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CONSTRUCT VALIDITY OF THE EMOTIONAL DISTRESS INVENTORY IN PATIENTS WITH CANCER

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Abstract: The purpose of this study is to evaluate the factor structure of the Emotional Distress Inventory (EDI), a brief 15-item self-report measure of emotional distress in a sample of 238 cancer patients. The conceptual framework that guided the development of the EDI, factor structure,internal consistency, and convergent validity are reported. Emotional distress items were developed and administered to cancer patients who initiated chemotherapy and/or radiation treatments at Morton Plant Hospital Cancer Center in Clearwater, Florida, USA. Item responses were examined by Factor Analyses of Principal Components with promax rotations, which yielded three factors. Strong alpha coefficients and correlations between the EDI, HADS and BSI offer impressive evidence of internal consistency and convergent validity. The EDI presents three subscales that assess Anxiety/Depression, Hopelessness, and Anger Expression as components of emotional distress. We also discuss the important implications of these subscales, particularly the inclusion of anger expression and hopelessness, in the assessment of emotional distress in cancer patients.

Key words: cancer, emotional distress, anxiety, anger, hopelessness, depression.

Resumen: El propósito de este estudio es evaluar la estructura factorial del Inventario de Distrés Emocional (EDI), un instrumento de medición del distrés emocional de 15 ítems, en una muestra de 238 pacientes con cáncer que iniciaron sus tratamientos con radioterapia y/o quimioterapia en el Hospital Morton Plant en la ciudad de Clearwater, Florida, USA. Se llevó a cabo un análisis factorial exploratorio mediante componentes principales y método de rotación promax con autovalores superiores a 1. El primer factor está configurado por 7 ítems correspondientes a síntomas de ansiedad y depresión. El segundo factor está agrupado por 4 ítems relacionados con sentimientos de desesperanza, mientras un tercer factor presenta 4 ítems que manifiestan la expresión de ira. Los resultados obtenidos nos indican que el Inventario de Distrés Emocional presenta una estructura factorial consistente con el marco conceptual en el cual se basó la construcción del instrumento, como también un elevado nivel de consistencia interna y validez convergente.

Palabras clave: cáncer, distrés emocional, ansiedad, ira, desesperanza, depresión.

Title: *Validez de constructo del Inventario de Distrés Emocional en pacientes con cáncer*

The recognition of distress in cancer patients has been a top priority in recent years within psychosocial oncology programs across the world (Bleiker, Pouwer, van der Ploeg, Leer & Ader, 2000; Enskar & von Essen, 2007; Larsson, Haglund & von Essen, 2009; Olivares Crespo, Sanz Cortes & Roa Alvarado, 2004; Sirgo, Diaz Ovejero, Cano-Vindel & Perez Manga, 2001). However, still approximately 50% of all the individuals diagnosed with cancer in the United States experience significant levels of emotional distress, and many of these symptoms are unrecognized and untreated (Jacobsen & Ransom, 2007). The U.S. National Comprehensive Cancer Network (NCCN) Practice Guidelines (1999) defines distress in cancer patients as "an unpleasant emotional experience of a psychological (cognitive, behavioral, emotional), social, and/or spiritual nature that interferes with the ability to cope effectively with

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cancer and its treatments" (p. 113). The NCCN further states that this distress ranges along a continuum, from "common normal feelings of sadness, vulnerability, and fears to problems that can become disabling, such as depression, anxiety, panic, social isolation, and spiritual crisis" (NCCN Practice Guidelines, 1999, p. 113). There is accumulating evidence in the literature indicating that cancer patients experience significant levels of distress at initial diagnosis, at recurrence or progression of the disease, and at terminal stage (Cella, Mahon & Donovan, 1999; Frojd, Larsson, Lampic & von Essen, 2007; Juan, et al., 2003; Neipp, Lopez-Roig, Terol & Pastor Mira, 2008; Zabora, 1998).

