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Do Psychologists Help? Assessment and Evaluation of an Integrative Care Approach to Cancer Treatment

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DO PSYCHOLOGISTS HELP? ASSESSMENT AND
EVALUATION OF AN INTEGRATIVE CARE APPROACH
TO CANCER TREATMENT

BY

MIRYAM YUSUFOV

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY
IN
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DOCTOR OF PHILOSOPHY

OF

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ABSTRACT

Psychosocial care has been shown to improve psychological and physiological functioning in cancer patients. However, as few as *five percent* of cancer patients engage in psychosocial care. Therefore, **Study 1** of this dissertation developed measures of core TTM constructs (Stage of Change, Decisional Balance, Self-Efficacy) relevant for increasing engagement in psychosocial care among individuals diagnosed with cancer.

Measure development entailed qualitative methods for item development and refinement followed by a series of quantitative analyses. The Stage of Change measure was validated against external constructs such as subjective present and future well-being. As expected, a chi-square test indicated that individuals in Action and Maintenance were significantly more likely to be in treatment than those in the pre-Action stages.

Measures for Decisional Balance and Self-Efficacy were developed using split-half, cross-validation procedures. In these, a series of Principal Component Analyses (PCAs) were conducted with half of the sample to narrow the item set and explore factor structure, and Confirmatory Factor Analyses (CFA) were conducted on the second half of the sample to confirm the factor structure and item loadings. For Decisional Balance, PCA supported two, 8-item factors, and CFA indicated a two-factor correlated model was the best fit to the data. For Self-efficacy, PCA supported two, 3-item factors, and CFA further supported this structure. Multivariate analyses indicated significant stage-construct relationships.

Overall results supported the validity of the measures developed and laid the foundation for applying the TTM to psychosocial treatment acceptance among cancer populations. Implications for application of the TTM to cancer populations are discussed.

Given that cancer patients frequently experience considerable distress during diagnosis and treatment, **Study 2** described the development and utilization of a behavioral health program for cancer patients, at a small community hospital, as well as provided preliminary results on program efficacy. This program was co-developed by individuals from a university-based clinical psychology doctoral program and a community hospital. The behavioral health program was comprised of a licensed, PhD-level clinical psychologist and seven clinical psychology doctoral students, who met with patients in order to accrue clinical hours. Patients were typically referred by their oncologists or nurses. Distress, depression, and anxiety were evaluated for a small subsample of participants. From the time the program was initiated, 238 patients between ages 18 and 95 ($M = 66.4$) were evaluated over a three-year period. The majority of patients (77.8%) were offered psychosocial care. Although 49.8% declined treatment, 23.6% engaged in one session and 26.6% engaged in two or more. Patients who were referred through the STAR Program® were more likely to engage in psychosocial care than those who found out about behavioral health through other means.

First, distress tracking may be improved if nurses, oncologists, and behavioral health providers administer measures. Second, partnerships between clinical psychology doctoral programs and hospitals may be mutually beneficial. Third,

hospitals offering cancer treatment may benefit from obtaining STAR® certification, in order to generate referrals for comprehensive cancer care. These efforts can serve as a model for other hospitals seeking to integrate behavioral health into routine cancer treatment.

Together, these two studies address the scarcity of studies on the intersection of cancer and mental health. As such, this work aimed to bridge the gap between the two disciplines, in order to prevent and treat mental health problems in cancer patients. Results of Study 1 may be used to guide researchers and clinicians in designing and implementing interventions. Study 2 methods and findings may be used to develop other behavioral health programs and to benchmark other integration efforts.

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PREFACE

This dissertation was prepared in manuscript format. The two manuscripts contained within have been written with the intention of submission to the following journals: *Journal of Clinical Oncology* (Manuscript 1) and *Supportive Cancer Care* (Manuscript 2).

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MANUSCRIPT 1

Stages of Change, Decisional Balance, and Self-Efficacy Measures for Psychosocial
Care Acceptance in a National Sample of Cancer Patients

Potential Journals for Submission: *Journal of Clinical Oncology, Annals of
Behavioral Medicine, Journal of Cancer Survivorship*

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Abstract

PURPOSE: Cancer is one of the most physically and emotionally debilitating diseases. Despite evidence that psychosocial care can improve psychological and physiological functioning, as well as increase survival rates, as few as 4.4% are willing to engage in psychosocial treatment. This study evaluated readiness to engage in psychosocial treatment by developing measures of Stage of Change, Decisional Balance, and Self-Efficacy. **METHODS:** Online survey data was collected from a national sample of 475 adults ($M_{\text{age}} = 47.89$, $SD = 14.77$) with cancer diagnoses. **RESULTS:** For Decisional Balance, PCA indicated two, 8-item factors (Pros $\alpha = .93$; Cons $\alpha = .81$). CFA supported a two-factor correlated model, $\chi^2(103) = 349.563$, $p < .001$, CFI = .928, RMSEA = .075. For Self-Efficacy, PCA indicated two, 3-item factors (“physical” and “social/emotional”; $\alpha = .83$). CFA supported this structure. Multivariate analyses indicated significant cross-stage differences for Pros, Cons, and Self-Efficacy. **CONCLUSION:** Findings support the validity of the developed Stage of Change, Decisional Balance, and Self-Efficacy measures. These measures may be used to evaluate readiness to engage in psychosocial care for cancer patients and survivors – and to tailor interventions to help them progress through the stages.

Keywords: *cancer, psychosocial, readiness, TTM, stages of change, self-efficacy, decisional balance*

As of January 1, 2014, approximately 14.5 million Americans had a history of cancer. In addition, the National Cancer Institute (NCI) of the National Institutes of Health (NIH), as well as the American Cancer Society (ACS) estimated 1.7 million *new* cancer cases in 2016. Notably, it is estimated that the cancer survivor population will increase to 19 million by January 1, 2024 [1], while the World Health Organization [2] predicted a 70% increase over the next two decades, worldwide. Although cancer incidence is expected to *increase*, the cancer death rate in the United States *decreased* by 23% between 1990 and 2012 [1]. Given the rise in cancer cases and the growing survivor population, there will also be increasing physical and emotional concerns associated with the disease and its treatment [3,4]. The multidimensional burden (i.e., vocational, financial, physical, interpersonal) of cancer undeniably makes it one of the most emotionally debilitating conditions [5].

The relationship between the physical and emotional burden of cancer is evidently strong [5-8]. For instance, depression has been shown to increase the length of hospitalization in lung cancer patients undergoing thoracic surgery [9]. Further, in a sample head and neck cancer patients, quality of life and negative coping styles were related to higher levels of anxiety and depression, as well as lower levels of optimism [10]. Remarkably, a 10-year study of 3,080 cancer survivors revealed that those with depression had *double* the risk of all-cause mortality, compared to those without depression [11]. Collectively, these findings reveal the pervasiveness of mental health issues among cancer patients, their staggering impact on physiological outcomes [9], survival rates [12], and accordingly, the need to address psychological concerns [10].

Psychosocial interventions, particularly in the form of evidence-based treatments and support groups, have been used to address a variety of cancer-related concerns, including quality of life [13,14], fatigue [15], pain [16], depression [17-19], and anxiety [20]. Further, psychosocial care may be used for increasing resilience and confidence, as well as for addressing fear of tumor progression [21]. Overall, this growing body of research has demonstrated effects largely in favor of psychosocial care.

Physiological outcome data further strengthens the case for psychosocial care among cancer patients. For instance, a seminal study revealed the effect of psychosocial treatment on survival of metastatic breast cancer patients, such that those who had participated in a support group were more likely to be survivors eight months after the intervention [22]. Notably, a more recent study revealed that pre-operative stress management improved immune functioning in men with prostate cancer undergoing radical prostatectomy [23]. Further, several studies found that psychosocial interventions were helpful in slowing disease progression [24-26] and increasing survival in cancer patients [27]. Collectively, studies support the potential for psychosocial interventions to improve cancer patients' physiological profile.

Numerous studies have explored the mechanisms and processes underlying the impact of psychosocial care on cancer patients' physiological functioning. For instance, a recent review of 16 randomized controlled trials (RCTs) that examined specific therapeutic components of treatments tailored for cancer patients revealed that alterations in cognitions, self-efficacy, mood disturbance, pain, and self-esteem were most important [28]. An earlier study established correlations between verbal or

written expressions of emotions and levels of tumor-infiltrating cancer lymphocytes in melanoma, suggesting that psychosocial interventions can enhance emotional expression to positively affect disease course and overall physiological functioning [26]. Similarly, Jensen discovered 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 [29]. Psychosocial interventions can also improve adherence to various difficult cancer treatments, which can increase survival. Altogether, compelling evidence exists for the role that psychosocial interventions may play in cancer patients' physiological profiles.

Despite overwhelmingly strong evidence that psychosocial interventions improve psychological and physiological well-being in cancer patients, reluctance to accept psychosocial treatment prevails. For example, a study of 132 cancer patients revealed that only 28% participated in psychosocial support, with 88% of respondents being women with a history of breast cancer (72%). However, those who utilized support had positive attitudes towards therapeutic interventions and a desire to cope more effectively with their illness [30]. A recent study of 1,777 cancer survivors revealed that only 4.4% used psychosocial care and alarmingly, the majority (55.1%) never even discussed the possibility with their oncologists. Interestingly, the 4.4% that used psychosocial services reported high satisfaction with how their needs were addressed [31]. In light of these findings, treatment engagement strategies are needed, particularly by way of assessing readiness to change and developing interventions.

The Transtheoretical Model (TTM) has been found effective in assessing

readiness to change and in guiding interventions [32]. The TTM is an integrative and comprehensive model of intentional behavior change that incorporates process-oriented variables to explain and predict how and when individuals change. TTM-guided interventions have modified many health risk behavior changes, including adherence to medical protocols and treatments, such as mammography screening [33], medications [34, 35], blood glucose monitoring [37], and blood donation [36]. Therefore, it offers a promising theoretical framework for assessing readiness to accept psychosocial care for cancer populations.

Key TTM constructs include Stage of Change, Decisional Balance, and Self-Efficacy. Stage of Change is the central organizing construct of the TTM, representing the temporal and readiness dimensions. As people change, they make forward stage progress through five identified stages: Precontemplation, Contemplation, Preparation, Action, and Maintenance. Accurately assessing Stage of Change is integral to the design and delivery of tailored behavior change interventions. Further, readiness to change is, in part, based on Decisional Balance. With regard to Decisional Balance, a stable pattern has been identified across Stages of Change for 48 different health risk behaviors [38]. For example, Cons are more salient than Pros in Precontemplation, whereas Pros are more salient than Cons in the Maintenance stage. Finally, Self-Efficacy is defined as one's level of confidence to successfully change a target behavior across challenging situations. Self-Efficacy scores are higher in later Stages of Change, such as those in Precontemplation reporting less confidence than those in Action or Maintenance [39]. As a result, Stage of Change, Decisional Balance, and Self-Efficacy may be used jointly to predict and facilitate behavior change.

In light of previous research findings on cancer patient reluctance to utilize psychosocial care, assessing readiness to change is clearly warranted. Although previous studies have explored barriers [40] and readiness to utilize psychosocial treatment [41], this is the first study to apply the TTM *and* quantitative methodology to acceptance of psychosocial care among cancer patients. As such, using the TTM as a theoretical framework and developing measures for acceptance of psychosocial care may enhance treatment engagement and advance models of team-based cancer treatment approaches. Thus, this study assessed three TTM constructs (Stage of Change, Decisional Balance, and Self-Efficacy) to accepting psychosocial care as a part of one's cancer treatment plan. The present study developed TTM measures that can be used to engage cancer patients in psychosocial care and to guide team-based interventions.

METHODS

Design

A sequential process of measure development was used to develop measures of Stages of Change, Decisional Balance, and Self-efficacy [42]. A series of semi-structured expert and research participant interviews were conducted. Item development was followed by exploratory, confirmatory, and external validation analyses.

Item Development

Initial item development 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 the literature on psychooncology and psychotherapy.

Expert Interviews

Following initial development, items were refined using feedback from experts in behavioral health, oncology, and the TTM. First, one licensed psychologist and PhD-level expert in working with cancer patients in a team-based oncology setting participated in a semi-structured interview on issues surrounding patient engagement in psychosocial care and provided feedback on the proposed set of items. Next, two oncologists provided feedback on issues that cancer patients commonly face with regard to diagnosis and treatment, as well as barriers to engaging in psychosocial care. Finally, two PhD-level experts in the TTM reviewed the proposed set of items for clarity and face validity.

Qualitative Participant Interviews

After expert feedback was incorporated, 12 semi-structured qualitative interviews were conducted with cancer patients actively recruited from a community hospital. The goal of these interviews was to elicit feedback on item clarity, acceptability, and face validity. Participants had to be over the age of 18 and had to have a cancer diagnosis. All interviews were conducted in private patient rooms, while individuals were receiving chemotherapy. Participants reviewed and signed informed consent forms first. No participants withdrew from the study after reviewing informed consent. Participants then reviewed and completed the initially developed items and provided oral feedback. Participant feedback was discussed with the TTM experts and was incorporated to generate the final version of the survey.

