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The Development and Psychometric Properties of a Measure of Social and Adaptive Functioning
for Children and Adolescents

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Acknowledgements. This research was supported by the National Health and Medical Research
Council (Australia).

Abstract

Developed, piloted, and examined the psychometric properties of the Child and Adolescent Social and Adaptive Functioning Scale, a self-report measure designed to examine the social functioning of young people in the areas of school performance, peer relationships, family relationships, and home duties/self-care. The findings of confirmatory and exploratory factor analysis support a 4-factor solution consistent with the hypothesized domains. Fit indices suggested that the 4-correlated factor model represented a satisfactory solution for the data, with the covariation between factors being satisfactorily explained by a single, higher order factor reflecting social and adaptive functioning in general. The internal consistency and 12-month test-retest reliability of the total scale was acceptable. A significant, negative correlation was found between the CASAFS and a measure of depressive symptoms, showing that high levels of social functioning are associated with low levels of depression. Significant differences in CASAFS total and sub-scale scores were found between clinically depressed adolescents and a matched sample of non-clinical controls. Adolescents who reported elevated but sub-clinical levels of depression also reported lower levels of social functioning in comparison to non-clinical controls.

Introduction

There are many theoretical issues relating to the construct of social and adaptive functioning. Generally speaking, the construct involves a judgement (made by the self or another person) about the relative success of an individual in fulfilling the expectations of a given culture or society, in various realms of life. Obvious questions arise, such as who should make the judgement of competence, in which realms of life, and according to what criteria? Despite difficulties in terminology and definition, the terms social competence and adaptive or social functioning are widely used in clinical practice. For the purposes of the present study, these terms will be used inter-changeably, with social functioning being defined as the degree to which an individual fulfils various roles in his or her life (Weissman, 1986). Among the primary domains of social functioning relevant to most individuals are work, family relationships, relationships with extended family or friends, leisure and social activities, household duties and self-care. The life domains of significance will vary across the lifespan, thereby making it important for the content of measures of social and adaptive functioning to be tailored to particular age groups.

Studies with clinical samples suggest that deficits in social functioning are associated with many forms of psychological disorders including internalising (e.g., Puig-Antich et al., 1993) and externalising problems (e.g., McGough, Speier & Cantwell, 1993; Renouf, Kovacs & Mukerji, 1997). For example, research has shown that, in general, adolescents with elevated depressive symptoms display lower levels of social functioning, including isolation from peers (Kandel & Davies, 1982), poor academic performance (Kovacs & Goldston, 1991), and poor family relationships (Kandel & Davies, 1982). The pattern of deficits in social functioning may differ according to the form of psychological disorder. For instance, depressed adolescents often withdraw from family and friends, refuse to participate in recreational activities and find it difficult to fulfil work demands at school or home (Puig-Antich et al., 1993). In contrast, young people with schizophrenia often fail in daily self-care routines and in many instances cannot maintain steady friendships, relationships or employment (Patterson et al., 1997; Shepherd, Watt, Falloon & Smeeton, 1989).

There are several reasons why it is important to be able to assess the nature and extent of deficits in social and adaptive functioning. First, the diagnosis of most mental disorders requires not only the presence of specific symptoms of psychopathology, but also impairment in daily functioning. Thus, a disorder is only regarded as being present if the presenting emotional and behaviour patterns interfere and disrupt the individual's ability to function successfully in

important domains of life. Second, it is important that the type of deficits in social functioning can be identified, in order to highlight areas in which remedial intervention and skills training are required. Third, measures of social and adaptive functioning are important in establishing a baseline level for the severity of an individual's presenting problem, against which to assess improvement over time in response to treatment. Effective treatment not only requires a reduction in clinical symptoms, but also the enhancement of social functioning. Therefore, it is important that reliable and valid assessments for social functioning are developed, and that these are sensitive to treatment effects. Finally, it is essential that measures are available that permit identification of social and adaptive functioning deficits at an early stage in life, to guide the prevention of further social decline, the onset of disorders, and to enable appropriate intervention strategies to be implemented.

Although there are numerous clinical interviews, self-report questionnaires, checklists and observational measures that assess symptoms of psychopathology, very little attention has been paid to the development of measures of social functioning. In particular, this area of assessment has been severely neglected with children and adolescents. As social roles vary with age, it is important that measures are developmentally appropriate for children and adolescents. In addition to developmentally appropriate content, such assessment measures for younger populations need to be brief and easy to understand. In the past, direct observations and structured interviews have formed the main methods of assessing social functioning in children and adolescents (e.g., John, Gammon, Prusoff & Warner, 1987). However, these techniques are time consuming and ratings of adjustment are often based on the subjective opinion of the observer. Furthermore, these techniques are impractical for large scale screening purposes in school environments. Self-report measures represent a more efficient method of assessing social functioning in large samples.

Few self-report measures of social functioning are available for direct use with young people, as it has been customary for clinicians and researchers to question parents and teachers about the psychiatric and social functioning of children and adolescents. The preference for using adults to report on the behaviours and functioning of children and adolescents has persisted despite convincing evidence to demonstrate that young people are capable of providing reliable and valid reports about their own behaviour (Chambers, et al., 1985; Edelbrock, Costello, Kalas, & Conover, 1985). Although a small number of self-report measures of child and adolescent social functioning exist, these measures suffer major limitations. The measures available to date tend to be extensions of adult measures of social functioning, and are based on the assumption that social functioning in younger people is comparable to the social roles and activities associated with adulthood. For example, the Social Adjustment Self-Report Scale (Weissman & Bothwell, 1976)

assesses six major areas of functioning including role domains irrelevant to the adolescent age group (i.e., marital role as a spouse, parental role). Participants for whom these roles are irrelevant therefore cannot be rated in these domains. While it is clear that differences in roles exist between adolescents and adults, current self-report measures fail to accommodate this fact.

