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Measures of Psychosocial Care Utilization in a National Sample of Cancer Patients

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Objective: Cancer is one of the most physically and emotionally debilitating diseases. Despite evidence that psychosocial care can improve psychological and physiological functioning, as few as 4.4% of patients are willing to engage in psychosocial treatment. Few studies explored drivers of psychosocial care underutilization. Therefore, treatment engagement strategies are needed, by identifying patients' barriers to psychosocial treatment. This study evaluated readiness to utilize psychosocial care by developing transtheoretical model (TTM) measures of stage of change, decisional balance, and self-efficacy. ***Method:*** Online survey data was collected from a national sample of 475 adults ($M_{\text{age}} = 47.89$, $SD = 14.77$) with cancer diagnoses. A sequential process of measure development was used. Semistructured expert and research participant interviews were conducted for initial item development, followed by exploratory, confirmatory, and external validation analyses. ***Results:*** Principal components analyses (PCA) indicated two, 4-item factors (pros $\alpha = .874$; cons $\alpha = .716$) for decisional balance. Confirmatory factor analyses (CFA) supported a 2-factor correlated model, $\chi^2(19) = 68.56$, CFI = .962, RMSEA = .078. For self-efficacy, PCA indicated two, 3-item components (physical $\alpha = .892$; social/emotional $\alpha = .708$). CFA supported this structure $\chi^2(8) = 23.72$, CFI = .989, RMSEA = .067. Physical component items included fatigue, pain, and discomfort. Multivariate analyses indicated significant cross-stage differences for pros, cons, and self-efficacy. ***Conclusions:*** Findings support the validity of the developed stage of change, 8-item decisional balance, and 6-item self-efficacy measures for psychosocial care. Clinicians could use these tools to address perceived cons of psychosocial care, including shame and self-efficacy (e.g., using psychosocial care despite pain). These scales may help treatment teams better address barriers to psychosocial care utilization.

What is the public health significance of this article?
This study demonstrated the importance of multidisciplinary treatment teams assessing and addressing perceived cons of psychosocial care to encourage utilization of services when treating individuals with cancer. This study highlights the importance of enhancing self-efficacy throughout cancer treatment, with an emphasis on both the social/emotional and physical components of cancer (pain, fatigue, discomfort), that can interfere with psychosocial service utilization. This study suggests that treatment teams should target mental health stigma and shame, as well as clarifying privacy concerns regarding psychologists' and other mental health professionals' sharing of patient information with the rest of the treatment team.

Keywords: transtheoretical model, readiness, cancer, mental health treatment, treatment engagement

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Individuals with cancer experience elevated levels of psychological distress, ranging from adjustment issues to meeting full diagnostic criteria for a mental disorder (National Cancer Institute, 2018). A meta-analysis of 94 psychiatric interview-based studies across oncological, hematological, and palliative care settings found that mood disorders occurred in 30%–40% of patients (Mitchell et al., 2011). Notably, in one study of 10,153 patients screened at two major cancer centers, over 50% of females and patients under age 50 had either subclinical or clinical levels of anxiety (Linden, Vodermaier, MacKenzie, & Greig, 2012). Further, one study of 150 Pakistani patients with cancer found that 66% had clinically significant levels of anxiety and depression, with gastrointestinal, respiratory, and breast cancer types more strongly associated with psychological distress (Jadoon, Munir, Shahzad, & Choudhry, 2010). One systematic review of 59 studies revealed that cancer-related fatigue was associated with both anxiety and depression (Brown & Kroenke, 2009). Collectively, these findings emphasize the pervasiveness of mental health issues in cancer populations.

Associations Between Psychological Distress and Cancer

The relationship between the physical and emotional burden of cancer is evidently strong (Banks et al., 2010; Hagedoorn, Sanderman, Bolks, Tuinstra, & Coyne, 2008; Linden, Vodermaier, MacKenzie, & Greig, 2012; Mitchell et al., 2011). For example, a retrospective study of 52 lung cancer patients found that depression was related to increased hospitalization following thoracic surgery (Kitagawa, Yasui-Furukori, Tsushima, Kaneko, & Fukuda, 2011). Further, a 10-year prospective study of 3,080 survivors revealed that depression was associated with *double* the risk of all-cause mortality, compared with those without depression (Mols, Husson, Roukema, & van de Poll-Franse, 2013). An earlier study established correlations between verbal or written expressions of emotions and levels of tumor-infiltrating cancer lymphocytes in melanoma, suggesting associations between emotional *expression* and disease course and overall physiological functioning (Temoshok, 1985). Similarly, Jensen (1987) found that *repression* of negative emotions was associated with an aggravated course of breast cancer and that psychological variables were *twice* as effective at predicting clinical outcomes as were biological indicators. With regard to the complex, bidirectional associations between psychological and physiological functioning, Antoni (2013) proposed that psychosocial interventions are associated with molecular systems that govern tumor promoting and tumor defense processes. Collectively, these results demonstrate relationships between psychological distress and physiological outcomes (Kitagawa et al., 2011) and survival rates (Brower, 2014), and accordingly, the need to address psychological concerns (Horney et al., 2011).

Psychosocial Interventions for Patients With Cancer

Psychosocial interventions have addressed a variety of cancer-related concerns, including quality of life (Eom et al., 2013; Rehse & Pukrop, 2003), fatigue (Jacobsen, Donovan, Vadaparampil, & Small, 2007), pain (Johannsen, Farver, Beck, & Zachariae, 2013), depression (Hart et al., 2012; Piet, Würtzen, & Zachariae, 2012; Willems et al., 2017), anxiety (Björneklett et al., 2012), resilience, confidence, and fear of tumor progression (Brix et al., 2008). Cognitions, self-efficacy, mood disturbance, and self-esteem are especially important to address in cancer patients (Stanton, Luecken, MacKinnon, & Thompson, 2013). Notably, psychological symptoms (e.g., depression) serve as risk factors for medical treatment nonadherence (e.g., DiMatteo, Lepper, & Croghan, 2000). Accordingly, psychosocial interventions have been associated with increased cancer treatment adherence by enhancing coping with treatment side effects (e.g., Redd, Montgomery, & DuHamel, 2001). Moreover, a study of 159 males undergoing surgery for prostate cancer found that those randomly assigned to a two-session presurgical stress management intervention had hematological markers of increased immune functioning and decreased presurgical mood disturbance (Cohen et al., 2011). Altogether, compelling evidence exists for the role psychosocial interventions play in cancer patients' adjustment and physiological profiles (e.g., Stagl et al., 2015).

