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## Coping skills training and acceptance and commitment therapy for symptom management: Feasibility and acceptability of a brief telephone-delivered protocol for patients with advanced cancer

Jennifer C. Plumb Vilardaga, PhD<sup>1</sup>, Joseph G. Winger, PhD<sup>1</sup>, Irene Teo, PhD<sup>2</sup>, Lynda Owen, PhD<sup>3</sup>, Linda M. Sutton, MD<sup>3</sup>, Francis J. Keefe, PhD<sup>1</sup>, Tamara J. Somers, PhD<sup>1</sup>

<sup>1</sup>Duke University Medical Center, Department of Psychiatry and Behavioral Sciences, Durham, NC USA

<sup>2</sup>Lien Centre for Palliative Care, Duke-NUS Medicine School, Singapore

<sup>3</sup>Duke Cancer Network, Durham, NC USA

### Abstract

**Context:** Patients with advanced cancer face a life-limiting condition that brings a high symptom burden that often includes pain, fatigue, and psychological distress. Psychosocial interventions have promise for managing symptoms, but need additional tailoring for these patients' specific needs. Patients with advanced cancer in the community also face persistent barriers – availability of interventions in community clinics, financial and illness-related factors – to accessing psychosocial interventions.

**Objectives:** The aim of the current study was to assess the feasibility and acceptability of telephone implementation of Engage, a novel, brief combined Coping Skills Training and Acceptance and Commitment Therapy protocol, for reducing symptoms and increasing quality of life in community patients with advanced cancer.

**Methods:** Adult patients with advanced cancer receiving care in the community received Engage, four, sixty-minute manualized telephone sessions delivered by a trained psychotherapist and completed pre- and post-treatment assessments.

**Results:** Engage was feasible, achieving 100% accrual (N=24) of a heterogeneous sample of patients with advanced cancer, with good retention (88% completed). Acceptability was demonstrated via satisfaction (mean=29 out of 32, *SD*=2), engagement (95% attendance) and use of skills. Secondary analyses pointed to reductions in pain interference, fatigue, psychological distress, and improvements in psychological acceptance and engagement in value-guided activity at post treatment.

**Conclusion:** Engage, our brief novel combined Coping Skills and Acceptance and Commitment Therapy intervention, demonstrated initial feasibility and acceptability when delivered over the

telephone, and increased access for community clinic patients with advanced cancer. Future research will assess the comparative efficacy of Engage in larger randomized trials.

### Keywords

Acceptance; coping skills; pain; advanced cancer; palliative care

## INTRODUCTION

Patients with advanced cancer face a life-limiting disease that brings a high symptom burden including pain, fatigue, and psychological distress.(1) Pain and fatigue are pervasive, (2,3) persistent,(4) and reduce functioning and overall quality of life for many patients with advanced cancer.(5) Psychological distress also commonly arises in the context of advanced cancer,(6) stemming from coping with symptoms, as well as concerns related to death, dying, and improving quality of life. There are limitations to medical treatment of these symptoms, including limited responsiveness and intolerable side effects.(1,7)

Clinical guidelines are clear that quality of life improvement is the key focus for palliative care, and that quality of life should include attention to physical, social, psychological, and spiritual functioning.(7) Psychosocial treatments are appropriate and needed in palliative care settings, as they target reduction in symptoms, and some work has also addressed functioning in social, psychological, and spiritual life domains. Despite their appropriateness, such treatments are often underutilized in palliative care settings(1,8,9) and there is room for enhancement of these interventions to better address social, psychological, and spiritual domains along with symptoms.

Cognitive behavioral therapy approaches, such as Coping Skills Training (CST) for symptom management have been employed to reduce symptoms such as pain and fatigue in patients with cancer.(10–15) Some amount of pain and fatigue may be able to be reduced or ameliorated for patients with advanced cancer through interventions such as CST, and reduction in symptom severity is an important aspect of overall quality of life for both patients (16) and providers.(7) However, some level of symptoms may not be able to be fully managed directly, particularly as pain and fatigue ultimately are expected to worsen toward end of life.(17) While important, symptom reduction is not sufficient for maintaining or improving overall quality of life for patients with advanced cancer. Rather, enhancing patients' ability to manage symptoms with a goal of decreasing symptom *interference* may therefore be particularly important for patients with advanced cancer.