A further problem for some self-report measures that purport to assess social functioning, is that they are too broad and/or non-specific in scope. For example, the Child Behavior Checklist (Achenbach, 1992) assesses three broad areas of adolescent social competence, namely activities, social functioning and school functioning, capturing a very general and non-specific sample of adaptive functioning, with very few questions in each area (Biederman, Faraone, Chen, 1993). Other measures available such as the Children's Global Assessment Scale (Shaffer, et al., 1983) provide global and often imprecise indicators of social functioning. Furthermore, most self-report measures of social functioning have been based on, and developed for, use with clinical samples. They therefore may not accurately assess, or be generalisable to, social functioning in community samples (e.g., Katz Adjustment Scale, Shaffer & Lyerly, 1963; Social Adjustment Self-Report Scale, Weissman & Bothwell, 1976). Other self-report measures are time-consuming to complete and are therefore not ideal for many research or screening purposes, especially in school environments where there are time constraints and large class groups.

The present study describes a self-report scale (Child and Adolescent Social and Adaptive Functioning Scale; CASAFS, Spence, Price, Sheffield & Donovan, 2000) developed specifically to examine the social and adaptive functioning of young people. Although the measure was developed so as to be suitable for use in the general community, the content was also designed to be relevant in the assessment of social and adaptive functioning in clinical samples. From a theoretical perspective, the measure was designed to assess the primary role domains related specifically to children and adolescents, namely, school performance, peer relationships, family relationships and home duties/self care. It was also developed to examine those domains of functioning for which evidence has demonstrated deficits to be associated with child and adolescent psychopathology, as outlined above. The measure was designed to be relatively brief and easy to complete by older children and adolescents and catered for group or individual administration in both clinical and community settings. Although the CASAFS provides an overall indicator of social functioning, it also provides assessment of functioning in each domain, thus allowing the identification of specific problem areas. It was hypothesized that the factor structure of the measure would reflect the 4 domains of social functioning being examined, but that there would be significant inter-correlation between performance in these areas, the inter-relationships of which could be explained by a higher order factor of social adjustment in general.

This model assumes that individuals may vary in their level of functioning in different social domains, but generally there will be a relatively high level of consistency in performance across domains. It is hypothesized that this inter-correlation reflects the influence of common skills and processes (e.g., problem solving or social skills) that impact similarly upon performance across different social domains. Thus, although there are domain specific factors, there are also common sources of influence relating to social and adaptive functioning in general. Such a model proposes a need to consider separately performance in different domains, in addition to social functioning in general.

The current paper reports on the development and psychometric properties of the CASAFS with a large community sample of adolescents. First, the factorial structure of the CASAFS was examined to validate the hypothesized 4-factor structure of the scale. Second, internal consistency and test-retest reliability were examined. Third, construct validity was considered through the association of the CASAFS with other related measures. It was predicted that the CASAFS would demonstrate a significant negative correlation with a measure of depression, given the reported association between depression and poor social functioning (Slotkin, Forehand, Fauber, McCombs & Long, 1988). Fourth, the clinical utility of the CASAFS was examined by comparing the social functioning scores of a matched sample of depressed adolescents, with those of a sub-clinical sample with elevated levels of depression, and a control group who did not report depressive symptoms. It was expected that the depressed adolescents would present with significantly poorer social functioning compared to the control group, with the non-clinical/elevated depression group falling in between. Finally, for comparative purposes, the paper presents age and gender differences in CASAFS total and sub-scale scores.

Method

Participants

The large community sample involved in the development of the CASAFS was comprised of 1478 adolescents aged 12 to 14 years (Mean age = 12.85, $SD = .54$). The sample consisted of 719 (48.6 %) males and 759 (51.4 %) females. Participants were in grade 8, and were recruited from 15 State and Catholic high schools in the greater Brisbane region, Australia. Schools were selected as being representative of the socio-economic structure and ethnic backgrounds of the Australian population in general, based on local census data. The majority of adolescents attending these schools were from low to middle income families. The majority (89%) of children were of Anglo-Saxon ethnic origin, with the remainder coming from a variety of other ethnic

backgrounds, including Southern and Eastern European (2.4%), Asia and PNG (3.9%) and Central/South America and Africa (2.8%). Unemployment level for the school catchment areas, based on census data, was approximately 5%. Informed consent forms were given out to teachers of all Year 8 classes in participating schools. We have no way of knowing how many students actually received these forms and took them home to their parents. However, written, informed consent was returned by a minimum of 66% of enrolments in participating classrooms. This is the lowest estimate of participation rate and may be an underestimate. In addition, participation in the study was dependent on each student's ability to read, write and speak English proficiently, as judged by their teachers.

Subsets from this sample were involved in specific aspects of the study, such as the collection of test-retest reliability data for the CASAFS, analysis of the exploratory and confirmatory factor compositions of the CASAFS, and the evaluation of convergent and discriminant validity of the CASAFS in relation to other measures. Specific details regarding the age and gender representation in each sub-sample of adolescents, are provided below.

Measures

Child and Adolescent Social and Adaptive Functioning Scale (CASAFS; Spence et al., 2000). The CASAFS is a self-report inventory consisting of 24 items designed to assess the social functioning of children and adolescents, defined as the degree to which an individual fulfils various roles in his or her life (Weissman, 1986). The CASAFS comprises 4 sub-scales examining functioning in 4 key social role areas relevant to children and adolescents, namely school performance, peer relationships, family relationships and home duties/self-care. Six items were selected to reflect each of the 4 dimensions of social functioning. These items were randomly allocated within the questionnaire. Young people were asked to respond on a 4-point scale comprising *never* (1), *sometimes* (2), *often* (3), and *always* (4) in response to each social functioning item. Family relationship items included a fifth scoring category stating 'does not apply to me'. This category was included for students for whom the question was inapplicable (e.g., students without siblings or one of their parents). Four negatively worded items (items 17, 18, 19, 22) required reverse scoring before calculation of the total and sub-scale scores. The questionnaire was designed so that the 1 to 4 ratings on the CASAFS could be summed for the 24 items to provide a total score of social functioning (ranging from 24 to 96), with high scores reflecting a higher level of social functioning. Similarly, sub-scale scores could be calculated, with scores ranging from 6 to 24 (see Table 2 for individual sub-scale items).

