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ORIGINAL ARTICLE

The Arabic Mood and Feelings Questionnaire: Psychometrics and Validity in a Clinical Sample

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Abstract The purpose of this study was to provide clinicians in the Arab World with a child and adolescent depression screening tool. Child and parent versions of the Mood and Feelings Questionnaire (CMFQ and PMFQ respectively) were translated to Arabic and administered along with the Strengths and Difficulties Questionnaire (SDQ) to 30 children and adolescents and with mood disorders and 76 children and adolescents with other psychiatric disorders seeking treatment at a child and adolescent psychiatry clinic. DSM-IV diagnoses were generated through clinical interviews by a psychiatrist blinded to self-reports. Internal consistency for both versions was excellent with moderate inter-informant agreement and good convergent validity with the SDQ emotional symptoms subscales on the child and parent forms. The CMFQ and PMFQ significantly differentiated between currently depressed participants and those with other psychiatric disorders. CMFQ scores were a stronger predictor of categorization into depressed and non-depressed groups than the PMFQ. Two modes of cutoffs were calculated with one favoring sensitivity (a score of 26 for the CMFQ and 22 for the PMFQ) and another favoring specificity (a score of 31 for the CMFQ and 28 for the PMFQ).

Keywords Adolescent · Depression · Psychometrics · Arabic · Foreign language translation

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Introduction

Depression is a common and debilitating condition with an estimated 1 year prevalence ranging from 4 to 5 % in mid to late adolescence [1] and 2 % in childhood [2]. Depression is associated with suicide risk which is one of the major leading causes of death among adolescents [2]. Despite its public health significance, depression in children and adolescents is often missed either as a function of under reporting of symptoms, or overlap with symptoms of anxiety, Attention Deficit Hyperactivity Disorder (ADHD) comorbidity [3] and the prominence of irritability and fluctuating mood symptoms [1]. In the Arab World, epidemiological accounts on the prevalence of child and adolescent depression are scarce. One study assessed suicidal ideation among Lebanese students aged 11–16 via a question with a binary response format and found a 16 % prevalence rate [4]. Such a percentage is cause for concern and highlights the need to screen for depressive disorders which have been linked to suicide ideation [5]. In another study using the Arabic Strengths and Difficulties Questionnaire [6] the prevalence of parent and teacher reported emotional difficulty symptoms in Egypt was 21.2 and 15.3 % respectively with a 2 % probable psychiatric diagnosis of a mood disorder in a sample of 1,186 school children aged 6–12 [7]. The lack of appropriate assessment instruments available in the Arabic language to screen for depressive symptoms in children and adolescents hinders

research on the prevalence of these disorders in this population.

Few instruments assessing depressive symptoms among children and adolescents have been developed and validated to date. The Children's Depression Inventory (CDI) was developed as a downward extension of the Beck Depression Inventory (BDI), and has a self, parent, and teacher report form, although usually the former is not typically used in clinical settings [8]. The CDI is highly correlated with other measures of depression, and has been validated in the Arabic language in Egypt [9] and Kuwait [10]. The CDI, however, does not discriminate well depression from anxiety disorders, and is therefore better used as a measure of internalizing conditions, rather than depression per se [11]. The BDI is very widely used in studies of adolescents, is a good screen for depressive disorders in this age group, and is sensitive to treatment effects [5]. It has strong psychometric properties in adolescents but does not have a parent form. The Center for Epidemiologic Studies-Depression Scale (CES-D) has been used in several epidemiological and treatment studies of adolescents of diverse ethnic origin, including the United Arab Emirates [12] and works well as a screen for depression, has good discriminant validity, and is sensitive to treatment effects [13–15]. One weakness is that it does not have a suicide ideation item.

An available instrument that has been validated in the Arabic language and used in studies assessing prevalence of psychiatric symptoms among children and adolescents is the Strengths and Difficulties Questionnaire (SDQ) [16]. While this is an informative tool on general child psychopathology, it assesses depression and anxiety symptoms in one combined emotional subscale. An Arab Youth Mental Health (AYMH) scale was also recently developed, measuring symptoms of depression and anxiety. It, however, lacks a parent report form and is for use with younger adolescents aged 10–14 [17]. In a subsequent validation on a Lebanese sample of adolescents, the AYMH did not effectively identify depressive symptoms in boys [18]. In light of the difficulties associated with detecting depression in children and adolescents, the significant level of attributed dysfunction [3], and the scarcity of research in this area in the Arab world, an Arabic screening tool that covers a wide range of depressive symptoms including those more found in children and adolescents is necessary.