Studies on prevalence of distress in cancer patients have reported that about 29% to 47% of patients who have received a diagnosis of cancer report significant levels of emotional distress (Massie & Holland, 1990). The occurrence of significantly elevated levels of anxiety as compared to a normal population has been reported to be as high as 85% for newly diagnosed cancer patients. In addition, the incidence of depression in cancer patients varies from 20% to 25% in United States (Breitbart, 1995), and 72% to 89% in Sweden (Frojd et al., 2007) with the prevalence increasing to 77% for those with advanced illness (Ford, Lewis & Fallowfield, 1995; Pirl & Roth, 1999).

Emotional distress, particularly, is considered to be an important construct in the field of health, and remains a legitimate topic of study (Zabora, Brintzenhofeszoc, Curbow, Hooker & Piantadosi, 2001). Although this concept is not comparable to clinical depression or major psychiatric illnesses, individuals with such diffuse types of complaints are in serious need of psychological and behavioral interventions in the medical field (Andersen et al.,2008; Cano-Vindel, Sirgo & Perez-Manga, 1994; Hewitt, Herdman & Holland, 2004; Sosa, Capafons & Caballeira, 1999).The diagnosis of cancer and the strain caused by the overwhelming side effects of its treatments are a perfect example of a potential stressor event capable of evoking emotional distress (Sebastian, Mateos & Prado, 2000). We define this state of emotional distress as marked by "subjective feelings that vary in intensity from sadness, uncertainty, confusion and worry to more significant symptoms such as anxiety, the expression of anger, social isolation and hopelessness". Our conceptual framework of the emotional distress construct in patients with cancer includes the expression of anger, hopelessness, and a significant degree of underlying multidimensionality (factors that are separated, but highly correlated), and should be clearly distinguished from clinical depression (Moscoso, McCreary, Goldenfarb, Knapp & Reheiser, 2000).

Research by Dohrenwend, Shrout, Egri and Mendelsohn (1980) on the psychological distress construct confirms the presence of highly correlated factors with a large amount of information coming from one major dimension. In support of this observation of a major dimension contributing to the emotional distress construct, considerable research has recognized the importance of considering anxiety and depression as mutually inclusive and coexisting components of emotional distress (Gottschalk & Hoigaard-Martin, 1986). In this regard, Cassileth, Lusk, Hutter, Strouse and Brown (1984) suggested that anxiety and depressive symptoms might represent two labels for a single, broad underlying construct.

It is critically important to recognize that conceptual clarity is essential to empirical progress. Therefore, in order to develop a valid and reliable screening measure, we must distinguish emotional distress, conceptually and empirically, from

those factors which are only indirectly related to the construct. The distinction between somatic distress and somatic symptoms or complaints is of critical concern. Somatic distress is regarded in the literature as a preoccupation with physical symptoms (Gillespie, Kirk, Heath, Martin & Hickie, 1999; Somerfield, Stefanek, Smith & Padberg, 1999). However, somatic symptoms or complaints, such as lack of appetite, difficulty with sleep, and a lack of energy, though having the capacity to generate significant emotional distress, are not exclusively related to the emotional distress construct. Furthermore, somatic symptoms are particularly in the case of cancer patients, more likely to be due to the side effects of cancer treatments than to the emotional state of the patient. Consequently, in the development of this screening measure, we did not include somatic symptom items to ensure a valid and reliable measurement of the emotional distress construct in patients with cancer (Moscoso, McCreary, Goldenfarb, Knapp & Rohr, 1999).

The screening of emotional distress as part of an initial psychosocial assessment, may offer an opportunity to identify high-risk patients before they receive their diagnosis of cancer (Rodgers, Martin, Morse, Kendell, & Verrill, 2005). Subsequent assessments of emotional distress taken after a diagnosis of cancer, following surgery, or upon beginning chemotherapy or radiation treatments could provide invaluable evidence of the need for psychological intervention to treat or manage these debilitating symptoms (Andersen et al., 2007). Despite the negative impact of emotional distress on cancer patients and its effects on quality of life, the screening for such emotional states has not been a consistent part of routine procedures in cancer programs (Ibbotson, Maguire, Selby, Priestman & Wallace, 1994; Jacobsen & Ransom, 2007).

