Original Article

Refinement and Revalidation of the Demoralization Scale: The DS-II—External Validity

Sophie Robinson, BPsych(Hons)[1,2]; David. W. Kissane, MBBS, MPM, MD, FRANZCP, FAChPM, FAPM[1,3,4,5]; Joanne Brooker, BSc(Hons), GradDipPsych, GradDipComp, PhD[1,3]; Courtney Hempton, BBSc(Hons), MBioethics[1,3]; Natasha Michael, MBChB, FRACP, FAChPM, MRCPI, MRCGP, MSc[4,6]; Jane Fischer, MBBS, DipChildHealth, GradDipMedPallCare, FAChPM[7]; Michael Franco, MBBS, FRACP, FAChPM[5,6]; Merlina Sulistio, MBBS, BMedSc, FRACP, FAChPM[4]; David M. Clarke, MBBS, MPM, PhD, FRACGP, FRANZCP[1]; Mehmet Ozmen, BComm, BEc(Hons), PhD[1,8]; and Susan Burney, BA, GradDipCounsPsych, MHlthSc, PhD[2,3]

BACKGROUND: The recently refined Demoralization Scale-II (DS-II) is a 16-item, self-report measure of demoralization. Its 2 factors—*Meaning and Purpose* and *Distress and Coping Ability*—demonstrate sound internal validity, including item fit, unidimensionality, internal consistency, and test-retest reliability. The convergent and discriminant validity of the DS-II with various measures is reported here. **METHODS:** Patients who had cancer or other progressive diseases and were receiving palliative care (n = 211) completed a battery of questionnaires, including the DS-II and measures of symptom burden, quality of life, depression, and attitudes toward the end of life. Spearman ρ correlations were determined to assess convergent validity. Mann-Whitney *U* tests with calculated effect sizes were used to examine discriminant validity and establish the minimal clinically important difference (MCID). Cross-tabulation frequencies with chi-square analyses were used to examine discriminant validity with major depression. **RESULTS:** The DS-II demonstrated convergent validity with measures of psychological distress, quality of life, and attitudes toward the end of life. It also demonstrated discriminant validity, as the DS-II differentiated patients who had different functional performance levels and high/low symptoms, with a difference of 2 points between groups on the DS-II considered clinically meaningful. Furthermore, discriminant validity was demonstrated, as comorbidity with depression was not observed at moderate levels of demoralization. **CONCLUSIONS:** The DS-II has sound psychometric properties and is an appropriate measure of demoralization. Given its structural simplicity and brevity, it is likely to be a useful tool in meaning-centered therapies. ***Cancer* 2016;000:000–000**. *© 2016 American Cancer Society.*

KEYWORDS: cancer, construct validity, convergent validity, demoralization, discriminant validity, external validity, revalidation.

INTRODUCTION

The Demoralization Scale-II (DS-II) is a recently refined and revalidated 16-item, self-report measure of demoralization.[1] Demoralization is a maladaptive coping response conceptualized as a loss of meaning and purpose, with feelings of hopelessness and helplessness.[2] It is understood to arise in response to a stressful event or situation, such as the suffering associated with the diagnosis or experience of an advanced cancer.[2] In our recent systematic[3] and conceptual[4] reviews, we provided a discussion on the differences between demoralization and depression and highlighted the finding that there is a level of overlap between these constructs. In a companion to this article in this issue of *Cancer*, we report the internal validity of the DS-II as a 2-factor model (comprising two 8-item factors: *Meaning and Purpose* and *Distress and Coping Ability*) that demonstrated psychometrically sound item fit, unidimensionality, and reliability in patients receiving palliative care.[1] The reduced number of items and the simplified response format make the DS-II more user-friendly in the advanced cancer setting than the original 24-item Demoralization Scale (DS).[1]

The original DS demonstrated moderate-to-strong convergent validity with measures of quality of life, anxiety, depression, hopelessness, hopefulness, adjustment to cancer, and attitudes toward death in a range of cultural contexts.[5-9] The DS also demonstrated discriminant validity, with between 5% and 23% of patients reporting high demoralization

Corresponding author: David W. Kissane, MD, MPM, FRANZCP, FAChPM, FAPM, Department of Psychiatry, School of Clinical Sciences at Monash Health, Monash University, Level 3, P Block, Monash Medical Centre, 246 Clayton Road, Clayton, Victoria 3186, Australia; Fax: (011) 61-3-9594-6499: david.kissane@monash.edu

[1]Department of Psychiatry, School of Clinical Sciences at Monash Health, Monash University, Clayton, Australia; [2]School of Psychological Sciences, Monash University, Clayton, Australia; [3]Szalmuk Family Psycho-Oncology Unit, Cabrini Health, Malvern, Australia; [4]Cabrini Palliative Care Service, Prahran, Australia; [5]Supportive and Palliative Care Unit, Monash Health, Clayton, Australia; [6]Department of Medicine, School of Clinical Sciences at Monash Health, Monash University, Clayton, Australia; [7]Department of Palliative Care, Calvary Health Care Bethlehem, Caulfield, Australia; [8]Department of Econometrics, Monash University, Clayton, Australia

See editorial on pages 000-000 and companion article on pages 000-000, this issue.