Despite its strong evidence base, reluctance to accept psychosocial treatment prevails. Although at least 35% of patients experience significant distress, only 5% receive psychological support (National Comprehensive Care Network, 2016). A recent study of 1,777 cancer survivors revealed only 4.4% used psychosocial care and 55.1% never discussed the option with their oncologists (Forsythe et al., 2013). However, those who utilized support had positive attitudes toward therapeutic interventions and a desire to effectively cope with their diagnosis (Plass & Koch, 2001). Therefore, assessing readiness to change and developing interventions may increase psychosocial treatment engagement. The transtheoretical model (TTM) is an integrative and comprehensive model of intentional behavior change that incorporates process-oriented variables to predict how and when individuals change (Prochaska & DiClemente, 1983). TTM-guided interventions modified many health behaviors, such as mammography screening (Rakowski et al., 1998), medication adherence (Johnson et al., 2006), and blood glucose monitoring (Jones et al., 2003). Thus, TTM offers a promising theoretical framework for assessing readiness to accept psychosocial care for cancer populations. Key TTM constructs include stage of change (SOC), decisional balance, and self-efficacy. SOC is the TTM's central organizing construct, representing the temporal and readiness dimensions. As people change, they make forward stage progress through five identified stages: precontemplation, contemplation, preparation, action, and maintenance. Readiness to change is, in part, based on decisional balance (Prochaska et al., 1994). A stable decisional balance pattern has been identified across SOC for 48 different health risk behaviors (Hall & Rossi, 2008). Finally, self-efficacy is defined as confidence to change a target behavior across challenging situations. Self-efficacy scores are higher in later stages (DiClemente, Prochaska, & Gibertini, 1985). Thus, SOC, decisional balance, and self-efficacy can jointly predict and facilitate behavior change. Previous research findings on reluctance to utilize psychosocial care underscore assessment of readiness to change. Although studies explored barriers (Dilworth, Higgins, Parker, Kelly, & Turner, 2014) and readiness to utilize psychosocial treatment (Baker et al., 2013), this is the first study to apply TTM *and* quantitative methodology to psychosocial care acceptance among cancer patients. Developing TTM measures can provide tools to enhance treatment engagement and advance team-based cancer treatment. Notably, Purushotham, Bains, Lewison, Szmukler, and Sullivan (2013) noted the scarcity of studies on the intersection of cancer and mental health—suggesting the need to bridge the gap between the two disciplines with the goals of preventing and treating mental health problems in cancer patients. Accordingly, this study evaluated three TTM constructs (SOC, decisional balance, and self-efficacy) to assess patient readiness to engage in psychosocial care and to guide team-based interventions. Specifically, aims of this study were the development of SOC, decisional balance, and self-efficacy for: (a) future use with cancer populations across different disease groups, disease stages, and settings; (b) identifying factors underlying psychosocial care underutilization; and (c) guiding interventions focused on promoting motivation and willingness for psychosocial care. Given the prevalence of psychological distress and patients with cancer, and consequences associated with this distress, the present study examined subjective present and future well-being, as well as the resulting "Life Evaluation Well-Being Index" (Cantril, 1965), in relation to TTM constructs. A prior randomized clinical trial found that individuals with lower SOC had lower well-being scores and used TTM constructs to foster subjective well-being using the Life Evaluation Well-Being Index (Prochaska et al., 2012). Further, psychotherapy research findings converge on the observation that willingness to engage in psychotherapy is complex and multidimensional (e.g., Rosenbaum & Horowitz, 1983). Further, in light of their baseline psychosocial functioning, the treatment gains that patients make are often paradoxical (e.g., Cooper, 2008; Keithly, Samples, & Strupp, 1980). For instance, research supports the "capitalization hypothesis:" Patients who are functioning relatively well at baseline improve more than those with a greater need for improvement (i.e., individuals with lower well-being or psychosocial functioning) and this is associated with stigma and perceived potential benefits of psychotherapy (Castonguay & Beutler, 2006; Clarkin & Levy, 2004; Rude & Rehm, 1991). Remarkably, Martens et al. (2010) found that in a sample of patients with gastrointestinal disorder, motivation for psychotherapy was *not* determined by clinical factors, but by interpersonal factors independent of symptoms. Notably, research also underscores the crucial role that mental health stigma (e.g., Eisenberg, Downs, Golberstein, & Zivin, 2009) and perceptions of psychosocial care (e.g., potential benefits, expectations) play in the decision to pursue or accept psychotherapy (Glass & Arnkoff, 2000). In light of the literature on psychotherapy, psychosocial support, TTM constructs, and present well-being, we propose the following hypotheses:

> *Hypothesis 1a:* Higher stage of change for psychosocial care acceptance will be associated with greater present well-being;
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> *Hypothesis 1b:* Higher pros of psychosocial care will be associated with greater present well-being;
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> *Hypothesis 1c:* Lower cons of psychosocial care will be associated with greater present well-being;
>
> *Hypothesis 1d:* Higher self-efficacy will be associated with greater present well-being.

Further, given the literature on psychosocial support, TTM constructs, and future well-being, we propose the following hypotheses:

> *Hypothesis 2a:* Higher stage of change for psychosocial care acceptance will be associated with greater future well-being;
>
> *Hypothesis 2b:* Higher pros of psychosocial care will be associated with greater future well-being;
>
> *Hypothesis 2c:* Lower cons of psychosocial care will be associated with greater future well-being;
>
> *Hypothesis 2d:* Higher self-efficacy will be associated with greater future well-being.

Method

Design

A sequential process of measure development was used to develop SOC, decisional balance, and self-efficacy measures (Redding, Maddock, & Rossi, 2006). Semistructured expert and research participant interviews were conducted. Item development was followed by split-half cross-validation techniques (Redding et al., 2006), including exploratory, confirmatory, and external validation analyses. Finally, we examined relationships between the three different TTM constructs (SOC, decisional balance, self-efficacy) and various patient factors to examine construct validity.

Item Development for TTM Measures

Initial item development for SOC, decisional balance, and self-efficacy was based on a comprehensive review of TTM measures for other behaviors (e.g., physical activity, high-fat diet, cigarette smoking). Items were further developed from psycho-oncology and psychotherapy literature. Following initial development, items were refined using feedback from experts in behavioral health, oncology, and the TTM. First, one PhD-level licensed psychologist and expert in psychosocial oncology participated in a semistructured interview on patient engagement issues in psychosocial care and provided feedback on the proposed item set. Next, two oncologists provided feedback on issues cancer patients commonly face regarding diagnosis and treatment, as well as barriers to psychosocial care. Finally, two PhD-level TTM experts reviewed the proposed items for clarity and face validity.

