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Psychometric Properties of the Arabic Version of the Depressive Cognition Scale in First-Year Adolescent Egyptian Nursing Students

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Abstract: *Background: Identifying depressive cognitions in adolescent nursing students can be an important step to prevent the development of clinical depression, which is positively associated with suicide. Purpose: This study focused on the psychometric testing of the Arabic version of the Depressive Cognition Scale (A-DCS) among 170 first-year adolescent Egyptian nursing students. Methods: The questionnaire was assessed for internal consistency, homogeneity, and construct validity using factor analysis and convergent validity. Results: Cronbach's alpha for (A-DCS) was .86. The homogeneity of the instrument was supported by item-to-total correlations between .30 and .70. Factor extraction generated only one factor with eigenvalues greater than 1, which is consistent with the English version. The (A-DCS) total score had a strong significant correlation with the Alienation Scale scores ($r = .51$, $p < .01$), indicating convergent validity. Conclusion: This scale has the potential to become a useful screening tool for depressive cognitions among Egyptian nursing students.*

Suicide is one of three leading causes of death worldwide among 15 to 34 year olds, and its prevalence is increasing significantly among adolescents (Afifi, 2006; Bertolote, Fleishmann, & Butchart, 2006). Recent data collected from Alexandria, Egypt, showed that 30% of 1,621 high school adolescents experienced a strong death wish (Afifi, 2006). In fact, depression is a strong predictor to suicide (Afifi, 2006). The evidence has now shown that adolescents not only experience the whole spectrum of mood disorders but also suffer from significant associated morbidity and mortality (Kloos, Collins, Weller, & Weller, 2007; Son & Kirchner, 2000). Although frequently unrecognized, depression is common (Son & Kirchner, 2000). Depression is a potentially fatal disorder; of the 30,000 Americans who commit suicide every year, 90% have a mental disorder, usually depression (Halter, 2004). Within the next 20 years, depression is predicted to become one of the leading causes of disability worldwide (Badamgarav et al., 2003; Cashman, Hale, Candib, Nimiroski, & Brookings, 2004). Statistics have shown that depression affects 4%-8% of adolescents (Louters, 2006). Many factors play a role in adolescents'

depression, including genetics, family dysfunction, peer problems, chronic illness, prior depressive episodes, and having a first-degree relative with a history of depression (Carlson, 2000; Castiglia, 2000; Louters, 2006).

In fact, studying depression among adolescents is important especially among the nursing students. Nursing students, the adolescents of today, are the nurses of tomorrow who will deal with human behavior. Their psychological well-being is an important factor in managing their clients' conditions (Bekhet, ElGuenidi, & Zauszniewski, in press). Healthy nursing students are likely to become healthy nurses who can then model and promote healthy lifestyles with their patients (Ahmadi, Toobaee, & Alishahi, 2004). A recent study conducted by Ahmadi and colleagues (2004) showed that a significant number of Middle East nursing students were mildly to moderately depressed with feelings of hopelessness (44%), and some of them had suicidal thoughts. Depression decreases the function of students and disturbs the relationship between the nurse and the patient (Ahmadi, 1994a, 1994b). To decrease depression, the rate of depression should be identified.

A recent qualitative study conducted by Dzurec, Allchin, and Angler (2007) aimed at examining 53 first-year nursing students' reasons for their own or their peers' experiences of feeling down or depressed. Fifty of the responses reflected participants' experiences of feeling down or depressed. The most identified themes were overload, or sense of being overwhelmed, and loneliness or isolation. Similarly, Sax, Bryant, and Gilmartin (2002) demonstrated that the complexity embedded in transitioning to college accounted for depression and feeling down.

A poorly defined problem defies identification and treatment (Müller & Dzurec, 1993). Although the popular media increasingly reports on the rise of depression among college students, reports of ways to intervene to stem that depression are limited (Dzurec et al., 2007). In fact, detecting and treating early depressive cognition in adolescent nursing students can be an important step in preventing the development of clinical depression and suicide. A growing number of publications in the scientific literature show a great need for clinicians and researchers to have access to reliable and valid research instruments in their own language to measure a concept of interest or concern (Sousa, Zauszniewski, Mendes, & Zanetti, 2005).