Survey Administration

The survey was administered using SurveyMonkey™ online survey software. Participants accessed the survey via an online link provided by Cint™, a targeted survey population and panel recruitment company. Individuals were asked to check a box indicating that they read the informed consent form and agreed to participate. They were then routed to questions on eligibility criteria (same as those for qualitative interviews). Eligible individuals were then linked to the full survey. Data were extracted from SurveyMonkey™ into SPSS for exploratory analyses and to EQS for confirmatory analyses.

Sample

Recruitment

Participants for qualitative interviews were recruited in person, by the primary investigator, at the Infusion Therapy Department at a community hospital. Interested participants were presented with informed consent forms to engage in semi-structured interviews and to provide oral feedback on the initially developed set of items. Of the 13 individuals offered to participate, 12 expressed interest. Qualitative interview participants were not compensated for their participation.

During the online survey administration phase of the study, participants were recruited through Cint™. Eligibility criteria were added to ensure a census-balanced sample, with adequate representation across specific groups and geographic regions in the United States. Eligibility quotas were as follows: only patients with a history of cancer (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). All recruitment and human subjects procedures were approved by the [masked for anonymous review] and [masked for anonymous review] institutional review boards.

Qualitative Interview Sample

Twelve, one-on-one, qualitative interviews were conducted by a clinical psychology doctoral student. The average age of the participants was 65.5 ($SD = 10.9$) and all participants had a present cancer diagnosis. Seven of the participants identified as female and five identified as male. All 12 participants identified as White.

Measures

Measures Used

Cantril Self-Anchoring Striving Scale. The Cantril Self-Anchoring Striving Scale [43] was used to determine evaluative well-being outcomes. Individuals were asked to rate their current and future lives on a ladder scale from 0 to 10, in which 0 represented the worst possible life and 10 represented the best possible life. The first question aims to capture *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 aims to capture *future* subjective well-being: “On which step do you think you will stand about five years from now?” Individuals who rated their present lives a 7 or higher and their future lives an 8 or higher were classified as “thriving”. Individuals who rated their current lives a 4 or lower and their future lives a 4 or lower were classified as “suffering”. Individuals who met neither of these

criteria were classified as “struggling” (e.g., rated their current lives as 5 and future lives as 6).

Measures Developed

Stage of Change for Psychosocial Care. Participants were assigned to a Stage of Change based on their answers to a short series of questions. They were assigned to the Precontemplation stage if they indicated that they were not considering psychosocial care and did not intend to engage in it for the next 6 months; to Contemplation if they intended to seek psychosocial care within the next 6 months; and to Preparation if they intended to seek psychosocial care within the next 30 days. Participants were assigned to the Action stage if they were receiving psychosocial care and had been for less than 6 months, and Maintenance if they had been receiving psychosocial care for 6 months or more.

Decisional Balance for Psychosocial Care. Thirteen items represented the Cons and eight items reflected the Pros. Respondents indicated how important each item was in their decisions of whether to accept psychosocial care, on a 5-point Likert scale, ranging from 1 = ‘Not Important At All’ to 5 = ‘Extremely Important’.

Self-efficacy. Nine items assessed Self-efficacy. Items evaluated participants’ confidence in their ability to engage in psychosocial care across a variety of challenging situations (e.g., feeling fatigued after chemotherapy). Participants indicated their confidence levels on a 5-point Likert scale, ranging from 1 = “Not At All Confident” to 5 = “Extremely Confident”.

Data Analysis

Data were examined for violations of normality before exploratory and confirmatory analysis. A random half of the sample was used for the exploratory phase using principal components analysis (PCA) with varimax rotation on item correlation matrixes. PCAs determined the number of components and reduced scales to a smaller set of items. The number of components retained was based on the minimum average partial procedure (MAP) and parallel analysis [44, 45]. 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 breadth of construct (to avoid redundancy and maintain conceptual breadth). The overall Cronbach alpha was examined to determine scale internal consistency.

The second half of the sample ($n = 238$) was used for confirmatory factor analysis (CFA). CFAs were used to evaluate the degree to which an independent portion of the data fit the model created by iterative PCAs. Model fit and factor loadings were evaluated. Final item selection was determined on the basis of item clarity, lack of redundancy, and conceptual breadth. Finally, Cronbach alphas and rho coefficients were examined to determine scale internal consistency. In the final phase, external validation analyses were conducted with the full sample ($N = 475$). First, the relationship between TTM constructs and Stages of Change was evaluated and compared to patterns seen in other areas of behavior change (Figures 1-3). Raw TTM construct scores (see Table 4) were translated to T-scores and weighted by group size to eliminate bias created by uneven Stage groups.

A chi-square test evaluated the association between participants' mental health

treatment status (in treatment versus not in treatment) and Stage of Change for Psychosocial Care. ANOVA also evaluated the relationship between Self-Efficacy and Stage of Change. Next, MANOVA evaluated relationships between Decisional Balance and Stage of Change. ANOVA determined whether individuals in the Action/Maintenance stages of change showed different levels of well-being than those in pre-Action stages. Then, regression analyses evaluated relationships between TTM constructs and subjective well-being. Finally, relationships between constructs were evaluated for consistency with patterns seen for other behaviors (e.g., physical activity, cigarette smoking).

RESULTS

Survey Sample

Cint™ recruited 466 eligible adults to participate in the online survey portion of the study (sample demographics are summarized in Table 1). The sample was primarily female (54.6%, $n = 255$), and ages ranged from 18 to 78 ($M = 47.89$, $SD = 14.77$). The majority (79%) of the sample was White ($n = 368$), 6.9% ($n = 32$) was multiracial or multiethnic, 4.9% ($n = 23$) was Hispanic/Latino, 4.1% ($n = 19$) was Black, 1.9% ($n = 9$) was Asian, 1.9% ($n = 9$) was American Indian/Native American, and 0.9% classified themselves as not fitting any of the aforementioned racial categories ($n = 4$). The majority of the sample (47.8%, $n = 223$) was in Precontemplation. Approximately one-fifth (22.1%, $n = 103$) were in Contemplation, 8.1% ($n = 38$) were in Preparation, 8.6% ($n = 40$) were in Action), and 13.5% ($n = 63$) in Maintenance.

In addition to sociodemographic information, self-reported medical information was collected. The most common cancer diagnoses were: breast (16.8%), prostate (7%), cervical (5.1%), thyroid (4.9%), and skin-basal squamous cell (4.9%). Further, 23.4% of the sample reported multiple cancer diagnoses, as a result of metastasis. Given that 57 different cancer diagnoses were reported, variables were recoded such that diagnoses were organized according to organ system/site (e.g., gastrointestinal, gynecologic, skin), as presented by the National Cancer Institute (2016). Additional information regarding the sample's cancer diagnoses and treatment may be found in Table 2.

Stages of Change

Descriptive Results

A series of chi-square tests of independence revealed relationships between Stage of Change and demographic variables. A chi-square test did not support an 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 chi-square test revealed an association between identifying as Hispanic/Latino and being in a pre-Action stage, $\chi^2(4, n = 460) = 31.37, p < .001, phi = .26$. Additionally, chi-square tests revealed no association between stage and level of education [$\chi^2(4, n = 461) = 3.47, p = .48, phi = .09$]. After variables were recoded to represent cancer site (e.g., GI, gynecologic, skin), as outlined by the NIH (2016), there was no association between stage and cancer site [$\chi^2(60, n = 467) = 48.75, p = .85, phi = .32$]. Finally, the pattern of well-being, across the stages, differed for the three subjective present well-

being categories (thriving, 50.8%; struggling, 39.7%; suffering, 9.5%), $\chi^2(8, n = 461) = 28.4, p < .001, phi = .25$.

External Validity of Stage of Change Action Criterion

To test the validity of the Stage of Change measure, differences in subjective well-being scores [42] among individuals in pre-Action versus Action/Maintenance Stages of Change were evaluated using ANOVA. A significant difference was observed in present well-being scores between those in pre-Action stages versus Action/Maintenance ($F(1, 1008) = 4.89, p = .03, \eta^2 = .01$). Individuals in the pre-Action stages ($M = 6.34, SD = 2.32$) reported significantly greater levels of subjective well-being than individuals in Action or Maintenance ($M = 6.01, SD = 2.37$).

However, an ANOVA revealed that between-stage differences in future subjective well-being scores were not significantly different for those in the pre-Action and Action stages, ($F(1, 1010) = .02, p = .88$). Finally, a chi-square test revealed an association between subjective well-being category (thriving, struggling, suffering) and Stage of Change, $\chi^2(8, n = 461) = 28.40, p < .001, phi = < .001$.

Decisional Balance and Self-efficacy

Exploratory Analyses

Exploratory procedures included PCA with varimax rotations. Sample size ($n = 237$) was adequate based on existing literature [46]. Decisions regarding retention of components were based on parallel analysis and minimum average partial procedures (MAP), both of which have been found to be accurate methods. Exploratory analyses were used to determine the number of components, the correlation between components, and the loadings of items on these components. Items with poor ($<.40$)

and/or complex loadings ($>.40$) on more than one factor were removed. In later steps, items with content overlap were removed.

Decisional Balance

Twenty-one decisional balance items were included in the initial exploratory factor analysis. PCA with varimax rotation on the 21 x 21 matrix of item intercorrelations was conducted to determine the factor structure of the decisional balance measure. A total of 6 iterative PCAs were conducted, which reduced the original pool of 21 items to 16, with 8 items reflecting Pros and 8 items reflecting Cons. Parallel analysis indicated a two-factor solution. Examination of the item content revealed that one factor (8 items) clearly reflected the pros of utilizing psychosocial services and one factor (8 items) clearly reflected the cons of utilizing psychosocial services. All item loadings were above 0.522. Internal consistency was excellent for the Pros scale ($\alpha = 0.933$) and good for the Cons scale ($\alpha = 0.809$). Together, the two factors accounted for 56.41% of the total variance (35.66% for Pros and 20.74% for Cons). The retained items can be viewed in Figure 4.

Decisional Balance – Short Form (DB-SF)

For development of the DB-SF, the 16 decisional balance items from the full measure were included in the initial exploratory factor analysis. PCA with varimax rotation on the 16 x 16 matrix of item intercorrelations was conducted to determine the factor structure of the measure. A total of 3 iterative PCAs was conducted, which reduced the original pool of 16 items to 8, with 4 items reflecting Pros and 4 items reflecting Cons. Parallel analysis indicated a two-factor solution, which was retained. Examination of item content revealed that one factor (4 items) clearly reflected the

pros of utilizing psychosocial services and one factor (4 items) reflected the cons of utilizing psychosocial services. All item loadings were above .641. Internal consistency was good for the Pros scale ($\alpha = .874$) and acceptable for the Cons scale ($\alpha = .716$). Together, the two factors accounted for 61.94% of the total variance (38.29% for Pros and 23.66% for Cons). The final set of retained items can be viewed in Figure 5.

Self-efficacy

All nine Self-efficacy items were included in the initial exploratory factor analysis. PCA with varimax rotation on the 9 x 9 matrix of items intercorrelations was conducted to determine the factor structure of the measure. Four PCAs were conducted, which reduced the initial pool of nine items to six. MAP and parallel analysis supported a single component solution. However, PCA supported a two-component solution. Therefore, the two-factor solution was retained. Examination of the item content revealed that one factor (3 items) clearly reflected the physical challenges to utilizing psychosocial services ($\alpha = .904$) and one factor (3 items) clearly reflected the social and emotional challenges utilizing psychosocial services ($\alpha = .757$). Item loadings ranged from .667 to .919. The resulting scale had good internal consistency ($\alpha = .826$) and accounted for 75.46% of the total variance. The final set of retained items can be found in Figure 6.

Confirmatory Analyses

Confirmatory factor analyses were conducted with the structural equation modeling software, EQS, using the remaining subsample ($n = 238$) [46]. Maximum likelihood estimation methods were used for fit indices since item data was ordinal

[46]. The fit indices calculated were the Satorra-Bentler scaled chi-square, the comparative fit index (CFI), and the absolute standardized residual statistic (AASR). CFI values of 0.90 and above are considered to indicate good fit [47]. RMSEA values between .05 and .08 suggest reasonable error of approximation and values $>.10$ indicate poor fit [48].

Decisional Balance

The following measurement models were compared for the 16-item Decisional Balance measure: (1) a null model that supported 16 independent variables and no latent factors; (2) a single-factor model; (3) a two-factor uncorrelated model; and (4) a two-factor correlated model. Fit indices for each model are summarized in Table 3.

The two-factor correlated model showed the best fit to the data. Factor loadings ranged from .464 to .878. Fit indices suggested good model fit, $\chi^2(103) = 349.563, p < .001, CFI = .928, RMSEA = .075$. The correlation between the two scales was $r = .147$ and rho coefficients were excellent for Pros ($\rho = .932$) and good for Cons ($\rho = .816$). The final items and their loadings in the confirmatory subsample are presented in Figure 5.