Qualitative Interview Sample and Procedure

To elicit feedback on item clarity, acceptability, and face validity, the primary investigator conducted 12 semistructured qualitative interviews with patients ($M_{\mathrm{age}} = 65.5$, $SD = 10.9$; 100% White; seven females, five males) actively recruited from a community hospital. Participants had to be over the age of 18 and have a cancer diagnosis. For this qualitative sample, participant eligibility was corroborated using medical records. For these 12 interview participants, cancer diagnoses were as follows: breast ($n = 4$), lymphoma ($n = 3$), esophageal ($n = 1$), endometrial ($n = 1$), leukemia ($n = 1$), liver ($n = 1$), and lung and salivary glands ($n = 1$). Participants completed the initially developed items and provided oral feedback for SOC, decisional balance, and self-efficacy. Participant feedback was discussed with TTM experts and incorporated to generate the final survey version.

Survey Administration

Cint, a targeted survey population and panel recruitment company, recruited participants during the online survey administration phase. Participants accessed SurveyMonkey online survey software via an online link provided by Cint. Following informed consent, they were routed to questions on eligibility criteria. Eligible participants were over the age of 18 and reported either a current or prior cancer diagnosis. Participants who answered "No" to the screener question: "Have you ever been diagnosed with cancer?" were disqualified from the study. Cint recruited participants until the target sample size (n = 475) was achieved. Thus, the researchers did not have access to the number of participants disqualified from the study. Eligibility was based on self-report and no confirmation from medical records was possible. Additional eligibility criteria ensured a census-balanced sample in the United States. Eligibility quotas were: only patients with a history of cancer or current diagnosis (100%), males (n = 233), females (n = 242), ages 18–22 (n = 43), ages 23–35 (n = 114), ages 36–55 (n = 185), ages 56–80 (n = 133), Midwest (n = 109), Northeast (n = 90), South (n = 171), and West (n = 105). Eligible individuals were then linked to the full survey. The university's and hospital's respective Institutional Review Boards approved procedures for human subjects protections.

Measures

Demographic characteristics. Participants indicated their sex, age, race/ethnicity, marital status, and level of education.

Clinical characteristics. Participants indicated cancer type (e.g., lung, skin, testicular), cancer treatment location (e.g., cancer center, community hospital, outpatient office), and cancer treatment type (e.g., chemotherapy, radiation, stem cell transplant). With regard to cancer type, patients were asked the following question: "What type of cancer have you been diagnosed with? Please note all that apply."

Measure Used

The Cantril Self-Anchoring Life Evaluation Index (Cantril, 1965) determined evaluative well-being outcomes. Individuals rated their current and future lives on a ladder scale from 0 to 10; 0 represented the *worst possible life* and 10 represented the *best possible life*. The first question assessed *present* subjective well-being: "Please imagine a ladder with steps numbered from 0 at the bottom, to 10 at the top. The top of the ladder represents the best possible life for you, and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time?" The second question measured *future* subjective well-being: "On which step do you think you will stand about 5 years from now?" Individuals who rated their present lives 7+ and their future lives 8+ were classified as "thriving." Individuals who rated their current lives <4 and their future lives <4 were classified as "suffering." Individuals who met neither criteria were classified as "struggling." Both the present and future well-being scales must be used to generate a well-being category (suffering, struggling, thriving). This well-being scale has been used in prior studies, including some medical settings such as refractive surgery (Freitas, Oliveiros, Marques, & Leite, 1995), heart transplantation (Molzahn et al., 1997), and psychiatry (e.g., Koweszko et al., 2016). Notably, a prior randomized clinical trial utilized TTM measures to increase the percentage of participants in the "thriving" category (Prochaska et al., 2012). In the present study, this measure served to examine relationships between willingness to engage in psychosocial care and well-being.

Measures Developed

SOC for psychosocial care. Participants responded to the following question: "Please select one item from the following that best describes your current willingness to seek psychosocial care (e.g., therapist, psychologist, support group, etc.)." Participants were assigned to precontemplation if they were not considering psychosocial care and did not plan to for the next 6 months; contemplation if they intended to within the next 6 months; and preparation if they intended to within the next 30 days. Participants were assigned to action if they were receiving psychosocial care for <6 months and maintenance if they had been receiving care for 6+ months.

Decisional balance for psychosocial care. Thirteen items reflected cons (e.g., "Seeking help is a sign of weakness") and eight reflected pros (e.g., "I could improve the quality of my life"). Thus, the initial starting number of items for this measure (prior to exploratory and confirmatory analyses) was 21. Respondents rated how important each item was in their decisions about whether to accept psychosocial care, on a 5-point Likert scale, ranging from 1 = *not important at all* to 5 = *extremely important*.

Self-efficacy for psychosocial care. Nine items assessed self-efficacy prior to exploratory and confirmatory analyses). Items assessed patients' ability to engage in psychosocial care across a variety of challenging situations (e.g., fatigue, pain, physical discomfort, sharing feels about diagnosis and treatment). Participants rated confidence levels on a 5-point Likert scale, ranging from 1 = *not at all confident* to 5 = *extremely confident*.

Sample Size Planning

Study sample size planning was to recruit as many participants as possible, based on budgetary constraints. However, we aimed for at least 400, based on the psychometric requirements for split-half, cross-validation to ensure the stability of principal components analysis (PCA) and confirmatory factor analysis (CFA) solutions (Kline, 2016; Redding et al., 2006; Velicer & Fava, 1998). This sample size would also provide adequate power for subsequent ANOVAs. For example, a sample size of 450 gives .80 power for a one-way ANOVA with five groups (e.g., stages of change) for an effect size accounting for about 2.5% of the variance (assuming a Type I error rate of .05). This is a much smaller effect size than has usually been obtained for SOC × Decisional Balance and SOC × Self-Efficacy ANOVAs (e.g., Hall & Rossi, 2008). For ANOVAs with fewer groups (e.g., wellbeing categories), power of .80 is achieved with slightly smaller effect sizes.