Therefore, a reliable and a valid measure of depressive cognitions that may precede the development of clinical depression and can be used with adolescent Egyptian nursing students is needed. This article reports the psychometric evaluation of the Arabic version of the depressive cognition scale in adolescent Egyptian nursing students.

Instruments to Measure Depression

There are many instruments that measure the presence and severity of depression, including the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mook, & Erbaugh, 1961), the Hamilton Rating Scale for depression (HRSD; Hamilton, 1960), the Center for Epidemiologic Studies Depression Scale (CES-D; Weissman, Sholomskas, Pottenger, Prusoft, & Locke, 1977), and the Zung Self-Rating Depression Scale (ZSDS; Zung, 1965). All these instruments are useful in measuring the affective, cognitive, behavioral, and physiological symptoms of depression (Zauszniewski, 1995). However, these instruments do not focus on specific cognitions that may precede the development of clinical depression (Lustman, Clouse, & Carney, 1988; Lustman, Freedland, Carney, Hong, & Clouse, 1992; Lustman, Griffith, Gavard, & Clouse, 1992; Zauszniewski, 1995). In response to this need, Zauszniewski (1995) developed the Depressive Cognition Scale (DCS), which focuses specifically on the measurement of cognitive symptoms that precede the development of clinical depression.

The Depressive Cognition Scale (DCS)

The conceptual bases of the DCS were Beck's cognitive theory of depression and Erikson's theory of psychosocial development (Zauszniewski, 1995). The DCS assesses eight depressive cognitions that may stem from less than successful progression through developmental stages (Zauszniewski, 1995). These eight depressive cognitions are hopelessness, helplessness, powerlessness, purposelessness, worthlessness, loneliness, emptiness, and meaninglessness (Zauszniewski, 1995). The DCS is a paper-based, self-administered, 8-item scale scored on a 6-point Likert-type scale ranging from 0 = Strongly Disagree to 5 = Strongly Agree. Each item in the scale represents one positive cognition. Sample items of the scale include the following: "I think my life is pretty full," and "I'm hopeful about my future." Strong disagreement with the statement of each item of the scale indicates the presence of that specific depressive cognition.

The composite score of the scale ranges from 0 to 40. Because all items are phrased in a positive direction, they must be reverse scored so that a higher composite score indicates more depressive cognitions (Zauszniewski, 1995). Acceptable internal consistency has been reported (alpha = .78) (Zauszniewski, 1995). Construct validity for the DCS was demonstrated by significant correlations in the expected directions ($p < .001$) with measures of depression, resourcefulness, adaptive functioning, and life satisfaction ($r = .54, -.37, -.60, -.57$, respectively) (Zauszniewski, 1997a). In addition, factor analysis indicated that the DCS was unidimensional and explained 40% and 51% of the total variance of the scale in two studies (Zauszniewski, 1997a; Zauszniewski, Chung, Krafcik, & Sousa, 2001).

Methods

Sample

The sample included a convenience sample of 170 adolescent first-year nursing students aged 17 to 20 years old (representing late adolescence), who were admitted to Faculty of Nursing, Alexandria University, Alexandria, Egypt. Of the sample, 95.3% of students' ages ranged between 17-19 years (Mean = 18 years). There were 121 females (71%) and 49 males (29%). Approximately 37.6% of the students' fathers had college education, 34.7% had high school or technical education (2 years after high school), 24% had less than high school education, and only 3.5% had graduate/professional education. On the other hand, 25.3% of the students' mothers had college education, 35.9% had high school or technical education (2 years after high school), 36.5% had less than high school education, and 2.4% had graduate/professional education. The number of siblings ranged from 0 to 8 with a mean of 3; 51% of the sample reported 6 or more family members. In relation to each student's birth order, 30% were the second child, 28% were the first child, and 18% were the last child. Regarding each student's birth order in relation to the same gender, 34.7% reported being the first child of that gender, and 31% were the second child born of that gender in the family. Further details concerning the parent study from which data used for this analysis were obtained have been reported elsewhere (Bekhet et al., in press). Based on the recommendation of at least 5-10 subjects per item of an instrument (Hair, Anderson, Tatham, & Black, 1998; Nunnally & Bernstein, 1994; Stevens, 2002), the sample size of 170 subjects was sufficient to conduct factor analysis of the 8-item DCS.