DOI: 10.1002/cncr.30012, **Received:** December 17, 2015; **Revised:** February 2, 2016; **Accepted:** February 10, 2016, **Published online** Month 00, 2016 in Wiley Online Library (wileyonlinelibrary.com)

without major depression.[5,6,8,9] However, later research with chi-square analyses brought into question the statistical support for discriminant validity of the DS in relation to depression, because demoralized patients were significantly more likely to be depressed than those who were not classified as demoralized.[7] Given the comorbidity between high demoralization and major depression, further evaluative studies are necessary.[3]

Previous validation studies of the original DS were further limited because they lacked an operational hypothesis for testing discriminant validity. Technically, discriminant validity is suggested when there is no correlation between measures of constructs,[10] yet some level of overlap is to be expected for depression and demoralization.[4,5] Such overlap is observed with depression and anxiety,[11] yet these constructs are recognized diagnostically as separate disorders.[12] Mehnert et al[6] reported that, compared with patients who had moderate demoralization, those who had high levels of demoralization were more likely to experience depression. Thus, comorbidity is to be expected at the severe end of demoralization, but divergence is more likely with moderate demoralization. If demoralization is conceptualized as an adjustment disorder with limited coping in response to a stressful predicament, then greater divergence from depressive features can be anticipated with low or moderate levels of demoralization.[13]

To extend examination of the discriminant validity of the DS-II, its relation to symptom and performance level is worthwhile. Previous research has indicated that physical symptoms and demoralization are positively correlated, whereas activity levels and demoralization are negatively correlated.[3] Following the methodology used by Cella and colleagues,[14] we examined differences in the levels of demoralization between high-level and low-level functioning and high-level and low-level symptomatic patients. Furthermore, this approach allowed us to calculate the minimal clinically important difference (MCID) of the scale, providing useful information for clinicians or researchers who want to use the tool as a measure of change.[14]

In this article, the construct (convergent and discriminant) validity of the DS-II is reported. To provide evidence for convergent validity, we expected to yield findings comparable to those reported with the original DS. To provide evidence for discriminant validity, discrimination between high-level and low-level functioning/symptomatic patients was anticipated as well as determination of the number of DS-II points needed to demonstrate an MCID. To further examine discriminant validity, we expected comorbidity with major depression for high levels of demoralization but divergence at moderate levels.

MATERIALS AND METHODS

Design and Patients

This observational study was conducted across 3 sites in Melbourne, Australia: Monash Health, Cabrini Health, and Calvary Health Care Bethlehem, all of which are acute metropolitan hospitals. Approval was received from human research ethics committees at all participating institutions. Patients were recruited from June 2013 to November 2014, and their demographic and medical data were obtained from medical records. Patients were eligible if they had advanced, progressive disease and were excluded if they were too frail or unwell medically to consent, unable to speak English, and/or had cognitive impairment. Eligibility was determined by the patient's treating physician.

Measures

Sociodemographic and medical details

The sociodemographic and medical details included primary diagnosis, duration of illness, inpatient or outpatient status, treatment type, supportive care status (ie, receiving counseling), age, sex, marital status, religion, educational achievement, and employment status.

DS-II

The DS-II is comprised of 16 items rated on a 3-point Likert scale, including 0 (*never*), 1 (*sometimes*), and 2 (*often*), with higher scores indicative of higher levels of demoralization (score range, 0-32).[1] It contains two 8-item factors: *Meaning and Purpose* and *Distress and Coping Ability*. The DS-II has demonstrated good internal reliability ($\alpha = .89$) for all patients and test-retest reliability in symptomatically stable patients (intraclass correlation = 0.80).[1]

McGill Quality-of-Life Questionnaire

In this study, 9 items from the McGill Quality-of-Life Questionnaire (MQOL) were used, including 6 from the existential domain, 2 from the social support domain, and the single global quality-of-life item.[15-17] The overall scale has demonstrated good internal reliability ($\alpha = .83$) and convergent validity with other measures of quality of life in a palliative care setting.[18]