The Mood and Feelings Questionnaire (MFQ) [19] was developed as a brief "net" for depression probability in child and adolescent populations, capturing cognitive, affective, vegetative and suicidal aspects of depression. The MFQ, with its parent and child forms, serves as a rapid assessment of depressive symptoms in epidemiological settings as well as clinical settings. There is also an efficient and brief version with 11 items called the NET-MFQ [20] that can be used for frequent follow ups [19]. Few translations of the MFQ have been published to date, all implicating a fixed one factor solution and moderate to high internal consistencies ($\alpha = .79–.93$) [21–24]. Although originally intended for epidemiological use, the MFQ has also been shown to be a useful depression screen among clinically depressed adolescents. For example in a study by Daviss et al. [25], 470 participants including clinically depressed, non-depressed psychiatric patients as well as healthy controls were administered the MFQ. The depressed group scored significantly higher on the MFQ child and parent forms than healthy controls and a group of psychiatric patients without mood disorders. However, on several accounts, it was found that the MFQ does not significantly differentiate between children with depressive disorders and those with depressive disorders and comorbid anxiety disorders [25, 26]. Further analyses revealed that cutoff scores of 29 for the child MFQ and 27 for the parent MFQ effectively differentiated between the groups. Similar cutoffs were also determined by Kent et al. [26], with a slightly lower score of 25 emerging for the parent form. Despite the utility of the various instruments described above, the MFQ seemed to address the minor yet important disadvantages highlighted. Specifically, it is the only depression self-report that has been validated in both children and adolescents, has both a self and parent reports and includes an item on suicidality. Therefore, the current study aimed at examining the psychometric properties of the Arabic Mood and Feeling Questionnaire (MFQ) in a sample of clinically depressed adolescents. Such an endeavor would provide clinicians with a quick and efficient method to screen for depressive symptoms in children and adolescents. We specifically aimed at translating the MFQ to Arabic, assessing its internal consistency, inter-informant agreement, convergent and divergent validity and appropriate cutoff scores.

Methods

Participants

Hundred and six parent and child pairs between the ages of 8 and 17 presenting for the first time to a child and adolescent psychiatry outpatient clinic in a university medical center were recruited as part of a child and adolescent psychiatry clinic registry, between January of 2011 and June of 2012. All patients and their parents were approached consecutively and those who agree to participate in the registry and were between the ages of 8 and 17 were asked to fill out the MFQ. The protocol was approved by the AUB Institutional Review Board and accordingly informed consent and assent were obtained from

participants and their parents. Participants' were mostly female (61 % female; 39 % male). Patients were also assessed for psychiatric disorders by a child and adolescent psychiatrist who was blind to the data from self-reports, according to the Diagnostic and Statistical Manual of mental disorders fourth revised version (DSM-IV-TR). Accordingly 22 participants were diagnosed with Major Depressive Disorder, 5 with depressive disorder not otherwise specified, 2 with Bipolar disorder most recent episode mixed and 1 with schizoaffective disorder most recent episode depressed. 10 participants from the group diagnosed with current depressive episode also had a comorbid anxiety disorder and 2 had comorbid ADHD (Table 1). All other participants received additional psychiatric diagnoses including bipolar disorders, psychotic disorders, anxiety disorders, and conduct disorder (Table 2).

Procedure

Mood and Feelings Questionnaire child (CMFQ) and MFQ parent (PMFQ) were translated to Standard Modern Arabic by a Masters level graduate in Public health and back-translated to English by a Masters level psychologist who was not exposed to the original English version. The back translated version and the original English version were compared for discrepancies and the Arabic version was revised and finalized accordingly. All eligible participants aged 8–18 years and their parents completed the Arabic MFQ, and the Arabic Strengths and Difficulties Questionnaire (SDQ) was completed by participants aged 11–17 and the parent version was filled for participants of all ages. Children and adolescents diagnosed with pervasive developmental disorders, mental retardation, psychotic disorders and borderline intellectual functioning were offered to complete the CMFQ and SDQ provided they could read and understand the scale items. Children and adolescents diagnosed with mental retardation did not complete the study scales. In cases where the child or adolescent was not able to complete the CMFQ and child SDQ only the parent versions were used.