Instruments

A demographic questionnaire was developed by the researchers to measure individual characteristics, including age, gender, parents' education, number of siblings, number of family members, student's birth order, parents' presence in the family, student's relationship with the parents, and family problems. Besides the demographic questionnaire, the Afaf Mohamed Abd El Monem Scale (AMAS; Abd El Monem, 1988) for the feeling of alienation was used to further determine the construct validity of the Arabic version of the DCS.

Alienation and Depression

Alienation is an experience of dissatisfaction and disconnectedness with oneself, with others, with one's God, with nature, or with a transcendent realm of being. It is a sense of homelessness (Younger, 1995). Alienation is a subjective state, a feeling of being stranger as if one is not one's normal self (Schabracq & Cooper, 2003). It is the individual's feeling of

uneasiness or discomfort, which reflects his exclusion or self-exclusion from social or cultural participation (Levett-Jones, Lathlean, McMillan, & Higgins, 2007). Alienation is related to the extent to which one's values, beliefs, and norms articulate with those of the particular group with which one is associated (Levett-Jones et al., 2007). In a recent study with a sample of 5,205 adolescents, Rayce, Holstein, and Kreiner (2009) found a significant association between aspects of alienation and high symptom load (experiencing at least one physical/psychological symptom on a daily basis). Kramer (2000) pointed out that "Alienation of any type might go together with depression" (p. 16). Furthermore, it has been found that isolated youth report more shyness, *greater feelings of alienation,* and more *depression* when compared with their peers (Tani, Chavez, & Deffenbacher, 2001), suggesting that "alienation goes together with depression." Furthermore, a study conducted by Exline, Yali, and Sanderson (2000) aimed at assessing the associations between religious variables and psychological distress in a sample of 200 college students and a clinical sample of 54 persons seeking out patient psychotherapy. Results showed that feelings of alienation from God were strongly associated with depression, particularly in the clinical sample ($r = .48$, $p < .001$) (Exline et al., 2000). Findings also indicated that greater social alienation increases the vulnerability to depression in a sample of 226 midlife women from the former Soviet Union (Miller et al., 2006).

Alienation was measured by the Afaf Mohamed Abd El Monem Scale (1988) for the feeling of alienation. It is reliable, valid, and has been tested with the Egyptian population previously (Abd El Monem, 1988; Bekhet, Abd El-Dayem, Naguib, & ElGuenidi, 2005). Reliability of AMAS among the Egyptian population ranged from .76 to .89 (Abd El Monem, 1988; Bekhet et al., 2005; Bekhet et al., in press). Construct validity was demonstrated by significant correlations in the expected directions ($p < .001$) with measures of adaptive functioning, social withdrawal, creative thinking, and depression among the Egyptian population ($r = -.54, .57, -.60, .57$, respectively; Abd El Monem, 1988). The scale consists of 41 items on a 5-point Likert scale ranging from strongly agree (0) to strongly disagree (4). Scores may range from 0 to 164 after reverse coding 4 items. Higher scores indicate greater alienation.

Prior to subject identification and recruitment, approval was obtained from the University Institutional Review Board (IRB) and from the faculty of nursing to conduct the parent study from which this secondary analysis was obtained.

Data Analysis

Descriptive statistics were used to examine the demographics and main study variables as appropriate for the level of the variable whether categorical or continuous. Psychometric

analysis consisted of computing Cronbach's alpha coefficient, interitem correlations, and item-to-total correlations to determine the internal consistency and homogeneity of the Arabic version of the DCS. Factor analysis was conducted to assess scale dimensionality and construct validity. Additionally, the correlation between the total scores on the Arabic version of the DCS and Afaf Mohamed Abd El Monem Scale (AMAS; 1988) for the feeling of alienation examined for convergent validity, a type of construct validity.

Results

Characteristics of the Main Study Variables

The Arabic version of the DCS's scores ranged from 0 to 40 (M = 12.04, SD = 7.87), with skewness and kurtosis of 1.01 and .93, respectively. The AMAS's feelings of alienation scores ranged from 12 to 129 (M = 57.13, SD = 22.59), with skewness and kurtosis of .60 and .18, respectively.

