



## The structure and use of the teacher and parent Maltese Strengths and Difficulties Questionnaire

Carmel Cefai<sup>a</sup>, Liberato Camilleri<sup>b</sup>, Paul Cooper<sup>c</sup> and Lara Said<sup>d</sup>

<sup>a</sup>Department of Psychology, University of Malta, Malta.

<sup>b</sup>Department of Statistics and Operation Research, University of Malta, Malta.

<sup>c</sup>School of Education, University of Leicester, UK.

<sup>d</sup>Department of Primary Education, University of Malta, Malta.

The Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997) is one of the most commonly used measures of mental health in children and young people and has been translated into more than forty languages. This paper discusses the translation of the SDQ in Maltese and explores the structure and use of the teacher and parent Maltese translations. 4797 school teachers and 2865 parents completed the Maltese teacher and parent SDQ respectively. The results indicate that the Maltese SDQ, particularly the teacher version, meets the basic psychometric properties which make it a useful index of social, emotional and behaviour difficulties and prosocial behaviour amongst Maltese children and young people. Exploratory factor analysis suggests that the Maltese version clearly discriminates between difficulty and prosocial behaviour, and that it may be closer in fit to a three factor model, namely internalized difficulties, externalized difficulties and prosocial behaviour. While there are a number of variations, which may be explained by the local educational and socio-cultural context, Maltese mean scores are quite comparable with international SDQ norms. In view of a number of limitations, however, the use of the Maltese SDQ needs to be used with caution and further research into its psychometric properties is suggested

**Keywords:** SDQ, Maltese, behaviour, assessment, teachers, parents

### Introduction

In his review of over 800 authoritative summaries of educational research on what makes effective teaching and learning, Hattie (2008) underlined the need for evidence-based practice in the classroom, challenging some previously held beliefs what makes effective teaching and learning while providing explanations on why effective approaches work. Cooper and Jacobs (2011) propose a similar approach in social and emotional education, arguing that evidence is not only useful in what works and does not work, but

<sup>1</sup> Corresponding author. Email address: [carmel.cefai@um.edu.mt](mailto:carmel.cefai@um.edu.mt)

it also helps us to understand why one approach works whilst another does not. One of the frequently used tools which seek to address the need for evidence-based approaches in emotional education, is the Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997). It underlines the need for reliable and valid assessment of children's and young people's mental health. The SDQ provides a measure of emotional, hyperactivity, conduct and peer problems, as well as of prosocial behaviour, on the basis of teachers', parents' and self report evaluations. It has become an international screening tool measuring the mental health of children and young people aged 3 to 16 years. It has been translated into more than forty languages, and is widely used in research and in clinical and educational settings to identify children and young persons who may be at risk for social, emotional and behaviour difficulties.

The SDQ has been found to be a reliable and valid instrument, with evidence supporting its five subscales and its significant relationship with other corresponding measures of psychopathology (Smedje et al. 1999; Goodman, Renfew, and Mullick 2000; Goodman 2001; van Widenfelt et al. 2003; Becker et al. 2004; Marzocki et al. 2004; Woerner, Becker and Rothenberger 2004; Couture, Cooper and Royer 2011). Such studies have consistently confirmed that the size and direction of the cross-correlations amongst the emotional, hyperactivity, conduct, peer and prosocial subscales are conceptually meaningful, consistent with current features of co-morbidity, and that each of the subscales is valid as a discrete construct. On the other hand, some more recent studies suggest low reliability in some of the subscales, particularly the peer and conduct problems scales (Dickey and Blumberg 2004; Palmieri and Smith 2007), as well as the self report version (Palmieri and Smith 2007; Percy, McCrystal and Higgins 2008). Some studies have also proposed a three factor model instead of the original five, namely an externalised scale combining conduct and hyperactivity subscales, an internalised scale consisting of emotional and peer problems subscales, and the prosocial scale (Dickey and Blumberg 2004; Hawes and Dadds 2004).

This paper discusses the development and use of the Maltese teacher and parent versions of the SDQ which were used in a national epidemiological study of social, emotional and behaviour difficulties in Maltese schools (Cefai, Cooper and Camilleri 2009). The first section describes the psychometric properties of the Maltese teacher and parent SDQ versions, including their reliability and internal consistency. This is followed by factorial analysis, exploring the measure's externalizing (hyperactivity/conduct) and internalizing (emotional/peer) structures, as well as the prosocial scale as a distinct conceptual structure in contrast to the five subscales. The paper then compares the distribution of the scores at both total and subscale levels by gender and age with the international literature, particularly with the means established by Goodman in the UK. We conclude by proposing the potential use of the teacher and parent Maltese SDQ in establishing an index of the strengths and difficulties of Maltese children, while underlining the measure's limitations.

## **Methodology**

### *Sample*

The sample in this study constituted ten per cent of the entire school population in Malta, thus having

one of the most representative data sets in international research. A random sample of approximately 6600 students was stratified mainly by school type, region and level, with comparable number of male and female students for each age group. In a multistage sampling procedure, 69 primary schools and 44 secondary schools were selected, providing a proportional representation of the school population by school type and region. Cluster sampling was used to choose classes within the selected schools. Random sampling was then used to choose students within the selected classes. The sample consisted of 3325 male and 3262 female students; of which 3174 attended primary schools and the remaining 3413 attended secondary schools. The parents and teachers of the selected students were asked to complete the respective versions of the SDQ amongst other measures.