Table 1 Comorbid diagnoses distribution per group

	Depressed/non-depressed
Generalized anxiety disorder	7/8
Social anxiety disorder	1/4
Separation anxiety	–/3
Panic disorder	2/3
Agoraphobia	1/–
Simple phobia	1/2
Kleptomania	1/–
Adjustment disorder	1/–
Somatization disorder	–/1
Tourette	–/3
Conversion	1/–
Post-traumatic stress disorder	–/1
Anorexia nervosa	1/–
Attention deficit hyperactive disorder	2/4
Conduct disorder	1/–
Pervasive developmental delay	–/3
Psychotic disorder	–/4

Instruments

The Mood and Feelings Questionnaire (MFQ) [19]

The MFQ [19] is a 33-item self-report measure of depressive symptoms for children and adolescents aged 8–18. Both child and parent forms encompass 33 one sentence items, rated on a three point likert type scale, with the parent form carrying one additional item tapping into the parent's observation of the child's response to praise. Parent and child forms have displayed good inter-informant total score correlations ($r = .65$, $p < .001$). Two modes of cutoff scores may be employed, one continuous, with a cutoff score of 27 on CMFQ and 21 on PMFQ [27]; and another system which divides scores into low (<20), medium (20–34) and high (>34) based on severity of depression [28]. Studies have shown high internal consistency ($\alpha = .90$) and satisfactory 1 week test–retest reliability ($r = .75$) for both forms [23].

The Strengths and Difficulties Questionnaire (SDQ)

The SDQ is a 25-item, broad-band rating scale used to screen behaviors of children, aged 3–16, as reported by parents and adolescents. The questionnaire includes supplemental questions that inquire whether the respondent thinks that the child has a problem, and further investigates the perceived impact of the problem, chronicity, distress, social impairment and burden on others. The SDQ can be completed by the parents of children aged 4–16, while adolescents aged 11–16 can complete an additional self-report. Respondents endorse items on a 3-point Likert type scale of 0 (*Not True*), 1 (*Somewhat true*) and 2 (*Very true*). A total score is obtained by summing the scores of the individual items. The SDQ yields 5 scores for difficulties-Conduct Problems (SDQ-CS), Inattention-Hyperactivity (SDQ-HYP), Emotional Symptoms (SDQ-ES), Peer Problems (SDQ-PPS), and Total Difficulties score—and one score for Strength–Prosocial behavior [16]. The reliability of the SDQ was investigated in an epidemiological study on a representative sample of ten thousand British children. The SDQ was given to the parents and eligible youth, of

Table 2 Age, sex and diagnoses per group

	Depressed (N = 30)	Non-depressed (N = 76)	Stats and effect size (r)
Age (mean/SD)	14.87 (1.74)	13.51 (2.53)	t(77.47) = 3.08, $p = .003$, $r = .33$
Sex ratio (male/female)	11/19	54/22	$\chi^2(1) = 11.02$, $p < .001$
ADHD- combined type (N and %)	2 (6.67 %)	16 (21.05 %)	–
ADHD inattention type (N and %)	–	5 (6.58 %)	–
Generalized anxiety disorder (N and %)	7 (23.33)	6 (7.29 %)	–
Social anxiety disorder (N and %)	1 (3.33)	7 (9.21 %)	–
Separation anxiety (N and %)	–	4 (5.26 %)	–
Panic disorder (N and %)	2 (6.67 %)	–	–
Anxiety disorder non-otherwise specified (N and %)	–	4 (5.26 %)	–
Agoraphobia (N and %)	1 (3.33 %)	–	–
Simple phobia (N and %)	1 (3.33 %)	2 (2.63 %)	–
Post traumatic stress disorder (N and %)	–	1 (1.31 %)	–
Kleptomania (N and %)	1 (3.33 %)	–	–
Adjustment disorder (N and %)	1 (3.33 %)	–	–
Conversion disorder (N and %)	1 (3.33 %)	–	–
Acute stress disorder (N and %)	–	1 (1.31 %)	–
Anorexia nervosa (N and %)	1 (3.33 %)	–	–
Obsessive compulsive disorder (N and %)	–	7 (9.21 %)	–
Mental retardation (N and %)	–	4 (5.26 %)	–
Bipolar disorder (N and %)	–	4 (5.26 %)	–
Psychotic disorder (N and %)	–	2 (2.63 %)	–
Autism (N and %)	–	2 (2.63 %)	–
Asperger's (N and %)	–	1 (1.31 %)	–
Trichotillomania (N and %)	–	2 (2.63 %)	–
Stuttering (N and %)	–	1 (1.31 %)	–
Oppositional defiant disorder (N and %)	–	1 (1.31 %)	–
Conduct problems (N and %)	1 (3.33 %)	–	–
Somatization disorder (N and %)	–	1 (1.31 %)	–
Major depressive disorder (N and %)	22 (73.3 %)	–	–
Depressive disorder non otherwise specified (N and %)	5 (16.66 %)	–	–
Bipolar disorder most recent episode mixed (N and %)	2 (6.67 %)	–	–
Schizoaffective disorder most recent episode depressed (N and %)	1 (3.33 %)	–	–

children aged 5–15 years old and results were analyzed. Internal consistencies for ranged from .65 to .85 for parents report, .70 to .88 for teacher reports, and .41 to .81 for youth self-reports [29]. In the current study, the Arabic SDQ which has previously been validated among Arab youth was administered [6].