Patient Health Questionnaire

The Patient Health Questionnaire (PHQ-9) is a self-report measure designed to assess the presence and severity of a major depressive episode (MDE) and is comprised of 9 items

representing criteria for an MDE.[19-21] Items are rated on a 4-point Likert scale ranging from 0 (*not at all*) to 3 (*nearly every day*) in relation to whether the symptom has been experienced in the past 2 weeks. Of the 9 criteria, an MDE is indicated if 5 or more criteria are scored a minimum of 2 on the scale (symptoms have been present at least *more than half the days*) during the past 2 weeks. At least 1 of the endorsed criteria must be depressed mood or anhedonia. The criterion "Thought that you would be better off dead or hurting yourself in some way" is included as an endorsed item, regardless of duration (score, >0).[20] The PHQ-9 has demonstrated good internal reliability ($\alpha = .89$) and construct validity with other health-related measures.[20]

Schedule of Attitudes Toward Hastened Death

The 20-item Schedule of Attitudes Toward Hastened Death (SAHD) is a self-report measure designed to capture the desire for death in seriously ill patients.[22,23] A dichotomous answer format of *true* or *false* is used for each item. A strong desire to die corresponds with endorsement of 10 or more items. The SAHD has demonstrated good reliability ($\alpha = .88$-$.89$) and convergent validity with other measures of desire for death, depression, and hopelessness in a study of individuals living with human immunodeficiency virus and acquired immunodeficiency syndrome and in a study of terminally ill patients.[22,23]

Will-to-Live rating

Respondents rated the intensity of their current "will to live" on a scale from 0 (*no will to live*) to 10 (*strong will to live*). The Will-to-Live (WTL) rating was validated in 1999 by Chochinov et al,[24] who studied a cohort of patients who were receiving palliative care. Recordings of the strength of their will to live were examined on a daily basis to demonstrate its variability as symptom levels and well being fluctuated.[24]

Memorial Symptom Assessment Scale

The Memorial Symptom Assessment Scale (MSAS) was used to measure symptom burden of 32 symptoms (physical and psychological).[25] It has demonstrated good reliability ($\alpha = .82$) in patients with cancer and has been extensively validated in the palliative care setting.[25] The MSAS provides a total score and 3 subscale scores, including a global distress index, physical symptomatology score, and psychological distress score.

Statistical Analyses

Given the inevitable skew present in the DS-II data and the scale of measurement was ordinal,[1] nonparametric tests were conducted using SPSS version 22 (IBM Corporation, Armonk, NY). Bonferroni adjustments were made for multiple comparisons; otherwise, a significance value of $P < .05$ was set.

First, Spearman ρ coefficient correlations between the DS-II and sociodemographic and treatment-related factors were examined. Mann-Whitney U tests and Kruskal-Wallis tests were used to examine group differences in DS-II scores across sociodemographic and treatment-related factors. Next, convergent validity was assessed by examining the patterns of Spearman ρ coefficient correlations between the DS-II and the MSAS, MQOL, PHQ-9, SAHD, and WTL instruments.

To test discriminant validity, Mann-Whitney U tests were used to determine whether the DS-II differentiated patients with high versus low functional performance levels, global distress, physical symptoms, psychological symptoms, and total symptoms.[14] The MCID of the DS-II was calculated using these symptom measures as clinical anchors and the effect size (ES) of the Mann-Whitney U test. This was defined as Z divided by the square root of sample size (N) for each anchor,[26] where an ES of .1 indicates a small effect size, .3 indicates a moderate effect size, and .5 indicates a large effect size.[27] These nonparametric calculation methods were guided by the parametric alternatives described by Cella et al.[14]

Discriminant validity between demoralization and depression also was examined first by determining the DS-II cutoff scores with reference to an extreme groups design[28] (low scorers, 0-25th percentile; middle scorers, 25th-75th percentile; and high scorers, ≥75th percentile). The closest approximations to these percentile categories allowed by the data were then compared with PHQ-9 categories using cross-tabulation frequencies and a chi-square analysis. To aid interpretation, standardized residuals were calculated for each category with a 90% confidence interval set.

RESULTS

Sample Characteristics

In the current study, 296 patients were approached, and 228 provided informed consent to participate (response rate, 77%). In the consenting group, 15 patients were excluded because of incomplete questionnaires, 1 because of ineligibility (curative disease), and 1 because she was an extreme outlier based on age (26 years). Of the 211 patients analyzed, 51.7% were men, and the mean age ± standard deviation was 70.98 ± 12.00 years. The sample characteristics are summarized in Table 1.