### *Measures*

The SDQ comprises four difficulty subscales, including five items each, measuring emotional, hyperactivity, conduct and peer difficulties respectively, as well as a prosocial scale which is the strengths-based element of the questionnaire. There are teacher, parent and self report (11years+) versions of the questionnaire. Emotional difficulties relate to anxiety and depression; hyperactivity to restlessness, over-activity and inattention; conduct to behaviour problems such as fighting, cheating and lying; and peer problems to bullying, loneliness, and having problems relating with peers. The SDQ also includes a fifth subscale measuring prosocial behaviour, such as being considerate, helpful, caring and kind to others. The score for each subscale ranges from 0 to 10, while a total difficulty score, which ranges from 0 to 40, is generated by summing the scores of the four subscales. In consultation with Robert Goodman, the author of the SDQ, the Maltese versions were translated through a process of forward and backward translations and then piloted with a number of teachers and parents.

From the 6587 questionnaires that were posted to the parents of the selected students, 2865 (43.5%) completed questionnaires were returned, while a total of 4797 (72.8%) of the questionnaires were returned by the teachers. Though the response rate was lower than the projected 10% of the school population, particularly in the case of the parents, it still represented a relatively large and representative sample of the school population in the country.

### *Analysis*

The aim of this paper is to investigate whether the Maltese SDQ is a reliable and valid tool for research and clinical purposes. Data analysis was undertaken in a three-phased sequence. Firstly, various statistical procedures were carried out to examine the psychometric properties of the instrument. Construct validity, internal consistency, inter-rater and test-retest reliabilities were tested using several measures including Pearson's correlation coefficient, Cronbach's Alpha and the Guttman split half. We also examined the nature of the relationship between the difficulty subscales and the prosocial scale in more detail. The scores in each subscale were categorised in three levels, namely abnormal, borderline and normal, using the

cut off points established in our main study (see Cefai, Cooper and Camilleri 2008). The percentage number of respondents for each combination of difficulty subscale was then compared with the prosocial one. Given that the prosocial scale has been construed as a conceptually distinct construct (Goodman 1997), it was hypothesised that though children with abnormal levels of difficulty were less likely to have high levels of prosocial behaviour, a significant number would still score highly on prosocial behaviour irrespective of their level of difficulty on the four subscales. During the second sequence of analysis, exploratory factor analytical techniques were applied to examine the relationship between the difficulties and prosocial clusters, and to explore whether an internalised (emotional/peer) and externalised (hyperactivity/conduct) subscales fitted the local data better than the four difficulty subscales. Finally, we wanted to compare the mean scores across gender and age-groups for both the total difficulty score and scores obtained from each subscale with the international norms, seeking to explore and explain similarities and differences.

### **Psychometric properties of the Maltese SDQ**

An important early task was to establish the construct validity of the Maltese SDQ version following translation. A series of interviews were held with sixty teachers and sixty parents respectively, asking them about the child's emotional state, conduct, hyperactivity, peer problems and prosocial behaviour. On the basis of the interview data, independent raters then scored the SDQs for the sixty children in each group. A comparison of the interview responses with those of the completed SDQs, gave correlation coefficients ranging from 0.72 to 0.89 (teachers) and from 0.71 to 0.83 (parents) on the five subscales. This suggested a satisfactory level of construct validity of the test for the Maltese population.

Sixty randomly selected participants fluent in both English and Maltese, were asked to complete the SDQ in English and in Maltese. A two week interval was allowed between the administration of the two versions. Half of the respondents were asked to complete the Maltese version first, while the other half were asked to complete the English version first. Cronbach's Alpha for individual items ranged from 0.67 to 0.92, and those for the five subscales from 0.75 to 0.89. This suggests satisfactory reliability of the Maltese translation at both individual and subscale levels.

Another important issue when assessing children's behaviour is that when different raters are involved, such as teachers and parents, they may provide diverging and contrasting evaluations on the same child. All the correlations of the rating scores from teachers' and parents' versions in the five subscales are positive and significant ranging from 0.14 to 0.37, implying that the scores provided by both groups of respondents tend to agree. This also indicates that students with social, emotional and behaviour difficulties tend to have higher emotional, conduct, hyperactivity and peer problem scores no matter who performs the evaluation. Moreover, students with good prosocial behaviour tend to have higher prosocial scores irrespective of the rater. The correlations are lower than those reported by Goodman (2001) (0.25 to 0.48) and other studies such as Van Winderfelt et al. (2003) (0.23 to 0.54). They do follow however, a similar pattern, and are within the Pearson meta-analytic mean for other measures (0.27) established by Goodman (2001). The data thus

underlines the need to use both versions in seeking to examine children's behaviour (cf Goodman et al. 2004).

Further analysis was carried out to examine the internal consistency of the Maltese SDQ. Table 1 shows that the Cronbach's alphas computed from teachers' evaluations are higher than those from parents' evaluations. Feldt's (1969) test reveals that they differ significantly at the 0.01 level of significance, suggesting less consistency in the way parents view their children and less reliability in their assessment of specific behaviour difficulties. In general, these patterns reflect those of other studies which suggest moderate to strong internal reliability across the subscales for the two versions (e.g. Goodman 2001; Hawes and Dadds 2004; Bourdon et al. 2005). Another clear finding is that across the two versions, the alpha coefficients for the peer problems scale are rather low (0.54 for the teacher version and 0.44 for the parent version), indicating potential problems in the internal reliability of this subscale. This is consistent however, with the low coefficients found for the subscale in other studies (Goodman 2001; Van Widenfelt et al. 2003; Muris, Meesters and van Berg 2003; Palmieri and Smith 2007). Goodman (2001) reported Cronbach's alpha coefficients as low as 0.41 (self-report version) and 0.57 (parent version) for this subscale. Palmieri and Smith (2007) suggest that the low reliability may be partly caused by the two reverse-scored items in a five item subscale. Moreover, scales that have few levels of response may result in low alphas (Nunnally and Bernstein 1994). Peer problems may also vary according to young people; while some may not get along with their peers or are bullied, yet they have a number of close friends (Yao et al. 2009).