Decisional Balance – Short Form (DB-SF)

The following measurement models were compared for the 8-item Decisional Balance (SF) measure: (1) a null model that supported 8 independent variables and no latent factors; (2) a one-factor model; (3) a two-factor uncorrelated model; and (4) a two-factor correlated model. Fit indices for each model are summarized in Table 3.

The two-factor correlated model showed the best fit to the data. Factor loadings ranged from .641 to .893. Fit indices suggested good model fit, $\chi^2(19) =$

68.56, $p < .001$, CFI = .962, RMSEA = .078. The correlation between the two scales was $r = .14$ and rho coefficients were good for Pros ($\rho = .872$) and acceptable for Cons ($\rho = .755$). The final items and their loadings in the confirmatory subsample are presented in Figure 5.

Self-Efficacy

The following measurement models were compared for the Self-efficacy scale: (1) a null model that supported six independent variables and no latent factors; (2) a single factor model; (3) an uncorrelated 2-factor model; and (4) a correlated 2-factor model. Fit indices for each model are summarized in Table 3.

The correlated two-factor model had the best fit. Factor loadings ranged from .572 to .923 and there was excellent model fit, $\chi^2(8) = 23.72$, $p = .003$, CFI = .989, RMSEA = .067. The correlation between the two factors was $r = .575$. Internal consistency was good (“social/emotional” $\alpha = .757$; “physical” $\alpha = .904$; total $\alpha = .851$). Final items and loadings are presented in Figure 2.

External Validation

Decisional Balance by Stages of Change

Multivariate analysis of variance (MANOVA) indicated that individuals at different Stages of Change differed significantly on Decisional Balance constructs for the full ($F(8,878) = 12.04$, $p < .001$, Wilks' $\lambda = .812$; $\eta^2 = .10$) and short-form (SF) ($F(8,894) = 12.72$, $p < .001$, Wilks' $\lambda = .806$; $\eta^2 = .10$) measures. Follow-up ANOVAs indicated significant between-stage differences on the Pros for the full measure ($F(4,449) = 18.39$, $p < .001$, $\eta^2 = .14$) and for SF; $F(4,454) = 19.64$, $p < .001$, $\eta^2 = .15$. Post hoc analyses indicated that the Pros were significantly higher for

individuals in the Action and Maintenance stages than for those in the Precontemplation stage.

Follow-up ANOVAs indicated significant between-stage differences on the Cons for full measure ($F(4,452) = 5.48, p < .001, \eta^2 = .05$) and SF ($F(4,456) = 6.7, p < .001, \eta^2 = .06$). Post hoc analyses indicated that the Cons were significantly lower for individuals in the Action and Maintenance stages than for those in the Precontemplation stage. Weighted T scores of Pros and Cons at each Stage of Change are presented in Figures 1 and 2.

Self-efficacy by Stages of Change

Multivariate analysis of variance (MANOVA) indicated that Self-Efficacy was significantly different across the Stages of Change, ($F(8,906) = 6.18, p < .001, \text{Wilks}' \lambda = .899; \eta^2 = .05$). Follow-up ANOVAs indicated 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. Follow-up comparisons showed that Self-efficacy of individuals in the Precontemplation and Preparation stages was substantially lower than that of those in the Action and Maintenance stages. Weighted T- scores of Self-efficacy at each Stage of Change are presented in Figure 4.

External Validation

A series of linear regressions were conducted to evaluate relationships between subjective well-being (present and future) scores and TTM constructs (Pros, Cons, Physical Self-Efficacy, and Social/Emotional Self-Efficacy). Greater subjective present well-being was associated with greater Physical Self-Efficacy ($\beta = .06, p < .05$). Additionally, greater subjective future well-being scores were 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

Results supported the validity of the Stages of Change measure and its relationship with key TTM constructs. Measure development results demonstrated good construct validity for Decisional Balance and Self-Efficacy in a national sample of adults diagnosed with cancer. Additionally, both scales demonstrated external validity in their relationship with Stages of Change. Consequently, the present study provides evidence of validity for measures that may be used to design and manage interventions in cancer treatment settings.

Stages of Change for Psychosocial Care

Findings supported the validity of Stages of Change for psychosocial care. First, the significant association between subjective well-being category (thriving, struggling, suffering) and Stage of Change for Psychosocial Care was consistent with previous literature. Based on these, interventions and treatment team members should consider individuals' subjective well-being in encouraging psychosocial care. Second, the significant difference in subjective *present* well-being between those in the pre-Action (i.e., Precontemplation, Contemplation, Preparation) and Action stages (Action, Maintenance) was also consistent with previous literature. Surprisingly,

however, no significant differences were observed between stage groups for subjective *future* well-being or well-being *category*. One interpretation for this finding may be that uneven membership in well-being categories (50.8% thriving, 39.7% struggling, 9.5% suffering) limited our ability to find differences between small groups. Notably, the weekly U.S. Life Evaluation of 3,500 randomly selected adults revealed that 54.9% were thriving, 42.1% were struggling, and 3% were suffering [49]. This distribution across wellbeing categories in a national sample of well adults was remarkably similar to the distribution found in this sample of cancer patients. This suggests that even when faced with a life-threatening illness, subjective life evaluations remain comparable. Thus, overall findings support the future use of Stage of Change for psychosocial care.

Decisional Balance

The present study supported a two-factor correlated model for the Decisional Balance scale, with one factor reflecting the Pros and the other the Cons of engaging in psychosocial care. This was consistent with previous studies, in which a two-factor Decisional Balance model was observed across health risk behaviors [48]. Further, the present findings converged with existing literature, with regard to the Cons outweighing the Pros in Precontemplation and an increase in Pros with progress to the Action and Maintenance Stages of Change [38]. Thus, Decisional Balance emerged as a critical construct in readiness to engage in 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 stage groups, as well as between the Preparation

and Action stage groups. One interpretation of this trend may be that ambivalence occurs during Preparation and Action stages, as opposed to Precontemplation. Nonetheless, the general trend was similar to the trend observed in other areas of behavior change, such that the Cons were more salient than Pros in Precontemplation, whereas Pros were more salient than Cons in Maintenance. Although replication and longitudinal follow-up are warranted, the present study suggests that tailored interventions should focus on feedback to address Cons during the Contemplation and Action stages, in order to maintain forward stage progress. For example, clinicians could address patient concerns regarding continuing psychosocial care throughout the Action stage. Given the common patient concern regarding psychologists sharing treatment information with the rest of the treatment team, best practices should be used in communicating psychosocial treatment information [49].

Findings were mixed with regard to the relationship between subjective well-being and perceived Pros and Cons. First, there was no relationship between Pros and present or future subjective well-being. Second, no relationship was observed between Cons and present subjective well-being. However, individuals with greater future subjective well-being perceived fewer Cons of engaging in psychosocial care. Thus, addressing perceived Cons of psychosocial care may be helpful in modifying subjective future well-being. However, given these cross-sectional findings, those with greater future well-being scores may be perceiving fewer cons of psychosocial care.

Self-Efficacy

This research supported a two-factor correlated model for Self-Efficacy. This finding diverged from some previous research on Self-Efficacy across other health

behavior change, in which a single-factor scale was supported. Nonetheless, Self-Efficacy was greater for individuals in the Action and Maintenance stages, compared with those in the pre-Action stages – a finding observed in other areas of behavior change. The present finding is comparable to situational temptations subscales (Positive Social, Negative Affect, and Habit Strength) observed for smoking [40] and high-fat diet [50]. One implication of the two-factor Self-Efficacy model is the strong physical component to having cancer. As such, experiencing pain, physical discomfort, and fatigue collectively reflect a unique component to Self-Efficacy. This finding sheds light on the low engagement rates among cancer patients, as they face unique challenges due to physical demands of their diagnoses and treatments. Accordingly, tailored interventions and treatment teams may consider and incorporate physical aspects of patients' cancer experiences in psychosocial care engagement. Notably, these findings support the use of integrative care approaches to cancer treatment – ones that incorporate physical therapy, rehabilitation, nutrition services, and mental health care [53-56].

Validation analyses further supported the developed Self-Efficacy measure. Self-Efficacy was significantly different across Stages of Change, demonstrating its utility in facilitating readiness to change. More importantly, Self-Efficacy was significantly lower in the pre-Action stages, compared with the Action stages, validating its role in acceptance of psychosocial care. The relationship between Self-Efficacy and present well-being provided further external validation for this measure, as those with greater confidence for engaging in psychosocial care across a range of challenging situations had greater subjective present well-being. These results indicate

that Self-Efficacy may be an essential component for feedback in an intervention or feedback session aimed at reducing reluctance or ambivalence to meet with a mental health provider or to attend a support group.

Limitations and Future Directions

This study has several limitations. 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 that the smaller Preparation (8.1%), Action (8.6%), and Maintenance (13.5%) 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 are based on cross-sectional comparisons of individuals in each Stage of Change. Although cross-sectional findings provide insight into factors that drive change, they do not warrant longitudinal implications. Third, findings are based on a sample that is mainly White and non-Hispanic. Furthermore, the qualitative interview sample (n = 12) consisted exclusively of White participants. Given the differences in cancer outcomes and mental health stigma among non-White populations [56], additional research examining the validity of these measures in non-White populations is warranted. Additionally, repeating the qualitative interviews with a more diverse sample, from several different hospitals would be useful for further validation. Fourth, the survey sample consisted of individuals who were enrolled in a health panel and therefore had interest in online survey research participation, potentially introducing sample bias. Finally, although the sample was diverse with regard to cancer site and

cancer treatment type, cancer staging data was not available. Given strong cross-cancer stage differences, with regard to physical and psychological functioning (e.g., lower physical functioning in Stage IV cancer, compared with Stage I), future research that investigates cancer staging data is recommended.

Despite its limitations, the study has numerous strengths and can inform future investigations. Notably, this study developed and validated three key TTM constructs – Stages of Change, Decisional Balance, and Self-Efficacy for Psychosocial Care in a large, national sample of cancer patients. These measures can be used in various ways. First, researchers may evaluate the impact of readiness to engage in psychosocial care on both, psychological and physiological treatment outcomes, including cancer survival rates. Second, cancer treatment teams may use this data to inform intervention strategies. For instance, clinicians may use psychoeducation and motivational interviewing in order to address ambivalence and thereby foster forward stage progress. Finally, the study findings support patient distress screenings in order to increase psychosocial care referrals and consequently, increase engagement in care. In sum, these findings may be used in intervention development and implementation in order to design treatments that are tailored to individuals' readiness to accept psychosocial care as a component of their cancer treatment plans.

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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	0.4% (n=2)
Multiracial	6.9% (n=32)
Other	0.9% (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	
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)

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	0.4 (n=2)
Genitourinary	12.4 (n=58)
Gynecologic	8.5 (n=40)
Head & Neck	3.4 (n=16)
Hematologic/Blood	6.6 (n=31)
Musculoskeletal	0.6 (n=3)
Neurologic	1.3 (n=6)
Respiratory/Thoracic	1.5 (n=7)
Skin	9 (n=42)
Unknown Primary	0.2 (n=1)
Metastasized	23.5 (n=110)
Other	1.7 (n=8)
Soft Tissue	0.4 (n=2)
Treatment location	
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)

Table 3.

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

	χ^2 (df)	CFI	RMSEA (CI)
Decisional Balance			
Model 1: null model	3546.08 (120)	--	--
Model 2: one-factor model	1126.87 (104)*	.701	.152 (.144, .160)
Model 3: uncorrelated two-factor model	356.74 (104)*	.926	.076 (.067, .084)
Model 4: correlated two-factor model	349.56 (103)*	.928	.075 (.066, .084)
Decisional Balance-Short Form			
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 (.16, .213)
Model 4: correlated two-factor model	23.72 (8)**	.989	.067 (.037, .099)

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

Table 4.

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

Stage	N	<u>Pros</u>		<u>Cons</u>		<u>Self-Efficacy</u>	
		Mean (SF)	SD (SF)	Mean (SF)	SD (SF)	Mean	SD
Precontemplation	219	24.2 (11.86)	7.57 (4.00)	20.79 (8.93)	5.97 (3.60)	17.08	5.54
Contemplation	101	29.16 (14.51)	7.36 (3.80)	23.19 (10.75)	7.65 (4.21)	19.32	5.3
Preparation	37	29.65 (14.66)	7.97 (4.28)	19.51 (8.70)	7.79 (4.33)	20.19	4.7
Action	40	29.63 (14.95)	7.29 (3.56)	22.05 (9.87)	6.66 (3.76)	18.97	4.27
Maintenance	60	31.87 (15.95)	7.42 (3.71)	18.37 (7.84)	8.03 (4.06)	20.61	4.75

Note. Mean = average sum score; higher scores indicate more importance for Pros and Cons and more confidence for Self-Efficacy;

SD = standard deviation; scores in parentheses indicate those from the Decisional Balance Short – Form (SF) measure

Table 5.