The 24 items were selected from an initial pool of 60 items generated to reflect a broad range of relevant social functioning abilities for children and adolescents. The items were selected from a review of existing literature, clinical experience of 4 psychologists who specialize in child and adolescent mental health, existing adult and child global adjustment measures (Endicott, Spitzer, Fleiss & Cohen, 1976; Shaffer, et al., 1983) and interviews with children and adolescents. The 60 items were then examined by a further 3 clinical psychologists who specialize in issues relating to young people. These judges were asked to determine independently (a) into which sub-scale of social functioning (if any) each item would fit, and (b) whether each item could be easily read and understood by students aged 10 to 17 years. There was a high level of agreement between judges, with 49 of the 60 items being allocated into the same sub-scale categories. Items were only retained when there was agreement among judges and if the judges considered the items to be easily readable and understandable by the target age range.

Pilot work was then conducted to confirm that young people were able to understand and read the selected items. The pilot process suggested a number of alterations to the original social functioning measure. First, the original scoring scale involving the three responses of “*much less than other kids* (1), *the same as other kids* (2), and *more than other kids* (3)”, was found to be too complex for some young people to understand and did not represent a broad enough range of responses. The scoring system was therefore modified to the 1 to 4 frequency response scale described above. Upon piloting, this system proved to be more effective, as it avoided mid-point responses and was easier for participants to understand. Second, a number of items were eliminated due to an overlap in content, and some minor grammatical adjustments were made. An attempt to include a recreation/hobbies sub-scale was abandoned after pilot testing revealed that these items did not hold together as a factor. This finding was not surprising, as respondents tended to engage in one or two activities rather than all hobby items and thus the concept of the recreation/hobby factor did not make theoretical sense. Following extensive pilot work, 24 items were retained in order to assess social functioning in the domains of school performance, peer relationships, family relationships and home duties/self-care among children adolescents. The grade level readability estimates for the final 24 items were 5.9 for the Flesch (1948) reading ease formula and 3.7 for the Coleman-Liau reading grade level.

Beck Depression Inventory (BDI; Beck et al., 1961). The BDI, a commonly used self-report measure of depressive symptoms, was utilized in the present study to examine the construct validity of the CASAFS. The BDI consists of 21 items measuring the severity of symptoms of depression according to DSM-IV criteria. These items deal with areas such as sadness, irritability, insomnia, self-blame, loss of appetite, guilt, suicidal ideation and loss of sexual interest. Although

the BDI was initially developed for use with adults, its use with adolescents has been examined in several studies (see Reynolds, 1994 for a review). With adolescents it has been shown to have acceptable internal consistency (ranging from .70 - .90) and adequate test-retest reliability (around .69 over 5 days) (Reynolds, 1994). Minor modifications were made to the original BDI, in accordance with other research studies that have used the BDI with adolescent samples (e.g., Bennett, Ambrosini, Bianchi, Barnett, Metz & Rabinovich, 1997; Carter & Dacey, 1996; Reynolds, 1994). These changes included a) the removal of item 21 that asked about sexual interest, and b) simpler terminology to aid understanding (e.g., for item 11 the word 'annoyed' was used to define irritable).

The BDI has been found to be a reliable and valid measure of depressive symptoms, with or without the inclusion of item 21 (Reynolds, 1994). The scale has high internal consistency and test-retest reliability with adolescent samples (Reynolds, 1994) and correlates highly with clinician ratings of depression (Carter & Dacey, 1996). Given the association between depression and poor social functioning, it was predicted that the CASAFS would correlate significantly with the BDI. The BDI, rather than the CDI, was included in the present study as it is planned to follow-up the population over a 5 year period, retaining the same measure of depression. The BDI is suitable for use over the 12-17 year age group, whereas the CDI is less suitable with older adolescents.

Anxiety Disorders Interview Schedule for Children (Silverman & Albano, 1996). The ADIS-C has been widely used as a diagnostic instrument for the identification of child emotional and behavioral disorders based on DSM-IV diagnostic criteria (APA, 1994). Despite an emphasis on anxiety disorders in its title, the interview provides coverage of a wide range of emotional and behavioural disorders with children and adolescents, including mood disorders. Several studies have confirmed the high inter-diagnostic reliability across all diagnostic categories (Di-Nardo, Moras, Barlow, Rapee & Brown, 1993; Silverman & Nelles, 1988). The measure was selected based on its ease and speed of administration, and relative ease of training interviewers to a satisfactory criterion of reliability. For the purpose of the present study, the ADIS-C was used to identify those adolescents meeting a clinical diagnosis of major depressive disorder, bipolar disorder, dysthymia or other mood disorder. A distinction could therefore be made between three different groups of adolescents (i.e., clinically diagnosed, sub-clinical and no diagnosis) in order to assess the construct validity of the CASAFS. Given the time constraints of the study, only the affective disorder section of the ADIS-C was administered.

Procedure

Following receipt of written informed consent from parents, all 1478 children in the community sample completed a questionnaire package including the CASAFS and BDI in a counterbalanced order to control for order effects. Standardized instructions and questionnaire items were read aloud by trained classroom teachers or research assistants and administered to class groups of approximately 20 to 40 students. Two researchers or teachers were present during questionnaire administration to assist any young person experiencing difficulties completing the questionnaires. Participants were identified by a subject code through which they could be recognized only by the researchers for retest and interview sessions.