Acceptance and Commitment Therapy (ACT 18) is one transdiagnostic mindfulness-based approach to reducing symptom interference. ACT utilizes mindfulness, or non-judgmental awareness of uncomfortable experiences of thoughts, emotions, and body sensations to promote acceptance of experiences (thoughts, feelings, and body sensations) such as those likely to arise for patients with cancer as their disease progresses and end of life concerns arise.(19–23) ACT also promotes improvements in quality life via active engagement in chosen activities guided by deeply held personal values across life domains (e.g., relationships, personal growth, health, spirituality) even in the presence of uncomfortable experiences.(24,25) Indeed, emerging evidence supports ACT for reducing psychological

distress (26,27), and decreasing interference from fatigue (28) in patients with advanced cancer. However, ACT approaches for patients with advanced cancer have not yet successfully targeted pain severity or interference as part of an overall strategy for managing symptoms (28,29), even though this is one important area of physical quality of life.

A thoughtful integration of CST and ACT may therefore best serve patients with advanced cancer as there are strengths in both approaches. CST promotes reduction of symptoms (i.e., pain, fatigue) where some improvement is possible and warranted, and ACT promotes acceptance of experiences that cannot be remediated or controlled (such as those in the context of worsening symptoms and end of life concerns) while also promoting consistent engagement in value-guided activity.(30) Such a combination may seem to conflict, as there are important theoretical and philosophical differences between these approaches. For example, CST is change-oriented (e.g., changing thoughts and feelings to be more positive or balanced, reducing symptoms) while ACT is acceptance-oriented (e.g., supporting non-judgmental awareness of experience however it arises).(25) Despite these differences, there has been a call to return to a more functional behavioral approach to achieving outcomes, which supports combining techniques from traditionally different approaches in service of similar functional goals.(30) A coherent functional behavioral analysis of patients' multi-symptom burden, in the context of end of life, can lead to an integration of components from CST and ACT. Particularly, components of these approaches can be meaningfully integrated when they serve the same functionally-defined outcomes, such as experiencing some symptom reduction and improving quality of life.(31)

CST can provide both cognitive (addressing negative thoughts) and behavioral (strategic pacing of activity) tools for increasing activity via some reduction in the barriers (presence of pain, fatigue, and psychological distress) to engaging in these activities. ACT also teaches mindful observation and acceptance of thoughts (e.g., worries about physical functioning changes and/or end of life), feelings (e.g., distress, anxiety, low mood), and body sensations (e.g., physical pain, fatigue) that are likely to be present due to a life-limiting illness, furthering a reduction in symptom interference. Personal values work in ACT also allows patients to discuss personal meaning in life, particularly in the context of a terminal illness. Elements from both CST (e.g., strategic pacing of activity) and ACT (e.g., acceptance of uncomfortable experiences) mutually support flexible engagement in activities directed by personally meaningful values across domains of life, even as some symptoms (i.e., pain and fatigue) increase and physical functioning declines toward end of life. These two approaches together uniquely and explicitly address bothersome symptoms, reduce symptom interference, and address social, psychological, and spiritual aspects of life.

Interventions addressing these issues also have the greatest reach when they are accessible to patients with advanced cancer. Many extant psychosocial interventions are burdensome (e.g., delivered in-person over nine to twelve 60–90 minute sessions), or are not available in community clinics where many patients receive their care.(26,27,32) When available, financial, transportation, and illness factors can further limit access to psychosocial care. (32–34) Brief treatments and those delivered via telephone- and mHealth can increase access to care for patients with advanced cancer.(35,36)

Taking into account the particular needs of patients with advanced cancer, our team developed a novel, combined CST and ACT intervention: Engage. In an effort to reduce treatment burden, Engage is brief, with four 45–60 minute sessions. Our initial feasibility and acceptability randomized pilot tested Engage delivered in person versus wait list control to patients with advanced breast cancer (N=85) living close to major medical centers in the United States (n=40) and Singapore (n=45).(37) Results demonstrated high feasibility and acceptability (i.e., successful accrual, engagement, and completion) and Engage participants showed greater improved on pain interference, fatigue, and distress.(37,38) However, reach was somewhat limited. Thirty percent of those choosing not to participate and 60% of non-completers cited reasons of distance, travel, or illness. Together, these results highlight the need for increasing access to this promising intervention for those unable to attend in-person visits.