Statistical Methods

The data was analyzed using the IBM Statistical Package for Social Sciences version 19. Sample characteristics were reported using descriptive statistics. Missing values were checked using Missing Value Analyses (MVA) and Little's MCAR was used to assess the pattern of missing values. Replacement by individual mean scores was applied when necessary. Normality of the data was checked through standardized skew statistics, The Kolmorgorov–Smirnov test and the Levene statistic. Univariate outliers were assessed through standardized z scores. Internal consistencies for the Arabic parent and child MFQ forms were assessed using the Cronbach's alpha statistic (α). Standardized z scores for participants' mean PMFQ, CMFQ, PSDQ and CSDQ as well as their subscales were calculated through IBM SPSS by subtracting the overall mean of the population from the mean of the participant divided by the population standard deviation. Inter-informant agreement was evaluated through Pearson's correlations between the z scores of the Arabic PMFQ and CMFQ means (r). Convergent and divergent validity were assessed through Pearson's correlation coefficients with standardized Arabic

parent and child SDQ Emotional Symptoms Subscale (SDQ-ESS) and Hyperactivity subscale (SDQ-HS) means respectively. A series of Analyses of Covariance were conducted to assess whether depressed and non-depressed youth differed on their respective MFQ scores, here age and sex were entered as covariates. The ability of the Arabic MFQ parent and child mean scores to discriminate between depressed and non-depressed youth was assessed using Discriminant Functions Analysis (DFA). The sensitivity and specificity of the Arabic MFQ forms against the diagnosis of depression generated by a child and adolescent psychiatrist was assessed at various cutoff scores using Receiver Operating Characteristics (ROC) analyses. Area Under the Curves (AUC) were also evaluated for diagnostic accuracy.

Results

Data Cleaning

Missing data were found across both PMFQ and CMFQ items. On the CMFQ, 12 participants had 1 missing item, 8 had 2 missing items and 3 had 3 missing items. On the Parent MFQ, 19 participants had 1 missing item, while 3 and 2 participants had 2 and 3 missing items respectively. MVA was conducted on all items of the PMFQ and CMFQ together with age, sex and SDQ scores to assess the pattern of missing values. The Little's MCAR for both PMFQ and CMFQ scores was not significant implying that the pattern of missing values was completely at random [PMFQ: $\chi^2(778) = 814.817$, $p > .05$, CMFQ: $\chi^2(753) = 759.082$, $p > .05$]. As such, all missing values were replaced by the mean of participants derived from their response to the rest of the MFQ items. No outliers were found and the data was normally distributed.

Demographics and Comorbid Diagnoses

Demographic and comorbid diagnoses are presented in Table 1 and 2. The depressed and non-depressed groups differed in sex distribution [$\chi^2(1) = 11.02$, $p < .001$] and age [$t(77.47) = 3.08$, $p = .003$, $r = .33$] (Table 2).

Reliability

Over the entire sample, both Arabic PMFQ and CMFQ had excellent internal consistencies ($\alpha = .94$ and $\alpha = .92$ respectively). Internal consistencies for depressed and non-depressed adolescents were assessed separately. Chronbach's alphas for the PMFQ and CMFQ of depressed adolescents were excellent ($\alpha = .917$ and $\alpha = .904$ respectively); Both scales were equally reliable among non-depressive adolescents with $\alpha = .916$ for the PMFQ and $\alpha = .901$ for the CMFQ.

Inter-Informant Agreement

There was a moderate positive correlation between standardized Arabic CMFQ and PMFQ mean scores in the overall sample ($r = .53$, $p < .01$).While more symptoms of depression were reported by youth (CMFQ: Mean = .79, SD = .42) as compared to parents (PMFQ: Mean = .66, SD = .42) on the Arabic MFQ, a paired sample t test using standardized scores (z scores) indicated that this difference was not statistically significant [$t(84) = 1.102$, $p = .27$].

Convergent and Divergent Validity

Both PMFQ mean z scores and CMFQ mean z scores positively correlated with parent SDQ-ESS z scores ($r = .56$, $p < .01$) and child SDQ-ESS mean scores ($r = .55$, $p < .01$) respectively indicating that both Arabic PMFQ and CMFQ had acceptable convergent validity. In examining divergent validity, correlations with SDQ-HYP mean scores were assessed. Here, mean PMFQ z scores did not significantly correlate with mean parent SDQ-HYP z scores ($p > .05$) and mean CMFQ z scores had a positive and significant correlation with mean child SDQ-HYP z scores ($r = .58$, $p < .01$).