TABLE 1. Sample Characteristics and Medical Information

Variable[a]	No. of Patients (%)
Total sample	211 (100)
Sex	
Men	109 (51.7)
Women	102 (48.3)
Age: Mean ± SD, y	70.98 ± 12.00
Age group, y	
40–59	44 (21)
60–79	108 (51.4)
≥80	58 (27.6)
Marital status	
Single	24 (11.4)
Married/de facto	113 (53.5)
Divorced/separated	36 (17.1)
Widowed	38 (18)
Religion	
Christianity	116 (55.2)
Other religion	19 (9.1)
No religion	75 (35.7)
Education	
Incomplete secondary education	49 (23.4)
Completed secondary education	47 (22.5)
Trade or college training	51 (24.4)
Tertiary education	62 (29.7)
Employment status	
Employed	18 (8.6)
Retired	144 (68.9)
Disability pension	47 (22.5)
Type of patient	
Inpatient	182 (86.3)
Outpatient	29 (13.7)
Primary diagnosis	
Cancer	189 (89.6)
Breast	25 (13.2)
Prostate	21 (11.1)
Gynecologic	11 (5.8)
Digestive system	48 (25.4)
Lung	32 (17)
Other	52 (27.5)
Cardiorespiratory disease	12 (5.7)
Neurologic disease	9 (4.2)
Renal failure	1 (0.5)
Duration of illness: Mean ± SD, mo	34.17 ± 45.47
Karnofsky index: Mean ± SD	56 ± 12
Treatment received/receiving	
Palliative chemotherapy	131 (62.1)
Radiation therapy	104 (49.3)
Surgery	121 (57.3)
Current medications	
Anxiolytic	94 (47.2)
Antidepressant	45 (23.1)
Opioid	167 (81.9)
NSAID	102 (54)
Receiving supportive psychosocial care	79 (37.4)

Abbreviations: NSAID, nonsteroidal anti-inflammatory drug; SD, standard deviation.
[a] There were missing data in some categories.

Associations With Sociodemographics and Medical Characteristics

Age was unrelated to total DS-II ($\rho = -.13$; $P = .059$; n = 210), unrelated to Meaning and Purpose ($\rho = -.04$; $P = .62$; n = 210), and negatively correlated with Distress and Coping Ability ($\rho = -.21$; $P = .002$; n = 210). There were no significant differences in DS-II scale scores for sex, marital status, or religion. The MQOL Social Support subscale, however, was inversely related to both DS-II subscales (Meaning and Purpose; $\rho = -.35$; $P < .001$; n = 178; Distress and Coping Ability: $\rho = -.29$; $P < .001$; n = 178) and total DS-II ($\rho = -.37$; $P < .001$; n = 178).

Distress and Coping Ability scores were significantly higher for patients who had a tertiary education (median score (Md), 4.5; n = 62) than for those without (median score, 3.0; n = 147; U test = 3677; z score = −2.22; $P = .03$) and for patients on a pension (median score, 5.0; n = 47) compared with retired patients (median score, 3.0; n = 144; U test = 2426.5; z score = −2.93; $P = .003$ [Bonferroni adjustment, .05/4]). There were no significant correlations between DS-II scores and primary diagnosis, cancer tumor type, or supportive care status. No correlation was observed between duration of illness and DS-II scores. Total DS-II scores were higher for patients who were receiving or had received radiation therapy (median score, 7.0; n = 104) than for patients who had not received radiation (median score, 6.0; n = 97; U test = 4227; z score = −1.99, $P = .047$). Patients who were currently receiving an anxiolytic also had higher scores on the total DS-II (median score, 7.0; n = 94) than patients who were not receiving an anxiolytic (median score, 5.0; n = 105; U test = 4054; z score = −2.18; $P = .029$).

Convergent Validity

Descriptive statistics for the MSAS, MQOL, PHQ-9, SAHD and WTL, along with their correlation with the DS-II scales, are reported in Table 2. For the total DS-II score, there were moderate-to-strong, positive correlations with psychological symptom burden, depression, and desire to die. In addition, the results revealed that there were moderate-to-strong, negative correlations between total DS-II scores and quality of life, social support, existential well being, and will to live.

Similar patterns were observed on the DS-II subscale level, as indicated in Table 2. Psychological symptom burden had a higher correlation with Distress and Coping Ability than with Meaning and Purpose, whereas Meaning and Purpose had a stronger correlation with the MQOL subscales, the desire to die, and the will to live.

