The Strength and Difficulties Questionnaire: Predictive validity of parent and teacher ratings for help-seeking behaviour over one year

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Abstract

Latent growth modelling was applied to investigate the predictive validity of the subscale and total difficulties scores from the Strengths and Difficulties Questionnaire (SDQ). Prospective data were collected on a community sample of n = 659 *children (aged 7 to 11 years) over a one-year period. Outcomes at one year after baseline were defined in terms of parental help-seeking behaviour and worry. Teacher-reported SDQ summary scores were more predictive of help-seeking behaviour from both the general practitioner and the school than parent-reported SDQ scores. Changes (increases) in SDQ scores proved more useful in predicting help-seeking than initial scores. Gender, age and socioeconomic status were not related to help-seeking behaviour, but the parents of children with higher IQ scores were more likely to seek help. The usefulness of the SDQ to predict help-seeking behaviour for emotional-behaviour difficulties in community settings and its implications for service-use issues in the UK context are discussed.*

AROUND 10 per cent of British children and adolescents have emotional-behaviour disorders that result in substantial distress or social impairment (Goodman *et al.*, 2002; Meltzer *et al.*, 2000). Only about 20 per cent of these children are in contact with Child and Adolescent Mental Health Services (CAMHS) (Garralda, 2004; Leaf *et al.*, 1996; Meltzer *et al.*, 2000). Yet the access to and demand for CAMHS have led to widespread and intractable problems in service provision and delivery, including long waiting lists, problems with non-attendance and complaints of inaccessibility by both service-users' families and primary care referrers (Heywood *et al.*, 2003).

One way in which primary care health professionals and other front-line workers can ease the population burden on CAMHS is by the early detection and management of emergent or low-level psychiatric problems so as to prevent these from developing into full-blown disorders. Epidemiological longi-tudinal studies of child health and service use have shown that a significant proportion of those with psychiatric disorders have illnesses that persist, with significant consequences for the child and other family members. This can result in considerable disruption for educational systems, incurring costs to both society and the economy (Koot, 1995). The need for early detection and intervention in the community setting is therefore crucial to preventative efforts. Those who are identified earlier may respond better to interventions in primary care health (Kramer & Garralda, 2000) or school settings (Appleton, 2000).

Early detection of emotional-behaviour disorders at the primary care level has, however, been shown to be difficult, and currently practice in the UK is still very limited (Appleton, 2000; Kramer & Garralda, 2000). Recently, increasing attention has been paid to improving procedures for detecting psychiatric disorders in community samples,

classifying children and adolescents as potential 'cases' using thresholds on screening questionnaires, or scoring them on multidimensional symptom scales (Costello *et al.*, 1993; Goodman *et al.*, 2003; Lahey *et al.*, 1996; Shaffer *et al.*, 1996).

The Strengths and Difficulties Questionnaire (Goodman, 1997, 2001) is frequently used in UK samples to screen children aged 3–16 years for emotional, behavioural and social or relationship difficulties. The SDQ is ideal for use in community or primary care settings because it is shorter than established instruments, can be administered to parents, teachers, or for 11–16-year-olds through self-report. Apart from its brevity (it takes approximately five minutes to complete), it provides ratings from multiple informants that can be used for multi-informant comparisons. In most areas it has been shown to function as well as the established Rutter questionnaires and it has some advantages over the Child Behaviour Checklist (Achenbach, 1991) which is more time consuming to administer (Goodman, 1997). In addition, the SDQ is free to use, with versions for download available on the Internet (http://www. sdqinfo.com). International versions are available, with the SDQ translated into over 40 languages.

Empirical studies have begun to reveal the SDQ's usefulness in detecting psychiatric disorders in the community. Multi-informant SDQs have identified individuals with a psychiatric diagnosis with a specificity of 94.6 per cent (95 per cent confidence interval (CI), 94.1–95.1) and a sensitivity of 63.3 per cent (59.7–66.9 per cent) (Goodman *et al.*, 2003). Similar results were reported by criterion validity studies for the SDQ in Australia (Mathai *et al.*, 2003), the Nordic countries (Obel *et al.*, 2004), Dhaka (Goodman *et al.*, 2000), southern European countries (Marzocchi *et al.*, 2004), the Netherlands (van Widenfelt *et al.*, 2003) and Germany (Woerner *et al.*, 2002).

Several studies in the UK and abroad have demonstrated the construct validity of the SDQ (see Table 1 for a summary), but

only four studies (Ford *et al.*, 2003; Goodman *et al.*, 2002; Hawes & Dadds, 2004; Mathai *et al.*, 2003) have reported longitudinal data, of which only two are UK-based (Ford *et al.*, 2003; Goodman *et al.*, 2002).

An aspect that has not yet been addressed is the ability of SDQ scores to *predict* later, not concurrent, help-seeking behaviour. SDQ scores have been shown to correlate with *concurrent* treatment status (Hawes & Dadds, 2004) and help-seeking (Koskelainen *et al.*, 2000), but neither of these studies was from UK samples and neither approached this issue using prospective longitudinal data. If the SDQ is to play a role in the early detection and identification of children in the community who may cause enough concern to parents or teachers to trigger help-seeking, then its predictive validity in this context needs to be demonstrated.