The standardized assessment of emotional distress is at least as problematic as its own definition. A survey of cancer programs in United States reports relying only on interviews for the assessments of emotional distress for cancer patients, as opposed to the utilization of screening instruments (Jacobsen & Ransom, 2007). Unfortunately, there has been relatively little systematic and methodological effort to evaluate or improve existing measures. Cancer programs could clearly benefit from a brief, easy to administer, yet comprehensive form of evaluation that identifies emotionally distressed cancer patients, who are experiencing not only anxiety and depression, but also anger and hopelessness. Although improvements in the assessment of general distress have been reported in recent years, the need for a standardized measure of emotional distress designed to eliminate the potentially confounding effects of somatic symptoms frequently associated with therapeutic treatments in cancer patients has become increasingly important. Therefore, further research is necessary to develop a brief, psychometrically sound screening instrument to assess all the above-mentioned components of emotional distress in patients with cancer.

Measuring emotional distress in cancer patients requires a coherent theoretical framework that includes anxiety, depression as well as the expression of anger and hopelessness related constructs (Moscoso et al., 1999; Spielberger & Reheiser, 2009). Anger has been underestimated partly because of the belief that anger is a normal and logical emotional reaction to a life threatening illnesses, particularly within a cross-cultural context (Moscoso & Spielberger, 1999). More precise definitions of these concepts are needed to guide the development of a new assessment measure to be used with cancer patients. They should distinguish the negative affectivity and mood from somatic aspects of anxiety and

depression, and recognize conceptually and empirically the differences between the experience, expression, and control of anger (Spielberger, Moscoso & Brunner, 2005).

The major purpose of this article was to report the factor structure of a screening measure of emotional distress in cancer patients. The Emotional Distress Inventory (EDI) was designed to provide a simple yet reliable instrument for use in the medical field with cancer patients, and identify individuals at high-risk of emotional distress when they are first diagnosed with cancer or upon receiving treatment. The EDI assesses the discrete but closely related dimensions of emotional distress that include anxiety, depression, anger expression and hopelessness. This 15-item screening measure is sensitive to the underlying multidimensionality of the construct.

Method

Participants

A sample size of at least 150 participants was determined to be necessary to satisfy the subjects-to-variable (STV) ratio based on the number of variables (Bryant & Yarnold, 1995; Gorsuch, 1988). The EDI was administered to 238 cancer patients, 162 females(68%) and 76 males (32%), who initiated either radiation and/or chemotherapy treatment in the outpatient services at Morton Plant Hospital Cancer Center in Florida. They ranged in age from 18 to 68 years old (median age= 48). Minimal inclusion criteria for subjects were: (1) 18 years of age or greater; (2) no history of psychiatric illness or substance abuse; (3) completion of the informed consent form. Psychiatric illness or substance abuse were considered to be potentially confounding factors for the evaluation of emotional distress in cancer patients. Consequently, 13 patients (5%) were ruled out because they had a previous history of psychiatric illness or were undergoing psychological treatment. Fifty eight patients (24%) from the total sample were Hispanic. The sample consisted of patients diagnosed with lung cancer 32 (13%), breast cancer 96 (40%), prostate cancer 84 (35%), colorectal cancer 19 (8%), and ovarian cancer 7 (3%). Most of the patients in this sample were newly diagnosed with cancer, except for 17 (7%) patients with lung cancer, who were experiencing recurrence and initiating radiation and/or chemotherapy treatments for their relapse.

Instruments

The Emotional Distress Inventory (EDI) is a 15-item, brief self-report screening inventory designed to measure the presence and severity of emotional distress as a multi-factor, general mood disorder defined as subjective feelings that vary in intensity from sadness, uncertainty, confusion and worry to more significant symptoms such as anxiety, the expression of anger, social isolation and hopelessness in cancer patients. This instrument carefully discriminates the confounding effects of somatic symptoms more commonly associated with cancer treatment. The inventory evaluates three distinct dimensions of emotional distress, which include anxiety/depression, hopelessness, and anger expression (Moscoso et al., 1999). In addition, the instrument provides clinical decision-making support at intake and during the course of treatment. In responding to each EDI item, patients reported to "what extent they had experienced each emotional distress-related symptom during the past month, including today" by rating themselves on a 4-point scale: (1) not at all; (2) sometimes; (3) often; (4) very much so.