Therefore, the current study delivered Engage via telephone to a heterogenous sample of patients with advanced cancer (N=24) living in communities far from major medical centers, in an effort to increase access. As a small pilot open trial, the primary aim of the current study was to report the feasibility and acceptability of delivering Engage via telephone. Our secondary aim was to report indicators of change in pain, pain interference, fatigue, distress, psychological acceptance and valued-activity engagement over time.

## METHODS

This study was approved by the Institutional Review Board, recruitment procedures complied with HIPAA guidelines, and this study was registered with [clinicaltrials.gov](https://clinicaltrials.gov) (<https://clinicaltrials.gov/ct2/show/NCT03285633>).

### Procedures

Patients with advanced cancer served by three outpatient cancer treatment facilities in central North Carolina USA (those who lived more than 60 miles away from academic medical center and two rural community cancer treatment clinics), were recruited to participate in the study. Inclusion criteria were adults aged 21 or older, with a primary diagnosis of advanced cancer (stage IV, or stage IIIB for lung cancer). Exclusion criteria included inability to read or speak English, and a hearing impairment preventing telephone communication. Potentially eligible participants were identified by electronic medical record search, oncologists gave permission to contact patients for recruitment, and interested patients reporting at least one symptom of pain, fatigue, and distress conducted consent remotely.

Participants completed baseline and post-treatment assessments remotely, and received four 45 minute telephone treatment sessions. A session-by-session treatment manual and accompanying patient workbook were developed by the authors based on prior work.(15,38–40) The study therapist was a licensed psychologist with over 10 years of experience, trained in both ACT and CST by lead developers of these interventions, and had previous experience utilizing these interventions with advanced cancer patients on other studies. Telephone sessions were guided by a written treatment manual, audio recorded, and informally checked for fidelity by a senior researcher. The study therapist was located at

Duke University Medical Center, and participants were in their homes. Participants received a study workbook and a hand-held audio player for listening to the mindfulness exercise at home. Participants were compensated \$20 for each completed assessment.

### Treatment Intervention

Engage was developed by combining elements from CST and ACT. Skills acquisition was via experiential learning and rehearsal; skills were practiced in session, strengthened with examples from participants' own life, and reinforced in assignment of homework practice between sessions. Homework was reviewed and troubleshooted each session and assigned cumulatively, building on previously learned skills.

**Session 1: Biopsychosocial-spiritual model of health.**—Psychoeducation about the biopsychosocial-spiritual model of health and wellbeing (41) was presented, and participants shared their experience of symptoms and concerns about end of life. ACT personal values were defined as guiding principles that support living with meaning and purpose, and participants identified one personal value. Mindfulness was presented as one means of coping with participants' identified psychological barriers (thoughts, feelings, body sensations) to living in line with this value, and practiced in session.

**Session 2: Value-guided activity planning.**—The CST skills of psychoeducation about pain and fatigue and the activity rest cycle were presented. The activity rest cycle promoted increasing engagement in important physical activities throughout the day by taking strategic rest breaks so as not to exacerbate pain or fatigue. ACT personal values exploration continued across important life domains and specific measurable actions serving these values were generated. Continuing to engage in valued activity even if pain and/or fatigue increased was highlighted, and the activity rest cycle was presented as one way to do so. Participants also generated numerous ways to live in line with values (e.g., actions in line with a value of “connecting with nature” include walking outside, spending a few minutes a day in the sunshine, or having a plant by the bed) so as to support valued activity engagement even with illness-related functional decline.

**Session 3: Coping with negative thoughts.**—Both CST and ACT skills were utilized to identify and cope with negative thoughts as a means of supporting greater engagement in valued activity. The CST skill of psychoeducation about common negative thinking patterns in the context of advanced illness were presented. Patients then used CST skills of increasing awareness of their own difficult thoughts and engaged in informal cognitive restructuring; getting perspective on their thoughts (e.g., “what am I missing in seeing things this way?” or “would I say that self-judgmental thought to a loved one?”). Participants also used the ACT skill of defusion (defined as reducing entanglement with thoughts), exploring how thoughts do not lead to actions, and actions can be guided by values rather than dictated by thoughts. They practiced saying, “I am having the thought that...” as a means of simply observing thoughts as passing experiences. Participants practiced selecting actions guided by values, predicting possible thought barriers that might arise, and planned to practice either getting perspective or simply observing thoughts as they engaged in their chosen value-guided activity at home.

