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***Arabic Version of the Children's Depression Inventory: Reliability and Validity**

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Arabic Version of Children's Depression Inventory: Reliability and Validity

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Abstract:

Administered an Arabic version of the Children's Depression Inventory (CDI) to 1,010 boys and 1,010 girls 7 to 16 years, enrolled in public schools in Cairo, Egypt. The sample's mean scores were notably higher than the scores of comparable normative samples of children in Western countries. Also, girls in the upper grades received significantly higher CDI scores than their male counterparts. We discussed the results in a cross-cultural context .

Introduction :

Increased interest in the presence and prevalence of depression among children and adolescents has led to initiatives to identify its rate in various cultures and societies. The Children's Depression Inventory (CDI; Kovacs, 1980-1981), the most frequently used self-rated scale for younger age groups (Kazdin, 1981), can be employed as a first step in such initiatives, preparatory to full-scale epidemiologic investigations. There is reason to believe that the rate of depression varies among adults of different cultures, as suggested by the work of Draguns (1980), Marsella (1980), and Ghareeb (1987a). Therefore, we undertook the present study to examine the corresponding phenomenon among Egyptian school children. We hypothesized that, as a consequence of rapid social changes taking place, in conjunction with modernization and mass education, children in Egypt would exhibit higher levels of depressive symptoms than children in American or in other Western societies.

Method and Results

Translation of the CDI

The CDI was translated independently by both of us. We applied the method of back translation, suggested by Brislin (1970), in order to avoid major deviations in meaning between the original English version developed by Kovacs (1980-1981) and the Arabic version . The final revised translation essentially conformed to the original text, but we opted for a colloquial rather than a classical Arabic rendition of the items. Although this might limit the applicability of this version of the CDI in

other Arab countries with different dialects, it facilitated comprehension in the present sample. (Ghareeb has already developed another version of the CDI in classical Arabic to be used in subsequent applications in other Arab countries) . The time required for the administration of the CDI ranged from 60 min for the lower grades to 30 min for the upper grades.

Subjects

All subjects were enrolled in public schools in Cairo, Egypt. Children who were repeating a grade were excluded from the study , as were those with physical or mental handicaps. We selected schools to represent the entire cosmopolitan area of Cairo. Due to the increasing number of school-children, most of the public schools in Cairo operate on two shifts; representatives of both shifts were included in the sample. Selection was determined by random procedures for schools and classes or shifts. When a class was picked up, all the pupils in that class took the CDI, and only those with physical or mental handicaps were exempted from the procedure.

Ghareeb administered all items and ascertained that no items were left unanswered. The items of the CDI were read aloud to the pupils in all grades (2 through 10) . Seven primary schools, five preparatory schools, and four high schools were involved. Egyptian schools are coeducational only in the first six grades. There were 1,010 boys and 1,019 girls . The socioeconomic background of children attending public schools may be described as primarily lower – middle class to middle-middle class. Upper-middle-class parents and some middle-class parents prefer to send their children to private schools ; these were not included in the sample .

Instruments

Two other questionnaires were used: the Arabic version of the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961)-the short form (Ghareeb, 1984, 1985)-and the Arabic version of the Anxiety Scale of Costello and Comrey (1967) and Ghareeb (1987b) . Both inventories were translated into Arabic, standardized, and published by Ghareeb in Egypt. The Arabic BDI has a split-half reliability (Spearman-Brown formula) of ,87 (n = 50) and a test-retest reliability of ,77 over a time interval of 11/2 months (n = 33) . The correlation between the Arabic versions of the BDI and the Depression scale of the Minnesota Multiphasic Personality Inventory was ,60 with a sample of 43 subjects (Ghareeb, 1984) – this represents evidence of the criterion-related validity of both scales. The test-retest reliability of the Arabic version of the Anxiety Scale of

Costello and Comrey (1967) was ,74 in a sample of 51 Egyptian police cadets over a time interval of 15 days . According to kuder-Richardson formula, the internal consistency reliability of this scale in a sample of 51 students at the police academy was ,91 . The Anxiety Scale was correlated ,58 with the Arabic version of the Eysenck personality Inventory (Neuroticism), ,26 with the BDI, and ,51 with the Arabic version of the Spielberger (1979) State-Trait Anxiety Scale (Trait Anxiety) among a sample of 58 university student.

Reliability and Validity of the Arabic CDI

Four separate studies of test-retest reliability were conducted on samples of fourth, fifth, seventh, and ninth graders. Test-retest reliability in a sample of 36 fourth graders (19 boys, 17 girls) yielded an r of ,81 over a 7-day interval . Similarly, a sample of fifth graders (18 boys, 20 girls) yielded an r of ,76 over a 21-day interval. Test-retest reliability with seventh- and ninth-grade boys was a ,72 over a 7-day interval. For a sample of 42 ninth-grade girls, test-retest reliability was ,77 over a 9-day interval.

We estimated the internal consistency of the CDI by item-total score correlation coefficients (Cronbach's alpha). The coefficient alpha was ,88 for a sample of 40 second- and third-grade boys. For a sample of 40 sixth-grade girls, alpha was ,79; for a sample of 40 eighth-grade girls, alpha was ,84. These correlations are all significantly different from 0 at the ,001 level and suggest acceptable internal consistency .