Content/Face Validity of the Measure

The process of translation starts with a fluent bilingual individual translating the English version of the DCS into an Arabic version. As recommended in the literature, the bilingual expert was able to make recommendations for altering the original items to make them more meaningful in the Arabic language (Brislin, 1986; Yu, Lee, & Woo, 2004). Following the translation of the measure, a blind back-translation was completed, during which two other bilingual experts converted the translated instrument into the original English language without having seen the original instrument (Brislin, 1986; Yu et al., 2004). Discrepancies between the original and translated instruments were then examined, and decisions were made about the equivalence of the two forms. As necessary, revisions were made in the translated Arabic measure until the two forms appeared to be equivalent, which is considered to be the most reliable method in determining cultural equivalence of an instrument. Literature has suggested that when both language versions of an instrument are identical in meaning, they are more likely to be equivalent (Jones & Kay, 1992; McDermott & Palchanes, 1994; Yu et al., 2004).

A panel of three Arabic bilingual professionals (two nursing faculty members and one medical doctor [MD]) reviewed the consistency of the translations, grammar, and structure of the Arabic language. This panel compared the English and the Arabic versions, examining item by item. After reaching a consensus in relation to the consistency of the translations and back-translations of the scale, as well as corrections of the Arabic language grammar and structure, an Arabic version of the DCS was produced.

Cross-Cultural Equivalence Analysis

Examination of the symmetrical translations and back-translations of the DCS revealed that there was inconsistency on the scale item measuring powerlessness. One translator translated the item, "I am in control of my life" into "يمكننى التحكم فى حياتى" and a second translator into "انا متحكم فى حياتى" Back translations of this item were "I can control my life" and "I am in control of my life."

The panel of three Arabic bilingual members compared the original scale and two translated versions into Arabic to validate the translation. The Arabic version of the scale that Arabic panel members agreed as the one with best semantic equivalence was further reviewed and edited to meet the requirements of Arabic grammar and structure. The final item on powerlessness became "انا متحكم فى حياتى"

Internal Consistency and Homogeneity

The overall estimate of the reliability of the DCS (Cronbach's alpha) was .86. This reliability estimate exceeded the recommended criterion for internal consistency of at least .70 for a newly developed scale (Nunnally & Bernstein, 1994). Deletion of any one of the items did not improve the overall Cronbach's alpha coefficient for the scale; the coefficient of reliability continued to be very close or equal to the Cronbach's alpha reported. As shown in Tables 1 and 2, all interitem correlations and item-to-total score correlations were between $r = .30$ and $r = .70$, meeting the necessary criteria for scale internal consistency (Nunnally & Bernstein, 1994) and homogeneity (Ferketich, 1991), respectively.

Dimensionality and Construct Validity

The Kaiser-Meyer-Olkin value of .88 also indicated that the sample size was adequate for the purpose of proceeding with factor analysis because it exceeded the recommended value of .60 (Tabachnick & Fidell, 2001).

A principal components factor analysis was conducted on the Arabic version of the DCS's items to extract the minimum number of factors that explained the maximum variance in the items of the scale. As shown in previous studies conducted by Zauszniewski (1997a) and Zauszniewski and colleagues (2001), it was expected in this study that only one factor would emerge from factor analysis. In fact, the factor extraction generated only one factor with eigenvalue greater than 1. The scree plot also clearly suggested that only one dimension underlay the items of the scale. As shown in Table 1, a single extracted factor explained 49.95% of the variance in the items of the scale. Thus, factor rotation was not needed. All communality values were above .30, as recommended by Tabachnick and Fidell (2001), and all items of the

scale had strong factor loadings on the single factor that emerged, exceeding the minimum recommended criterion of .30 (Nunnally & Bernstein, 1994; Polit, 1996).

The Arabic version of the DCS's total score had a strong positive correlation with the total score of the Alienation Scale scores ($r = .51$, $p < .01$), thereby suggesting construct validity.