**Session 4: Skills integration.**—Problem-solving use of skills and planning for continued skill use even if functioning decreased was discussed. When desired, participants explored values-guided actions as they related to end-of-life choices.

## Measures

The primary outcomes of the study were feasibility and acceptability of the program. Feasibility was measured by recruitment rate, accrual, and retention. Acceptability was assessed via treatment engagement (75% session attendance, use of skills), and client satisfaction. The Client Satisfaction Questionnaire (CSQ-8 42,43) included items such as, “How satisfied are you with the amount of help you received?” and “To what degree did the program teach you skills that are helping you to better manage your symptoms?”

Secondary outcomes were assessed at pre- and post-intervention using well-validated measures. Higher values reflect worse outcomes on all measures. Pain severity was assessed with the Brief Pain Inventory (BPI 44,45). Patients reported their pain over the last 7 days at its “worst,” “least,” “average,” and “now,” on a scale from 0 = “no pain” to 10 = “pain as bad as you can imagine”. Pain Interference was assessed with the Pain Disability Index (PDI 46,47). Patients reported how much pain had interfered with daily activities (e.g., work, sleep) over the past 7 days, on a scale from 0 = “does not interfere” to 10 = “completely interferes”. Fatigue was assessed by the PROMIS Fatigue Short Form (48,49). Patients reported on their fatigue over the past 7 days, including the severity level, how much they were bothered by their fatigue, and the amount fatigue interfered with daily living. Responses are on a scale from 1 = “Not at all” to 5 = “Very Much”. Psychological distress was assessed by the Hospital Anxiety and Depression Scale (HADS 50). Patients reported their anxiety and depressive symptoms over the past 7 days. Responses are on a scale from 0 to 3 with anchors that vary based on the question prompt. Mindfulness and psychological acceptance was assessed using the Acceptance and Action Questionnaire-II (AAQ-II 51). Patients reported about their level of accepting their emotional experience (e.g., “I worry about not being able to control my worries and feelings”) on a scale from 1 = “Never true” to 7 = “Always true”. The AAQ-II has commonly been used as a process of change measure, and is often related to, or predictive of, important changes in symptom severity.(22,52)

Psychological well-being was assessed using the Bulls-Eye Values Survey.(53,54) Patients are asked to write about their personal values or guiding principles for living life with meaning and purpose across domains of relationships, education/work/community, leisure, and health/well-being, and to rate how successful they have been living in line with these values in the last month. A visual of a dartboard is provided and responses were coded in this study ranging from 1 = “a perfect bulls-eye, and great success living in line with a value” to 14 = “very far away from living in line with a value”. This is a process of change measure assessing improvements in psychological well-being and has demonstrated utility in other behavioral medicine populations.(53,54)

## Analysis Plan

Descriptive statistics were used to characterize the primary feasibility and acceptability outcomes. Changes from pre- to post-intervention on secondary outcomes were examined using paired-samples *t*-tests. We computed effect sizes using Hedges’  $g_{av}$ , which provides a



conservative effect size estimate for studies with a small sample and repeated measures design. However, given that this was a pilot feasibility study, these analyses were exploratory and should be interpreted cautiously.(55)

## RESULTS

### Feasibility

Study staff mailed recruitment letters to 122 adults with advanced cancer at three sites. Thirty-two (26%) potential participants responded to the recruitment letter and were mailed informed consent materials and 24 (100% accrual) completed the consent process over a 6 month time period. See Table 1 for demographics.

Retention was high with 88% (n=21) completing the study; attrition was due to participants being lost to contact (n=2) and death (n=1). Twenty three participants completed baseline assessments, and 21 participants completed both baseline and post-treatment assessment measures. Two percent of the data were missing for those completing both baseline and post treatment assessments.

### Treatment Acceptability

Patients rated high levels of satisfaction with the study (mean =29;  $SD=2$ , a score of 32 reflects the highest possible satisfaction), with 87% of participants stating they would return for a refresher of program skills in the future, and 87% reporting the program was “quite” or “very helpful” for managing their symptoms. Engagement in treatment was high: 95% of participants who began intervention sessions completed all four sessions (n=21 of 22), with one participant completing only 1 session, and all of the remaining participants completing all 4 sessions. The most used skills at post-treatment were the activity rest cycle, cognitive coping skills, and value-guided action planning (more than 3 days per week). See Table 2 for details.