Analysis of Covariance

A one-way between groups ANCOVA was performed to check for mean differences on the CMFQ and PMFQ between depressed and non-depressed youth where sex and age were entered as covariates. Mean scores on the parent and child versions of the Arabic MFQ are presented in Table 3. There was a significant group effect upon both CMFQ [$F(3,86) = 13.05$, $p = .001$, $r = .36$] and PMFQ [$F(3,97) = 20.85$, $p = .000$, $r = .42$]. Depressed children and adolescents along with their parents scored significantly higher on CMFQ [Mean = 1.06, Standard Deviation (SD = .41)] and PMFQ (Mean = .97, SD = .39) than non-depressed children and adolescents and their parents (CMFQ mean = .67, SD = .32 and PMFQ mean = .55, SD = .38). The same analysis was repeated excluding parent and child reports of children with psychotic disorders and mental retardation, and the findings remained consistent.

Discriminant Functions Analysis

A DFA using the stepwise method was performed where Arabic PMFQ and CMFQ scores were used as predictors of membership in either depressed or non-depressed groups.

Table 3 Mean differences between depressed and non-depressed

	N	Depressed		Non-depressed		Stats and effect size (*r*)
		Mean	Standard deviation	Mean	Standard deviation	
PMFQ	27	0.97	0.39	0.55	0.38	$t(99) = 4.92$, $p = .000$, $r = .44$
CMFQ	29	1.06	0.41	0.67	0.37	$t(88) = 4.56$, $p = .000$, $r = .44$
PSDQ-ESS	27	6.00	2.80	4.43	2.47	$t(90) = 2.67$, $p = .009$, $r = .27$
PSDQ-HS	27	4.96	3.06	5.58	2.71	$t(90) = -.96$, $p > .05$
CSDQ-ESS	28	5.43	2.73	4.61	2.78	$t(67) = 1.21$, $p > .05$
CSDQ-HYP	27	5.07	2.34	4.93	2.44	$t(66) = .25$, $p > .05$

PMFQ parent mood and feelings questionnaire, *CMFQ* child mood and feelings questionnaire, *PSDQ-ESS* parent strengths and difficulties questionnaire emotional symptoms score, *PSDQ-HS* parent strengths and difficulties questionnaire hyperactivity score, *CSDQ-ESS* child strengths and difficulties questionnaire emotional symptoms score, *CSDQ-HYP* child strengths and difficulties questionnaire hyperactivity score

Homogeneity of covariance matrices was assumed as assessed by the Boxe's M statistic which was not significant (>.05). Wilks' lambda indicated that the discriminant function is highly significant [$\chi^2(2) = 22.005$, $p = .000$] and the proportion of total variability not explained was 75.9 %. Upon examining the standardized canonical discriminant function coefficients, CMFQ scores were the stronger predictors of group membership (.674) followed by PMFQ scores (.507). The classification table indicated that 74.1 % of cases were correctly classified into depressed and non-depressed groups. Non depressed youth were classified as non-depressed 76.3 % of the time; and more than two-third (69.2 %) of depressed youth were classified as depressed based on the discriminant function derived from the Arabic CMFQ and PMFQ while less than one-third (30.8 %) were classified as non-depressed.

Receiver Operating Characteristic Analysis

Cutoff scores were determined using Receiver Operating Characteristic (ROC) Areas Under the Curve (AUC) for discriminating depressed from non-depressed participants. A total sample of 57 participants, 19 depressed and 38 non-depressed, is the minimum appropriate sample size needed to detect differences with 80 % power precision at a 95 % confidence interval for an AUC of .7. The current analysis included 30 participants receiving diagnoses of mood disorders and 76 participants with other psychiatric disorders. The AUC was fair for both CMFQ (AUC = .76, $p < .001$) and PMFQ (AUC = .75, $p < .001$). As the MFQ is meant to be used as a screen for depressive symptoms, a lower cutoff score would be more beneficial as it would not risk missing individuals with sub threshold depression. A score of 22 on the PMFQ and 26 on the CMFQ achieve 76.9 and 73.1 % sensitivity respectively. Specificity would be 64.4 and 67.8 % for the Arabic PMFQ and CMPQ respectively. Another set of cutoff scores was also calculated where specificity was given precedence so as to provide more stringent criteria of a depression classification. A score of 28 on the PMFQ with 61.5 % sensitivity and 79.9 % specificity and 31 on the CMFQ with 61.5 % sensitivity and 76.3 % specificity were selected (Fig. 1).

Discussion

The aim of the current study was to assess the psychometric properties of the Arabic MFQ among children and adolescents seeking outpatient psychiatric treatment. Results indicated that the Arabic MFQ is a valid instrument for use among children and adolescents in a clinical setting.