**Table 1 Cronbach's Alpha for internal consistency within the five subscales**

<b>Subscale</b>	<b>Teachers</b>	<b>Parents</b>
Emotion	0.730	0.661
Conduct	0.737	0.535
Hyperactivity	0.824	0.692
Peer	0.541	0.440
Prosocial	0.825	0.593

An examination of the correlations amongst the five subscales reveals common patterns across the teacher and parent versions. The four problem subscales in both versions are all positively and significantly correlated with the total difficulty score, ranging from 0.59 to 0.80 (Table 2), indicating that the problem subscales provide a valid total difficulty score (Goodman 1997; 2001; Palmieri and Smith, 2007). As expected, the correlations between items in the same subscale are significantly higher than correlations between items in different subscales. The significant differences in correlation values between items within the same subscale and items between different subscales (see Table 3) provide further evidence to the validity of the five subscales making up the measure (Goodman 1997; Palmieri and Smith 2007). Items within the same subscale are all positively correlated and significant; whereas correlations between items within different subscales are low indicating, weaker relationships.

**Table 2 Pearson correlations between total score and subscale scores**

<b>SDQ Scales</b>	<b>Teachers</b>	<b>Parents</b>
Total Difficulty – Emotional Problems	0.634*	0.710*
Total Difficulty – Peer Problems	0.741*	0.674*
Total Difficulty – Conduct Problems	0.801*	0.736*
Total Difficulty – Hyperactivity Problems	0.587*	0.587*
Total Difficulty – Prosocial Behaviour	-0.500*	-0.220*
Emotional Problems – Peer Problems	0.435*	0.382*
Emotional Problems – Conduct Problems	0.187*	0.263*
Emotional Problems – Hyperactivity Problems	0.224*	0.242*
Emotional Problems – Prosocial Behaviour	-0.115*	-0.132*
Peer Problems – Conduct Problems	0.207*	0.206*
Peer Problems – Hyperactivity Problems	0.180*	0.142*
Peer Problems – Prosocial Behaviour	-0.333*	-0.181*
Conduct Problems – Hyperactivity Problems	0.633*	0.471*
Conduct Problems – Prosocial Behaviour	-0.490*	-0.296*
Hyperactivity Problems – Prosocial Behaviour	-0.431*	-0.137*

\* p&lt;0.0005

**Table 3 Pearson correlation ranges of individual items within and between subscales**

<b>Subscale items</b>	<b>Pearson Correlation Ranges</b>	
	<b>Teacher</b>	<b>Parent</b>
Emotion – Emotion	0.223 to 0.483	0.166 to 0.392
Emotion – Peer	0.075 to 0.299	0.041 to 0.300
Emotion – Conduct	-0.036 to 0.299	-0.028 to 0.247
Emotion – Hyperactivity	-0.074 to 0.339	-0.045 to 0.294
Emotion – Prosocial	-0.127 to -0.039	-0.122 to -0.011
Peer – Peer	0.155 to 0.387	0.107 to 0.229
Peer – Conduct	-0.048 to 0.175	-0.052 to 0.154
Peer – Hyperactivity	-0.092 to 0.191	-0.081 to 0.172
Peer – Prosocial	-0.321 to -0.021	-0.166 to -0.011
Conduct – Conduct	0.256 to 0.546	0.128 to 0.290
Conduct – Hyperactivity	0.115 to 0.470	0.035 to 0.322
Conduct – Prosocial	-0.401 to -0.097	-0.206 to -0.023
Hyperactivity – Hyperactivity	0.283 to 0.740	0.150 to 0.574
Hyperactivity – Prosocial	-0.403 to -0.114	-0.302 to -0.040
Prosocial – Prosocial	0.443 to 0.537	0.138 to 0.390

Table 2 shows that the four problem subscales are positively correlated with each other while they are all negatively correlated with the prosocial scale. All the correlations are significant and in the expected direction, while being low enough to indicate that the scales are measuring related but discrete constructs (cf. Goodman 1997). The intercorrelations are substantially stronger for the teacher version, but relatively low for parents, suggesting lower discriminative power for the parent version (Achenbach, McConaughy and Howell 1987; Nelson et al. 2007).

Another clear pattern amongst the problem subscales is that the emotional subscale is more strongly correlated with peer relationships (moderate correlations) than with the other two problem subscales (low correlations), while hyperactivity and conduct are more strongly correlated with each other (moderate to high correlations) than they are with emotions and peer relationships (low correlations). These findings match Goodman's own correlations (2001) where the correlation between the two externalized factors was twice as much in magnitude as that between emotion and externalized factors. We will examine this issue further later on in the paper.