Three studies were conducted to evaluate the validity of the Arabic CDI. The first of these studies correlated the CDI with the Arabic version of the BDI (Ghareeb, 1984) in a sample of 46 eighth-grade girls. The correlation was ,87 . For a sample of 51 ninth-grade boys, the correlation between the CDI and the BDI was ,71 . A second study examined the relation between depression as measured by the CDI and anxiety as measured by the Arabic version of the Anxiety Scale of Costello and Comrey (1967). These measures were administered to one sample of 51 ninth-grade boys and one sample of 46 eighth-grade girls. The correlations were ,43 and ,54, respectively (both $p < ,01$).The third study used a sample of "problem" children who were so identified because they were repeating grades. For the sample of 23 boys and 75 girls, the mean CDI score of 19,77 ($SD = 6,81$) proved to be significantly higher than the mean CDI score of 17,38 ($SD = 6,77$) reported for a control group from similar grades (5 through 9; $p < ,05$).

Normative Study

After we ascertained internal consistency and test-retest reliability for the Arabic CDI and preliminary information as to its validity, we administered the inventory booklet to the whole sample. The results, summarized in Table 1, point to mean scores for both sexes higher than the scores reported by investigators from several countries (see Discussion section) . Furthermore, there was a significant difference between the score of male and female school children in Grades 7 through 10. with girls having higher depression scores than boys .

Discussion

The average levels of depressive symptoms among Egyptian school children (with mean CDI scores ranging from 13,16 to 17,92 in different age groups of boys and girls) are notably higher than the figures reported for children in various Western countries. Kovacs (1985) reported a CDI mean of 9,28 (SD = 7,30) for a sample of 860 Canadian 8- to 14- year-old school children. Green (1980) found a mean of 9,72 (SD = 7,00) for a sample of 630 Pennsylvanian 12- to 15-year-old school children . Smucker, Craighead, Craighead, and Green (1986) obtained a mean of 9,09 (SD = 7,04) for three large samples of 1,252 American third to ninth graders. The mean for all 594 males was 9,21 (SD = 6,99). and the mean for all 658 females was 8,99 (SD = 7,10) . Finch, Saylor, and Edwards (1985) reported significant age and sex differences on the CDI (although small in magnitude) for a sample of second to eighth graders in a Florida public

**Table 1: Means and standard Deviations on the Arabic Version
Of the CDI in a sample of 2,029 public School Children in Cairo, Egypt**

(Males n=1,101; Females n=1,019)

Grade	Age (Years)	Males			Females*			P value of sex Difference
		N	M	SD	N	M	SD	
2	7 ½ to 8 ½	92	14.87	7.29	76	13.32	7.54	ns
3	8 ½ to 9 ½	123	13.16	7.72	120	13.41	7.10	ns
4	9 ½ to 10 ½	108	15.38	6.92	93	16.24	7.98	ns
5	10 ½ to 11 ½	120	14.49	6.65	125	14.06	7.32	ns
6	11 ½ to 12 ½	137	15.14	6.88	117	16.52	7.35	ns
7	12 ½ to 13 ½	108	13.55	5.99	148	16.01	6.88	<.001
8	13 ½ to 14 ½	109	13.68	7.10	124	17.56	7.25	<.001
9	14 ½ to 15 ½	133	14.50	6.41	105	17.92	5.86	<.001
10	15 ½ to 16 ½	81	14.98	6.47	111	17.59	6.13	<.001

School; the overall mean was 9,65 (SD = 7,30). A study by Camuffo, Cerutti, Lucarelli, and Mayer (1985) in Italy on 152 male and 131 female school children yielded CDI means of 10,93 (SD = 6,17) and 10,45 (SD = 6,11) for males and females, respectively. A German study by Steinsmeier (1987) on 153 boys and girls age 10 to 13 gave CDI means of 10,5 (SD = 5,4) and 9,3 (SD = 3,7), respectively. Thus, overall, the mean scores of American, Canadian, German, and Italian school children seem to range from 9 to 12 and are all lower than the means reported in the present study.

The obtained high mean scores of Egyptian school children on the CDI may mirror feeling of despondency brought on by modernization and rapid social change in a country that is otherwise part of the Third World. An alternative interpretation is that the scores reflect a culturally different response set. That is, in Egypt, perhaps more than in other countries, it is culturally sanctioned for children, especially in the early grades, to exaggerate their need for help. On the other hand, the finding that within the upper grades females scored significantly higher than males appears to reflect a phenomenon found in many cultures. Nolen-Hoeksema (1987) offered an explanation for this sex difference by suggesting that it is more accepted for females to report depression and despair than it is for males. Specifically, Nolen-Hoeksema (1987) wrote: "Men's responses to their dysphoria are more behavioral and dampen their depressive episodes, whereas women's responses to their depressive episodes are more ruminative and amplify them" (p.274). This explanation may also apply to children and adolescents, but it would be necessary to take into account the developmental changes in depression. Smucker et al. (1986) found evidence for such developmental changes in depression, but the magnitude was too small to warrant a definitive conclusion.

A culture-specific interpretation of the results may be made along lines suggested by Draguns (1980) and Marsella (1980). They suggested that the construct of depression may be viewed in predominantly Western terms with connotations similar but not identical with a comparable construct within non-Western culture. Thus, responses to the CDI may not represent so much of what is commonly understood as depression in Western culture, but what an Egyptian child or adolescent (in this instance taking the CDI) understands by a statement like "I feel sad". Church (1987) alluded to a culture-specific Filipino construct, *hiya*, defined as "a painful emotion arising from a relationship with an authority figure or with society inhibiting self-assertion which is perceived as dangerous to one's ego"

(p.275). For a Filipino school child, depression and *hiya* may mean the same thing, but this is not the same as saying that there is no depression in Third World countries. It is more parsimonious to explain the results in terms of social and material pressures on children from Third World countries, but a refinement of this conclusion awaits further analysis of the factor structure of the Arabic CDI in a manner achieved by the work of Carey, Faulstich, Gresham, Ruggiero, and Enyart (1987). Who managed to extract three factors from the CDI . It would be necessary to determine which of these factors discriminates between depression in one culture as compared to another .

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