Those students attaining a score of 13 or greater on the BDI were categorized as being at high risk for depression, and a follow-up interview was arranged. Interviews were conducted using the ADIS-C and took place at school. Follow-up support of the school guidance officer or counsellor was provided for young people for whom clinical depression or suicidal ideation was identified. In order to meet a diagnosis, students were required to meet key criteria and to obtain a severity rating of at least 4 on the 0- to 8-point severity rating scale of the ADIS-C. Three hundred and ninety-five of the 1478 adolescents (27%) were interviewed as a consequence of BDI scores greater than or equal to 13. Of these students, 42 (2.84% of total sample; 10.6% of those with BDI scores ≥ 13) were diagnosed as meeting clinical criteria for depression, dysthymia, bipolar disorder or some combination of these disorders. Adolescents in the clinical group (meeting diagnostic criteria) were matched in terms of age, gender, and socio-economic status with samples of 42 sub-clinical adolescents (no diagnosis but BDI score ≥ 13) and 42 non-clinical, control adolescents (BDI score < 13). Twelve-month test-retest reliability data were collected for 320 students from the community sample.

Results

Confirmatory factor analysis

A confirmatory factor analysis was conducted using a randomly selected sub-sample of 800 adolescents in order to confirm that the factor structure of the measure did indeed reflect the 4 dimensions of social functioning that the CASAFS purported to assess. The sample comprised equal numbers of males and females aged 12 to 14 years (Mean age = 12.85 years, $SD = .53$), and did not include any participants from the exploratory factor analysis reported below. The data were examined using EQS (Bentler, 1995) with an elliptical re-estimated least squares (ERLS) estimation using the correlation matrix. ERLS estimation was selected given that the tests for

normality revealed evidence of positive kurtosis and negative skewness among many of the questionnaire items. Estimation methods such as the maximum likelihood (ML) rely on assumptions of normality and were therefore not considered the most appropriate for the present analysis. Instead, the ERLS estimation method was considered preferable given that this form of estimation allows variables to share a common non-zero kurtosis parameter, as was evident in the present data set (Anderson & Gerbing, 1988; Bentler, 1995). The sample was not considered large enough to warrant the use of arbitrary distribution estimation methods that are able to overcome the problems of both kurtosis and skewness. The results based on ERLS estimation closely mirrored those produced by ML solution, although the goodness of fit indices were slightly lower for the ML procedure.

It was predicted that the data would be best accounted for by a 4-correlated factor, model in which items loaded upon factors relating to School Performance, Peer Relationships, Family Relationships and Home Duties/Self-Care. The covariation between factors was proposed to be explained by a single, higher order factor reflecting social and adaptive functioning in general. Four models were compared: i) a single factor, ii) 4 uncorrelated factors, iii) 4 correlated factors and iv) 4 first order factors loading on a single, higher order factor. In all instances, the iterative estimation procedure converged, all matrices were positive definite and no parameter estimate problems were encountered.

Model 1 (single factor). The single factor model investigated the degree to which all CASAFS items can be considered as assessing a single, associated dimension of social functioning rather than reflecting separate areas of social functioning. Some CASAFS items loaded significantly ($p < .01$) upon the single factor, with loadings greater than .33. However, items 2, 6, 10, 18 and 22 from the Peer Relationships dimension, item 19 from the Family Relationships scale, and item 20 from the Home Duties/Self-Care dimension, all failed to load significantly onto the single, general factor of social functioning. Values for NFI, NNFI and CFI greater than .90 are considered to reflect a relatively good fit of the model to the data. Table 1 indicates that the single factor solution represents a relatively poor fit of the data, with the normed fit index (NFI), non-normed fit index (NNFI) and comparative fit index (CFI) well below .90.

Model 2 (four uncorrelated/orthogonal factors). For this model, the confirmatory factor analysis fixed the loadings of each questionnaire item of the CASAFS onto the dimension of social functioning that the item was predicted to measure. However, in model 2, the factors were not allowed to inter-correlate. The fit indices for this model indicate a relatively poor fit of the data, with fit indices below .90, as outlined in Table 1.

Model 3 (four correlated factors). The four-correlated factor model again fixed the factor loadings so that questionnaire items loaded only on the latent factor of social functioning that the item was expected to reflect. However, in Model 3 the factors were allowed to inter-correlate. Table 2 shows the factor loadings of each CASAFS item upon the hypothesized latent factor. All factor loadings were significant, with standardized values exceeding .30. All factors were found to intercorrelate significantly ($N=800$, $p<.001$). The School Performance factor correlated significantly with Peer Relationships (.14), Family Relationships (.43), and Home Duties/Self Care (.45) subscales. In turn, scores on the Peer Relationships factor correlated with Family Relationships (.25) and Home Duties/Self Care (.28). Finally, the Home Duties/Self Care factor correlated significantly with the Family Relationships factor (.55). When the standard errors of the correlations were considered, none of the confidence intervals for the correlation between any of the four factors included a value of unity. Thus, it is highly unlikely that any of the factors of the CASAFS were assessing exactly the same dimensions.

In terms of fit indices, the NNFI and CFI values for the four-correlated factor model exceeded .90, with the NFI closely approaching this value, suggesting a relatively good fit of the model to the data. While the chi-squared value indicated a significant difference between the parameters of the data and the model, $\chi^2(246) = 926$, $p <.001$, it is important to note that Marsh, Balla and McDonald (1988) emphasized the difficulty in obtaining non-significant chi-square values with large sample sizes. Hence, in view of the strong fit indices, it would be incorrect to discard model 3 on the grounds of the chi-square statistic. Overall, the fit indices suggested that the four-correlated factor model represents a satisfactory explanation for the data.