We carried out further investigations on the relationship between the difficulty subscales and the prosocial scale to examine whether the prosocial scale can be construed as a conceptually distinct construct rather than just the reverse of the difficulty score. The difficulty subscales' scores were categorized into three categories - abnormal, borderline and normal in line with the cut off points established in the study (see Cefai, Cooper and Camilleri 2008), while the prosocial scale was categorised as good, borderline and poor. The data suggests that while a large proportion of the students categorized as having 'normal' difficulties tend to have good prosocial behaviour, a substantial number of students categorized as 'borderline' or 'abnormal' still exhibit good prosocial behaviour (Table 4). The teachers' evaluation for instance, suggests that 42.6% of those with high total difficulty scores (abnormal category) still have good prosocial skills and another 30% have borderline prosocial skills, with less than one third exhibiting poor prosocial behaviour. The parents' evaluations suggest a more positive picture, with more than 60% of those with abnormal levels of difficulty having good prosocial behaviour and less than one fourth having poor prosocial behaviour. Over 70% of students categorized as having abnormal emotional difficulties have good prosocial behaviour in both teachers' and parents' versions, while in the case of peer relationships, it is 54% and 64% for teachers' and parents' evaluations respectively. Even for conduct, the percentages are 35% and 46% respectively. It is thus indicative that the prosocial scale is not just the reverse of any of the difficulty subscales or the total difficulty score, but may be construed as a conceptually distinct construct as proposed by Goodman (1997).

### **Exploratory factor analysis**

The Pearson product-moment correlations amongst the five subscales described above suggest that the scales are measuring related but discrete constructs, supporting Goodman's (1997) five factor structure. The stronger relationships between the two internalizing and the two externalizing subscales, however, are also consistent with conceptual and diagnostic frameworks of social, emotional and behaviour difficulties (cf. DSM 1V-R) and some of the SDQ studies in other countries (eg. Koskelainen, Sourander and Vaurus 2001; Dickey and Blumberg 2004; Hawes and Dadds 2004).

**Table 4 Percentage of students grouped by subscale level using teachers' and parents' evaluations**

Difficulty subscales		Prosocial Behaviour					
		Teachers			Parents		
		Good	Borderline	Poor	Good	Borderline	Poor
Total Difficulty	Normal	83.3%	12.9%	3.8%	81.5%	8.6%	9.9%
	Borderline	56.4%	25.9%	17.7%	71.7%	9.1%	19.2%
	Abnormal	42.6%	29.5%	27.9%	60.5%	15.3%	24.3%
Emotional Problems	Normal	77.6%	15.4%	7.0%	78.8%	9.2%	12.0%
	Borderline	70.9%	19.3%	9.8%	75.4%	9.6%	14.9%
	Abnormal	70.0%	17.3%	12.7%	78.6%	10.5%	10.9%
Peer Problems	Normal	79.7%	14.5%	5.9%	80.6%	8.9%	10.5%
	Borderline	63.2%	25.1%	11.7%	72.1%	9.1%	18.9%
	Abnormal	54.1%	23.2%	22.7%	63.6%	13.6%	22.7%
Conduct Problems	Normal	84.1%	11.9%	3.9%	81.9%	8.3%	9.8%
	Borderline	58.4%	30.3%	11.3%	67.5%	13.2%	19.3%
	Abnormal	34.9%	30.7%	34.3%	46.3%	18.2%	35.5%
Hyperactivity Problems	Normal	81.3%	13.6%	5.1%	80.3%	8.8%	10.9%
	Borderline	56.3%	28.7%	15.0%	75.8%	9.8%	14.3%
	Abnormal	45.1%	26.8%	28.1%	66.8%	12.7%	20.5%

These suggest two major structures underlying difficulties in children and young people, namely internalized and externalized problems (cf. Rutter 1967; Aschenebach 1991). The emerging pattern led us to do further analysis of the data to examine the relationships between the five subscales, and whether our data has a closer fit to a three factor model. Exploratory factor analysis was employed in two stages, namely a one-factor unrotated model for all the 25 SDQ items, followed by a two-factor unrotated model for the 20 difficulty items. Table 5 displays the unrotated factor loadings of the 25 SDQ items derived from factor analysis. For both teachers' and parents' evaluations, the one factor maximum likelihood solution is clearly contrasting the first 20 difficulty items with the last 5 prosocial items. Students with social, emotional and behaviour difficulties tend to exhibit less prosocial behaviour; whereas, students with fewer difficulties tend to engage more in prosocial behaviour. This factor suggests the 25 items load into two distinct clusters, namely total difficulty score and prosocial behaviour.

Table 6 displays the unrotated factor loadings of the twenty difficulty items using a two-factor model. For both teachers' and parents' evaluations, the first factor measures the severity of social, emotional, and behaviour difficulties, since all four scales have comparable positive factor loadings. The second factor contrasts students with abnormal conduct-hyperactivity difficulties but who hardly display any emotional-peer problems, against students with abnormal emotional-peer difficulties but who hardly exhibit any conduct-hyperactivity problems. It is evident that the positive factor loadings of emotional-peer difficulties contrast with the negative factor loadings of conduct-hyperactivity.

**Table 5 Unrotated factor loadings of the 25 SDQ items**

Items	1-Factor Model	
	Teachers	Parents
Often complains of headaches, stomachaches, sickness	0.328	0.338
Many worries, often seems worried	0.155	0.327
Often unhappy, down-hearted or tearful	0.394	0.496
Nervous clingy in new situations, easily loses confidence	0.349	0.504
Many fears, easily scared	0.244	0.418
Rather solitary, tends to play alone	0.247	0.329
Has at least one good friend	0.295	0.249
Generally liked by other children	0.399	0.256
Picked on or bullied by other children	0.310	0.406
Gets on better with adults than with other children	0.163	0.276
Often has temper tantrums or hot tempers	0.582	0.515
Generally obedient, usually does what adults request	0.629	0.465
Often fights with other children or bullies them	0.604	0.449
Often lies or cheats	0.626	0.464
Steals from home, school or elsewhere	0.304	0.269
Restless, overactive, cannot stay still for long	0.516	0.325
Constantly fidgeting or squirming	0.598	0.479
Easily distracted, concentration wanders	0.672	0.587
Thinks things out before acting	0.679	0.506
Sees tasks through to the end, good attention span	0.663	0.531
Considerate of other people's feelings	-0.660	-0.252
Shares readily with other children	-0.574	-0.219
Helpful if someone is hurt, upset or feeling ill	-0.565	-0.243
Kind to younger children	-0.578	-0.312
Often volunteers to help others	-0.588	-0.340