Data Analysis

First, chi-square tests of independence determined associations between sociodemographic characteristics (e.g., gender, education level, age category) and SOC, as well as well-being category (e.g., suffering, surviving, thriving) and SOC. We used the Statistical Package for Social Sciences Version 24.0 (SPSS 24.0) for these analyses. Second, split-half cross-validation procedures including both exploratory and confirmatory analyses (Redding et al., 2006) also were conducted using SPSS 24.0 and EQS, respectively. A random exploratory half of the sample ($n = 237$) was used for principal components analyses (PCA) with varimax rotation on item correlation matrices. The minimum average partial procedure (MAP) and parallel analysis guided component retention decisions (Horn, 1965; Velicer, 1976). Item selection was an iterative process that involved removing items for quantitative reasons (loadings <.40, or >.90 and correlations >.70 with other items, or high loadings [>.40] on multiple factors) and qualitative construct breadth. In later steps, items with content overlap were removed. Cronbach's alpha reflected internal consistency.

Third, CFAs were conducted using the structural equation modeling software program EQS with the remaining subsample ($n = 238$). Maximum likelihood estimation methods were used for fit indices (Satorra-Bentler scaled chi-square, comparative fit index [CFI], root mean-square error of approximation [RMSEA]) because item data were ordinal (Kline, 2016). CFAs evaluated the degree to which an independent portion of the data fit the model created by iterative PCAs. Model fit and factor loadings were evaluated. Item clarity, lack of redundancy, and conceptual breadth determined final item selection. Cronbach alphas established internal consistency.

Fourth, external validation analyses were conducted with the full sample ($N = 475$). Relationships between TTM constructs and SOC were evaluated and compared to patterns in other behavior change areas. Raw TTM scale scores were standardized using *T* scores ($M = 50$, $SD = 10$) and weighted by group size to eliminate bias created by uneven stage groups.

Finally, a chi-square test evaluated the association between participants' mental health treatment status (in treatment vs. not in treatment) and SOC for psychosocial care. Multivariate analyses of variance (MANOVA) evaluated relationships between decisional balance and SOC and between self-efficacy and SOC. Significant results ($\alpha < .05$) were followed with ANOVAs on the individual dependent variables and post hoc Tukey's tests for means comparisons. ANOVA was also used to determine whether individuals in the action/maintenance SOC showed different well-being levels than those in pre-action stages. Regression analyses evaluated relationships between TTM constructs and subjective wellbeing.

Results

Survey Sample

Cint recruited 475 eligible adults to participate in the study's online survey. Cint recruited participants until this target sample size ($n = 475$) was achieved. Thus, the researchers did not have access to the number of participants who answered "no" to the screening items. Missing data resulted in a final analytic sample of $N = 466$. The sample was primarily White (79%, $n = 368$) and female (55%, $n = 255$). Ages ranged from 18 to 78 ($M = 47.89$, $SD = 14.77$). Most of the sample (48%, $n = 223$) was in the precontemplation stage for psychosocial care. Demographic characteristics are presented in Table 1.

The most common cancer diagnoses were: breast (16.8%) and prostate (7%), and 23.4% reported multiple cancer diagnoses, either due to metastasis or a history of multiple primary cancers. Variables were recoded so the 57 reported diagnoses were organized by organ system/site (e.g., gastrointestinal, gynecologic, skin), as presented by the National Cancer Institute (2016). Medical characteristics are presented in Table 2.

Table 1
Demographic Characteristics

Variable	Participants
Sex	% (*n*)
Female	54.6% (*n* = 255)
Male	44.3% (*n* = 207)
Other	1.1% (*n* = 5)
Race/ethnicity	
Native American	1.9% (*n* = 9)
Asian/Pacific Islander	1.9% (*n* = 9)
Black	4.1% (*n* = 19)
Hispanic/Latino	4.9% (*n* = 23)
Middle Eastern	.4% (*n* = 2)
Multiracial	6.9% (*n* = 32)
Other	.9% (*n* = 4)
White	79% (*n* = 368)
Marital status	
Married	54.3% (*n* = 253)
Divorced	12.7% (*n* = 59)
Living with partner	11.2% (*n* = 52)
Not married	17% (*n* = 79)
Separated	1.3% (*n* = 6)
Widowed	3.6% (*n* = 17)
Education	
<High school	2.5% (*n* = 12)
High school diploma	14.8% (*n* = 69)
Some college	19.3% (*n* = 90)
Trade/vocational school	6.9% (*n* = 32)
Associate degree	12% (*n* = 56)
Bachelor's degree	25.7% (*n* = 120)
Master's degree	12.6% (*n* = 59)
Professional/doctorate degree	6.2% (*n* = 29)
Stage of change (SOC)	
Precontemplation	47.8% (*n* = 223)
Contemplation	22.1% (*n* = 103)
Preparation	8.1% (*n* = 38)
Action	8.6% (*n* = 40)
Maintenance	13.5% (*n* = 63)

Stages of Change for Psychosocial Care

Chi-square tests revealed no association between gender and stage, $\chi^2(4, N = 461) = 7.64$, $p = .12$, $phi = .12$ or between race and stage, $\chi^2(4, N = 461) = 7.36$, $p = .12$, $phi = .13$. However, a significant association between being Hispanic/Latino and in a pre-action stage (i.e., precontemplation, contemplation, preparation), $\chi^2(4, N = 460) = 31.37$, $p < .001$, $phi = .26$ was found. Chi-square tests revealed no association between stage and education level, $\chi^2(4, N = 461) = 3.47$, $p = .48$, $phi = .09$ or between stage and cancer site, $\chi^2(60, N = 467) = 48.75$, $p = .85$, $phi = .32$. Further, chi-square tests revealed no association between age category (i.e., four categories: 18–34; 35–49; 50–64; 65+) and stage of change (preaction/action), $\chi^2(3, N = 420) = 4.76$, $p = .19$. Categories of subjective present well-being (thriving, 50.8%; struggling, 39.7%; suffering, 9.5%), $\chi^2(8, N = 461) = 28.4$, $p < .001$, $phi = .25$ differed across stages of change for psychosocial care.