### Secondary Outcomes

Exploratory analyses suggested that secondary outcomes (i.e., pain-related interference, fatigue, psychological distress, acceptance, and value-based action) improved, though changes were generally small (i.e.,  $g_{av}<0.50$ ). The largest improvement was for values-based action in the categories of work ( $g_{av}=0.21$ ) and health ( $g_{av}=0.41$ ). As noted previously, these analyses should be interpreted cautiously as this study was a small, single-arm feasibility trial that was not powered to detect clinically meaningful effects. See Table 3.

## DISCUSSION

In this study, we described the initial testing of telephone-delivered Engage, a brief, novel combined CST and ACT intervention for patients with advanced cancer to target symptom management and increase mindful acceptance of uncomfortable experiences while increasing engagement in value-guided activity as a means of improving quality of life. Engage delivered via telephone to community patients demonstrated feasibility. Moreover, participants found the combined protocol an acceptable approach to coping with pain,

fatigue, and distress as measured by of satisfaction, engagement, and use of skills. Exploratory analyses indicate that measures of pain and pain interference, fatigue, distress, acceptance, and engagement in valued-activity changed in the expected directions. Though the effect sizes were generally small, we consider any improvement from pre- to post-intervention noteworthy for these seriously-ill patients as many patients with advanced cancer experience worsening symptoms over time.(56) Future work is needed to verify this hypothesis using a randomized clinical trial. Taken together, both the format and the content of Engage shows promise for improving symptom management in patients with advanced cancer who experience multiple symptoms while also facing end of life concerns.

In order to increase the reach of the intervention, we recruited patients in community clinics and living far from major medical centers and delivered the intervention by telephone. Telephone implementation of our brief protocol allowed patients to receive this intervention from their homes, removing barriers of in-person treatments such as illness and travel. Successful recruitment and retention of a heterogenous sample of patients with advanced cancer across sites may indicate a high level of generalizability to other community cancer clinics.

Participants also reported that the program was quite helpful for managing their symptoms and lends support to our combined CST and ACT protocol. Participants' high level of engagement in the program provides preliminary support for the program as a whole and specifically highlights the acceptability of the activity rest cycle, cognitive coping skills, and value-guided activity planning skills.

An integration of skills from CST and ACT appears to have been beneficial for patients. While CST and ACT traditionally have differing theories and approaches, in this study we tailored our combined intervention to help patients meet the same functional goal of improving overall quality of life. CST and ACT are most divergent in the role of cognition in the development, maintenance, and amelioration of psychological distress; however, cognitive strategies from both approaches (i.e., cognitive change, cognitive defusion) have shown promise in reducing psychological distress.(57) It is possible that these differing approaches when combined thoughtfully may serve a similar goal of creating cognitive flexibility, which allows greater engagement in valued activity. Efforts to reduce symptoms such as pain (30) can be useful under some circumstances, particularly when patients are facing end of life and symptoms (such as severe pain) prevent engagement in value-guided activity, but it is not recommended to continue to use strategies to manage symptoms when continued attempts to do so takes individuals further away from living with meaning and purpose.(30) Ongoing research with patients with advanced cancer can answer questions as to the best way to support the shared functional goals of improving overall quality of life with treatment strategies from ACT, CST, or their combination, and under which circumstances.

To our knowledge this was the first examination of a brief, telephone-delivered, intervention for community patients with advanced cancer that combined symptom management skills from CST and mindful acceptance of uncomfortable experiences and increasing value-guided activity engagement from ACT. Future studies will need to continue testing this



intervention in larger randomized trials of community patients with advanced cancer, with further follow up.