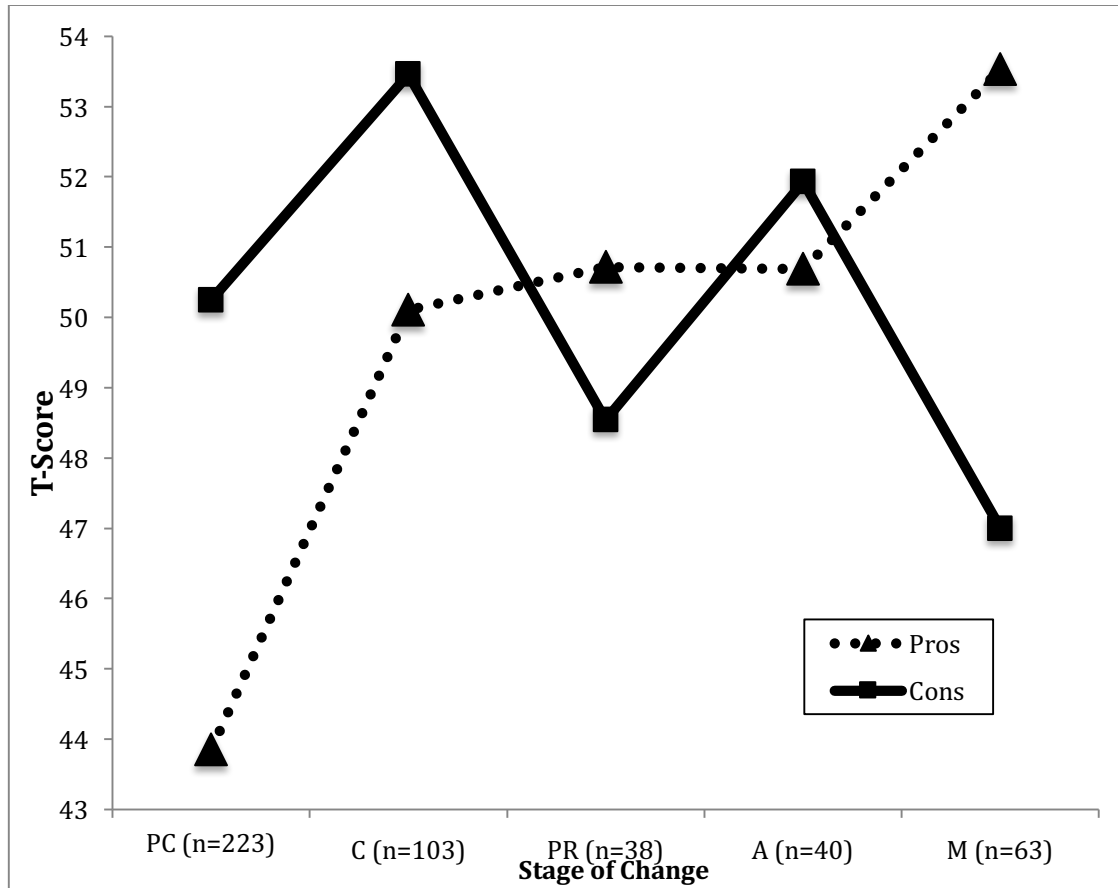
2 x 2 Contingency Table for Chi-Square Test Reporting the Association between Subjective Well-Being Category and Stage of Change

		Subjective Well-Being Category	
		Thriving	Struggling /Suffering
Stage	Pre-Action	81.2% (190)	74.9% (170)
	AM	18.8% (44)	25.1% (57)

Note. Pre-Action = Precontemplation, Contemplation, or Preparation Stages; AM = Action or Maintenance Stages.

Figure 1.

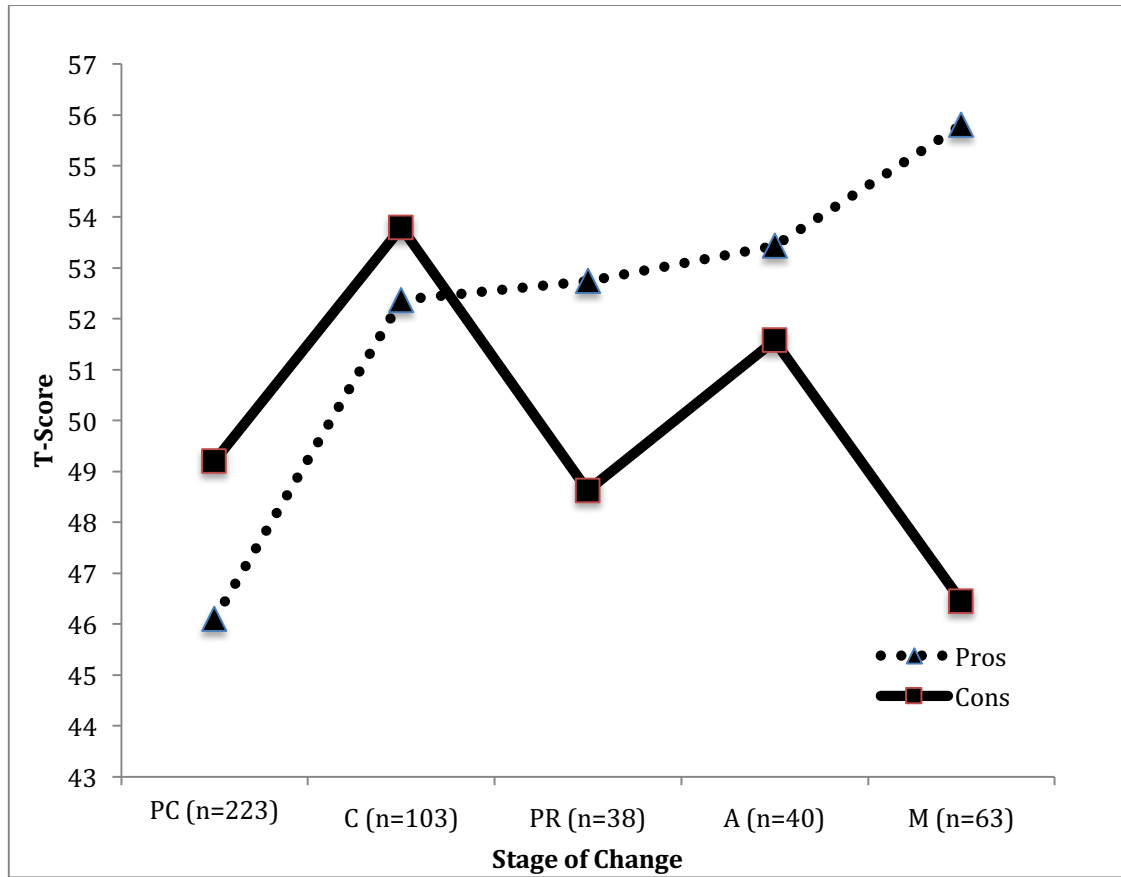
Stage of Change by Decisional Balance.



Note. PC = Precontemplation; C = Contemplation; PR = Preparation; A = Action; M = Maintenance

Figure 2.

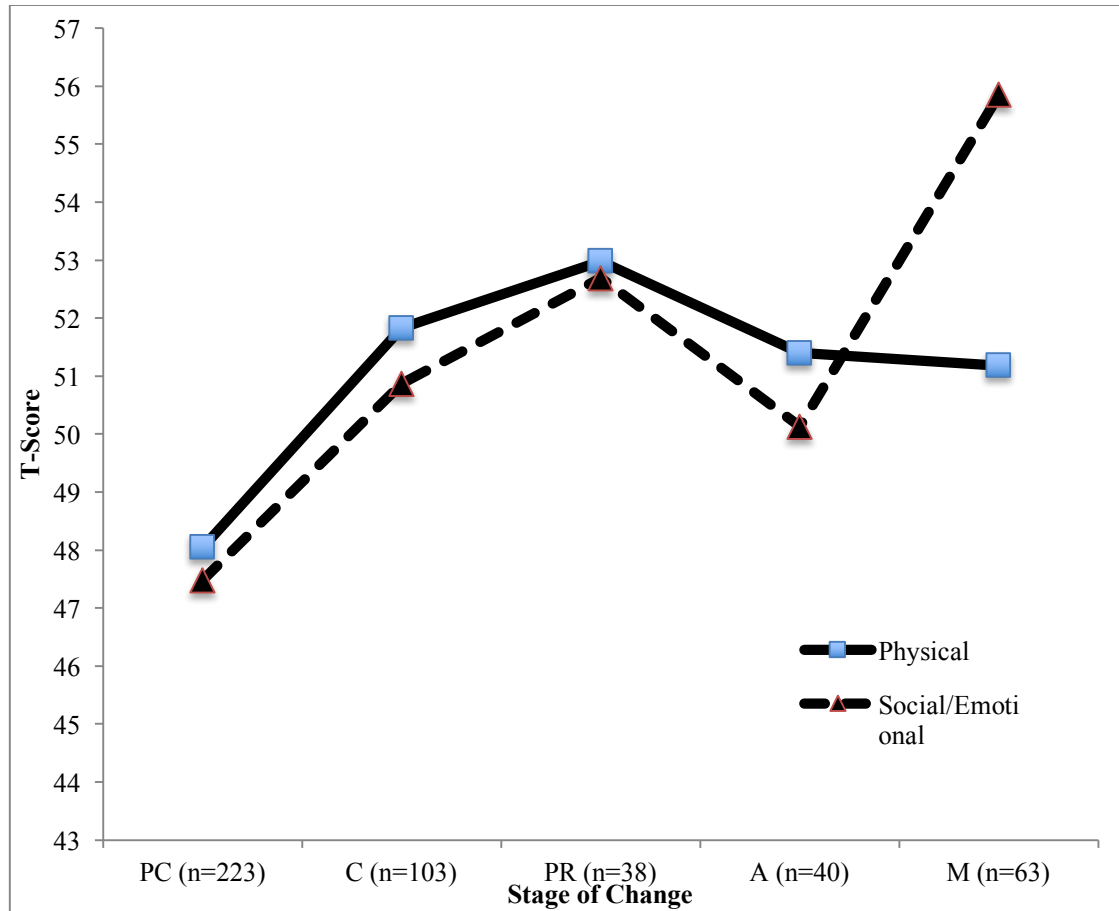
Stage of Change by Decisional Balance – Short Form (SF).



Note. PC = Precontemplation; C = Contemplation; PR = Preparation; A = Action; M = Maintenance

Figure 3.

Stage of Change by Self-efficacy.



Note. PC = Precontemplation; C = Contemplation; PR = Preparation; A = Action; M = Maintenance; “physical” represents the physical challenges to engaging in psychosocial care and “social/emotional” represents the social and emotional challenges to engaging in psychosocial care

Figure 4.
Decisional Balance Structural Model (N=238)

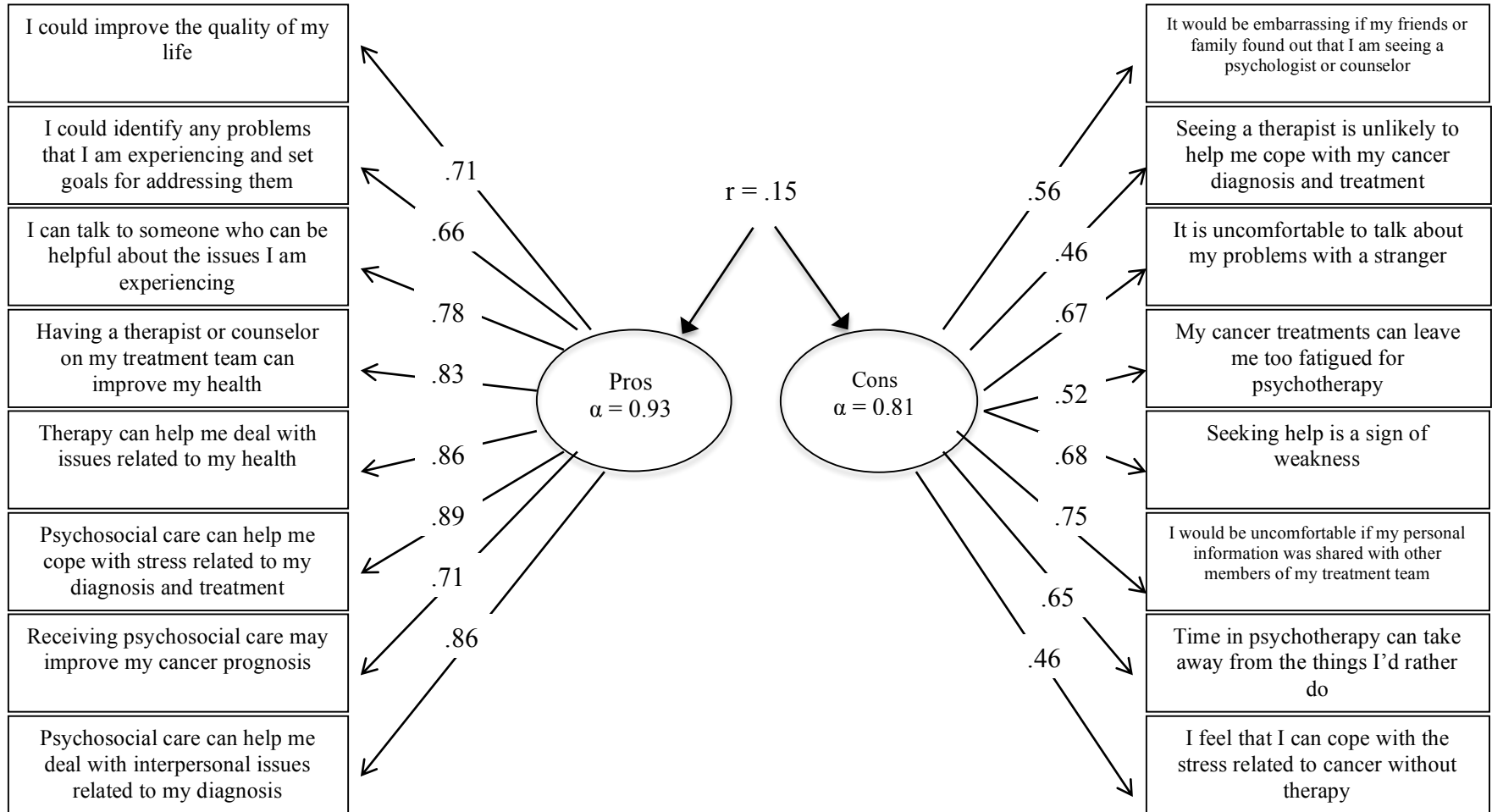


Figure 5.
Decisional Balance (Short Form) Structural Model (N=238)