Table 2
Medical Characteristics

Variable	Participants
Cancer site	% (n)
Breast	16.8 ($n = 79$)
Digestive/gastrointestinal	8.7 ($n = 41$)
Endocrine/neuroendocrine	4.9 ($n = 23$)
Eye	.4 ($n = 2$)
Genitourinary	12.4 ($n = 58$)
Gynecologic	8.5 ($n = 40$)
Head and neck	3.4 ($n = 16$)
Hematologic/blood	6.6 ($n = 31$)
Musculoskeletal	.6 ($n = 3$)
Neurologic	1.3 ($n = 6$)
Respiratory/thoracic	1.5 ($n = 7$)
Skin	9 ($n = 42$)
Unknown primary	.2 ($n = 1$)
>1 cancer site[*]	23.5 ($n = 110$)
Other	1.7 ($n = 8$)
Soft tissue	.4 ($n = 2$)
Treatment location (not mutually exclusive)	
Homeopath	1.5% ($n = 7$)
Major cancer center	19.4% ($n = 92$)
Not receiving treatment	7.8% ($n = 37$)
Outpatient office	33.5% ($n = 159$)
General hospital	37.9% ($n = 180$)
Community hospital	9.7% ($n = 46$)
VA hospital	5.7% ($n = 27$)
Treatment type (not mutually exclusive)	
Blood product donation	7.8% ($n = 37$)
Chemotherapy	43.4% ($n = 206$)
Homeopathy	4.4% ($n = 21$)
Hyperthermia	4.4% ($n = 21$)
Immunotherapy	6.1% ($n = 29$)
Photodynamic therapy	1.3% ($n = 6$)
Radiation	38.1% ($n = 181$)
Stem cell transplant	2.7% ($n = 13$)
Surgery	52.4% ($n = 249$)
Targeted therapy	11.6% ($n = 55$)

[*] Includes participants with a history of >1 primary cancer and those with metastatic disease.

External Validity of SOC Action Criterion

Of those who reported thriving, 81.2% were in pre-action ($n = 190$) and 18.8% in action/maintenance ($n = 44$). Of those who reported struggling/suffering, 74.9% were in pre-action ($n = 170$) and 25.1% action/maintenance ($n = 57$). ANOVA revealed that individuals in pre-action ($M = 6.34$, $SD = 2.32$) reported significantly greater subjective present well-being than individuals in action/maintenance ($M = 6.01$, $SD = 2.37$), $F(1, 459) = 4.89$, $p = .03$, $\eta^2 = .01$. However, ANOVA revealed no significant stage differences in future subjective well-being, $F(1, 463) = .52$, $p = .47$.

Decisional Balance for Psychosocial Care

PCA with varimax rotation on the 16×16 matrix of item intercorrelations determined factor structure. Three iterative PCAs reduced the original pool of 16 items to eight, with four items reflecting pros and four items reflecting cons of psychosocial care (see Figure 1). MAP and parallel analysis supported a two-factor solution; both one- and two-component solutions were explored. Internal consistency was good for pros ($\alpha = .874$) and acceptable for cons ($\alpha = .716$) with the exploratory half of the sample. The two factors accounted for 61.9% of the total variance.

For the confirmatory analyses on the second half of the sample, four models were compared for the eight-item decisional balance measure: (a) null model that supported eight independent variables and no latent factors; (b) one-factor model; (c) two-factor uncorrelated model; and (d) two-factor correlated model (see Table 3). The two-factor correlated model showed the best fit. Internal consistency was good for both pros ($\alpha = .87$) and cons ($\alpha = .75$). See Figure 1 for factor loadings and factor correlation.

Self-Efficacy for Psychosocial Care

PCA with varimax rotation on the 9×9 matrix of items intercorrelations determined the measure's factor structure. Four PCAs reduced nine items to six (see Figure 2). MAP supported a single-component solution. However, both, PCA and parallel analysis supported a two-component solution. Therefore, the two-factor solution was retained. One factor (three items) reflected *physical* challenges to utilizing psychosocial services ($\alpha = .904$) and the second factor (three items) reflected *social/emotional* challenges ($\alpha = .757$). The overall six-item scale had good internal consistency ($\alpha = .826$) and accounted for 75.5% of the total variance.

Four CFA models were compared for the self-efficacy scale on the second half of the sample: (a) null model that supported six independent variables and no latent factors; (b) single-factor model; (c) uncorrelated two-factor model; and (d) correlated two-factor model. The correlated two-factor model showed the best fit (see Table 3; see Figure 2 for factor loadings and factor correlation).

External Validation

Decisional balance by SOC. MANOVA indicated individuals at different SOC differed significantly on decisional balance constructs, $F(8, 894) = 12.72$, $p < .001$, Wilks' $\Lambda = .806$; $\eta^2 = .10$. Follow-up ANOVAs found significant between-stage differences on the pros, $F(4, 454) = 19.90$, $p < .001$, $\eta^2 = .15$. Group means and standard deviations are shown in Table 4. Post hoc Tukey's tests indicated the pros were significantly higher for individuals in the action and maintenance stages than for those in precontemplation. Follow-up ANOVAs also found significant between-stage differences on cons, $F(4, 456) = 6.7$, $p < .001$, $\eta^2 = .06$. Post hoc analyses indicated cons were significantly lower for individuals in action and maintenance stages than for those in precontemplation (see Figure 3a).

Self-efficacy by SOC. MANOVA indicated self-efficacy was significantly different across the stages, $F(8, 906) = 6.18$, $p < .001$, Wilks' $\Lambda = .899$; $\eta^2 = .05$. Follow-up ANOVAs found significant between-stage differences on the physical, $F(4, 456) = 4.31$, $p < .01$, $\eta^2 = .04$) and social/emotional, $F(4, 459) = 10.49$, $p < .001$, $\eta^2 = .08$, factors. Group means and standard deviations are shown in Table 4. Follow-up comparisons showed that individuals' self-efficacy means in the precontemplation and preparation stages were substantially lower than self-efficacy means of those in action and maintenance (see Figure 3b).

Linear regressions determined relationships between subjective well-being (present and future) scores and TTM constructs (pros, cons, physical self-efficacy, and social/emotional self-efficacy).