In the construction of the EDI, any items describing somatic symptoms commonly associated with the treatment of cancer patients were carefully not taken into consideration. This is consistent with

previous studies that report confounding issues with those items that assess somatic symptoms of emotional distress because they overlap with somatic symptoms caused by cancer-related treatments (Cassileth et al., 1984). The first step was the development of a pool of items based on face validity of the emotional distress construct, reading difficulty, and complexity of meaning. This process of item building was guided by empirical considerations to measure the underlying dimensions of emotional distress: anxiety, depression, hopelessness and anger expression.

The initial pool of 20 emotional distress items were conceptually based and written specifically for the EDI, or were adapted and slightly modified from existing measures of mood disturbance and personality affect. Nine staff members and patients of Morton Plant Hospital Cancer center rated the pool of 20 emotional distress items. These judges had to agree on the content validity of each item based on how clearly it assessed mood disturbance. Five of the initial 20 items (25%) were eliminated based on the ratings of these judges, due to awkward wording or redundant content (Moscoso et al., 1999).

The Brief Symptom Inventory (BSI) is an 18-item measure developed from its longer parent instruments, the SCL-90-R and the BSI 53-item scales (Derogatis, 1993). The stability coefficient for the GSI was 0.90, strongly indicating that the BSI is a reliable measure over time. The BSI is a self-report inventory designed to offer an interpretive report profile of scale scores for Somatization, Depression, and Anxiety. In responding to the BSI, patients reported "How much that problem has distressed or bothered you during the past 7 days including today" by rating themselves on a 5-point scale: (0) not at all; (1) a little bit; (2) moderately; (3) quite a bit; (4) extremely.

The Hospital Anxiety and Depression Scale (HADS) is a 14-item measure of the severity of anxiety and depressive symptoms (Zigmond & Snaith, 1983). It was designed for patients with a general physical illness placed in a hospital. It should be noted, however, that the HADS has both positive and negative anxiety and depression affectivity items. In responding to the HADS items, patients are instructed to "Read each item and underline the reply which comes closest to how you have been feeling in the past week" and rate themselves on a 4-point scale. The variety of response sets and the use of both positive and negative affectivity items are of concern when attempting to validate anxiety and depression scale scores. This difference has been found by Spielberger and colleagues to be a very significant factor in the assessment of anxiety and depression (Spielberger, Reheiser, Owen, & Sydeman 2003). The authors reported correlations ranged from +0.76 to +0.41 for the anxiety items, and the significance of all these was $p<0.01$. The items in the depression subscale had correlations ranging from +0.60 to +0.30, all significant beyond $p<0.02$ (Zigmond & Snaith, 1983).

Procedure

Patients receiving treatment at Morton Plant Hospital Cancer Center were informed about the study by the research coordinator. Those who met inclusion criteria to participate in the study were provided a written informed consent statement. The consent form clearly emphasized that participation in the study was voluntary, and that all information would be strictly confidential. The questionnaire packet, consisting of demographic data queries and three measures of emotional distress, the EDI, the HADS, and the BSI, were administered during the course of their intake for radiation treatment sessions at Lykes Center for Radiation Therapy and/or chemo-

Table 1. Factor analysis of the 15 individual Emotional Distress Inventory (EDI) items for a combined sample of male and female cancer patients