Discriminant Validity

Mann-Whitney U test results indicated that patients who reported higher global distress (>1.0) had significantly higher demoralization scores (median score, 8.5; n = 110)

TABLE 2. Descriptive Statistics From the Memorial Symptom Assessment Scale, the McGill Quality-of-Life Questionnaire, the Patient Health Questionnaire, the Schedule of Attitudes Toward Hastened Death, and Will-to-Live Ratings, Plus Spearman Correlations With the Demoralization Scale-II

							DS-II		
			Score				Spearman Correlation		
Scale	Content	No. of Patients[a]	Min	Max	Mean	SD	Meaning and Purpose	Distress and Coping Ability	Total
MSAS	psychological distress	192	0	3.67	0.95	0.8	.49[b]	.65[b]	.64[b]
MQOL	QoL	180	0	10	7.59	2.47	−.40[b]	−.34[b]	−.41[b]
	Existential well being	181	0.33	10	7.45	2	−.57[b]	−.45[b]	−.57[b]
PHQ-9	MDE	183	0	1			.37[b]	.41[b]	.41[b]
SAHD	Desire to die	162	0	16	4.14	3.85	.43[b]	.23[c]	.39[b]
WTL	Will to live	120	0	10	8.28	2.29	−.49[b]	−.25[c]	−.44[b]

Abbreviations: DS-II, Demoralization Scale-II; Max, maximum; MDE, major depressive episode; Min, minimum; MQOL, McGill Quality-of-Life Questionnaire; MSAS, Memorial Symptom Assessment Scale; PHQ-9, Patient Health Questionnaire; SAHD, Schedule of Attitudes Toward Hastened Death; SD, standard deviation; WTL, Will-to-Live rating.

[a] The number of patients varies because some were missing data.

[b] $P < .001$.

[c] $P < .01$.

TABLE 3. Cross-Tabulation Frequencies Between Demoralization and Major Depression

	Major Depressive Episode		
Demoralization[a]	No	Yes	Total
Low (0–3)			
Percentage of total	32.8	0.5	33.3
Count	60	1	
Expected count	54	7	
Standardized residual	0.8	−2.3	
Moderate (4–10)			
Percentage of total	36.6	1.6	38.3
Count	67	3	
Expected count	62	8	
Standardized residual	0.6	−1.8	
High (≥11)			
Percentage of total	19.1	9.3	11.5
Count	35	17	
Expected count	46	6	
Standardized residual	−1.6	4.5	

[a] Standardized residuals ± 1.65 were deemed significant (90% confidence interval). Expected cell frequency was met (>5).

than patients who reported lower global distress (median score, 3.0; n = 82), with a median difference of 5.5 points (ES = .49; *U* test = 1946; *z* score = −6.75; $P < .001$). Patients with higher MSAS physical symptoms (>1.0) had significantly higher demoralization scores (median score, 7.0; n = 115) than patients with lower physical symptoms (median score, 5.0; n = 76; median difference, 2 points; ES = .19; *U* test = 3391; *z* score = −2.63; $P = .009$). Regarding MSAS psychological distress, patients with higher scores (>1.0) had significantly higher levels of demoralization (median score, 11.0; n = 72) than patients with lower scores (median score, 4.0; n = 120), with a median difference of 7 points (ES = .42; *U* test = 1370.5; *z* score = −7.93; $P < .001$). Patients with higher levels on MSAS total symptoms (>1.0) had significantly higher levels of demoralization (median score, 10.0; n = 73) than patients with lower levels (median score, 4.0; n = 118; median difference, 6 points; ES = .39; *U* test = 2301.5; *z* score = −5.42; $P < .001$). Higher functioning patients (Karnofsky rating >70; *able to carry on normal activity*)[29] reported lower demoralization scores (median score, 3.0; n = 27) than patients with lower performance ratings (median score, 7.0; n = 163), with a median difference of 4 points (ES = .18; *U* test = 1538.5; *z* score = −2.51; $P = .012$). These observed median differences and subsequent effect sizes suggest that a difference of at least 2 points on the DS-II between groups may be clinically meaningful (MCID).