**Table 6 Unrotated factor loadings of the 20 SDQ Difficulty items**

Items	2-Factor Model			
	Teachers		Parents	
Often complains of headaches, stomachaches, sickness	0.395	0.260	0.377	0.219
Many worries, often seems worried	0.241	0.614	0.399	0.444
Often unhappy, down-hearted or tearful	0.468	0.476	0.540	0.405
Nervous clingy in new situations, easily loses confidence	0.427	0.500	0.525	0.308
Many fears, easily scared	0.314	0.636	0.461	0.402
Rather solitary, tends to play alone	0.233	0.563	0.322	0.391
Has at least one good friend	0.272	0.235	0.221	0.169
Generally liked by other children	0.325	0.421	0.223	0.363
Picked on or bullied by other children	0.360	0.400	0.438	0.345
Gets on better with adults than with other children	0.219	0.137	0.294	0.169
Often has temper tantrums or hot tempers	0.622	-0.141	0.532	-0.173
Generally obedient, usually does what adults request	0.603	-0.315	0.423	-0.399
Often fights with other children or bullies them	0.614	-0.358	0.431	-0.135
Often lies or cheats	0.630	-0.223	0.444	-0.209
Steals from home, school or elsewhere	0.323	-0.018	0.241	-0.066
Restless, overactive, cannot stay still for long	0.582	-0.482	0.372	-0.462
Constantly fidgeting or squirming	0.664	-0.418	0.524	-0.447
Easily distracted, concentration wanders	0.722	-0.095	0.610	-0.273
Thinks things out before acting	0.669	-0.162	0.474	-0.321
Sees tasks through to the end, good attention span	0.675	-0.021	0.513	-0.291

The explanatory factor analysis indicates a three-factor model, namely externalization and internalization dimensions (difficulty dimensions), and a prosocial dimension. It suggests that the problem scales data may fit better within a two factor model, namely externalizing difficulties (hyperactivity and conduct) and internalizing difficulties (emotional and peer problems). It could be that Maltese teachers and parents do not differentiate children in the same way as their counterparts in other countries, due to social and cultural issues amongst others. It must also be underlined that the dataset in this study was normative rather than clinical, taking all children in the sample, namely those classified as normal, borderline and abnormal, rather than just the latter. This might explain, at least in part, both factors, namely classifying children into those who have problems and those who do not (factor 1) and those who have internalised and externalised problems as well as prosocial behaviour (factor 2). While identifying multiple factors in his data, Achenbach (1991) found the greatest reliability and validity for a two factor solution, differentiating between internalising and externalising problems. Using the SDQ parent version in the USA, Dickey and Blumberg (2004) similarly found that some items in conduct were more closely related to hyperactivity, while some items in peer problems were more strongly correlated with emotional problems. They suggested a collapsed version of the four difficulty subscales into an externalized and an internalized subscales; proposing a three factor model in lieu of the five factor one. In a study with young people in Finland using the self report version, Koskelainen, Sourander and Vaurus (2001) also found evidence for a two factor problem model, namely externalization and internalization dimensions, and a prosocial dimension. On the other hand, in a study of parent and teacher reports using the Dutch SDQ version, Van Leeuwen et al. (2006) found that while the five factor model fitted the data only moderately, the three factor model did not show a better fit.

### **Comparison with UK norms**

A comparison of the mean scores obtained with those provided by Goodman (1997), shows a number of interesting similarities and differences between the two sets of mean scores (Table 7). Firstly, both sets of mean scores elicited from parents are higher than those provided by the teachers, suggesting that the latter tend to provide a more moderate evaluation of students' difficulties and prosocial behaviour. This is consistent with international research, which suggests that parents are more likely to indicate that their child exhibits problem behaviours, while teachers on the other hand may be more concerned with children's functioning in relation to the particular demands of schools, the curriculum and pedagogy in contrast to their general functioning (Achenbach, McConaughy and Howell 1987; Nelson et al. 2007). Secondly, the mean difficulty scores of both the teachers' and parents' evaluations are significantly higher than those provided by Goodman, while the variations in the prosocial scores are less conspicuous. Such differences could be due to various factors, including translation and other methodological issues, and have indeed been reported in studies in other countries (Van Windenfelt et al. 2003; Woerner, Becker and Rothenberger 2004). Maltese teachers and parents may have culturally determined different thresholds of what constitutes a difficulty, underlining the need to take into account cross-cultural factors when comparing the properties of scales and questionnaires.

Moreover, the cross-scale correlations between the four problem scales with the prosocial scale, suggest that while a large proportion of the students categorized as having ‘normal’ difficulties tend to have good prosocial behaviour, a substantial number of students categorized as ‘borderline’ or ‘abnormal’ still exhibit good prosocial behaviour. The teachers’ and parents’ evaluations suggest that less than one third and one fourth respectively of students with abnormal levels of difficulty have poor prosocial behaviour. This is an interesting finding, underlining the potential resilience of Maltese students, who despite a high level of emotional and behaviour difficulties, are still able to engage in prosocial behaviour. We think this merits further research and may suggest how the SDQ may also be used in research on resilience.