Emotional Distress Inventory	Factor 1 Dep/Anx	Factor 2 Hopeless	Factor 3 Anger
EDI: Anxiety			
I feel strained (2)	.71		
I feel nervous (5)	.62		
I feel confused and restless (6)	.58		
I feel overwhelmed by "simple difficulties" (9)	.68		
EDI: Depression			
I worry that my condition will get worse (8)	.37	.31	
I feel sad (14)	.71		
I am not enjoying the things I usually do for fun (9)	.61		
EDI: Demoralization			
I feel distant from my friends (3)		.40	
I am losing hope in the fight against my illness (10)		.63	
I feel like a failure (15)		.49	
I am losing faith in my medical treatment (12)		.63	
EDI: Anger			
I get easily irritated (1)	.35	.41	
I am angrier than I am willing to admit (4)			.72
I feel angry (13)			.48
I "boil inside", but I try not to show it (11)			.66
Eigenvalue	6.30	.75	.62
Inter-factor Correlations	Factor 1 - Factor 2 = .59 Factor 1 - Factor 3 = .57 Factor 2 - Factor 3 = .45		

Note: The number in parentheses refer to the number of the items in the instrument

therapy treatment sessions at Powell Cancer Pavilion, both facilities being part of the Morton Plant Hospital Cancer Center in, Florida, USA. Each subject, having been given standardized oral and written instructions in English completed the demographic data information section and assessment tools. The study was approved by the Morton Plant Health Care Institutional Review Board.

Results

The responses to the 15 items comprising the Emotional Distress Inventory (EDI) were subjected to principle components factor analyses with promax rotations, both for male and female respondents. Exploratory factor analyses rather than confirmatory factor analysis were carried out, because such analyses were judged to be more conservative (Gorsuch, 1988). Well defined anxiety/depression as a main factor, and hopelessness and anger expression as two small factors, with Eigen va- lues greater than 1.0 were found for both, female and males respondents. The scree test and breaks criterion suggested that three factors should be extracted. The three factor promax solution for the combined sample provided a clear simple structure. The strong inter-factor correlations among these factors, .45 or greater, provide the statistical rational for using the promax rotation solutions. The salient factor loadings, equal to or greater than .35, are reported in Table 1 for the 15 items. Factor 1 consisted of seven (7) items with dominant

Table 2. Means, standard deviations, and alpha coefficients/item remainder correlations for a sample of male and female cancer patients on the Emotional Distress Inventory (EDI), its Anxiety, Depression, Hopelessness, and Anger subscales, and each of the 15 individual items

MEASURE/ITEM	N	Mean	Std Dev	Alpha/I.R.
EDI (Emotional Distress Inventory)	238	26.91	8.36	.91
EDI: Anxiety	238	7.61	2.87	.83
I feel strained (2)	238	2.03	.89	.68
I feel nervous (5)	238	2.03	.89	.65
I feel confused and restless (6)	238	1.83	.89	.71
I feel overwhelmed by "simple difficulties" (7)	238	1.71	.87	.61
EDI: Depression	238	7.86	2.93	.80
I worry that my condition will get worse (8)	238	2.08	.92	.62
I feel sad (14)	238	1.97	.94	.75
I am not enjoying the things I usually do for fun (9)	238	1.95	1.03	.57
EDI: Hopelessness	238	5.16	1.89	.72
I feel distant from my friends (3)	237	1.47	.83	.56
I am losing hope in the fight against my illness (10)	238	1.27	.62	.54
I feel like a failure (15)	238	1.27	.64	.47
I am losing faith in my medical treatment (12)	238	1.17	.47	.39
EDI: Anger	238	6.29	2.25	.78
I get easily irritated (1)	238	1.88	.80	.53
I am angrier than I am willing to admit (4)	237	1.54	.79	.66
I feel angry (13)	238	1.49	.65	.62
I "boil inside", but I try not to show it (11)	237	1.38	.66	.47

Note: The number in parentheses refer to the number of the items in the instrument

salient item loadings reflecting symptoms of anxiety and depression, whereas Factor 2 and 3 were composed of four (4) items each with content relating to hopelessness and anger expression respectively (see Table 1). Factor 2 was labeled hopelessness and Factor 3 was labeled anger.