Both parent and child forms of the MFQ had excellent internal consistencies comparable to the original English

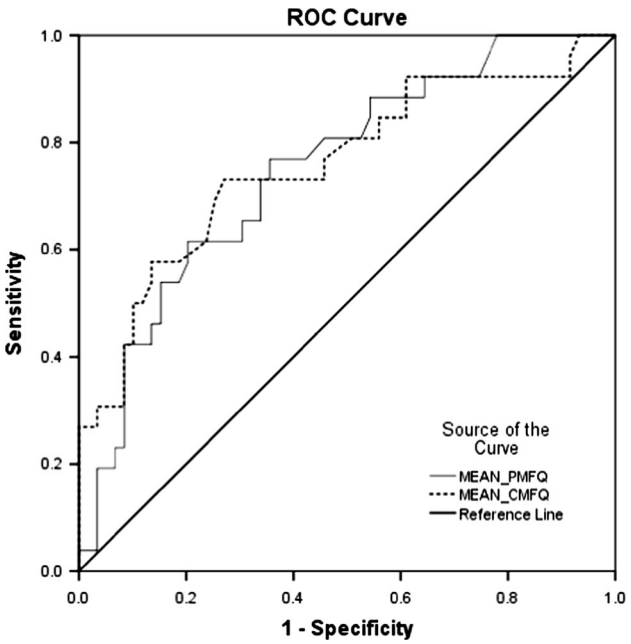

Fig. 1 ROC curve for the Arabic PMFQ and CMFQ

version [19] as well as other versions of the scale such as the Norwegian [23] and Chinese versions [24]. Convergent and discriminant validity was assessed through examining correlations with the Arabic SDQ emotional symptoms and hyperactivity subscale scores respectively for each parent and child forms. Both Arabic CMFQ and PMFQ were moderately correlated with the Arabic SDQ-ESS corresponding forms. The correlation between the parent Arabic MFQ and parent Arabic SDQ-ESS was smaller than that between their corresponding child forms. This may have been due to the fact that children and adolescents tend to be more accurate in reporting internalizing symptoms when compared to parents [30]. Yet, it is important to note that the MFQ in addition to affective symptoms assessed cognitive and behavioral symptoms of depression that are not assessed by the SDQ-ESS and are better picked up by parents. Perhaps the use of a more comprehensive screen for depression in assessing convergent validity would have revealed significant associations with both parent and child versions. Another factor that could have influenced the correlation between the two scales is the fact that the SDQ-ESS is meant to address all emotional difficulties and is not specific to depression per se [16]. Hence; items on the SDQ-ESS are broad and capture much more than symptoms of one disorder. In fact, the SDQ is most commonly used as a gateway questionnaire to a structured psychiatric interview, the Development and Wellbeing Assessment Questionnaire (DAWBA) [31]. For example, the total score obtained on the SDQ-ESS determines whether to administer sections related to anxiety as well as depression. Other studies have used scales such as the BDI to assess convergent validity of the self-report version, and high correlations have been found [23]. We did not use the BDI as it did not have a parent report measure. Divergent validity was examined through correlation with the SDQ hyperactivity subscales of both parent and child forms. The parent SDQ-HYP score did not significantly correlate with the parent Arabic MFQ. The child Arabic MFQ scores however had a small but significant positive correlation with the Arabic SDQ-HYP subscale scores. The small correlation between the two child self-reports may be explained by the overlap in symptoms of poor concentration and impulsivity which are often reported in depression as well [32].

The current study also examined the cutoff scores that best differentiated depressed youth from youth with other psychiatric diagnoses. Our study demonstrated a lower cutoff for the parent form (22.48) compared to the child form (26.41). This is a finding that has also consistently been reported in other studies [25, 26, 28]. In fact, the cutoff score obtained for the Arabic CMFQ was similar to that found in another study exploring the psychometric properties of the English MFQ in a psychiatric sample of children and adolescents [26].

Limitations of this study include first and foremost the small sample size of participants with depressive disorders in general and MDD specifically. This made it difficult to explore the efficiency of the MFQ in differentiating major depression from minor depression. Therefore future studies should address this issue by recruiting a larger sample of adolescents with MDD. Another limitation was the use of clinical diagnoses generated by a child and adolescent psychiatrist instead of the use of a structured or semi-structured psychiatric interview. The lack of a structured clinical interview is especially problematic when diagnosing disorders such as pediatric bipolar disorder [33], and other sub threshold disorders such as schizoaffective disorder and depressive disorder NOS, which meet some but not all criteria for distinctive categories but still cause significant psycho-social impairment [34]. This, in our case, was inevitable since such a tool that is valid for use with children and adolescents in the Arab world is not currently available in Arabic. Another limitation of our study is the presence of a high level of comorbidities in both depressed and non-depressed samples. Such a rate of comorbidity is however expected in a clinical sample. While it is a limitation, this issue has also served as a demonstration of the ability of the MFQ to discriminate between depressed and non-depressed samples despite the presence of potential confounders. Lastly factor structure of the Arabic MFQ was not assessed as the sample size was not large enough to carry out factor analysis techniques. Future studies should aim at assessing factor structure of this scale using a large sample size.