To test for discriminant validity between major depression and demoralization, the DS-II data were divided into 3 categories: low scorers (scores of 0-3; 65 patients; 30.8%), middle scorers (scores of 4-10; 85 patients; 40.3%), and high scorers (scores ≥11; 61 patients; 28.9%). The PHQ-9 was completed by 183 patients, and 21 (11.5%) met diagnostic criteria for an MDE. Table 3 lists the cross-tabulation frequencies and associated standardized residuals (±1.64 = significant, 90% confidence interval) between demoralization and the presence of major depression. Chi-square analysis indicated a significant correlation between PHQ-9 categories and DS-II categories (chi-square statistic = 32.41; n = 183; $P < .001$), indicating that demoralized patients were significantly more likely to be depressed than those who

were not demoralized. The standardized residuals indicated that individuals with low and moderate demoralization were more likely than chance to not be experiencing an MDE, whereas individuals with high demoralization were more likely than chance to be experiencing an MDE.

DISCUSSION

The DS-II is a refined measure of demoralization consisting of 16 items and 2 subscales: Meaning and Purpose and Distress and Coping Ability. In this study, the DS-II demonstrated convergent validity with measures of psychological symptom burden, quality of life, existential well being, depression, and attitudes toward the end-of-life (including the desire to die and the will to live).

Compared with the Distress and Coping Ability subscale, the Meaning and Purpose subscale yielded a stronger correlation with desire to die and will to live. This observed difference suggests that loss of meaning and purpose has a more profound impact on attitudes toward the end of life, and perhaps on the development of suicidal ideation,[2] than a breakdown in coping and general distress. This is consistent with research indicating that meaninglessness and hopelessness were mediators of the correlation between depression and suicidality[3,24,30] and with recent research by Fang and colleagues,[31] who reported that demoralization had more influence on suicidal ideation than depression.

Furthermore, Meaning and Purpose had a stronger observed correlation with quality of life indicators than Distress and Coping Ability. Thus, it appears that a loss of meaning and purpose has a more profound effect on quality of life than general dysphoria, disheartenment, and a sense of incompetence, as measured by the Distress and Coping Ability subscale. In contrast, Distress and Coping Ability yielded a stronger correlation with psychological symptom burden than Meaning and Purpose. This outcome suggests that the Distress and Coping Ability subscale is a better measure of global psychological distress than the Meaning and Purpose subscale.

Previously, establishment of the discriminant validity of the DS was hampered by the lack of a clear hypothesis. In 2011, Mehnert and colleagues[6] highlighted their finding that divergence between depression and demoralization is evident at moderate levels of the construct. Here, we have demonstrated that comorbidity between depression and demoralization exists at high levels of demoralization but not at moderate levels, thus supporting the findings of Mehnert et al. From anecdotal evidence, it is clear that comorbidity can be well understood when patients with major depression develop suicidality, because prominent demoralization is a key component of this presentation. However, in the moderate demoralization range, many patients do not meet criteria for major depression yet will have a constellation of symptoms that constitute a form of adjustment disorder. These features may be more usefully conceptualized as adjustment disorder with demoralization than adjustment disorder with depressive symptoms. We have previously suggested that both the patient and their clinician might better understand such a classification, because it more accurately describes the patient's experience and could allow for the patient to feel more clearly heard.[3] Thus, one approach would be to consider a separate diagnosis of demoralization syndrome[2]; however, the current data do not support this argument. Alternatively, demoralization could be added as a specifier to adjustment disorder.[3] Overall, future research is required to continue to clarify the diagnostic role of demoralization in mental and physical health.[32]

We recognize the limitation of using interquartile ranges to determine cutoffs for the DS-II. Unfortunately, we had no alternative analytic means of establishing cutoff points at this time. To determine reliable clinical significance levels for demoralization, scores on the DS-II need to be compared with a "gold standard" measure, typically a validated diagnostic interview. Such an interview has yet to be developed. Nonetheless, we chose to examine the divergence of demoralization from depression in an exploratory manner, because we believe the question of comorbidity is of strong clinical interest. Discriminant validity was strengthened by demonstrating different functional performance levels and high/low symptoms with high versus low DS-II scores. Finally, the estimation of a minimally important difference on the DS-II has provided clinically relevant information.

Examination of the associations between DS-II scores and sociodemographic and treatment-related factors revealed both consistencies and disparities with previous findings for the DS.[3] For example, no differences were observed in DS-II scores across marital status, although previous research has generally indicated that being in a relationship or living with others is associated with lower levels of demoralization.[3] However, one study reported no differences in demoralization by marital status.[33] Nonetheless, we observed a small, inverse correlation between social support and demoralization, in line with previous findings.[3] Being on a disability support pension was associated with increased distress and reduced coping compared with being retired. The finding that patients with a tertiary education reported slightly higher distress and poorer coping than patients without a tertiary

education adds to the mixed evidence for the association between education and demoralization.[3] Patients who were receiving radiation therapy or had done so previously reported slightly higher demoralization than patients who were receiving other treatments, possibly reflecting more serious disease status. The finding that patients currently receiving an anxiolytic medication were slightly more demoralized is another possible marker of illness complexity. Finally, we observed no correlation between demoralization and primary diagnosis, cancer type, duration of illness, or supportive care status.[7] Caution is warranted in the interpretation of these associations, however, because they are weak.