The means, standard deviations, alpha coefficients and item remainder correlations for the EDI, the Anxiety, Depression, Hopelessness, Expression of Anger subscales, and the 15 individual items are reported in Table 2. The alpha for the total EDI scale is significantly high at .91 as well as the alphas for the brief four item subscales, ranging from .72 to .83. The item remainder correlations of .39 or greater provides further evidence of strong internal consistency for each of the brief 4 item subscales.

Pearson correlation coefficients analysis was used to evaluate the relationship among the EDI scale, its Anxiety (Anx), Depression (Dep), Hopelessness (Hop), and Anger (Ang) subscales, the HADS Anxiety (HADS-A) and Depression (HADS-D) scales, and the Brief Symptom Inventory (BSI) and its Somatization (BSI-S), Anxiety (BSI-A), and Depression (BSI-D) scales. The correlations for the cancer patients who completed these three measures and subscales are reported in Table 3. As might be expected, each of the scales and subscales of the three measures were very strongly correlated ($p<.001$). The greatest correlations were among the Anxiety and Depression subscales of each of the three measures. The Somatization scale of the BSI had the lowest correlations with the EDI and HADS due to the complete lack of physical symptom items comprising these last two inventories.

Table 3. Pearson correlation coefficients analysis for a sample of male and female cancer patients (N= 238) for the Emotional Distress Inventory (EDI),its Anxiety (Anx), Depression (Dep), Hopelessness (Hop), and Anger (Ang) subscales,the Hospital Anxiety and Depression survey (HADS) Anxiety (HADS-A) and Depression(HADS-D) scales, and the Brief Symptom Inventory (BSI), its Symptoms (BSI-S), Anxiety(BSI-A), and Depression (BSI-D) subscales.

	EDI	ANX	DEP	HOP	ANG	HADS-A	HADS-D	BSI	BSI-S	BSI-A	BSI-D
EDI		.90	.83	.76	.79	.81	.72	.80	.53	.77	.75
ANX	.90		.66	.59	.64	.77	.66	.78	.54	.77	.67
DEP	.83	.66		.55	.47	.67	.64	.70	.42	.65	.69
HOP	.76	.59	.55		.51	.56	.61	.63	.41	.55	.65
ANG	.79	.64	.47	.51		.62	.48	.52	.37	.51	.46
HADS-A	.81	.77	.67	.56	.62		.63	.75	.45	.77	.67
HADS-D	.72	.66	.64	.61	.48	.63		.76	.59	.63	.73
BSI	.80	.78	.70	.63	.52	.75	.76		.75	.91	.91
BSI-S	.53	.54	.42	.41	.37	.45	.59	.75		.51	.54
BSI-A	.77	.77	.65	.55	.51	.77	.63	.91	.51		.77
BSI-D	.75	.67	.69	.65	.46	.67	.73	.91	.54	.77	

All correlations were significant at the $p < .001$ level.

Discussion

The main purpose of this study was to further the development of the EDI as a brief, easily administered and psychometrically sound screening inventory for the assessment of emotional distress in patients with cancer by providing evidence of construct and concurrent validity. The impetus for our ongoing efforts with the EDI has been the need to efficiently identify patients at high-risk of experiencing significant levels of emotional distress when they receive their diagnosis of cancer, undergo surgery, or when they begin chemotherapy or radiation treatment. Our cancer center staff has long recognized the need for a brief, self-report, screening instrument capable of assessing emotional distress without the confounding effects of somatic symptoms, which are commonly associated with the treatments of cancer patients. Furthermore, the EDI was designed to provide clinical decision-making support at intake and during the course of treatment by concisely evaluating four major dimensions of emotional distress; anxiety, depression, anger and hopelessness.

The conceptual framework of the emotional distress construct includes a significant degree of underlying multidimensionality, factors that are separated but highly correlated (Coyne, 1994). Analyses confirmed the factor structure and the construct validity of the EDI; identifying three dimensions of emotional distress which correspond directly with the conceptual constructs on which the measure is based. In examining the factor structure of the EDI, a three-factor solution had the best simple structure and was most meaningful, providing valuable information on the component dimensions of emotional distress. A factor solution was considered to have good simple structure when each item loaded unambiguously on one factor (Nunnnally, 1978). Salient items were identified as possessing factor loadings equal to or greater than 0.35.