In summary, our study indicated that the Arabic CMFQ and PMFQ are valid assessment tools for child and adolescent depression among Arabic speaking youth. Our findings support the ability of the Arabic CMFQ and PMFQ to effectively discriminate between depressed and non-depressed youth. This is a potentially valuable tool for clinicians that would help them screen for depression in psychiatric settings. This would also help pediatricians and other clinicians in non-psychiatric settings to effectively screen for child/adolescent depression and determine whether a psychiatric referral is necessary. Future studies should assess the factor structure of the Arabic MFQ in larger samples in order to attempt to derive a shorter version as done by Angold et al. [19]. In addition, future research should aim at validating this tool on a community sample and non-psychiatric clinical samples.

Summary

In summary, the current study examined the psychometric properties of the Arabic Mood and Feelings Questionnaire in a sample of children and adolescents along with their parents presenting at an outpatient psychiatry clinic. This

study serves as an initial step towards a more comprehensive psychometric evaluation and validation of the MFQ on a larger non-psychiatric sample. Moreover, the current study aimed at providing clinicians in the Arab World with a screening tool for depressive symptoms that is both short and efficient and may therefore be used as a net for individuals at risk for major depressive disorders.

References

1. Thapar A, Collishaw S, Pine DS, Thapar AK (2012) Depression in adolescence. Lancet 379:1056–1067. doi:10.1016/s0140-6736(11)60871-4
2. Beardslee WR, Gladstone TRG, O'Connor EE (2012) Developmental risk of depression: experience matters. Child Adolesc Psychiatr Clin N Am 21:261–278. doi:10.1016/j.chc.2011.12.001
3. Ryan ND (2001) Diagnosing pediatric depression. Biol Psychiatry 49:1050–1054. doi:10.1016/s0006-3223(01)01143-x
4. Mahfoud ZR, Afifi RA, Haddad PH, DeJong J (2011) Prevalence and determinants of suicide ideation among Lebanese adolescents: results of the GSHS Lebanon 2005. J Adolesc 34:379–384. doi:10.1016/j.adolescence.2010.03.009
5. Beck AT, Ward CH, Mendelson M, Mock J, Erbaugh J (1961) An inventory for measuring depression. Arch Gen Psychiatry 4:561–571. doi:10.1001/archpsyc.1961.01710120031004
6. Alyahri A, Goodman R (2008) The prevalence of DSM-IV psychiatric disorders among 7–10 year old Yemeni schoolchildren. Soc Psychiatry Psychiatr Epidemiol 43:224–230. doi:10.1007/s00127-007-0293-x
7. Elhamid A, Howe A, Reading R (2009) Prevalence of emotional and behavioural problems among 6–12 year old children in Egypt. Soc Psychiatry Psychiatr Epidemiol 44:8–14. doi:10.1007/s00127-008-0394-1
8. Kovacs M (1985) The children's depression, inventory (CDI). Psychopharmacol Bull 21:995–998
9. Abdel-Khalek AM (1998) Criterion-related validity of the Arabic children's depression inventory. Psychol Rep 82:930. doi:10.2466/pr0.82.3.930-930
10. Abdel-Khalek AM (1996) Factorial structure of the Arabic children's depression inventory among Kuwaiti subjects. Psychol Rep 78:963–967. doi:10.2466/pr0.1996.78.3.963
11. Politano PM, Edinger DL, Nelson WM (1989) Comparisons of conduct and affective disordered youth: a psychometric investigation of responses to the children's depression inventory. J Child Psychol Psychiatry 30:431–438. doi:10.1111/j.1469-7610.1989.tb00256.x
12. Ghubash R, Daradkeh TK, Al Naseri KS, Al Bloushi NBA, Al Daheri AM et al (2000) The performance of the Center for Epidemiologic Study Depression Scale (Ces-D) in an Arab Female Community. Int J Soc Psychiatry 46:241–249. doi:10.1177/002076400004600402
13. Mojarrad Y, Lennings CJ (2002) Examination of the Centre for Epidemiological Studies Depression Scale (CES-D) in an adolescent mental health sample. J Appl Health Behav 4:1–6
14. Prescott CA et al (1998) Prediction of major depression and dysthymia from CES-D scores among ethnic minority adolescents. J Am Acad Child Adolesc Psychiatry 37:495–503. doi:10.1097/00004583-199805000-00012