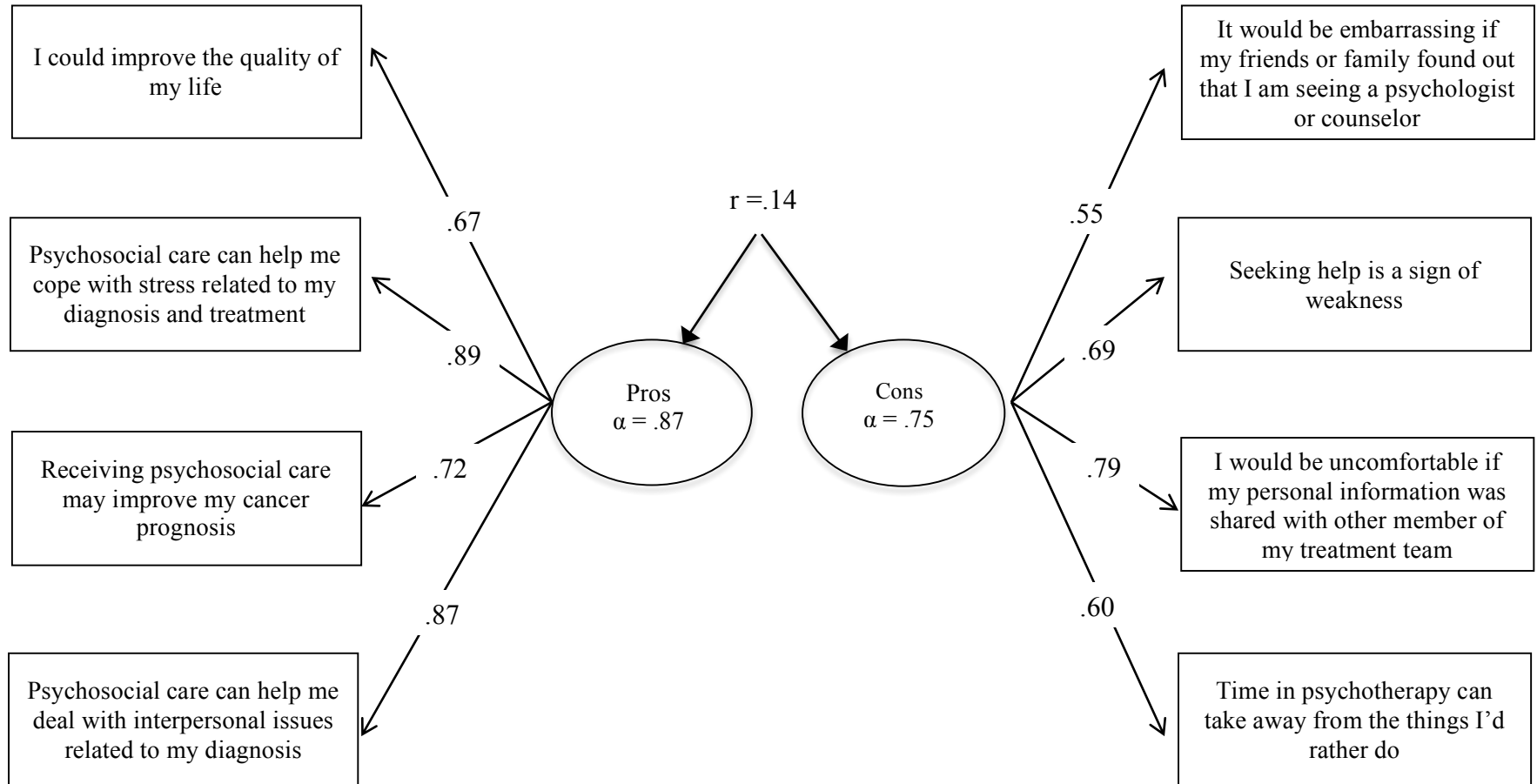
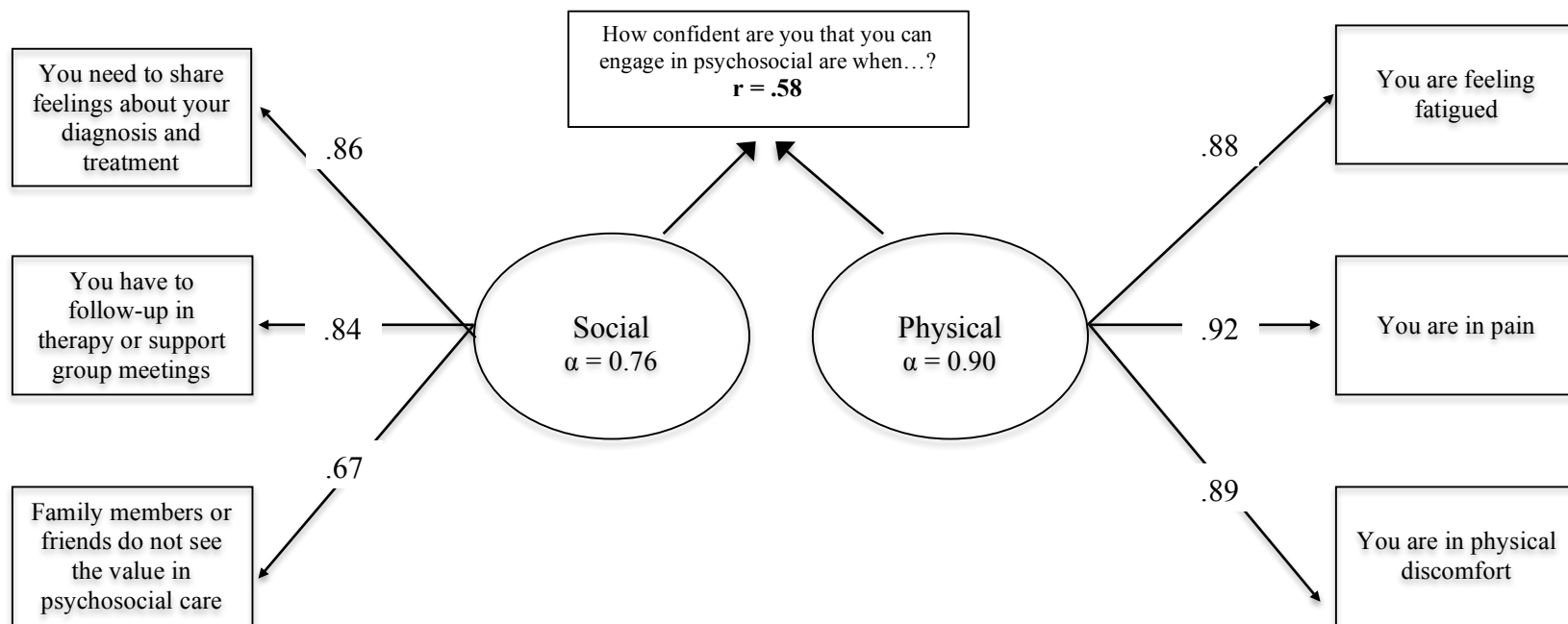


Figure 6.

Self-Efficacy Structural Model



MANUSCRIPT 2

Development, Evaluation, and Utilization of a Behavioral Health Program for Cancer
Patients

Potential Journals for Submission: *Psycho-Oncology; Supportive Care in Cancer*

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Abstract

BACKGROUND. Cancer patients frequently experience considerable distress during diagnosis and treatment. The aims of this study were to describe the development and utilization of a behavioral health program for cancer patients, at a small community hospital, as well as to provide preliminary results on program efficacy. **METHODS.** This program was developed collaboratively by individuals from a university-based clinical psychology doctoral program and a community hospital. The behavioral health program was comprised of a licensed, PhD-level clinical psychologist and seven clinical psychology doctoral students. Patients were typically referred by their oncologists or nurses. Distress, depression, and anxiety were evaluated for a small subsample of participants. **RESULTS.** From the time the program was initiated, 238 patients between ages 18 and 95 ($M = 66.4$) were evaluated over a three-year period. The majority of patients (77.8%) were offered psychosocial care. Although 49.8% declined treatment, 23.6% engaged in one session and 26.6% engaged in two or more. Patients who were referred through the STAR Program® were more likely to engage in psychosocial care than those who found out about behavioral health in other ways. **CONCLUSIONS.** First, distress tracking may be improved if nurses, oncologists, and behavioral health providers administer measures. Second, partnerships between clinical psychology doctoral programs and hospitals may be mutually beneficial. Third, hospitals offering cancer treatment may benefit from obtaining STAR® certification, in order to generate referrals for comprehensive cancer care. These efforts can serve as a model for other hospitals seeking to integrate behavioral health into routine cancer treatment.

Keywords: *cancer, behavioral health, utilization, psychotherapy, support, evaluation*

Given improvements in early detection, diagnosis, and treatment, individuals with cancer are living longer. Often times, their diagnosis may be managed as a chronic illness (McCorkle et al., 2011). However, although providers may be prolonging lives, insufficient attention is being paid to quality of lives. In 2005, The Institute of Medicine (IOM)'s report, *From Cancer Patient to Cancer Survivor: Lost in Transition*, discussed a cancer care continuum, ranging from diagnosis and treatment, to survivorship. This report, along with changing U.S. health care delivery systems, underscores the importance of better integrated models of care. Such models include partnerships between oncologists and providers from other disciplines, including psychology, social work, and primary care. More importantly, given that severe and acute distress often begins at the time of cancer diagnosis, these partnerships should last throughout the cancer care continuum in order provide care that can improve clinical outcomes and enhance quality of life simultaneously (Andersen et al., 2009). Notably, oncologists and nurses are encouraged to have discussions with patients regarding the psychosocial effects of cancer, in part to connect patients to psychosocial services (Forsythe et al., 2013). To illustrate the distinct and unique role of such partnerships, Silver & Baima (2013) defined cancer “pre-habilitation” as a process, on a continuum of care, that occurs between the time of cancer diagnosis and the beginning of acute treatment, including physical *and* psychological assessments.

The changing U.S. healthcare landscape places an urgent emphasis on improving the quality of patient care and on reducing overall costs, particularly within hospitals. A recent systematic review of 78 studies revealed that collaborative care

models improved mental and physical outcomes for individuals with mental disorders across a wide variety of care settings, supporting care integration (Woltmann et al., 2012). Similarly, a review of psychosocial interventions for cancer revealed that the biomedical model of disease does not take into account all of the complex factors involved in cancer, underscoring the need for a broader, more integrative framework for cancer care that integrates psychosocial factors (Shapiro et al., 2001). Notably, recent models have converged on the use of multimodal, multidisciplinary interventions to decrease cancer-related morbidity, increase survival rates, improve physical and psychological health outcomes, decrease hospital readmissions, and reduce healthcare costs (e.g., Mehnert & Koch, 2008; Purushotham, et al., 2013; Stanton, Luecken, MacKinnon, & Thompson, 2013). Findings from a recent study of 1,083 women with breast cancer generated recommendations for patient education, screening for psychosocial distress, and tailoring psychosocial interventions for older women (Mehnert & Koch, 2008). Unfortunately, despite evidence that up to 35% of patients with cancer experience *significant* distress, only *five percent* obtain psychological help (National Comprehensive Cancer Network, 2016). Access to effective psychosocial care is often limited by lack of systematic approaches to assessment, scarcity of psychosocial services, and patient reluctance to accept treatment, mainly due to perceived stigma (Zabora et al., 2001). Nonetheless, the literature has evolved to encourage broader and better integrated models of care, rather than treating cancer from a solely biomedical model.