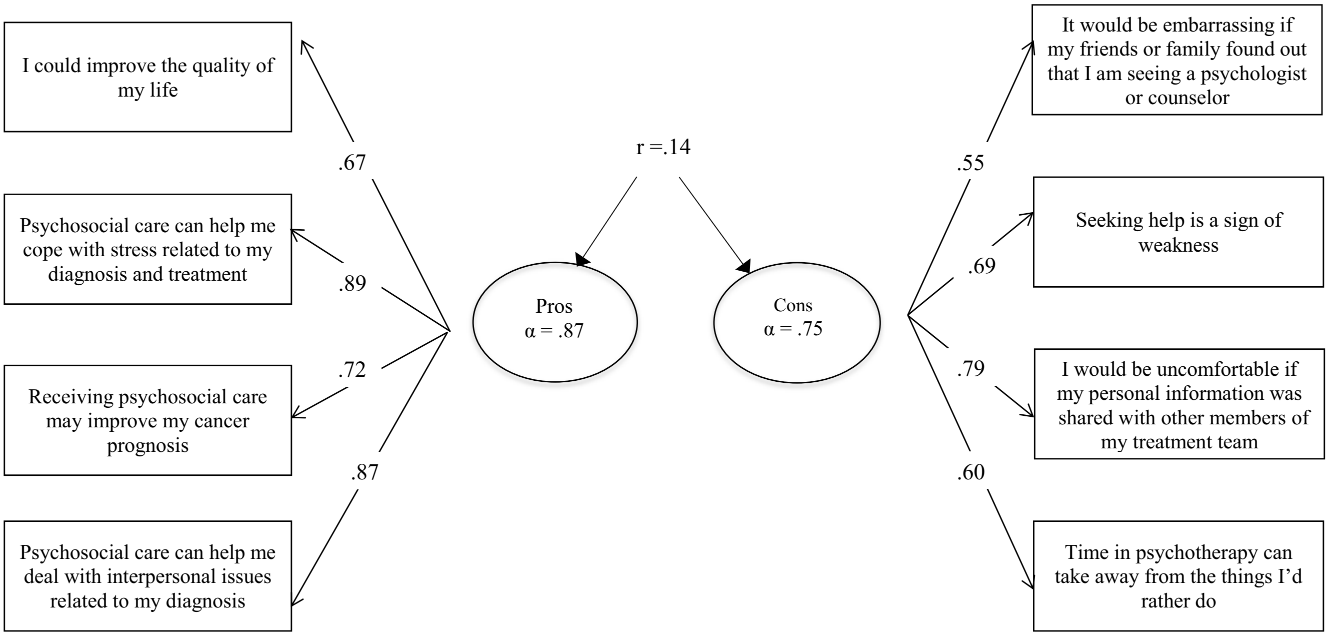

Figure 1. Decisional balance structural model.

Greater subjective *present* well-being was associated with *greater* physical self-efficacy ($\beta = .06$, $p < .05$). Additionally, greater subjective *future* well-being was associated with *fewer* perceived cons ($\beta = -.11$, $p < .001$). However, no significant relationships between present well-being and social/emotional self-efficacy ($\beta = .01$, $p = .75$), cons ($\beta = -.01$, $p = .66$), and pros ($\beta = .05$, $p = .15$) were observed. Finally, results revealed no significant relationships between future well-being and pros ($\beta = .03$, $p = .31$), physical self-efficacy ($\beta = .05$, $p = .14$), and social/emotional self-efficacy ($\beta = .05$, $p = .09$).

Discussion

Measure development results demonstrated good construct validity for decisional balance and self-efficacy for psychosocial care in a national sample of adults reporting either a current cancer diagnosis or a history of cancer. Both scales demonstrated external validity in their relationship with SOC. Consequently, the present study demonstrates validity for measures that may be used to design and manage interventions in cancer treatment settings. These items may also guide discussions between oncologists or cancer care team members and patients regarding psychosocial care (see online supplemental material).

SOC for Psychosocial Care

Overall findings supported the validity of SOC for psychosocial care. However, the significant association between wellbeing category (thriving, struggling, suffering) and SOC for psychosocial care was inconsistent with previous literature and with Hypothesis 1, as results demonstrated greater wellbeing in the pre-action compared to the action/maintenance stages. Treatment team mem-

Table 3
Fit Indices for Evaluated Decisional Balance and Self-Efficacy Confirmatory Models

Confirmatory models	χ^2_{SB} (*df*)	CFI	RMSEA [90% CI]
Decisional balance			
Model 1: Null model	1342.98 (28)	—	—
Model 2: One-factor model	449.39 (20)*	.673	.223 [.205, .240]
Model 3: Uncorrelated two-factor model	224.56 (20)*	.891	.163 [.143, .311]
Model 4: Correlated two-factor model	68.56 (19)*	.962	.078 [.058, .097]
Self-efficacy			
Model 1: Null model	1400.959 (15)	—	—
Model 2: One-factor model	239.147 (9)*	.834	.242 [.215, .268]
Model 3: Uncorrelated two-factor model	146.612 (9)*	.901	.187 [.160, .213]
Model 4: Correlated two-factor model	23.72 (8)**	.989	.067 [.037, .099]

Note. $N = 238$; χ^2_{SB} = Satorra-Bentler scaled chi square; *df* = degrees of freedom; CFI = comparative fit index; RMSEA = root mean square error of approximation; CI = confidence interval.
* $p < .001$. ** $p < .01$.

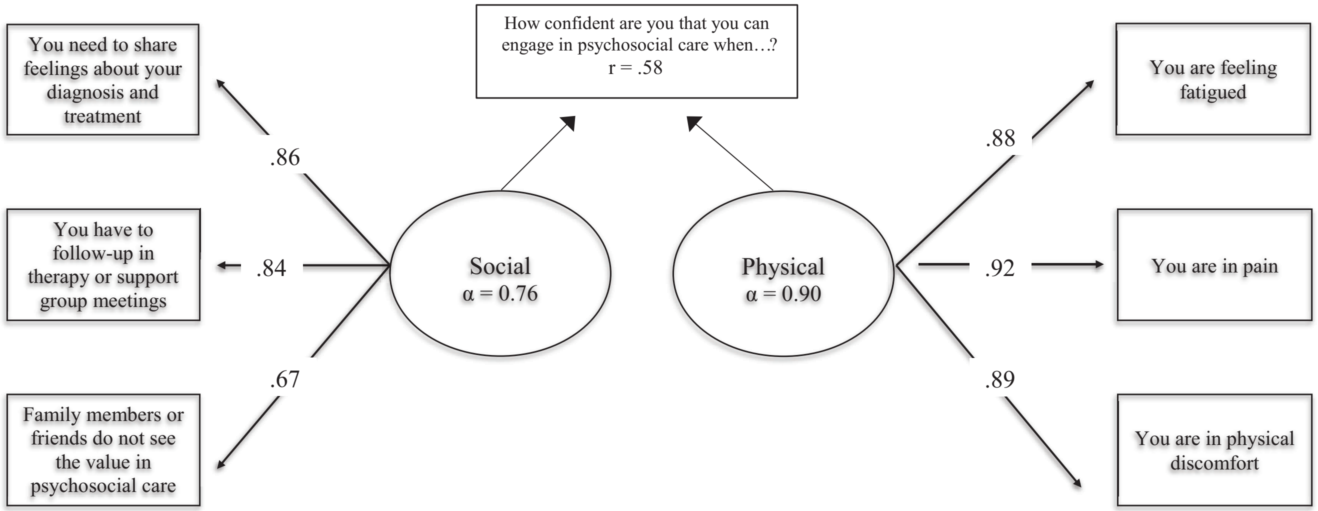

Figure 2. Self-efficacy structural model. Internal consistency (α) for the full six-item scale = .851.