To determine whether the four-correlated factor model represented a better fit of the data than other models, the chi-square values of the models were compared in relation to changes in the degrees of freedom. The change in the chi-square statistic between the 4-correlated factor model and the single factor model, in relation to the change in the degrees of freedom, indicated a significantly better fit of the data by the 4-correlated factor model (see Table 1). Furthermore, the four-correlated factor model was found to provide a significantly better fit of the data than the four-uncorrelated factor model.

Confirmatory factor analyses were then conducted separately for boys and girls. The results revealed that the four, correlated factor model provided a good fit for both genders, although the fit indices were slightly higher (around .94) for girls than for boys (around .89). Thus, the factor structure held for both genders. The pattern of correlations between factors was also similar for boys and girls, although the correlations between factors tended to be higher for girls than boys.

Model 4 (four first order factors, loading on one higher order factor). This model examined whether the data could adequately be explained by four first order factors (relating to social functioning in the domains of School Performance, Peer Relationships, Family Relationships and Home Duties/Self Care, the inter-correlations of which could be explained by a higher order factor of social and adaptive functioning in general. As Table 1 indicates, Model 4 also provided a good fit of the data, with NFI, NNFI, CFI values around .90. In order to compare the fit of the higher-order model with the 4-factor first order model (Model 3) it is necessary to examine the value of the target coefficient as described by Marsh and Hocevar (1985). These authors pointed out that the fit of a second-order model can never exceed the fit of the corresponding model involving only the first order factors. Rather, the higher-order model is merely examined to determine the extent to which the covariation between the first order factors can be accounted for by a higher-order factor. In order to determine whether the second-order factor adequately explains the covariation, a target coefficient is calculated from the ratio of the chi-square value of the first model to the chi-square value of the more restrictive second-order model. The target coefficient has an upper limit of 1, and a value greater than .90 suggests that the second-order factor provides a good explanation for the covariance between factors (Marsh & Hocevar, 1985). The comparison of the chi-square values of Model 3 and higher-order Model 4 produced a target coefficient of .99, suggesting that the higher-order model provides a satisfactory explanation for the covariation between first order factors.

The standardized loadings of the first order factors upon the higher-order factor were all statistically significant, being .58 for the School Performance factor, .33 for Peer Relationships, .73 for Family Relationships, and .76 for Home Duties ($p < .001$ in all cases). The percent of variance in scores for each factor being explained by the higher-order factor were 32% for School Performance, 11% for Peer Relationships, 53% for Relationship with Family, and 58% for Home Duties.

Exploratory factor analysis

An exploratory factor analysis was conducted to examine whether questionnaire items cross-loaded onto other factors. Principal components extraction was used with varimax rotation, for a randomly selected subsample of 200 adolescents (50% male, 50% female) with an average age of 12.79 years ($SD = .52$). The analysis produced 4 factors with an eigenvalue greater than 1.5. Likewise, the scree test supported a 4-factor solution. The 4-factor solution accounted for 48.1% of the variance in CASAFS scores. The results of the factor analysis revealed 4 factors relating to School Performance (eigenvalue = 5.16, 22% of variance), Family Relationships

(eigenvalue = 2.43, 10% of variance), Peer Relationships (eigenvalue = 2.09, 9% of variance), and Home Duties/Self Care (eigenvalue = 1.86, 8% of variance). Of the 24 CASAFS items, 23 items loaded in excess of .40 upon their predicted factor. Only item 16 (I shower and keep myself clean) failed to load greater than .40 on any factor, although its loading was highest on the predicted factor of Home Duties/Self Care. Only one item cross-loaded on another factor. Item 18 (I spend most of my spare time alone) loaded significantly upon both the peer relationship factor and the Family Relationship factor. Overall, the exploratory factor analysis demonstrated that the CASAFS items strongly loaded upon factors reflecting the dimensions that the items purported to measure.

Internal consistency and 12-month test-retest reliability

Internal consistency and test-retest reliability was examined using a sub-sample of 320 adolescents (50% male, 50% female) of mean age 12.85 years ($SD = .54$) and for whom 12 month test-retest data were collected. The analysis generated a coefficient alpha of .81 for the scale as a whole. The internal consistency of the sub-scales revealed coefficient alphas of .81 (School Performance); .67 (Peer Relationships); .74 (Family Relationships); and .69 (Home Duties/Self-Care). Using the criterion proposed and justified by Bracken (1987), the total score of the CASAFS can be regarded as having acceptable internal consistency. The internal consistency was somewhat weaker for the individual sub-scales.

The test-retest analyses revealed a 12-month test-retest reliability correlation coefficient of .58 for the total score on the CASAFS. The correlation (temporal stability) of the sub-scale scores were: .63 for School Performance; .59 for Peer Relationships; .54 for Family Relationships and; .48 for Home Duties/Self-Care. Repeated measures analysis of variance (ANOVA) were conducted to examine changes in scores over time. A very small, but significant decrease in the CASAFS total score was found over the 12 month test-retest period, $F(1, 318) = 12.67, p < .001$ (Time 1 Mean=71.68, $SD = 8.62$; Time 2 Mean=69.98, $SD = 9.76$). Significant decreases in scores over time were found for the School Performance sub-scale, $F(1, 318) = 32.57, p < .001$, (Time 1 Mean=16.87, $SD = 3.42$; Time 2 Mean=15.87, $SD = 3.75$) and the Family Relationships sub-scale, $F(1, 318) = 10.05, p < .01$, (Time 1 Mean=18.70, $SD = 3.42$; Time 2 Mean=18.10, $SD = 3.66$). However, no significant changes over time were found for the Peer Relationships nor the Home Duties/Self-Care sub-scales.