**Table 7 Teacher and parent mean SDQ scores by age and gender for Maltese and UK students**

<b>Total Difficulty Score</b>					
<b>Gender</b>	<b>Age</b>	<b>Teachers</b>		<b>Parents</b>	
		Maltese	English	Maltese	English
<b>Male</b>	5-10 yrs	9.37	8.0	11.17	9.3
	11-16 yrs	9.82	7.6	10.24	8.8
<b>Female</b>	5-10 yrs	7.48	5.6	10.74	7.9
	11-16 yrs	8.21	5.0	10.40	7.6
<b>Emotion</b>					
<b>Male</b>	5-10 yrs	1.95	1.5	2.61	1.8
	11-16 yrs	1.90	1.3	2.48	1.8
<b>Female</b>	5-10 yrs	2.13	1.5	2.81	2.0
	11-16 yrs	1.97	1.3	3.12	2.1
<b>Conduct</b>					
<b>Male</b>	5-10 yrs	1.61	1.2	1.94	1.8
	11-16 yrs	1.71	1.2	1.70	1.6
<b>Female</b>	5-10 yrs	1.06	0.6	1.73	1.5
	11-16 yrs	1.38	0.7	1.77	1.4
<b>Hyperactivity</b>					
<b>Male</b>	5-10 yrs	4.08	3.8	4.74	4.1
	11-16 yrs	3.91	3.4	4.04	3.8
<b>Female</b>	5-10 yrs	2.66	2.2	4.26	3.1
	11-16 yrs	3.05	1.9	3.58	2.6
<b>Peer</b>					
<b>Male</b>	5-10 yrs	1.72	1.5	1.87	1.5
	11-16 yrs	2.30	1.6	2.01	1.6
<b>Female</b>	5-10 yrs	1.62	1.2	1.94	1.3
	11-16 yrs	1.82	1.2	1.92	1.5
<b>Prosocial</b>					
<b>Male</b>	5-10 yrs	7.33	6.7	8.41	8.4
	11-16 yrs	6.43	6.4	8.01	8.3
<b>Female</b>	5-10 yrs	8.20	8.0	8.91	8.9
	11-16 yrs	7.55	8.8	8.61	8.8

In line with Goodman's norms (Goodman 1997), there is a decrease in emotional problems with age according to teachers, but while Goodman reports little difference with age according to parents, Maltese parents suggest a higher rate of emotional problems in secondary school amongst female students. The data also suggests increased hyperactivity for females in secondary school according to teachers, and decreased prosocial behaviour according to both teachers and parents. This resonates with the findings of a number of studies carried out in Europe which suggest increasing emotional problems amongst female adolescent students (Muris, Meesters and van Berg 2003; Woerner, Becker and Rothenberger 2004). A recent study exploring the views of students amongst 35 countries in Europe and North America, found that Maltese female students reported significantly increasing stress as they moved from their first to their last year of secondary school education; they were also found to be the most academically pressured students in the study (WHO 2008).

On the other hand, while international literature suggests that peer problems, conduct and hyperactivity either decrease or are stable from primary to secondary school (Goodman 1997, Muris, Meesters and van Berg 2003; Van Windenfelt et al. 2003; Woerner, Becker and Rothenberger 2004), in the Maltese sample, overall hyperactivity decreases (except for female students), conduct and peer problems increase, and prosocial behaviour decreases. Parents' evaluations for boys, however, suggest higher conduct problems for primary school boys concurring with Goodman's scores (Goodman 1997). Goodman's means more or less concur with Maltese means for decreasing prosocial behaviour, but other studies indicate increasing prosocial scores in adolescence (Van Windenfelt et al. 2003). The increasing behaviour problems and decreasing prosocial behaviour in the Maltese context may be related, at least in part, to the Maltese educational system, where small primary community schools are transformed into large secondary schools streamed by ability. Indeed the most problematic behaviour in Maltese schools was found in secondary schools for low achieving students (Cefai, Cooper and Camilleri 2008). Another possibility is the increasing academic pressures in a highly competitive secondary school system marked by selection, segregation and examination, an explanation also suggested by Giannakopoulos et al. (2009) who found a similar finding amongst Greek students. It must be noted that a more comprehensive and inclusive system is now being implemented in Maltese secondary schools.

### **Conclusions and recommendations**

The results of this study indicate that the Maltese SDQ meets the basic psychometric properties which make it a useful index of social, emotional and behaviour difficulties and of prosocial behaviour amongst Maltese children and young people. Maltese mean scores are quite comparable with UK and other international SDQ norms. There are however, some variations in the means, such as higher means for the Maltese population, which may be explained by the local educational and socio-cultural context. Such differences underline the need to use the Maltese norms (see Cefai, Cooper and Camilleri 2008) when scoring the questionnaire, as the use of Goodman's UK norms with the Maltese population would lead to over-

diagnosis of difficulty. The measure, particularly the teacher version, has overall good internal consistency, at both total difficulty and individual subscale levels. This reflects its original construction as an instrument assessing general social, emotional and behaviour difficulties as well as a measure of the major forms of such difficulties and of prosocial behaviour. At the level of content, the teacher version appears to be a more robust instrument, with satisfactory internal consistency except for the peer difficulty subscale. The parent version appears to have lower discriminative power, with relatively lower Cronbach's alphas than those for the teachers' version, suggesting cautious and judicious use. The low correlations between the teacher and parent versions also underline the need of multiple informants when assessing child behaviour, with both teachers and parents providing valuable, even if diverging, information (Goodman et al. 2004).