bers (oncologists, nurses) should consider individuals' wellbeing in encouraging psychosocial care. Second, the significant difference in *present* wellbeing between those in the pre-action (precontemplation/contemplation/preparation) and action stages (action/maintenance) was also inconsistent with previous literature and with Hypothesis 1 (i.e., greater wellbeing in pre-action, compared to action/maintenance stages). However, no significant stage differences were observed for subjective *future* wellbeing or wellbeing *category*, failing to confirm Hypotheses 2a and 3a. One interpretation for this finding may be that uneven membership in wellbeing categories (50.8% thriving, 39.7% struggling, 9.5% suffering) limited our ability to find differences between small groups, although the struggling and suffering groups were combined in analyses, given the small number of participants in the suffering group (9.5%). Another interpretation is that because the pre-action group had greater wellbeing, they would not feel as much need for psychosocial care, as they may already have adequate psychosocial support (e.g., from family, friends, etc.). An example alternative interpretation could be that survivors with no recurrence or those with a long time since diagnosis (e.g., ≥10 years) may have had diminished need for psychosocial care. It is important to underscore how remarkably similar cancer patients are with regard to thriving, compared with a representative national sample. Notably, the weekly U.S. Life Evaluation of 3,500 randomly selected healthy adults revealed 54.9% were thriving, 42.1% were struggling, and 3% were suffering (Gallup, 2016). This was remarkably similar to the wellbeing category distribution found in this sample. Thus, even when faced with a life-threatening illness, subjective life evaluations remained comparable to those of a national sample not facing cancer. Overall findings support the future use of SOC for psychosocial care.

Decisional Balance

This study supported a two-factor correlated model for decisional balance, reflecting pros and cons of psychosocial care. Cons outweighed the pros in precontemplation and pros increased with progress to action and maintenance, consistent with decisional balance and SOC relationships found across other behavioral areas (Hall & Rossi, 2008). Decisional balance may be a critical construct to assess readiness to utilize psychosocial care.

In comparing decisional balance for psychosocial care with other problem areas, one difference emerged. There was an *increase* in perceived cons between the precontemplation and contemplation stages, as well as between preparation and action. One interpretation may be that ambivalence occurs during preparation and action stages, as opposed to precontemplation. Nonetheless, the general trend was similar to observations in other behavior

Table 4
Summary of Raw Scores on Pros, Cons, and Self-Efficacy by Stage

		Pros		Cons		Self-efficacy: Physical		Self-efficacy: Social/emotional	
Stage	*N*	Mean	*SD*	Mean	*SD*	Mean	*SD*	Mean	*SD*
Precontemplation	223	11.86	4	8.93	3.6	8.21	3.25	8.88	3.1
Contemplation	103	14.51	3.8	10.75	4.21	9.44	3.26	9.88	2.65
Preparation	38	14.66	4.28	8.7	4.33	9.81	2.89	10.42	2.43
Action	40	14.95	3.56	9.87	3.76	9.3	2.78	9.67	2.51
Maintenance	63	15.95	3.71	7.84	4.06	9.22	3.26	11.35	2.6

Note. *M* = average sum score; higher scores indicate more importance for pros and cons and more confidence for self-efficacy; *SD* = standard deviation.

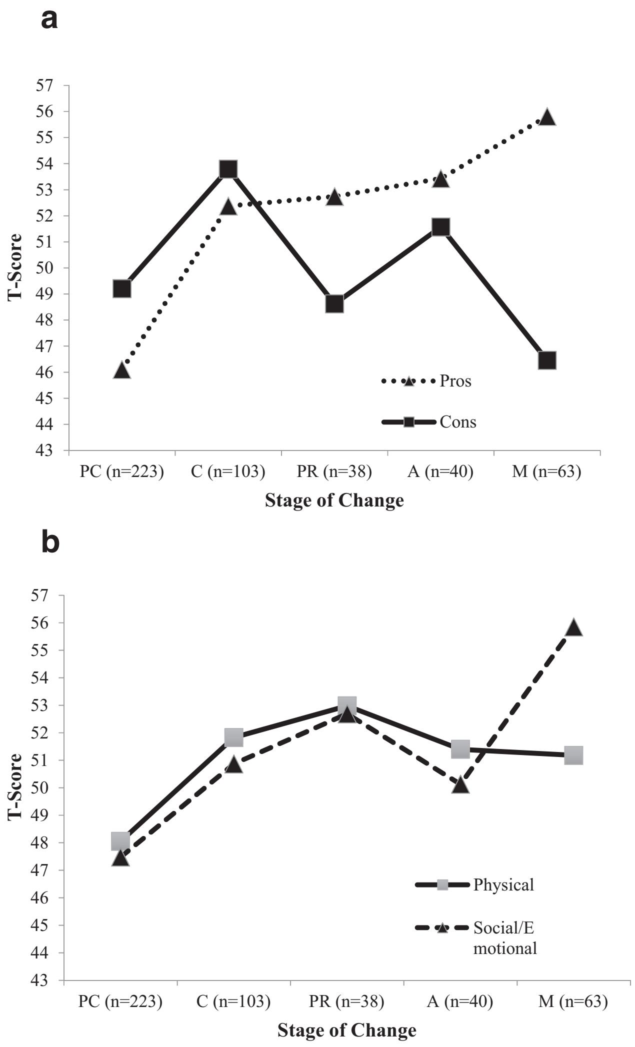

Figure 3. (a) Stage of change by decisional balance. (b) Stage of change by self-efficacy. PC = precontemplation; C = contemplation; PR = preparation; A = action; M = maintenance; "physical" represents physical challenges to engaging in psychosocial care and "social/emotional" represents social and emotional challenges to engaging in psychosocial care.

change areas, such that cons were more salient than pros in precontemplation, whereas pros were more salient than cons in maintenance (Figure 1). Although replication and longitudinal follow-up are warranted, this study suggests tailored interventions should focus on feedback to address cons during the contemplation and action stages, to maintain forward stage progress. For example, clinicians (oncologists, psychologists, social workers) could address patient concerns regarding *continuing* psychosocial care throughout the action stage. Given the common patient concern regarding psychologists sharing information with the treatment team (see Figure 3), best practices should be used in communicating *psychosocial* treatment information (Gallup, 2016).