Validity of the CASAFS

Construct validity of the CASAFS was examined through the inter-correlation of CASAFS scores with a measure of depressive symptoms, namely the Beck Depression Inventory (BDI). Eight hundred students were involved in this phase of the study. The results showed a significant negative correlation between the CASAFS total scores and the scores on the BDI ($r = -.34$, $p < .01$), revealing that higher levels of social functioning were related to lower levels of depressive symptoms. In addition, most of the sub-scale scores on the CASAFS correlated significantly with the BDI scores (School Performance, $r = -.29$; Peer Relationships, $r = -.19$; Family Relationships, $r = .35$; $p < .01$ in all cases), with the exception of the Home Duties/Self-Care sub-scale which was not significant. All sub-scale correlations were in the expected negative direction, with higher levels of depressive symptoms being associated with lower levels of social functioning in domains of school performance, and peer and family relationships.

The validity of the CASAFS in terms of differential response of clinically depressed, sub-clinical, and non-clinical control adolescents was then examined. This study involved three groups, each comprising 10 males and 32 females of mean age 12.85 years ($SD = .56$). The groups consisted of 42 clinically diagnosed depressed adolescents, 42 sub-clinical adolescents and 42 control participants. The clinically depressed group was selected on the basis of scoring above or equal to 13 on the BDI (Mean = 24.65, $SD = 9.72$) and receiving a clinical diagnosis of major depression, dysthymia, bipolar disorder, or any combination of these depressive disorders according to the ADIS-C structured diagnostic interview. In reality, this sample included young people with a diagnosis of major depressive disorder, as cases of dysthymia and bipolar disorder were not detected in the sample. The sub-clinical group involved students who attained scores above or equal to 13 on the BDI (Mean = 18.76, $SD = 7.71$) but did not meet diagnostic criteria when interviewed. The non-clinical, control adolescents either did not display, or displayed minimal signs of depressive symptoms on the BDI, scoring below a cut-off of 13 (Mean = 5.88, $SD = 4.57$). Students were matched across groups on age, gender and socio-economic status. When exact socio-economic matching was not possible, matches were selected within 1 rank above or below the target status.

Mean values for the CASAFS for each of the 3 groups are shown in Table 3. Multivariate analysis of variance was used to examine differences between the 3 groups 4 sub-scale scores on the CASAFS, with ANOVA being used to compare groups on the total social functioning score. The MANOVA revealed a significant difference between groups, Wilks Lambda $F(8,240)=13.03$, Eta Square=.11. All factor scores, other than the Home Duties/Self-Care dimension, showed significant differences between groups, as shown in Table 3. Groups also differed significantly for

the total CASAFS score. Tukey post-hoc comparisons between groups showed that the clinically depressed group reported significantly lower scores than the non-clinical control group for the total score and all sub-scale scores ($p < .05$), with the exception of the Home Duties/Self-Care sub-scale. The clinical group reported significantly lower scores than the sub-clinical group on the Peer Relationships factor only. The sub-clinical group reported significantly lower scores than the non-clinical control group on CASAFS total score, School Performance and Family Relationship sub-scales.

Mean social functioning scores and gender effects

Analyses of variance were conducted to examine gender differences in social functioning. Given that the narrow age band of the sample, age differences were not examined. However, a significant effect was found for gender, $F(1, 798) = 10.33, p < .01$, with females reporting significantly higher levels of social functioning than males. Table 4 shows the means and standard deviations of the CASAFS total scores and all sub-scale scores for each gender and the total sample. Significant gender effects were evident for several of the CASAFS sub-scales. Females reported significantly higher scores than males on the Peer Relationships sub-scale, $F(1, 798) = 29.34, p < .001$, and the Home Duties/Self-Care sub-scale, $F(1, 798) = 36.49, p < .001$. No significant gender differences were found on the School Performance or Family Relationships sub-scales.

Discussion

The aim of this study was to develop a reliable and valid measure of adaptive social functioning for children and adolescents and to confirm its underlying dimensions. The CASAFS was designed to assess four primary domains of social functioning specifically relevant to young people, namely school performance, peer relationships, family relationships, and home duties/self-care. Construction of the CASAFS addressed several of the limitations inherent in existing measures of child and adolescent social functioning. First, the CASAFS did not downwardly descend from adult scales, being specifically designed to assess domains of functioning relevant to young people. Second, while most measures of social functioning are developed with clinical samples in mind, the CASAFS was designed to be generalizable to community samples, in addition to clinical populations. Third, the scale was designed to be quick to administer and suitable for self-report completion in large groups in school settings, as well as for one-to-one use in the clinic.

As predicted, the confirmatory factor analysis demonstrated that a model with 4 correlated factors provided a good fit of the data set. The CASAFS items were found to load strongly and significantly upon the factors they were designed to measure, justifying sub-scales relating to school performance, peer relationships, family relationships, and home duties/self-care. A high level of inter-correlation between the factors was evident, which could be adequately explained by a higher order factor relating to social and adaptive functioning in general. Although each first order factor loaded significantly on the higher order factor, there was sufficient unique variance explained by each first order factor to justify their examination separately, in addition to use of the total social and adaptive functioning score.

The exploratory factor analysis, using a different sub-sample, provided further support for the 4-factor structure, with the scree test supporting a 4-factor solution accounting for almost half of the variance in CASAFS scores. All items loaded at moderate to high levels onto the factors they were intended to measure, with exploratory factor analysis producing results consistent with the four social role domains found in the confirmatory analysis. One item, Item 18 (I spend most of my spare time alone) significantly cross-loaded upon the peer relationships and family relationships factors. However, this result may be seen as logical, considering that an adolescent's spare time would encompass both time spent with family and time spent with friends. Overall, confirmatory and exploratory analyses supported a 4-factor solution for the CASAFS, with items reflecting the domains of functioning that they purported to measure.