While the total difficulty score appears to be a reliable overall evaluation of children's and young people's difficulty, the Pearson's correlations and the exploratory factor analysis both suggest that a three factor model may be a more useful structure to describe the strengths and difficulties of children and young people in the local context. A restructuring of the four difficulty subscales in two internalised and externalised structures, while retaining the prosocial subscale as conceptually distinct dimension, may thus be warranted. This is particularly relevant in view of the lack of reliability of the peer relationships subscale, rendering it a relatively weak subscale, in line with international findings (Muris, Meesters and van Berg 2003; van Widenfelt et al. 2003). A three factor structure does not exclude however, the use of the four problem subscales, given that the alphas for the five subscales are strong enough to warrant their use if there is a specific reason for doing so. Further research in the future may help to determine which of the two models will travel better in the local context, and to examine the possibility of a better-fitting theoretical construct of social, emotional and behaviour difficulties in the local context.

The analysis also suggests that the construct of prosocial behaviour is more distant from the four difficulties constructs and that it is not merely the inverse of difficulty. More importantly the presence of difficulty does not automatically mean the absence of prosocial behaviour. This underlines the need to use a measure which examines children's and young people's strengths as well as difficulties. The findings also suggest that the SDQ is potentially useful as a measure of resilience in children and young people, exploring the balance between the difficulties/risks and strengths/protective factors (cf. Cefai 2008). Further research is suggested however, to determine more conclusively whether the prosocial scale is a stand alone, conceptually distinct construct in the local context, including an examination of the theoretical as well as the item-specific nature of the hypothesised distinction between difficult behaviour and prosocial behaviour.

This study may be viewed as an important step towards the use of the Maltese SDQ for research, clinical and educational purposes. It suggests that the Maltese version may be a useful index of children and young person's psychological difficulties, of specific behaviour problems, particularly internalising and externalising difficulties, and of prosocial behaviour. Given that this was the first-ever study of its kind in Malta, we call for further research aimed at examining the Maltese SDQ from an empirical and as well as a theoretical perspective. Further research is needed to explore the concurrent use of both the five factor and the

three factor models depending on the nature of the activity being undertaken. Research also needs to examine further the psychometric properties of the instrument with a wider population, particularly the reliability of the parents' version. Construct validity was based only on interviews with sixty teachers and sixty parents and making use only of one question for each scale. The use of other established measures of psychopathology such as the *Child Behavior Checklist* (Achenbach 1991) would be useful in such an exercise. Further research also needs to be carried out to examine the reliability, internal consistency and structural validity of the Maltese self report version.

### **Acknowledgements**

We would like to thank Dr Robert Nix from the Prevention Research Centre at Pennsylvania State University, USA, for his valuable comments.

### **References**

- Achenbach, T. M. 1991. *Integrative Guide to the 1991 CBCL/4-18, YSR, and TRF Profiles*. Burlington, VT: University of Vermont, Department of Psychology.
- Achenbach, T. M., McConaughy, S. H. and Howell, C. T. 1987. Child/adolescent behavioral and emotional problems: Implications of cross-informant correlations for situational specificity. *Psychological Bulletin*, 101, 213-232.
- Becker, A., Woerner, W., Hasselhorn, M., Banaschewski, T. and Rothenberger, A. 2004. Validation of the parent and teacher SDQ in a clinical sample. *European Child and Adolescent Psychiatry*, 13 (Suppl 2), 11–16.
- Bourdon, K.H., Goodman, R., Rae, D., Simpson, G. and Koretz, D.S. 2005. The Strengths and Difficulties Questionnaire: U.S. normative data and psychometric properties. *Journal of the American Academy of Child and Adolescent Psychiatry*, 44, 557–564.
- Cefai, C. 2008. *Promoting Resilience in the Classroom. A Guide to Developing Pupils' Emotional and Cognitive Skills*. London: Jessica Kingsley Publishers.
- Cefai, C., Cooper, P. and Camilleri, L. 2008. *Engagement Time: A national study of students of students with social, emotional and behavioural difficulties in Maltese schools*. Malta: European Centre for Educational Resilience & Socio-Emotional Health, University of Malta.
- Cooper, P. and Jacobs, B. 2011 *Evidence of Best Practice Models and Outcome in the Education of Children with Emotional Disturbance/Behavioural Difficulties An International Review*. Dublin: National Council for Special Education
- Couture, C., Cooper, P. and Royer, E. 2011 A Study of the Concurrent Validity between the Boxall Profile and the Strengths and Difficulties Questionnaire. *International Journal of Emotional Education*, 3 (1)
- Dickey, W.C. and Blumberg, S.J. 2004. Revisiting the factor structure of the Strengths and Difficulties Questionnaire: United States, 2001. *Journal of the American Academy of Child and Adolescent*

*Psychiatry*, 43, 1159–1167.