Findings were mixed regarding the relationship between wellbeing and pros and cons. First, pros and wellbeing were not associated, failing to support Hypothesis 1b. Second, no relationship was observed between cons and present wellbeing, failing to confirm Hypothesis 1c. However, individuals with *greater* future wellbeing perceived *fewer* cons of engaging in psychosocial care, confirming Hypothesis 2c. So, it is possible that interventions aiming to reduce perceived cons of psychosocial care may increase future wellbeing. However, because these were cross-sectional findings, it is equally likely that those with greater future wellbeing simply perceived fewer cons of psychosocial care.

Self-Efficacy

This research supported a two-factor correlated model for self-efficacy for psychosocial care comprised of six items (see online supplemental material). Self-efficacy was *greater* for individuals in the action and maintenance stages, compared with those in the pre-action stages—a finding observed across other TTM behavior change studies (Figure 1; Redding et al., 2006). These two efficacy subscales are more comparable to situational temptations subscales (positive social, negative affect, and habit strength) found for smoking (Velicer, DiClemente, Rossi, & Prochaska, 1990) and high-fat diet (Rossi et al., 2001). This two-factor self-efficacy scale underscores both the strong *physical* and *emotional* components to having cancer. Accordingly, experiencing physical pain, discomfort, and fatigue collectively reflect a unique biomedical aspect of self-efficacy, that can be very important to address in those undergoing cancer care. This finding aligns with the low engagement rates among cancer patients, as they face unique challenges due to physical demands associated with treatments. Consequently, tailored interventions and treatment teams may consider and address both physical and emotional aspects of patients' cancer experiences in their efforts to engage patients in psychosocial care. Individuals with greater confidence for engaging in psychosocial care across a range of challenging situations had greater present wellbeing, supporting Hypothesis 1d. Therefore, self-efficacy may be essential in interventions or feedback sessions for addressing reluctance/ambivalence to meet with a psychologist or attend a support group. These findings support and provide tools for integrative care approaches to cancer treatment—ones that incorporate physical therapy, rehabilitation, nutrition services, and mental health care (Silver, 2010, 2013, 2015; Silver, Baima, Newman, Galantino, & Shockney, 2013).

Limitations and Future Directions

First, 47.8% and 22.1% of the survey sample was in precontemplation and contemplation, respectively. Although sample sizes were adequate for *internal* validation analyses—and scores were weighted by sample size for *external* validation analyses—it is likely the smaller post-action sample sizes limited the power for comparisons with other stage groups. Future research evaluating findings in larger samples including preparation, action, and maintenance stages is warranted. Second, findings were based on cross-sectional comparisons of individuals in each SOC. Although they can provide insight into factors driving change, they do not warrant longitudinal conclusions. Third, findings were based on a mainly White and non-Hispanic sample, with a high level of education. Furthermore, the qualitative interview sample (n = 12) consisted exclusively of White participants. Therefore, repeating qualitative interviews with a more diverse sample would be useful for further validation. Additionally, differences in cancer outcomes and mental health stigma among non-White populations warrant additional research examining the validity of these measures in those groups (Silver, 2015). Fourth, the survey sample was enrolled in a health panel with interest in research participation, potentially introducing sample bias. Fifth, participant eligibility was determined exclusively using self-report and thus, no confirmation of eligibility from medical records was possible. Sixth, 23.5% of participants reported multiple cancer diagnoses, but our survey did not distinguish between those who reported this due to metastatic disease or to a history of more than one primary cancer. Further, although the sample was diverse regarding cancer site and cancer treatment type, cancer staging data was not available. Given strong cross-cancer stage differences, regarding physical and psychological functioning (e.g., lower physical functioning in Stage IV cancer, compared with Stage I), future research investigating cancer staging data is recommended; the present investigation did not collect cancer staging data or time since diagnosis. Therefore, we cannot distinguish whether those in an earlier SOC were patients with cancer or those with a history of cancer. Relatedly, the heterogeneity of cancer type within this sample is limiting and may not capture psychosocial concerns specific to diagnoses, warranting future research focused on specific cancer types. Obtaining confirmatory diagnoses, time since diagnosis, treatment status (in treatment vs. not in treatment), and stage would have been helpful in explaining the findings. For example, it is difficult to determine associations between having multimodal cancer treatment (e.g., radiation + surgery + chemotherapy) and readiness for psychosocial care. Finally, an overarching limitation is the action criteria for readiness for psychosocial care (SOC) with an oncology population. For example, the SOC criterion for maintenance was historically engaging in psychosocial care for at least 6 months. Oncology patients are burdened with numerous demands, including scans and treatment visits, thus making it difficult to meet this criterion. Future studies may examine alternative stage criteria to better meet the needs of oncology patients and treatment teams. Nonetheless, 13.5% of this national sample reported being in the maintenance stage. Finally, most TTM constructs (SOC, decisional balance, self-efficacy) are inherently cognitive. Thus, future research can develop and validate processes of change, given its behavioral and experiential components (Prochaska, Velicer, DiClemente, & Fava, 1988).

Despite its limitations, the study has numerous strengths and can inform future investigations. Notably, this study developed and validated three key TTM constructs—SOC, decisional balance, and self-efficacy for psychosocial care in a large, national sample of cancer patients. These measures can be used to: (a) evaluate the impact of readiness to engage in psychosocial care on both psychological and physiological treatment outcomes, including cancer survival rates, and (b) inform intervention strategies. Clinicians may use psychoeducation and motivational interviewing to address ambivalence and thereby foster forward stage progress. Finally, in conjunction with distress screenings (e.g., NCCN Distress Screen; National Comprehensive Cancer Network, 2016), clinicians may utilize these study findings to increase psychosocial care referrals and consequently, increase engagement in care. Specifically, distress screenings may serve as a prelude for a psychosocial intervention, establish the need for psychosocial care, and inform individual psychosocial needs. Although the NCCN Distress Screen is a stand-alone measure used in cancer care settings, patients with clear psychosocial needs unwilling to engage in psychosocial interventions may benefit from assessing willingness and motivation and identifying underlying/contributing factors (e.g., stigma, perceived potential benefits, etc.). Collectively, this data can be used to intervene on and facilitate readiness to use psychosocial services. In sum, these findings may be used in intervention development and implementation to design treatments tailored to individuals' readiness to accept psychosocial care as a cancer treatment plan component, in conjunction with existing measures and tools (e.g., NCCN Distress Screen) suggesting the need for psychosocial care. For survivors, alternative psychological measures may be utilized to necessitate psychosocial care (e.g., Beck Anxiety Inventory, Beck Depression Inventory, Generalized Anxiety Disorder-7, Patient Health Questionnaire-9, etc.). Finally, these measures may serve as clinician tools to help patients progress from "suffering" to "thriving," by encouraging psychological treatment across the cancer care continuum.

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