Factor 1 comprised of seven items with loadings ranging from 0.37 to 0.71, assessed anxiety and depression. Although depression and anxiety have been viewed as independent and conceptually distinct syndromes, the ability to differentiate between depression and anxiety on self-report measures has proven to be very difficult (Clark & Watson, 1991; Haaga, McDermut & Ahrens, 1993). This is particularly true in self-report instruments that have not taken into consideration items reflecting symptoms of somatic anxiety and somatic depression.

Research by Dohrenwend, et al. (1980) on the psychological distress construct confirms the presence of highly correlated factors with a large amount of information coming from one major dimension. In support of this observation of a major dimension contributing to the emotional distress construct, a large number of studies have recognized the importance of considering anxiety and depression as mutually inclusive and coexisting components of emotional distress. In this regard, Cassileth and colleagues (1984) suggested that anxiety and depressive symptoms might represent two labels for a single, broad underlying construct.

Factor 2 was comprised of four items with strong dominant loadings ranging from 0.40 to 0.63. The content of the items comprising this factor reflected losing hope, losing faith, feeling like a failure, and social isolation. The pessimistic-oriented nature of the items in factor 2 may indicate that hopelessness has both, a negative affectivity and a cognitive component, or perhaps that these items tap social isolation and "a sense of giving up" in cancer patients. Since the experience of these feelings is commonly reported by cancer patients after being informed of recurrence, or that the condition has become terminal, the emergence of this factor as an independent dimension for this sample of cancer patients is not at all surprising.

We had initially expected a one-dimensional, bipolar factor of anger expression given the small number of items, which the data clearly supported in the third factor. Thus, rather than assessing two relatively independent dimensions of anger expression as in the preliminary study by Moscoso and colleagues (2000), the items seemed to suggest a single bipolar factor. Previous factor analyses of anger expression scales in the general population have identified comparable factors (Moscoso & Spielberger, 1999; Spielberger, 1988).

The strong correlation between the EDI scale and its Anxiety, Depression, Anger and Hopelessness subscales with the HADS Anxiety, HADS Depression, and the BSI scale and its Anxiety and Depression subscales were expected. The much lower correlations between these scales and subscales and the BSI-Somatization subscale were also expected, due to the lack of such items in either the EDI or the HADS. The strong correlations of the EDI Anger and Hopelessness subscales with the HADS and BSI scales offer additional evidence for the inclusion of such new dimensions in the evaluation of emotional distress in cancer patients. These findings provide clear evidence of concurrent validity, and suggest that emotional distress should be assessed, especially in cancer patients, separately from somatic symptoms.

The results of the factor analysis for the 15-item EDI clearly indicate that this measure provides a valid and reliable description of the experience of emotional distress in patients with cancer. The factor structure of the inventory confirmed the assumed structural properties and provided empirical support for conceptualizing emotional distress as a multi-dimensional construct. Certainly, these results support the continu-

ing examination of the structural nature of this screening instrument, including attempts to replicate these findings in more heterogeneous populations. The .91 coefficient alpha for the EDI indicated significant internal consistency for the 15-item instrument is impressive when considering that three psychometrically discrete, significantly correlated dimensions were identified by this measure and assessed by its subscales.

In summary, the results reported in this study offer strong empirical evidence of good internal consistency, construct validity and concurrent validity for the measure. Furthermore, the factor analyses are very encouraging, suggesting that the EDI provides significant information about the multidimensional aspects of emotional distress in cancer patients. However, these findings should be taken cautiously. The current study presents limitations related with sample size and population's specific characteristics. Further research will be needed to provide information about the EDI's use in populations other than cancer patients. This study emphasizes the need for a brief, self-report instrument to assess anger expression, anxiety, depression and hopelessness as components of emotional distress in cancer patients, while explicitly excluding the potentially confounding effects of somatic symptoms commonly associated with cancer treatments.

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