There are additional study limitations that need to be considered. The homogeneity of the sample was problematic, in that the majority of patients were older, retired, Caucasian, and Christian. Therefore, future research is required to replicate the current findings in a heterogenous sample, longitudinally and across cultures. Longitudinal research will assist in understanding the causal nature of the various associations identified between demoralization, sociodemographics, and treatment-related factors. A question also remains as to whether the DS-II is suitable for detecting intervention-related changes. Change in DS-II scores after the treatment of physical symptoms will help clarify the measure's responsiveness as a measure of state rather than trait.

Overall, in conjunction with our report on the internal validity of the DS-II,[1] the current findings indicate that the scale is a suitable measure of demoralization that has demonstrated sound psychometric properties. It is hoped this tool will be used in research and prove timely in an era where trials of meaning-centered interventions are currently emerging. Clinically, it is anticipated that the brevity of the DS-II means it can be used readily to assist clinicians when making a clinical judgment about a patient's mental state.

FUNDING SUPPORT

This study was supported by the Bethlehem Griffiths Research Foundation.

CONFLICT OF INTEREST DISCLOSURES

The authors made no disclosures.

AUTHOR CONTRIBUTIONS

Sophie Robinson: Conceptualization, methodology, validation, formal analysis, investigation, data curation, writing–original draft, writing–review and editing, and project administration. **David. W. Kissane:** Conceptualization, methodology, validation, formal analysis, investigation, resources, writing–original draft, writing–review and editing, visualization, supervision, project administration, and funding acquisition. **Joanne Brooker:** Conceptualization, methodology, validation, formal analysis, writing–review and editing, and supervision. **Courtney Hempton:** Investigation, data curation, writing–review and editing, and project administration. **Natasha Michael:** Conceptualization, methodology, investigation, writing–review and editing, visualization, supervision, and project administration. **Jane Fischer:** Conceptualization, methodology, resources, and writing–review and editing. **Michael Franco:** Conceptualization, methodology, investigation, writing–review and editing, and supervision. **Merlina Sulistio:** Conceptualization, methodology, investigation, writing–review and editing, visualization, supervision, and project administration. **David M. Clarke:** Conceptualization, methodology, validation, formal analysis, writing–review and editing, and supervision. **Mehmet Ozmen:** methodology, software, formal analysis, writing–review and editing, visualization, and supervision. **Sue Burney**: Conceptualization, writing–review and editing, and supervision.

REFERENCES

1. Robinson S, Kissane DW, Brooker J, et al. Refinement and revalidation of the Demoralization Scale: the DS-II—internal validity. *Cancer.* 2016;000:000-000.
2. Kissane DW, Clarke DM, Street AF. Demoralization syndrome: a relevant psychiatric diagnosis for palliative care. *J Palliat Care.* 2001; 17:12-21.
3. Robinson S, Kissane DW, Brooker J, Burney S. A systematic review of the demoralization syndrome in individuals with progressive disease and cancer: a decade of research. *J Pain Symptom Manage.* 2015;49:595-610.
4. Robinson S, Kissane DW, Brooker J, Burney S. A review of the construct of demoralization: history, definitions, and future directions for palliative care. *Am J Hosp Palliat Care.* 2016;33:93-101.
5. Kissane DW, Wein S, Love A, Lee XQ, Kee PL, Clarke DM. The demoralization scale: a report of its development and preliminary validation. *J Palliat Care.* 2004;20:269-276.
6. Mehnert A, Vehling S, Hocker A, Lehmann C, Koch U. Demoralization and depression in patients with advanced cancer: validation of the German version of the Demoralization Scale. *J Pain Symptom Manage.* 2011;42:768-776.
7. Mullane M, Dooley B, Tiernan E, Bates U. Validation of the demoralization scale in an Irish advanced cancer sample. *Palliat Support Care.* 2009;7:323-330.
8. Costantini A, Picardi A, Brunetti S, et al. Italian version of Demoralization Scale: a validation study. *Riv Psichiat.* 2013;48:234-239.
9. Hung H, Chen H, Chang Y, et al. Evaluation of the reliability and validity of the Mandarin version of Demoralization Scale for cancer patients. *J Intern Med Taiwan.* 2010;21:427-435.
10. DeVellis RF. Scale Development: Theory and Applications. 3rd ed. North Carolina: Sage Publications, 2012.
11. Zbozinek TD, Rose RD, Wolitzky-Taylor KB, et al. Diagnostic overlap of generalized anxiety disorder and major depressive disorder in a primary care sample. *Depress Anxiety.* 2012;29:1065-1071.
12. American Psychiatric Association, ed. Diagnostic and Statistical Manual of Mental Disorders (DSM-5). 5th ed. Washington, DC: American Psychiatric Publishing; 2013.
13. Kissane DW. Demoralization: a life-preserving diagnosis to make for the severely medically ill. *J Palliat Care.* 2014;30:255.
14. Cella D, Eton DT, Lai J-S, Peterman AH, Merkel DE. Combining anchor and distribution-based methods to derive minimal clinically important differences on the Functional Assessment of Cancer Therapy (FACT) anemia and fatigue scales. *J Pain Symptom Manage.* 2002;24:547-561.
15. Cohen SR, Hassan SA, Lapointe BJ, Mount BM. Quality of life in HIV disease as measured by the McGill quality of life questionnaire. *AIDS.* 1996;10:1421-1427.

