1002/pon.4430>
- Secinti, E., Tometich, D. B., Johns, S. A., & Mosher, C. E. (2019). The relationship between acceptance of cancer and distress: A meta-analytic review. *Clinical Psychology Review, 71*(1), 27–38. <https://doi.org/10.1016/j.cpr.2019.05.001>
- Sherman, K. A., Woon, S., French, J., & Elder, E. (2017). Body image and psychological distress in nipple-sparing mastectomy: The roles of self-compassion and appearance investment. *Psycho-Oncology, 26*(3), 337–345. <https://doi.org/10.1002/pon.4138>
- Shonin, E., Van Gordon, W., Compare, A., Zangeneh, M., & Griffiths, M. D. (2015). Buddhist-derived loving-kindness and compassion meditation for the treatment of psychopathology: A systematic review. *Mindfulness, 6*(5), 1161–1180. <https://doi.org/10.1007/s12671-014-0368-1>
- Sirois, F. M. (2020). The association between self-compassion and self-rated health in 26 samples. *BMC Public Health, 20*(1), 74. <https://doi.org/10.1186/s12889-020-8183-1>

- Sirois, F. M., & Hirsch, J. K. (2019). Self-Compassion and adherence in five medical samples: The role of stress. *Mindfulness*, *10*(1), 46–54. <https://doi.org/10.1007/s12671-018-0945-9>
- Sirois, F. M., Kitner, R., & Hirsch, J. K. (2015). Self-compassion, affect, and health-promoting behaviors. *Health Psychology*, *34*(6), 661–669. <https://doi.org/10.1037/hea0000158>
- Sirois, F. M., Molnar, D. S., & Hirsch, J. K. (2015). Self-compassion, stress, and coping in the context of chronic illness. *Self and Identity*, *14*(3), 334–347. <https://doi.org/10.1080/15298868.2014.996249>
- Smeets, E., Neff, K., Alberts, H., & Peters, M. (2014). Meeting suffering with kindness: Effects of a brief self-compassion intervention for female college students. *Journal of Clinical Psychology*, *70*(9), 794–807. <https://doi.org/10.1002/jclp.22076>
- Smout, M., Davies, M., Burns, N., & Christie, A. (2014). Development of the Valuing Questionnaire (VQ). *Journal of Contextual Behavioral Science*, *3*(3), 164–172. <https://doi.org/10.1016/j.jcbs.2014.06.001>
- Strauss, C., Lever, B., Gu, J., Kuyken, W., Baer, R., Jones, F., & Cavanagh, K. (2016). What is compassion and how can we measure it? A review of definitions and measures. *Clinical Psychology Review*, *47*, 15–27. <https://doi.org/10.1016/j.cpr.2016.05.004>
- Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics*. Harper Collins.
- Terry, M. L., & Leary, M. R. (2011). Self-compassion, self-regulation, and health. *Self and Identity*, *10*(3), 352–362. <https://doi.org/10.1080/15298868.2011.558404>
- Terry, M. L., Leary, M. R., Mehta, S., & Henderson, K. (2013). Self-compassionate reactions to health threats. *Personality and Social Psychology Bulletin*, *39*(7), 911–926. <https://doi.org/10.1177/0146167213488213>
- Thomsen, D. K., Jensen, A. B., Jensen, T., Mehlsen, M. Y., Pedersen, C. G., & Zachariae, R. (2013). Rumination, reflection and distress: An 8-month prospective study of colon-cancer patients. *Cognitive Therapy and Research*, *37*(6), 1262–1268. <https://doi.org/10.1007/s10608-013-9556-x>
- Todorov, N., Sherman, K. A., & Kilby, C. J. (2019). Self-compassion and hope in the context of body image disturbance and distress in breast cancer survivors. *Psycho-Oncology*, *28*(10), 2025–2032. <https://doi.org/10.1002/pon.5187>

- Tóth-Király, I., Bóthe, B., & Orosz, G. (2017). Exploratory Structural Equation Modeling Analysis of the Self-Compassion Scale. *Mindfulness*, 8(4), 881–892. <https://doi.org/10.1007/s12671-016-0662-1>
- Trapnell, P. D., & Campbell, J. D. (1999). Private self-consciousness and the five-factor model of personality: Distinguishing rumination from reflection. *Journal of Personality and Social Psychology*, 76(2), 284–304. <https://doi.org/10.1037/0022-3514.76.2.284>
- Van Gordon, W., Shonin, E., Sumich, A., Sundin, E. C., & Griffiths, M. D. (2013). Meditation Awareness Training (MAT) for psychological well-being in a sub-clinical sample of university students: A controlled pilot study. *Mindfulness*, 5(4), 381–391. <https://doi.org/10.1007/s12671-012-0191-5>
- Veale, D., Gilbert, P., Wheatley, J., & Naismith, I. (2015). A new therapeutic community: Development of a compassion-focused and contextual behavioural environment. *Clinical Psychology and Psychotherapy*, 22(4), 285–303. <https://doi.org/10.1002/cpp.1897>
- Voci, A., Veneziani, C. A., & Fuochi, G. (2019). Relating mindfulness, heartfulness, and psychological well-being: The role of self-compassion and gratitude. *Mindfulness*, 10(2), 339–351. <https://doi.org/10.1007/s12671-018-0978-0>
- Wagner, L. I., Schink, J., Bass, M., Patel, S., Diaz, M. V., Rothrock, N., Pearman, T., Gershon, R., Penedo, F. J., Rosen, S., & Cella, D. (2015). Bringing PROMIS to practice: Brief and precise symptom screening in ambulatory cancer care. *Cancer*, 121(6), 927–934. <https://doi.org/10.1002/cncr.29104>
- Williams, M. J., Dalgleish, T., Karl, A., & Kuyken, W. (2014). Examining the factor structures of the Five Facet Mindfulness Questionnaire and the Self-Compassion Scale. *Psychological Assessment*, 26(2), 407–418. <https://doi.org/10.1037/a0035566>
- Willson, S., & Miller, K. (2014). Data collection. In K. Miller, S. Willson, V. Chepp, & J.-L. Padilla (Eds.), *Cognitive interviewing methodology* (pp. 15–33). Wiley & Sons, Inc.
- Woods, C. M. (2006). Careless responding to reverse-worded items: Implications for confirmatory factor analysis. *Journal of Psychopathology and Behavioral Assessment*, 28(3), 189–194. <https://doi.org/10.1007/s10862-005-9004-7>

- Wren, A. A., Shelby, R. A., Soo, M. S., Huysmans, Z., Jarosz, J. A., & Keefe, F. J. (2019). Preliminary efficacy of a lovingkindness meditation intervention for patients undergoing biopsy and breast cancer surgery: A randomized controlled pilot study. *Supportive Care in Cancer*, 3583–3592. <https://doi.org/10.1007/s00520-019-4657-z>
- Zessin, U., Dickhäuser, O., & Garbade, S. (2015). The relationship between self-compassion and well-being: A meta-analysis. *Applied Psychology: Health and Well-Being*, 7(3), 340–364. <https://doi.org/10.1111/aphw.12051>
- Zhu, L., Yao, J., Wang, J., Wu, L., Gao, Y., Xie, J., Liu, A., Ranchor, A. V., & Schroevers, M. J. (2019). The predictive role of self-compassion in cancer patients' symptoms of depression, anxiety, and fatigue: A longitudinal study. *Psycho-Oncology*, 28(9), 1918–1925. <https://doi.org/10.1002/pon.5174>