- Feldt, L. S. 1969. A test of the hypothesis that Cronbach's alpha or Kuder-Richardson 20 coefficient is the same for two tests. *Psychometrika*, 34, 363–373.
- Giannakopoulos, G., Tzavara, C., Dimitrakaki, C., Kolaitis, G., Rotsika, V. and Tountas, Y. 2009. The factor structure of the Strengths and Difficulties Questionnaire (SDQ) in Greek adolescents. *Annals of General Psychiatry*, 26 (8), 20.
- Goodman, R. 1997. The Strengths and Difficulties Questionnaire: A research note. *Journal of Child Psychology and Psychiatry*, 38, 581–586.
- Goodman, R. 1999. The extended version of the Strengths and Difficulties Questionnaire as a guide to child psychiatric caseness and consequent burden. *Journal of Child Psychology and Psychiatry*, 40, 791–801.
- Goodman, R. 2001. Psychometric properties of the Strengths and Difficulties Questionnaire (SDQ). *Journal of the American Academy of Child and Adolescent Psychiatry*, 40, 1337–1345.
- Goodman, R., Ford, T., Simmons, H., Gatward, R., and Meltzer, H. 2000. Using the Strengths and Difficulties Questionnaire (SDQ) to screen for child psychiatric disorders in a community sample. *British Journal of Psychiatry*, 177, 534–539.
- Goodman, R., Renfrew, D., and Mullick, M. 2000. Predicting type of psychiatric disorder from Strengths and Difficulties Questionnaire (SDQ) scores in child mental health clinics in London and Dhaka. *European Child and Adolescent Psychiatry*, 9, 129–134.
- Goodman, R., Ford, T., Corbin, T., and Meltzer, H. 2004. Using the Strengths and Difficulties Questionnaire (SDQ) multi-informant algorithm to screen looked-after children for psychiatric disorders. *European Child and Adolescent Psychiatry*, 13, 25–31.
- Hattie, J. (2008) *Visible Learning*. London: Routledge.
- Hawes, D.J., and Dadds, M.R. 2004. Australian data and psychometric properties of the Strengths and Difficulties Questionnaire. *Australian and New Zealand Journal of Psychiatry*, 38, 644–651.
- Koskelainen, M., Sourander, A., and Kaljonen, A. 2000. The Strengths and Difficulties Questionnaire among Finnish school-aged children and adolescents. *European Child and Adolescent Psychiatry*, 9, 277–284.
- Koskelainen, M., Sourander, A., and Vauras, M. 2001. Self-reported strengths and difficulties in a community sample of Finnish adolescents. *European Child and Adolescent Psychiatry*, 10, 180–185.
- Leadbeater, B.J., Kupermin, G.P., Blatt, S.J. et al. 1999. A multivariate model of gender differences in adolescents' internalizing and externalizing problems. *Developmental Psychology*, 35, 1268–82.
- Marzocchi, G.M., Capron, C., Di Pietro, M., et al. 2004. The use of the Strengths and Difficulties Questionnaire (SDQ) in Southern European countries. *European Child and Adolescent Psychiatry*, 13 (Suppl 2), II40–46.
- Mellor, D. 2005. Normative data for the Strengths and Difficulties Questionnaire in Australia. *Australian Psychologist*, 40, 215–22.

- Muris, P., Meesters, C., and van Berg, F. 2003. The Strengths and Difficulties Questionnaire (SDQ) further evidence for its reliability and validity in a community sample of Dutch children and adolescents. *European Child and Adolescent Psychiatry*, 12, 1-8.
- Nelson, R., Epstein, M, Griffith, A. and Hopper, J. 2007. Factor Structure, Internal Consistency, and Interrater Reliability of the Early Childhood Behavior Problem Screening Scale. *Topics in Early Childhood Special Education*, 27, 148.
- Nunnally, J.C. and Bernstein, I.H. 1994. eds. *Psychometric Theory*. 3rd ed. New York: McGraw-Hill.
- Palmieri, P.A. and Smith, G.C. 2007. Examining the Structural Validity of the Strengths and Difficulties Questionnaire (SDQ) in a U.S. Sample of Custodial Grandmothers, *Psychological Assessment*, 19(2), 189–198.
- Percy, A., McCrystal, P. Higgins, K. 2008. Confirmatory factor analysis of the adolescent self-report Strengths and Difficulties Questionnaire. *European Journal of Psychological Assessment*, 24, 43-48.
- Rutter, M. 1967. A children's behavior questionnaire for completion by teachers: preliminary findings. *Journal of Child Psychology and Psychiatry*, 8, 1–11.
- Smedje, H., Broman, E., Hetta, J. and von Knorring, A.L. 1999. Psychometric properties of a Swedish version of the Strengths and Difficulties Questionnaire. *European Child and Adolescent Psychiatry*, 8, 63–70.
- Van Leeuwen, K., Meerschaert, T., Bosmans, G., De Medts, L. and Braet, C. 2006. The Strengths and Difficulties Questionnaire in a Community Sample of Young Children in Flanders. *European Journal of Psychological Assessment*, 22(3), 189–197
- Van Widenfelt, B.M., Goedhart, A.W., Treffers, P.D. and Goodman R. 2003. Dutch version of the Strengths and Difficulties Questionnaire (SDQ). *European Child and Adolescent Psychiatry*, 12, 281–9.
- World Health Organisation (WHO) 2008. *Inequalities in Young People's Health. School-Aged Children International Report From the 2005/2006 Survey*. Last retrieved 15<sup>th</sup> April 2011 from <http://www.euro.who.int/Document/E91416.pdf>
- Woerner, W., Becker, A. and Rothenberger, A. 2004. Normative data and scale properties of the German parent SDQ. *European Child and Adolescent Psychiatry*, 13 (Suppl 2), II3-10.
- Yao, S., Zhang, C., Zhu, X., Jing, X, McWhinnie, C.M, and Abela, J. 2009. Measuring Adolescent Psychopathology: Psychometric Properties of the Self-Report Strengths and Difficulties Questionnaire in a Sample of Chinese Adolescents. *Journal of Adolescent Health*, 45, 55–62.