15. Dierker LC et al (2001) Screening for anxiety and depression in early adolescence. J Am Acad Child Adolesc Psychiatry 40:929–936. doi:10.1097/00004583-200108000-0001
16. Goodman R (1997) The strengths and difficulties questionnaire: a research note. J Child Psychol Psychiatry 38:581–586. doi:10.1111/j.1469-7610.1997.tb01545.x
17. Makhoul J et al (2011) Development and validation of the Arab Youth Mental Health Scale. Community Ment Health J 47:331–340. doi:10.1007/s10597-010-9312-6
18. Mahfoud Z et al (2011) Validation of the Arab youth mental health scale as a screening tool for depression/anxiety in Lebanese children. Child Adolesc Psychiatry Ment Health 5 doi:10.1186/1753-2000-5-9
19. Angold A, Costello EJ, Messer SC, Pickles A (1995) Development of a short questionnaire for use in epidemiological studies of depression in children and adolescents. Int J Methods Psychiatr Res 5:237–249
20. Costello EJ, Angold A (1988) Scales to assess child and adolescent depression: checklists, screens, and nets. J Am Acad Child Adolesc Psychiatry 27:726–737
21. Kerfoot M, Koshyl V, Roganov O, Mikhailichenko K, Gorbova I, Pottage D (2007) The health and well-being of neglected, abused and exploited children: the Kyiv street children project. Child Abuse Negl 31:27–37. doi:10.1016/j.chiabu.2006.07.003
22. Swadi H (1998) Self-reported depressive symptoms among male adolescents in the UAE. Arab J Psychiatry 9:13–18
23. Sund AM, Larsson B, Wichstrøm L (2001) Depressive symptoms among young Norwegian adolescents as measured by the mood and feelings questionnaire (MFQ). Eur Child Adolesc Psychiatry 10:222–229. doi:10.1007/s007870170011
24. Cao F-l, Su L-y, Cheng P-x (2009) Reliability and validity of the mood and feelings questionnaire in Chinese adolescents [reliability and validity of the mood and feelings questionnaire in Chinese adolescents]. Chin J Clin Psychol 17:440–442
25. Daviss WB, Birmaher B, Melhem NA, Axelson DA, Michaels SM, Brent DA (2006) Criterion validity of the mood and feelings questionnaire for depressive episodes in clinic and non-clinic subjects. J Child Psychol Psychiatry 47:927–934. doi:10.1111/j.1469-7610.2006.01646.x
26. Kent L, Vostanis P, Feehan C (1997) Detection of major and minor depression in children and adolescents: evaluation of the mood and feelings questionnaire. J Child Psychol Psychiatry 38:565–573. doi:10.1111/j.1469-7610.1997.tb01543.x
27. Cooper PJ, Goodyer I (1993) A community study of depression in adolescent girls. I: estimates of symptom and syndrome prevalence. Br J Psychiatry 163:369–374
28. Wood A, Kroll L, Moore A, Harrington R (1995) Properties of the mood and feelings questionnaire in adolescent psychiatric outpatients: a research note. J Child Psychol Psychiatry 36:327–334
29. Goodman R (2001) Psychometric properties of the strengths and difficulties questionnaire. J Am Acad Child Adolesc Psychiatry 40:1337–1345
30. Lynch F, Mills C, Daly I, Fitzpatrick C (2006) Challenging times: prevalence of psychiatric disorders and suicidal behaviours in Irish adolescents. J Adolesc 29:555–573. doi:10.1016/j.adolescence.2005.08.011
31. Goodman R, Ford T, Richards H, Gatward R, Meltzer H (2000) The development and well-being assessment: description and initial validation of an integrated assessment of child and adolescent psychopathology. J Child Psychol Psychiatry 41:645–656. doi:10.1111/j.1469-7610.2000.tb02345.x
32. Leon GR, Kendall PC, Garber J (1980) Depression in children: parent, teacher, and child perspectives. J Abnorm Child Psychol 8:221–235. doi:10.1007/bf00919066
33. Jenkins MM, Youngstrom EA, Washburn JJ, Youngstrom JK (2011) Evidence-based strategies improve assessment of pediatric bipolar disorder by community practitioners. Prof Psychol Res Pract 42:121
34. Clark LA, Watson D, Reynolds S (1995) Diagnosis and classification of psychopathology: challenges to the current system and future directions. Annu Rev Psychol 46:121–153