The internal consistency of the CASAFS total score was acceptable, with sub-scale scores showing somewhat weaker reliability. Test-retest reliability with the sample of 320 students revealed acceptable levels of stability in CASAFS total and sub-scale scores, given the 12-month follow-up period. The data revealed a tendency for adolescents to report significantly lower scores over the 12-month retest period. A decrease in social functioning scores between Grade 8 (12 to 13 years) and Grade 9 (13 to 14 years) was evident for total scores and on adolescents' ratings of their functioning in the dimensions of school performance and family relationships. It is unclear whether this finding reflects the impact of re-testing, changes in adolescents' self-perceptions, or a genuine decline in social functioning from 12 to 13 years of age. It is important to note, however, that the extent of the change over time was minimal, albeit statistically significant. Most of the effect of the change over time could be attributed to a decrease in adolescents' ratings of their academic performance over the 12-month period. It is plausible that school performance may suffer over this period due to increased academic demands and competing pressures from other avenues of life. It should be noted that the 12-month retest period was not ideal for the evaluation of test-retest reliability. It would have been preferably to evaluate test-retest reliability both in the

long-term (12-months) and short-term (e.g., 2 weeks). Although one would expect high stability in the short-term, given that minimal changes in social functioning would be expected to occur, a lower level of stability would be anticipated over a 12-month period in response to dynamic changes in social and adaptive functioning associated with changing life circumstances. Indeed, it would not be desirable for test-retest reliability to be extremely stable over such a prolonged period in which developmental changes would be expected to occur. If a measure is highly stable across a period in which behavioural changes are expected to have occurred, then the measure would not be sensitive to changes in the construct being measured. Further research to examine test-retest reliability over a varying time periods, and to establish sensitivity to changes in social functioning (e.g., following treatment designed to enhance social functioning), is therefore warranted.

The construct validity of the CASAFS was supported by a significant correlation between the total CASAFS scores and total scores on the BDI. The relationship between higher levels of social functioning and lower levels of depressive symptoms found in the present study is consistent with the results of previous research examining the association between depression and social functioning (Slotkin et al., 1988). The present study found that the negative association between social functioning and depressive symptoms was evident for all sub-scales, with the exception of the Home Duties/Self-Care sub-scale.

Further support for the construct validity of the CASAFS was obtained through comparison of clinically depressed, sub-clinical and control groups of adolescents. As expected, the clinically depressed adolescents reported significantly poorer social functioning in comparison to the control group. Specifically, adolescents diagnosed with depression reported that they functioned more poorly at school, and in their relationships with family and peers, compared to their non-clinical counterparts. This finding is consistent with research conducted by Puig-Antich et al. (1993) which examined the psychosocial functioning of depressed adolescents. Similar to the present study, Puig-Antich et al. found that, compared to controls, clinically depressed adolescents displayed significant functional impairment in the areas of parent-child relations, sibling relationships, peer relationships and school performance. In the present study, the sub-clinical students also showed significantly poorer social functioning than the control group on the total CASAFS score and in the areas of school performance and family relationships. Comparisons between the clinically depressed and the sub-clinical groups showed the clinical group to report significantly lower scores on the Peer Relationships factor, but not for the total score or any other sub-scale scores. Therefore, it seems that depressed adolescents and those with sub-clinical levels of depressive symptoms, demonstrate similar deficits in social functioning. Overall, these findings

support the validity of the CASAFS by showing it to be sensitive to the impact of depressive symptoms and disorders.

Small but significant gender differences were found on several of the CASAFS domains. Compared to males, females reported significantly higher levels of social functioning overall and in the areas of peer relationships and home duties/self-care. The gender difference in relation to peer relationships is consistent with research into adolescent self-concept, showing that boys perceive themselves as less adequate than girls in their ability to make and maintain close friendships (Harter, 1988).

There are several limitations of the present study that warrant discussion, in addition to those points mentioned above. First, the study did not assess the convergent validity of the CASAFS. It is suggested that future research should aim to rectify this short-coming by comparing the CASAFS to other assessment devices that assess child and adolescent social functioning (i.e., interview schedules, global ratings). In addition, it would be valuable to investigate the properties of the CASAFS with respect to a more diverse range of clinical disorders to confirm that the CASAFS is sensitive to impairment in social functioning associated with other forms of psychopathology and to evaluate its sensitivity to treatment effects.

The second limitation concerns the relatively narrow age band of the sample. Research is now needed that examines the psychometric properties and structure of the measure with a broader range of young people, given that developmental differences are likely to exist in relation to social competence. Similarly, normative and psychometric data should be gathered from samples of youths from other cultural and ethnic backgrounds. Without such data, it remains uncertain whether the findings of the present study will generalize to other age groups and populations.

Further limitations of the present study include the reliance upon self-report and the use of a sole informant. Future studies should examine the level of agreement between multiple informants on the CASAFS, including data from youths, parents, teachers and direct observation. It is not clear from the present study whether children and adolescents are accurate in their self-assessments of their social and adaptive functioning. Furthermore, in the absence of data from multiple informants, it cannot be discounted that the relationship of higher levels of depressive symptoms and lower levels of social functioning reflect common method variance or respondent bias. That is, it is feasible that participants who assess their emotional state negatively (and therefore report more symptoms of depression) also tend to appraise their social functioning negatively. It is also possible that depressed individuals tend to evaluate their functioning more negatively than is actually the case. In order to discount these possibilities, it would be necessary to obtain reports from independent sources, such as parents, teachers or peers. However, one

argument against an explanation of respondent bias is that the relationship between depression and impaired social functioning in the present study was not found for the home duties/self-care subscale. Rather, high levels of depression were associated specifically with low levels of academic performance and impaired peer and family relationships.