Given the limitations of the biomedical model, research supports that multidisciplinary collaborative care teams are more likely to deliver favorable cancer

treatment outcomes. Notably, a randomized trial of psychosocial support groups revealed that the use of multidisciplinary collaborations enhanced enrollment rates in psychosocial interventions (Goodwin et al., 2000). Such improvements have often been attributed to having cancer treatment providers (e.g., oncologists, nurses) introduce and recommend behavioral health treatment, thereby increasing engagement. However, due to insufficient behavioral health providers in oncology settings, nurses and oncologists are often expected to screen for patient distress and to provide therapeutic services (Fallowfield, Ratcliffe, Jenkins, & Saul, 2001). Problematically, Sollner et al. (2001) found that oncologist recommendations for counseling did not correlate with patient distress, implying that oncologists' ability to identify patients in distress is generally insufficient. Additionally, a recent study of 448 oncologists revealed that 38% of their patients experienced psychological distress requiring intervention, but only half of those oncologists had any mental health services affiliated with their practices. Additionally, only 47% made a referral for psychosocial services (Muriel et al., 2015). These data suggests that multidisciplinary teams, representing professionals with different areas of expertise (e.g., nursing, oncology, psychology) may be more likely to deliver effective care and to enhance treatment outcomes. However, providing psychosocial care to cancer patients comes with numerous barriers, including the need for systematic approach to identifying patients with unmet psychosocial needs, as well as provider, patient, financial, and organizational challenges (Fann & Sharpe, 2012).

Survivorship Training and Rehabilitation (STAR) Program ®

STAR® is a free access, evidence-based program that provides nutrition counseling, physical rehabilitation, caregiver support, monitoring tools, and behavioral health services for cancer patients (Kirschner et al., 2013; Silver et al., 2013; Silver & Baima, 2013; Silver, Baima, Mayer, 2013; Silver & Gilchrist, 2011; Silver & Mayer, 2007; Silver, 2007; 2010; 2011; 2013; 2014; 2014; Silver et al., 2015a,b). The program aims to address a wide array of cancer-related physical and psychological impairments, all of which potentially interfere with treatment recommendations and coping. As of November 2016, 549 hospitals or cancer centers possess STAR® certification, nationwide. The main benefits of possessing STAR Program® certification are: 1) improved patient outcomes, by way of intervening on quality of life with evidence-based clinical protocols; 2) increased access to care; 3) improved clinician knowledge, while improving delivery of care; 4) increased patient referrals, which often generate a self-sustaining service and decrease the economic impact of cancer on patients, caregivers, and the healthcare system; and 5) enhanced community education by supporting local and regional awareness initiatives (STAR®, 2015).

Purpose of Current Study

As the literature supporting the efficacy of biobehavioral cancer care continues to grow (e.g., Lutgendorf & Anderson, 2015) a dearth of reporting on psychosocial cancer care programs prevails. Notably, a recent study revealed the scarcity of studies on the intersection of cancer and mental health and suggested the need to bridge the gap between these two disciplines, in order to prevent and treat mental health problems in cancer patients (Purushotham et al., 2013). Collectively, research has identified: 1) a gap between the need for and delivery of services; 2) that

dual screening for psychological distress and physical impairment is critical for optimal outcomes; and 3) integrated rehabilitative services are cost-effective. Accordingly, the current study describes the development, preliminary evaluation, and utilization of a behavioral health program integrated into routine cancer care at a STAR Program® - certified hospital.

METHODS

Setting and Program Description

The study took place at an independent, non-profit acute care hospital serving [area masked for anonymous review]. Prior to the beginning of data collection, the program was collaboratively designed by hospital administrators, clinicians, and staff, as well as faculty and two graduate students from a clinical psychology doctoral program at a northeastern, public research university. The goals of this program were to: 1) increase access to behavioral health services to cancer patients; and 2) provide students with a one-year, formally supervised clinical training experience.

In August 2013, one emeritus faculty member [masked for anonymous review] and two doctoral Psychology students [masked for anonymous review] were recruited to implement behavioral health services for patients receiving cancer treatment on an outpatient basis. The faculty member served as the clinical supervisor for the two students and provided weekly group and individual supervision for all cases. All three providers documented clinical encounters. Upon completion of this training experience (August 2014), three new doctoral Psychology students replaced the first two students, although one of the students [masked for anonymous review] remained on the team as a peer supervisor from 2014 to 2015.

During Year 2 (2014-2015) of this program, *[masked for anonymous review]* launched a weekly, three-hour didactic seminar co-led by a Clinical Assistant Professor of Psychiatry in the Behavioral Medicine Track at *[masked for anonymous review]* and the peer supervisor *[masked for anonymous review]* to supplement the training experience, formally named the “Health Practicum”. The purpose of the didactic portion of this practicum was to: 1) provide additional supervision; 2) hold formal trainings on health psychology; and 3) discuss the application of Cognitive-Behavioral Therapy (CBT) and Acceptance and Commitment Therapy to cancer patients and other clinical populations. Upon completion of this training experience in August 2015, two new doctoral students joined the behavioral health team at the hospital for Year 3 (2015-2016) of the program. This program continues to be available to all patients and caregivers at *[masked for anonymous review]* and the “Health Practicum” continues to run.

All behavioral health providers completed the STAR Program® Certification course. The course is a 10-module training, based on recent evidence on best practices with regard to cancer treatment and rehabilitation. The modules covered a vast array of information, including an overview of cancer rehabilitation, an overview of cancer biology and available treatments, common impairments related to cancer, and best practices for selecting assessment tools. Upon completion of the course, participants took the STAR® Certification Test, an online examination in order to receive STAR® Clinician Certification.

Data Collection

All procedures were in accordance with the Institutional Review Boards of [masked for anonymous review] and [masked for anonymous review]. The period of data collection was from the initiation of behavioral health services (August 2013) to June 30, 2016. Nursing staff administered the National Cancer Care Network (NCCN) distress thermometer (NCCN, 2016) to patients and compiled the documentation for behavioral health staff. The purpose of NCCN administration was to: 1) screen for distress; 2) provide preliminary data for behavioral health staff; and 3) prioritize patient assignments (i.e., in the event of understaffing, patients with a higher distress scores would be seen first).

Measures

Demographics. Patients who accepted psychosocial treatment provided their gender, age, race/ethnicity, marital status, and employment status during the intake. A retrospective chart review was conducted to obtain this information from individuals who only attended support groups or those who were referred, but declined psychosocial care. For all patients, medical information was obtained, including cancer site, cancer stage, and cancer treatment type.

Cancer Staging. The TNM system is one of the most widely used cancer staging systems. It is based on the size and extent of the primary tumor (T), the degree of spreading to nearby lymph nodes (N), and the presence or absence of metastasis (M). A number is added to each letter to indicate the size or extent of primary tumor and degree of cancer proliferation. Primary Tumor (T) can be noted as TX (primary tumor cannot be evaluated), T0 (no evidence of primary tumor), Tis: Carcinoma in situ (CIS; abnormal cells are present, but have not spread to neighboring tissue and may become

cancerous), T1, T2, T3, T4 (size and/or extent of the primary tumor). Regional Lymph Nodes (N) may be noted as NX: Regional lymph nodes cannot be evaluated, N0: No regional lymph node involvement; N1, N2, N3: Degree of regional lymph node involvement. Metastasis (M) may be noted as MX: distant metastasis cannot be evaluated; M0: no distant metastasis; M1: distant metastasis is present (Greene & Sobin, 2002).

Depression. The Beck Depression Inventory (BDI-II) is a 21-item, self-report rating inventory that measures characteristic attitudes and symptoms of depression (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), such as hopelessness and loss of interest. Higher scores on the BDI reflect more depressive symptomatology. Internal consistency for the BDI ranges from .73 to .92, with a mean of .86 (Beck, Steer, & Garbin, 1988). The BDI demonstrates high internal consistency, with alpha coefficients of .86 and .81 for psychiatric and non-psychiatric populations, respectively (Beck et al., 1988). The BDI-II has been used in a variety of medical and healthcare settings, including primary care (Arnau, Meagher, Norris, & Bramson, 2001; Beck, Guth, Steer, & Ball, 1997), coronary heart disease (Berkman et al., 2006), and breast cancer (Love, Grabsch, Clarke, & Kissane, 2004).

Anxiety. The Beck Anxiety Inventory (BAI) is a 21-item self-report inventory for measuring the severity of anxiety, with higher scores reflecting higher anxious symptomatology. It has a high internal consistency ($\alpha = .92$) and test-retest reliability over 1 week $r(81) = .75$. The BAI discriminates anxious diagnostic groups (panic disorder, generalized anxiety disorder, etc.) from non-anxious diagnostic groups (major depression, dysthymic disorder, etc.). The BAI has been used in various

medical and health settings, including bone marrow transplantation (Manne et al., 2001), coronary artery bypass surgery (Hartford, Wong, & Zakaria, 2002), and chronic pulmonary disease (Cully et al., 2006).

Distress. The National Comprehensive Cancer Network (NCCN) Distress Thermometer for Cancer Patients is a self-report measure that has been used to identify patients with elevated psychological distress, in various domains, including financial, emotional, and physical, with the patients noting subjective levels of distress, ranging from 0 (no distress) to 10 (extreme distress) (Goebel & Mehdorn, 2011; Holland & Bultz, 2007; Jacobsen et al., 2005; Patel, Sharpe, Thewes, Bell, & Clarke, 2011).

Analytic Plan

All data analyses were conducted using the Statistical Package for the Social Sciences, Version 24.0 (SPSS 24.0). First, a series of chi-square tests of independence were conducted to determine associations between demographic variables and medical characteristics. Second, chi-square tests were run to determine relationships between demographic and medical characteristics, and behavioral health program utilization, respectively. Finally, repeated-measures within-subjects ANOVAs, with Bonferroni corrections, were run to examine changes in depression and/or anxiety between the first and second, as well as first and final sessions with behavioral health providers. Alpha was established at the .05 level.

RESULTS

Demographic and Medical Characteristics

From August 2013 to June 2016, a total of 306 patients received cancer treatment at the Infusion Therapy Department of the hospital. Behavioral health program data was available on 238 patients, representing 77.8% of the total cancer patient population. The participants ranged in age from 18 to 95 ($M_{\text{age}} = 66.4$, $SD = 12.9$).

The majority of the participants (54.2%) identified as female, 45.4% identified as male, and 0.4% identified as “other”. The majority (85.7%) of participants identified as White, 11.8% identified as Multiracial/ethnic or other, and the remainder identified as either Black (.8%), Native American (.4%), Asian (.4%), Hispanic (.4%), or Middle Eastern (.4%). The majority (59.2%) of participants were married. Additional information regarding patient demographics may be found in Table 1.

In addition to sociodemographic information, medical information was collected. The most common cancer diagnoses were breast (18.1%) and lung (10.1%). Further, 19.1% of the sample reported multiple cancer diagnoses, as a result of metastasis. Given that 29 different cancer diagnoses were prevalent in the sample, variables were recoded such that diagnoses were organized according to organ system/site (e.g., gastrointestinal, gynecologic, skin), as presented by the National Cancer Institute (2016). This revealed that the most common cancer sites were breast (20.4%) and gastrointestinal (16.6%). From the date of program initiation to June 30, 2016, 17 patients (7.14%) who were offered behavioral health treatment passed away. Additional information regarding the sample’s medical characteristics may be found in Table 2.

Chemotherapy was the most common form of cancer treatment (53.4%), followed by receiving two or three forms of treatment (18.4%), surgery (6.3%), and radiation (4.2%). Other treatments included immunotherapy (.4%), targeted therapy (.4%), and homeopathy (.4%). Additional information regarding the participants' cancer treatment may be found in Table 2.

Treatment Providers

Three years of data revealed that of the 125 patients seen by the behavioral health providers, the supervisor and PhD-level licensed psychologist met with the majority (34.3%, $n = 43$) of patients. During the first year of the behavioral health program (2013-2014 academic year), two doctoral Psychology students saw 32.8% ($n = 41$) of patients, combined. During the 2014-2015 academic year, two second-year and one fourth-year Psychology student saw 26.4% of patients ($n = 33$). Two students joined the behavioral health staff during the 2015-2016 academic year and saw 8 patients, combined (6.4%).