16. Cohen SR, Mount BM, Strobel MG, Bui F. The McGill quality of life questionnaire: a measure of quality of life appropriate for people with advanced disease. A preliminary study of validity and acceptability. *Palliat Med.* 1995;9:207-219.
17. Cohen SR, Mount BM, Tomas JJ, Mount LF. Existential well-being is an important determinant of quality of life: evidence from the McGill quality of life questionnaire. *Cancer.* 1996;77:576-586.
18. Cohen SR, Mount BM, Bruera E, Provost M, Rowe J, Tong K. Validity of the McGill quality of life questionnaire in the palliative care setting: a multi-centre Canadian study demonstrating the importance of the existential domain. *Palliat Med.* 1997;11:3-20.
19. Kroenke K, Spitzer RL. The PHQ-9: a new depression diagnostic and severity measure. *Psychiatr Ann.* 2002;32:1-7.
20. Kroenke K, Spitzer RL, Williams JB. The PHQ-9 J. *Gen Intern Med.* 2001;16:606-613.
21. Spitzer RL, Kroenke K, Williams JB. Validation and utility of a self-report version of PRIME-MD. *JAMA.* 1999;282:1737-1744.
22. Rosenfeld B, Breitbart W, Galietta M, et al. The schedule of attitudes toward hastened death. *Cancer.* 2000;88:2868-2875.
23. Rosenfeld B, Breitbart W, Stein K, et al. Measuring desire for death among patients with HIV/AIDS: the schedule of attitudes toward hastened death. *Am J Psychiatry.* 1999;156:94-100.
24. Chochinov HM, Tataryn D, Clinch JJ, Dudgeon D. Will to live in the terminally ill. *Lancet.* 1999;354:816-819.
25. Portenoy RK, Thaler HT, Kornblith AB, et al. The Memorial Symptom Assessment Scale: an instrument for the evaluation of symptom prevalence, characteristics and distress. *Eur J Cancer.* 1994; 30:1326-1336.
26. Fritz CO, Morris PE, Richler JJ. Effect size estimates: current use, calculations, and interpretation. *J Exp Psychol Gen.* 2012;141:2-18.
27. Coolican H. Research Methods and Statistics in Psychology. 6th ed. London and New York: Psychology Press; 2014.
28. Preacher KJ. Extreme groups designs. In: Cautini RL, Lilienfeld SO, eds. The Encyclopedia of Clinical Psychology. Vol. 2. Hoboken, NJ: John Wiley & Sons, Inc; 2015:1189-11924.
29. Mor V, Laliberte L, Morris JN, Wiemann M. The Karnofsky performance status scale: an examination of its reliability and validity in a research setting. *Cancer.* 1984;53:2002-2007.
30. Beck AT, Kovacs M, Weissman A. Hopelessness and suicidal behavior. *JAMA.* 1975;234:1146-1149.
31. Fang CK, Chang MC, Chen PJ, et al. A correlational study of suicidal ideation with psychological distress, depression, and demoralization in patients with cancer. *Support Care Cancer.* 2014;22:3165-3174.
32. De Figueiredo JM. Distress, demoralization and psychopathology: diagnostic boundaries. *Eur J Psychiatr.* 2013;27:61-73.
33. Lee CY, Fang CK, Yang YC, et al. Demoralization syndrome among cancer outpatients in Taiwan. *Support Care Cancer.* 2012;20:2259-2267.