In summary, the CASAFS was designed as a self-report measure to assess specific social and adaptive functioning domains relevant to young people. This measure was found to have acceptable psychometric properties, with initial evaluations of reliability and validity proving to be promising. As intended, the CASAFS proved to be easy and quick to administer and provides a valuable self-report measure for assessment in large group situations. The CASAFS is likely to be a useful tool in the assessment of child and adolescent social and adaptive functioning, in both clinical and research contexts. Within clinical settings, it is important that social and adaptive functioning are considered during initial assessment and evaluation of treatment outcomes. For interventions to be regarded as clinically effective, it is essential that they result in improvements in adaptive and social functioning, in addition to reductions in specific symptoms of psychopathology. Given the strong inter-relationships and vicious cycle that operates between clinical psychopathology and social functioning, it is important that both aspects are tackled during treatment, in order to increase the likelihood of maximal and durable therapy outcomes. For many young people, intervention will need to be specifically tailored to the enhancement of social functioning (e.g., social and communication skills training, or remediation of educational difficulties) in addition to the management of clinical symptoms. In addition to community-based screening uses, the CASAFS is likely to be a useful tool in clinical settings for quick screening of social and adaptive functioning deficits. The outcome may then steer the clinician to more in-depth measures that focus on specific aspects of social and adaptive functioning, such as the specific assessment of social skills and social competence, or academic skills.

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Table 1

Fit Indexes for Each Model, with Comparisons Between Models

Model	χ^2	<i>df</i>	<i>p</i>	NFI	NNFI	CFI	Comparison	χ^2 change	<i>df</i> change	<i>p</i> of χ^2 change
Null model	7, 885	276								
Model 1: 1 factor	3, 004	252	< .001	.62	.60	.64	Null vs Model 1	4881	24	< .001
Model 2: 4 uncorrelated factors	1, 298	252	< .001	.84	.85	.86	Model 1 vs Model 2	1706	0	< .001
Model 3: 4 correlated factors	926	246	< .001	.88	.90	.91	Model 3 vs Model 2	372	6	< .001
Model 4: 4 factors, 1 higher order	929	248	<.001	.88	.90	.91	Target Co-efficient = .99			

Table 2

Confirmatory Factor Analysis Standardized Loadings of Areas of Social Functioning on Predicted Four Factors

Predicted social functioning dimension	Questionnaire items	Factor loadings			
		F1	F2	F3	F4
School performance	1) I get good marks in Maths/Arithmetic	.66	—	—	—
	5) I get good marks in Science	.65	—	—	—
	9) I get good marks in Social Science and/or History	.66	—	—	—
	13) I get good marks in reading/writing/English	.67	—	—	—
	17) I have trouble with my school work *	.45	—	—	—
	21) I am successful at my school work	.83	—	—	—
Peer relationships	2) I go out to places with my friends	—	.70	—	—
	6) I have friends of the opposite sex	—	.55	—	—
	10) I go to parties or school dances	—	.70	—	—
	14) I have at least one or two special friends	—	.37	—	—
	18) I spend most of my spare time alone *	—	.30	—	—
	22) I have difficulty making friends *	—	.31	—	—
Family relationships	3) I have a good relationship with my mother	—	—	.75	—
	7) I have a good relationship with my father	—	—	.64	—
	11) I get on well with my brother(s)/sister(s) (if you have any)	—	—	.46	—
	15) I get on well with my relatives	—	—	.56	—
	19) I have fights with my parent(s) *	—	—	.46	—
	23) I have an adult who I can talk to if I have a problem	—	—	.56	—
Home duties/ self-care	4) I help around the house	—	—	—	.67
	8) I keep my room and belongings tidy	—	—	—	.56
	12) I keep my clothes clean and tidy	—	—	—	.54
	16) I shower and keep myself clean	—	—	—	.39
	20) I help with the cooking at home	—	—	—	.42
	24) I help with the cleaning up after meals	—	—	—	.56

* items were reverse scored

Table 3

Mean Scores and Standard Deviations for CASAFS for Each Group

Measure	Non-clinical controls group		Sub-clinical group		Clinical diagnosis group		Univariate ANOVAs		
	Mean	<u>SD</u>	Mean	<i>SD</i>	Mean	<u>SD</u>	<u>F</u> (2, 123)	<u>p</u>	Eta Square
School performance	17.01 ^a	3.33	14.91 ^b	3.68	14.57 ^b	4.20	5.20	<.01	.08
Peer relationships	19.55 ^a	2.61	19.19 ^a	3.33	17.36 ^b	3.35	5.95	<.01	.09
Family relationships	18.96 ^a	2.84	16.90 ^b	3.78	16.23 ^b	3.70	7.12	<.01	.10
Home duties / self-care	18.21 ^a	2.72	16.83 ^a	3.33	17.04 ^a	3.40	2.32	= .10	.04
CASAFS total Score	73.73 ^a	7.47	67.83 ^b	9.59	65.20 ^b	7.66	11.65	<.001	.16

Values with different superscripts indicate significant Tukey group contrasts ($p < .05$).

Table 4

Means and Standard Deviations by Gender for CASAFS Sub-Scale and Total Scores

		School performance	Peer relationships	Family relationships	Home duties /self-care	Total CASAFS score
Males (n=400)	Mean	16.65	18.48	18.76	16.58	70.46
	<u>SD</u>	3.72	2.92	3.36	3.23	9.11
Females (n=400)	Mean	16.47	19.62	18.48	17.88	72.44
	<u>SD</u>	3.38	3.02	3.42	2.87	8.32
Combine d genders (n=800)	Mean	16.56	19.05	18.62	17.23	71.45
	<u>SD</u>	3.55	3.02	3.39	3.12	8.77