Future research should increase access to psychosocial interventions for patients with advanced cancer to improve quality of life across domains. If found efficacious in larger trials, delivery of Engage via telephone or videoconferencing in other community clinics using highly-trained therapists located far from where patients get their care are next steps. Training community clinic staff (e.g., nurses, social workers) to deliver Engage in-person or via telehealth will further support this important goal.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

## DISCLOSURES AND ACKNOWLEDGEMENTS

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**Table 1.**

## Demographics.

		<b>M</b>	<b>SD</b>
Age	Range: 35–82	66	10.8
		<b>N</b>	<b>%</b>
Gender	Male	17	71
	Female	7	29
Race/Ethnicity	White	18	75
	African American	6	25
	Hispanic	1	4
	Other: Middle Eastern	1	4
Partner Status	Married	18	75
	Domestic partner/living together	1	4
	Single/Divorced	5	21
Education	Less than High School	2	8
	High School diploma	4	17
	Some college	9	37
	College degree	5	20
	Graduate degree	2	8
Cancer Type	Prostate	8	34
	Colorectal	4	17
	Non-small cell lung	3	13
	Small-cell lung	2	8
	Upper GI	2	8
	Renal	2	8
	Breast	1	4
	Appendiceal	1	4
	Gallbladder	1	4
Time since diagnosis	Within the last 2 years	10	42
	2–4 years ago	6	25
	More than 4 years ago	6	29
	Not reported	1	4
Initial/Recurrence	Initial cancer diagnosis	19	79
	Recurrent cancer diagnosis	4	17
	Not reported	1	4

**Table 2.**

Use of skills at post treatment.

Days used in the last week	Mindfulness (audio-guided)	Mindfulness (self-guided)	Activity rest cycle	Coping with thoughts	Value-guided action planning
	% (n)	% (n)	% (n)	% (n)	% (n)
0	17 (4)	17 (4)	--	--	4 (1)
1-2	26 (6)	17 (4)	13 (3)	21 (5)	39 (9)
3-4	26 (6)	26 (6)	30 (7)	30 (7)	48 (11)
5-6	9 (2)	9 (2)	17 (4)	30 (7)	17 (4)
7	4 (1)	13 (3)	22 (5)	--	4 (1)

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**Table 3.**

Secondary outcomes at pre- and post-intervention

Measures	N	Score Mean (Standard Deviation)		Mean Difference and 95% CI	t (df)	p	g <sub>av</sub>
		Pre-intervention	Post-intervention				
BPI-Severity	19	1.96 (2.09)	1.76 (2.40)	-0.20	-0.71 (18)	0.48	0.09
PDI	18	18.11 (17.09)	15.83 (12.59)	-2.28	-1.00 (17)	0.33	0.15
PROMIS-Fatigue	20	54.47 (9.07)	53.73 (9.18)	-0.74	-0.38 (19)	0.71	0.08
HADS-Anx	20	7.25 (5.09)	6.65 (3.87)	-0.60	-0.74 (19)	0.47	0.13
HADS-Dep	19	5.68 (3.96)	5.05 (3.27)	-0.63	-0.95 (18)	0.35	0.17
AAQ-II	20	17.05 (10.35)	15.80 (10.45)	-1.25	-0.79 (19)	0.44	0.12
Val-Sum	19	3.36 (1.59)	3.07 (1.77)	-0.29	-0.58 (18)	0.57	0.17
Val-Work	19	3.21 (1.96)	2.79 (1.81)	-0.42	-0.77 (18)	0.45	0.21
Val-Leisure	19	3.21 (1.78)	3.11 (1.88)	-0.11	-0.19 (18)	0.85	0.05
Val-Relations	19	3.21 (2.07)	3.37 (2.41)	0.16	0.27 (18)	0.79	-0.07
Val-Health	19	3.79 (1.69)	3.00 (2.03)	-0.79	-1.42 (18)	0.17	0.41

Note. *n*s= 18 to 20 for pairs of scores due to missingness. Effect sizes are Hedges' *g*<sub>av</sub> for paired samples, which is interpreted similarly to Cohen's *d* (i.e., 0.2 = small, 0.5 = medium, 0.8 = large effects). Higher values represent worse scores on all measures. BPI-Severity = Brief Pain Inventory-Pain Severity subscale. PDI = Pain Disability Index. PROMIS-Fatigue = Fatigue Profile Short-Form. HADS-Anx = Hospital Anxiety and Depression Scale-Anxiety Subscale. HADS-Dep = Hospital Anxiety and Depression Scale-Depression Subscale. AAQ = Acceptance and Action Questionnaire. Val-Sum = Bulls-Eye Values Inventory-Sum Score. Val-Work = Bulls-Eye Values Inventory-Work Subscale. Val-Leisure = Bulls-Eye Values Inventory-Leisure Subscale. Val-Relations = Bulls-Eye Values Inventory-Relationship Subscale. Val-Health = Bulls-Eye Values Inventory-Health Subscale.