Discussion

This study represents the first attempt to examine the reliability and the validity of an Arabic version of the 8-item Depressive Cognition Scale (DCS). The results provide solid support for the scale's reliability and validity among first-year nursing students. Reliability was demonstrated through adequate estimates of internal consistency; Cronbach's alpha was .86, which exceeds the minimum criterion of .70 (Nunnally & Bernstein, 1994). This internal consistency estimate is consistent with findings from other studies of DCS measures, which reported alpha of .78 in a sample of older adults (Zauszniewski, 1995); alphas of .75 and .87, respectively, in African American female caregivers and noncaregivers (Zauszniewski, Picot, Debanne, Roberts, & Wykle, 2002); and an alpha of .85 in women with type 2 diabetes (Zauszniewski et al., 2001). The corrected item-to-total correlations for all 8 items exceeded the .30 criterion (Cronk, 2004), suggesting the homogeneity of the measure and that each item was measuring a unique construct. This finding is also consistent with findings from studies of the measure of the DCS in Brazilian adults of diabetes mellitus (Sousa, Zanetti, Zauszniewski, Mendes, & Daguano, 2008), healthy American elders (Zauszniewski, 1997a, 1997b), and American women with type 2 diabetes (Zauszniewski et al., 2001).

In addition to providing evidence of the reliability of the Arabic version of the DCS, the findings indicate that the measure has construct validity, as evidenced by significant correlations of .51 ($p < .01$) in the expected direction with an established measure of alienation. The findings of this study are consistent with the findings with previous studies, which found a significant positive correlation between the DCS and alienation in a sample of 204 male and 208 female students selected randomly in high schools (Lee, 2007).

The findings of the factor analysis provide further support for the construct validity of the DCS. The emergence of a single factor that explained a substantial portion of the variance is consistent with factor analytic studies of the DCS (Sousa et al., 2008; Zauszniewski, 1997a; Zauszniewski et al., 2001). The variance explained in this study (49.95%) is similar to some extent to the variance explained in the study of African American women, noncaregivers (46%) (Zauszniewski et al., 2002) and less than the variance explained in the study of Brazilian adults with diabetes mellitus (56.73%) (Sousa et al., 2008). However, it should be noted that the

population is different in this study than the two mentioned studies. The greater amount of variance may be due to the fact that first-year nursing students constitute a more homogeneous population.

The findings from this analysis of the psychometric properties of the Arabic version of the DCS in first-year nursing students yield promising evidence that the 8-item DCS has acceptable reliability and validity. The findings also indicate that the DCS is potentially useful for assessing depressive cognitions that precede the development of clinical depression for first-year nursing students, which is important for early intervention and prevention of depression in adolescent nursing students.

Further psychometric testing of the scale may be warranted. This study provides evidence that the DCS consists of a single dimension and supports the construct validity of the DCS for this sample of first-year Egyptian nursing students.

Notes

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Appendix
Table 1
The Arabic Version of the DCS Item Analysis and Factor Analysis (N = 170)

Item	Alpha if Item Deleted	Item-to-Total Score Correlation	Factor Loadings	Communality Values
Emptiness	.84	.53	.64	.41
Helplessness	.85	.51	.62	.38
Hopelessness	.84	.61	.72	.52
Loneliness	.84	.58	.69	.48
Meaninglessness	.83	.62	.72	.52
Powerlessness	.84	.59	.70	.49
Purposelessness	.83	.65	.76	.58
Worthlessness	.83	.69	.79	.62
Eigenvalue			3.99	
% Variance explained			49.95	
Factor Cronbach's alpha			.86	

Table 2
The Arabic Version of the DCS Interitem Correlation Matrix (*N* = 82)

Item	1	2	3	4	5	6	7	8
1. Emptiness	1	1						
2. Helplessness	.37*	1						
3. Hopelessness	.44*	.40*	1					
4. Loneliness	.32*	.33*	.47*	1				
5. Meaninglessness	.45*	.31*	.42*	.52*	1			
6. Powerlessness	.36*	.34*	.40*	.41*	.45*	1		
7. Purposelessness	.36*	.39*	.44*	.46*	.46*	.45*	1	
8. Worthlessness	.40*	.44*	.49*	.40*	.45*	.53*	.69*	1

*p < .001