Evaluation

Well-being

Baseline well-being was assessed using the NCCN, BDI, and BAI. The NCCN was administered to a subsample ($n = 86$) of patients. A score of "3" (minimal to mild distress) was the most frequently reported (18.6%), followed by "7" (moderate distress; 15.1%). Mean score was 4.36 ($SD = 2.63$). The BDI was administered to a subsample ($n = 55$) of patients. The mean baseline score was 13.96 (mild depression; $SD = 13.96$, range = 0-43). The BAI was administered to a subsample ($n = 46$) of patients. The mean baseline score was 12.67 (mild anxiety; $SD = 9.42$, range = 0-39).

Program Efficacy

Change in depression and anxiety scores between patients' first and last sessions was calculated (see Figure 2). For a small subset of patients ($n = 17$) for which follow-up depression scores were available, results revealed that the behavioral health program had a statistically significant effect on depression scores between the patients' first ($M = 15.29, SD = 6.84$) and last ($M = 10.47, SD = 6.02$) session, $F(1,16) = 8.5, p = .01, \eta^2 = .35$. However, for the small subset of patients ($n = 14$) for which follow-up anxiety scores were available, change in anxiety between the first ($M = 14.29, SD = 10.67$) and last ($M = 8.86, SD = 6.65$) session was not significant, $F(1, 14) = 2.95, p = .11, \eta^2 = .19$. To further evaluate potential treatment gains, change in depression and anxiety scores between patients' first and second sessions was calculated. Results revealed that the behavioral health program had a statistically significant effect on depression scores, $F(1,15) = 4.98, p < .05, \eta^2 = .25$, between sessions 1 ($M = 15.94, SD = 1.63$) and 2 ($M = 12.94, SD = 1.5$). However, results revealed that the program's effects on anxiety scores were not statistically significant, $F(1,14) = .35, p = .57, \eta^2 = .03$, between sessions 1 ($M = 14.29, SD = 2.85$) and 2 ($M = 12.14, SD = 2.06$).

Program Utilization

Of the 238 participants, the majority (68.2%) were referred to STAR® for behavioral health services. The range of time between STAR® referral and initial visit was zero to 730 days ($M = 82.82, SD = 160.53$). With regard to overall behavioral health service utilization, 49.8% did not initiate treatment or declined to meet with behavioral health staff, 23.6% attended one visit, and 26.6% engaged in two or more

sessions. The average number of sessions was 2.77 ($SD = 8.31$, range = 0-96). Chi square analyses revealed that those who received a STAR® referral were more likely to engage in treatment, compared with those who found out about behavioral health services in other ways (e.g., directly approached by behavioral health provider), $\chi^2 (6) = 13.68, p = .03$. However, the majority (51.9%) of patients who received a referral did not engage in treatment, 20.8% attended one session, and 27.3% engaged in two or more. Of the 83 who did not receive a referral, but were offered psychosocial care by an oncologist, nurse, or behavioral health provider, 45.8% did not engage, 28.9% attended one session, and 25.3% attended two or more. Finally, the majority of participants engaged in individual psychosocial care only (50.2%), while five patients engaged in support groups only (2.1%), and only 2 patients (0.84%) engaged in both, individual and group care. The average number of group sessions attended was .06 ($SD = .43$, range = 0-4).

Demographic Characteristics and Program Utilization

A series of chi square tests of independence explored relationships between demographic variables and behavioral health program utilization. A chi-square test did not support an association between gender and treatment acceptance, $\chi^2 (2, n = 237) = 4.63, p = .10$ or between race/ethnicity and treatment acceptance, $\chi^2 (2, n = 237) = 5.20, p = .07$. However, there was an association between being married and accepting treatment, $\chi^2 (2, n = 237) = 7.92, p < .001; phi = .55, p < .001$ and engaging in at least two psychosocial visits, $\chi^2 (2, n = 237) = 3.66, p < .001; phi = .63, <.001$. There was also an association between being employed and accepting treatment, $\chi^2 (11, n = 237) = 52.98, p < .001; phi = .473, p < .001$ and engaging in at least two visits, $\chi^2 (22, n =$

237) = 59.99, $p < .001$; $\phi = .503$, $p < .001$. Finally, there was an association between being in a younger age group and accepting treatment (compared to those in an older age group), $\chi^2 (6, n = 237) = 14.84$, $p = .02$; $\phi = .26$, $p = .02$. There was also an association between being in a younger age group and engaging in at least two psychosocial visits, $\chi^2 (3, n = 237) = 10.34$, $p = .02$; $\phi = .22$, $p = .01$.

Clinical Characteristics and Program Utilization

A series of chi square tests of independence revealed relationships between clinical characteristics and behavioral health utilization. No relationship between cancer organ system site and treatment acceptance was observed, $\chi^2 (22, n = 237) = 28.96$, $p = .15$. However, a relationship between cancer diagnosis and treatment acceptance was observed, $\chi^2 (33, n = 237) = 53.55$, $p = .01$, such that being diagnosed with leukemia, lymphoma, multiple myeloma, lung, pancreatic, and gastric cancer was associated with accepting treatment, compared with those diagnosed with cancers with higher survival rates (e.g., breast; NIH, 2016). Further, there was an association between cancer diagnosis and engagement in at least two behavioral health encounters, $\chi^2 (66, n = 237) = 87.79$, $p = .04$. The association between treatment acceptance and cancer stage was not significant, $\chi^2 (8, n = 237) = 13.87$, $p = .09$. Chi square tests revealed between receiving chemotherapy and to accepting treatment, compared with those who were receiving multiple cancer treatments, $\chi^2 (10, n = 237) = 24.50$, $p < .01$. The association between engaging in at least two sessions and receiving only one treatment was also significant, $\chi^2 (20, n = 237) = 37.77$, $p < .01$.

Baseline Well-Being and Program Utilization

Chi square tests did not support an association between baseline anxiety category (e.g., minimal, mild, severe) and treatment acceptance, $\chi^2(6, n = 237) = 6.84, p = .34$ or between baseline depression category (e.g., minimal, mild, severe) and treatment acceptance, $\chi^2(6, n = 237) = 5.53, p = .48$. Further, the association between treatment acceptance and distress level was not significant, $\chi^2(20, n = 237) = 17.23, p = .64$.

DISCUSSION

Results supported the development, preliminary efficacy, and overall utilization of the behavioral health program. As such, the present study provides preliminary data and evidence for establishing and maintaining a partnership between a hospital and clinical psychology doctoral program. Results may be used to benchmark other behavioral health integration efforts.

Program Development and Implementation

The behavioral health program was collaboratively designed and implemented, with individuals from the hospital and the clinical psychology doctoral program. The program and its associated clinical practicum continued to run for the third and fourth consecutive year, respectively. The onsite clinical supervisor saw patients and provided group and individual supervision. The practicum supervisor leads didactic seminars and additional supervision for three-hour sessions, weekly, for the third consecutive year. Notably, doctoral students were motivated to lead groups and conduct individual sessions in order to accrue clinical hours and to receive intensive training and supervision in applications of evidence-based treatments in an oncology setting. Consistent with previous studies and recommendations for program

development and implementation (Brothers et al., 2015; Williams et al., 2015), the present program involved training for all clinicians, in addition to formal supervision. Specifically, all clinicians were STAR®-certified and trained in providing evidence-based treatments (EBTs) for cancer patients.

Evaluation

The present study reports only preliminary results on program efficacy. Specifically, administering the NCCN was challenging, as nurses were flooded with numerous competing clinical responsibilities, including administering medications, fluids, and cancer treatments (including chemotherapy). As such, this challenge may be addressed by having oncologists or support staff members administer the NCCN during office visits. Although having nurses and oncologists administer the measure may address some mental health stigma-related barriers, behavioral health providers may administer this measure to all patients receiving cancer treatment onsite, in order to maximize distress tracking. “Distress” has been defined as a combination of anxiety and depressive symptoms, which may negatively influence how patients cope with cancer and their ability to follow treatment recommendations (NCCN, 2016). As such, using the NCCN is critical to providing comprehensive cancer care, as the vast majority of cancer patients (~95%) do not obtain psychological help (NCCN, 2016).

Administering the BAI and BDI presented even more challenges. First, only behavioral health providers administered these measures, as these measures require scoring and categorization into levels of severity. Additionally, the BDI item that pertains to suicidality would require behavioral health follow-up, if endorsed by a

patient. Second, only patients who accepted treatment completed these measures. The majority of patients who declined to complete the BAI and BDI cited fatigue and pain as their primary barriers. Consequently, this study lacked a control or comparison group, as BAI and BDI scores were not available on patients who declined psychosocial treatment.

Program Efficacy

Given challenges with BAI and BDI administration, results on changes in anxiety and depression were limited, by the small sample size over time. Further, the lack of a control or comparison group limited our ability to draw conclusions regarding program efficacy. Nonetheless, these preliminary findings are promising with regard to intervening on depression among cancer patients. Notably, the present study not only revealed significant changes in depression between first and last session (i.e., from mild to minimal levels of depression), but *between the first and second session* (e.g., from mild to minimal levels depression). This finding is consistent with the psychotherapy literature on large treatment gains that are often observed in the first few sessions (Cooper, 2008). However, the present study revealed statistically nonsignificant findings with regard to changes on anxiety. Given the unique challenges that cancer patients are often faced with, treating anxiety might be especially difficult. For instance, addressing concerns related to fear of tumor progression and beginning new cancer treatments may be particularly anxiety-provoking and difficult to address (e.g., Brix et al., 2008). Nonetheless, a *clinically* significant decrease in anxiety was observed (i.e., from mild to minimal levels of anxiety).

Patient Demographic and Medical Characteristics

Consistent with epidemiological data on cancer incidence and prevalence, the most common diagnosis in this study sample was breast cancer, followed by lung cancer (National Cancer Institute, 2016). Additionally, consistent with national data, the majority of individuals in this sample had multiple forms of treatment, often surgery as their primary treatment, followed by chemotherapy (National Cancer Institute, 2016).

Program Utilization

Results revealed promise with regard to behavioral health integration in a routine cancer care setting. First, 77.8% of patients receiving cancer treatment were offered psychosocial care. This represents a much higher proportion of patients, as most other studies revealed substantially lower rates. For instance, Forsythe and colleagues (2013) revealed that 55.1% of patients were never offered psychosocial care. Notably, this study found that 50.2% patients of patients were willing to engage in care, in contrast to another recent study that found that only 4.4% engaged in psychosocial care (Forsythe et al., 2013). Additionally, while a previous study reported that half of oncologists reported no affiliation with mental health services and only 47% made a referral for psychosocial services (Muriel et al., 2015), 68.2% of patient received a referral for onsite psychosocial treatment in this study. It is important to note that in the present study, over a quarter (26.6%) of patients engaged in two or more psychosocial care encounters. Finally, the present study supported the use of STAR® referrals to increase psychosocial treatment engagement, as patients were more likely to engage in treatment if their referral was generated through the

STAR Program®. As such, hospitals offering cancer treatment would benefit from acquiring STAR Program® certification.

In order to evaluate this program and its utilization more broadly, we compared its utilization data to that of the general psychotherapy literature. First, the mean number of sessions attended in this study was 2.77, ranging from zero to 96 sessions. Although it is challenging to make recommendations regarding the number of therapy sessions needed to meet criteria for remission or “recovery”, a dose-response relationship does exist (Cooper, 2008). However, it is important to note that sudden treatment gains on acute and symptomatic problems, as would be expected with a cancer patient population, would tend to happen more quickly than change on more longstanding problems (i.e., personality-based diagnoses) (e.g., Cooper, 2008; Kopta et al., 1994). Notably, although the average number of sessions that patients engaged in was few, research has established a ‘law of diminishing returns’, meaning that as patients have more sessions, the added benefit of each session actually begins to decrease (Cooper, 2008). To illustrate, research has revealed that the degree of improvement between session 53 and 104 is approximately the same as between sessions two and four (Cooper, 2008). The mean number of sessions attended, in the present study, was consistent with the general psychotherapy research, which has demonstrated that on average, patients drop out after just two sessions (Swift & Greenberg, 2012). However, of those who engaged in treatment (n = 119) in the present study, 42% attended three or more sessions, 10.9% attended two sessions, and 47.1% attended only one. The present research revealed that despite the unique

challenges that cancer patients face, many committed to more than three sessions, a number greater than what has been observed in the general psychotherapy research.

Demographics and Program Utilization

Results revealed some associations between patient demographics and use of the behavioral health program. First, individuals who were not married were more likely to utilize the program and to engage in two or more visits. Patients who are married might be perceiving their spousal support as sufficient enough to decline psychosocial treatment. Second, patients who were not employed were more likely to accept treatment, suggesting that engaging in psychosocial care may be an additional and demanding time commitment, given investment in work *and* cancer treatment. For patients who are employed while receiving cancer treatment, providing “bedside” psychosocial care may be especially important, in order to eliminate or minimize the time commitment related to psychosocial care. Finally, patients who were in a younger age group were more likely to engage in psychosocial treatment. This finding may be interpreted in the context of mental health stigma and is consistent with previous research findings on mental health stigma among older age groups (e.g., Brenes et al., 2015; Conner et al., 2010; Sirey et al., 2001). Strategies to address this stigma may include psychoeducation and having oncologists or nurses introduce behavioral health services and its providers. Interestingly, analyses revealed no gender differences with regard to treatment utilization. This finding is contrary to previous findings in which men were less likely to seek or accept psychosocial care (Clement et al., 2015; Vogel et al., 2014).

Clinical Characteristics and Program Utilization

Results revealed some associations, with regard to patient clinical characteristics and use of the behavioral health program. First, a relationship between cancer diagnosis and treatment acceptance and engagement in two or more visits, was observed, such that those with multiple cancer diagnoses, due to metastasis, were more likely to decline treatment. Further, patients with leukemia, lung cancer, lymphoma, multiple myeloma, pancreatic, and gastric cancer were more likely to decline treatment. This finding may be due to decreased survival rates for the aforementioned cancers (CDC, 2016; NIH, 2016), compared with cancers with higher survival rates (e.g., breast), for which patients were more likely to accept psychosocial treatment. Given that severe levels of psychological distress may interfere with coping and cancer treatment recommendations, it may be especially important for cancer treatment providers (oncologists, nurses) to encourage and support psychosocial care for these individuals. Second, results revealed that patients who were receiving chemotherapy were more likely to engage in psychosocial care than patients receiving multiple cancer treatments (e.g., chemotherapy, radiation). Providing “bedside” psychosocial care may address this barrier, as patients can have individual therapy sessions while receiving chemotherapy, thereby minimizing time commitment.

Limitations and Future Directions

This study has several limitations. First, only a small subset of the sample had baseline well-being data available. An even smaller subset of the sample had follow-up well-being data available. Future research should implement a systematic approach to progress monitoring, in order to maximize well-being assessment. Second, present findings are based on a sample that is mainly White and non-Hispanic. Given the

differences in mental health stigma among non-White populations (Nadeem et al., 2007), additional research examining the utilization of psychosocial services in non-White populations is warranted. Third, no anxiety or depression data was available on patients who *declined* psychosocial care, thereby limiting our ability to compare groups. Fourth, although the behavioral health program is a segment of the STAR® program that sought to provide comprehensive care, this program was fundamentally not integrated. Specifically, oncologists were often not in contact with behavioral health providers past the initial referral, demonstrating separate, rather than integrated care (Eickmeyer et al., 2013). This, and other programs, should seek to provide an integrated approach, such that oncologists and behavioral health providers exchange clinical data regarding shared patients. Conducting weekly team rounds would be an excellent platform for exchanging crucial patient information that can inform and tailor treatment. Despite its limitations, the study has numerous strengths and may be used to guide future investigations and designs of behavioral health programs. First, this program represents an important step towards improved integration of patient care, using a multidisciplinary care approach to treatment, with enhanced access to psychosocial services and care. Given that psychosocial care of cancer patients has traditionally been viewed as separate from routine medical care, the present study assessed and evaluated the implementation of a more comprehensive approach to cancer. This study also implemented monitoring and maximization of treatment engagement. Notably, the present investigation exemplified clinical research by evaluating a newly developed program for cancer patients. Further, evaluation is paramount to using data to improve and further develop a program. In sum, this data

may be used to not only further develop the existing program, but to inform program development in other settings. Finally, given low engagement rates, this study underscores the importance of readiness to change, by way of engaging patients in psychosocial care. Future studies should examine barriers to engaging in care and should develop measures to evaluate readiness.

Conclusions

This study illustrated the feasibility of integrating a behavioral health program into routine cancer care and generated several recommendations. First, distress tracking may be improved by having the entire team administering measures, including nurses, oncologists, and behavioral health providers. Second, partnerships between clinical psychology doctoral programs and hospitals, providing cancer care, may be mutually beneficial. Third, hospitals offering cancer treatment may benefit from acquiring STAR® certification, in order to generate referrals for cancer care that is more comprehensive. Treatment that incorporates psychosocial care may be used as complementary support for patients diagnosed and treated for cancer. Taken together, implementing these recommendations may improve patient physiological and psychological outcomes. Finally, this study may serve as a prototype for developing such programs and the data can benchmark the success of efforts to improve access to cancer-related psychosocial care.

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Table 1.

Baseline Characteristics

Variable	Participants
Sex	% (n)
Female	54.2% (n=129)
Male	45.4% (n=108)
Other	.4% (n=1)
Age	
18-34	1.9% (n=4)
35-49	6% (n=13)
50-64	35.8% (n=77)
65+	56.3% (n=121)
Race/Ethnicity	
White	85.7% (n=204)
Multiracial/Other	11.8% (n=28)
Black	.8% (n=2)
Native American	.4% (n=1)
Asian/Pacific Islander	.4% (n=1)
Hispanic/Latino	.4% (n=1)
Middle Eastern	.4% (n=1)
Marital Status	
Married	59.2% (n=141)
Not married	13.1% (n=31)
Divorced	11.3% (n = 27)
Widowed	8.8% (n=21)
Not Reported	4.6% (n=11)
Living with partner	2.1% (n=5)
Separated	0.8% (n=2)
Employment Status	
Retired	34.5% (n=82)
Not Reported	33.6% (n=80)
Employed	16% (n=38)
Disabled/On Leave	9.6% (n=23)
Unemployed	5.5% (n=13)
Student	0.8% (n = 2)

Table 2.

Clinical Characteristics.

Variable	Participants
STAR Referral	% (n)
Yes	68.2% (n=150)
No	31.9% (n=70)
Cancer Site	
Breast	19.5% (n=43)
Digestive/Gastrointestinal	16% (n=35)
Endocrine/Neuroendocrine	1.3% (n=3)
Genitourinary	4.6% (n=10)
Gynecologic	2.3% (n=5)
Head & Neck	5% (n=11)
Hematologic/Blood	13.6% (n=30)
Musculoskeletal	0.5% (n=1)
Neurologic	1.8% (n=4)
Respiratory/Thoracic	11.4% (n=25)
Skin	1% (n=2)
Unknown Primary	4.1% (n=9)
Metastasized	19.1% (n=42)
Cancer Stage	
0	8.5% (n=17)
I	15.6% (n=31)
II	14.1% (n=28)
III	14.6% (n=29)
IV	29.6% (n=59)
Unknown	13.6% (n=25)
Hematologic	4% (n=8)
Treatment type	
Chemotherapy	63.8% (n=127)
Homeopathy	.5% (n=1)
Immunotherapy	.5% (n=1)
Targeted Therapy	.5% (n = 1)
Radiation	5% (n=10)
Surgery	7.54% (n=15)
2 treatments	21.1% (n = 42)
3+ treatments	1% (n = 2)

**Note.* Caregivers were not included in the treatment type analysis

Figure 1. Flowchart for Referral Process

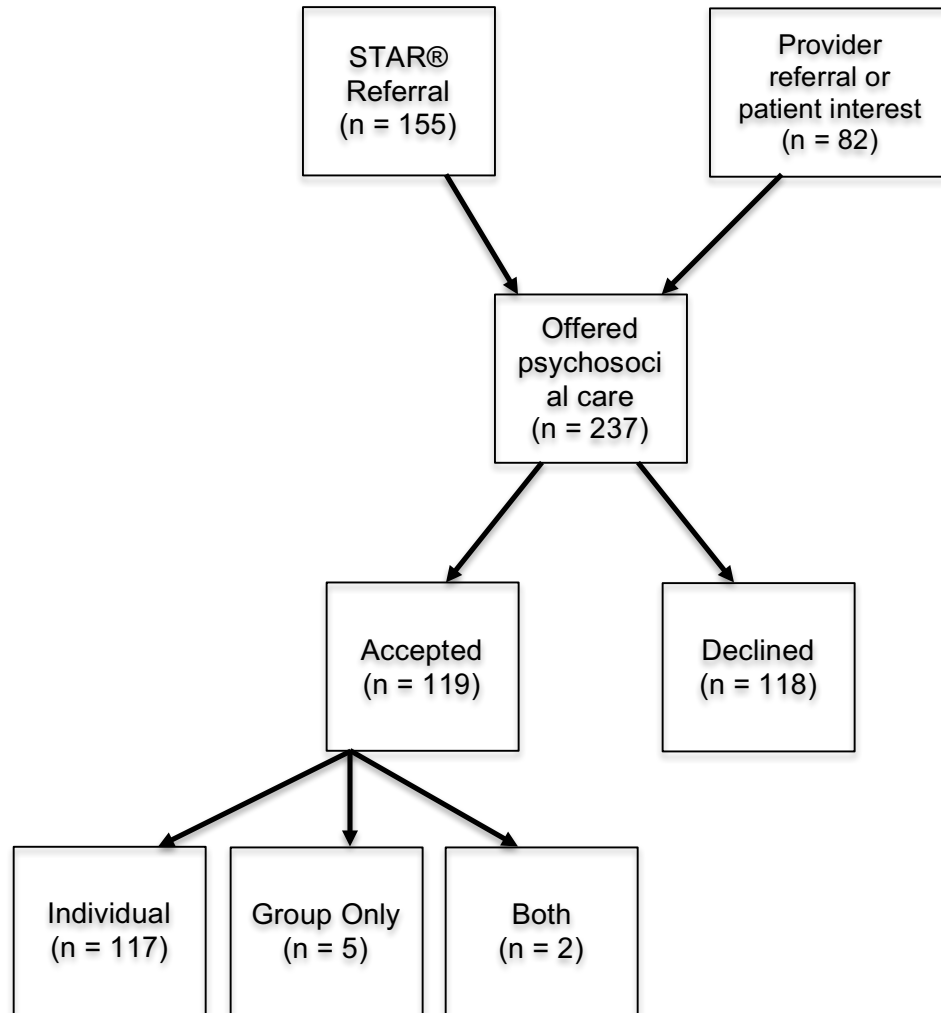
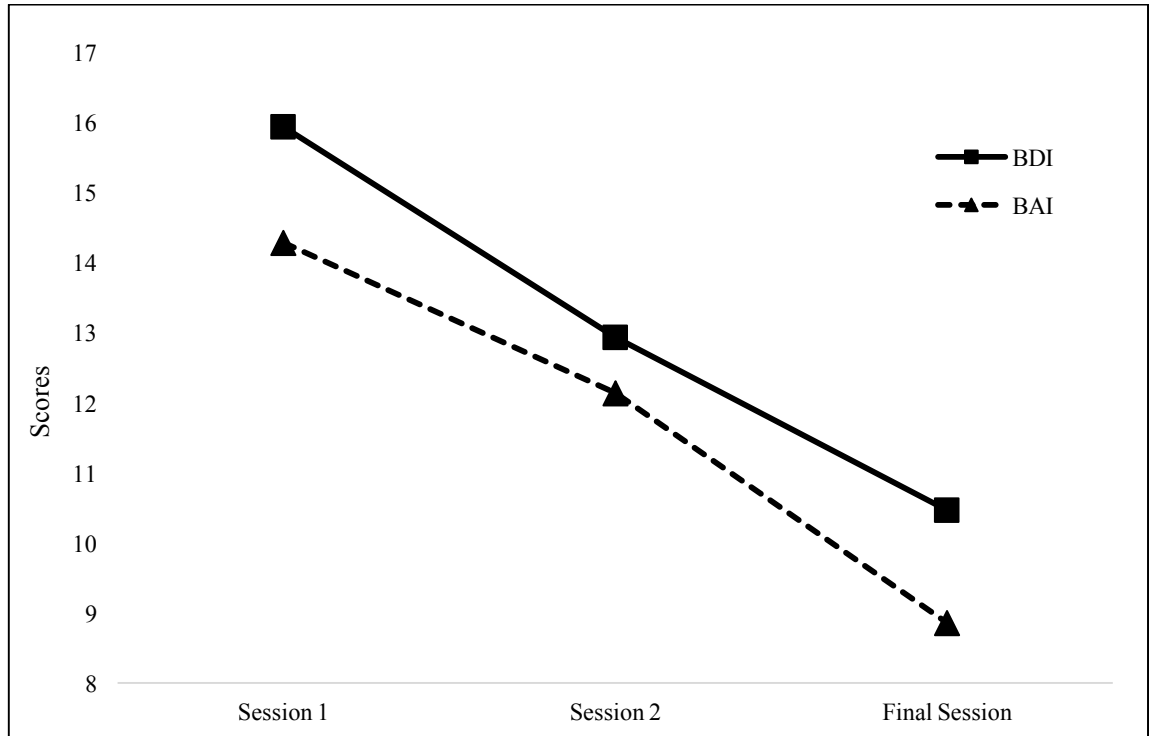


Figure 2.

Depression and Anxiety Scores across Sessions



Note. Total BDI and BAI scores across three time points. The *solid line* shows the depression scores, while the *dashed line* shows the anxiety scores. Change in depression scores was significant between the first and second session and between the first and final session. Change in anxiety scores was neither significant between the first and second session, nor between the first and final session.