The first aim of the current study was therefore to test the ability of SDQ scores to predict help-seeking behaviour at one year. For this purpose, we divided sources of help and advice into three levels, following the approach of Ford *et al.* (2003): *informal contacts* included discussing child mental health concerns with family members or friends; *front-line services* comprised the general practitioner (GP) and within-school resources, such as teachers and head-teachers; *specialist services* referred to CAMHS. We also included a fourth outcome measure, *parental worry*, to investigate whether SDQ baseline scores would predict how much a parent would feel worried or concerned about their child one year later.

Many other factors have been shown to influence referral and help-seeking, including the nature, severity and comorbidity of mental health problems, psychosocial family stress, socio economic status (SES), parental psychiatric illness, poor peer and school performance, age and gender (Garralda & Bailey, 1988; Verhulst & van der Ende, 1997; Zahner & Daskalakis, 1997; Zwaanswijk, Van der Ende *et al.*, 2003; Zwaanswijk, Verhaak, *et al.*, 2003). We therefore also considered child age, gender, IQ (as an index of

Authors	N	Sample	Country	Age	Type of study and results
Goodman, 2001	10438	Community population	UK	3–16	Internal and criterion validity: factor structure confirmed and predictive of diagnoses
*Hawes & Dadds, 2002	1359	Community population	Australia	4–9	Internal and criterion validity: CFA confirmed factor structure of SDQ-P. Predicted diagnosis, current treatment status and was stable over 12-month period
Muris *et al.*, 2003	562	Community population	Netherlands	9–15	Internal and criterion validity: SDQ-P,T,S correlated with other measures of psychopathology. CFA confirmed factor structure
Ronning *et al.*, 2004	4167	School-based community sample	Norway	11–16	Internal validity: CFA confirmed factor structure of the SDQ-S and UK cut-offs
Smedje *et al.*, 1999	900	Community population	Sweden	6–10	Internal validity: CFA confirmed factor structure of the SDQ-P,T
Woerner *et al.*, 2002	930	Community population	Germany	6–16	Internal validity: CFA confirmed factor-structure and cut-offs
Koskelainen *et al.*, 2001	1458	Community population	Finland	13–17	Internal validity: CFA confirmed factor structure of the SDQ-S and UK cut-offs
Dickey & Blumberg, 2004	9574	Community population	USA	4–17	Internal validity: CFA did not confirm UK factor structure
Becker *et al.*, 2004	214	Clinical	Germany	11–17	Criterion validity: SDQ-S predicted diagnoses and other psychopathology measures
Becker *et al.*, 2004	543	Clinical	Germany	5–17	Criterion validity: SDQ-T,P predicted diagnoses and other psychopathology measures
Mathai, *et al.*, 2004	83 116	Community population Mental health clinic attendees	UK	11–16	Discriminative validity: SDQ-S distinguished between the two samples
van Widenfelt *et al.*, 2003	970	Community population	Netherlands	11–16	Criterion validity: SDQ-P,T,S correlated with other measures of psychopathology
Goodman *et al.*, 2003	7984	Community population	UK	5–15	Criterion validity: SDQ-P,T,S predicted diagnoses

Study	N	Sample	Country	Age	Description
Goodman et al., 2000	101 89	Mental health clinic attendees (UK) Mental health clinic attendees (Bangladesh)	UK Bangladesh	4–16	Criterion validity: The computerized diagnostic algorithm of SDQ-P,S,T predicted psychiatric diagnosis for both samples
Mathai et al., 2004	101	Mental health clinic attendees	Australia	4–15	Criterion validity: The computerized algorithm of SDQ-P,S,T predicted psychiatric diagnosis
**Koskelainen et al., 2000	735	Community population	Finland	7–15	Criterion validity: SDQ-P,T,S correlated with help-seeking and other measure of psychopathology
*Ford et al., 2003	929	With psychiatric disorder out of community sample of 10 438	UK	5–15	SDQ used to identify psychiatric cases who were followed up for service use. Predictive validity of SDQ not discussed
*Goodman et al., 2002	936 3029	Psychiatric disorder Without psychiatric disorder	UK	5–15	Stability of SDQ scores over 18 month follow-up
*Mathai et al., 2003	130	Mental health clinic attendees	Australia	4–14	SDQ-T,P,S and clinician-rated as outcome measure for use in mental health settings
Marzocchi et al., 2004	n/a	Various	Southern Europe	4–17	Review of use of the SDQ in Southern European countries
Obel, et al., 2004	n/a	Various	Nordic Countries	4–17	Review of use of the SDQ in Nordic countries
Woerner et al., 2004	n/a	Various	n/a	4–17	Review of use of the SDQ in countries other than Europe
Rothenberger & Woerner, 2004	n/a	n/a	n/a	n/a	Editorial to special issue for evaluations and applications of SDQ

Table 1: Studies conducted to investigate the validity and reliability of the SDQ. *Studies with the SDQ that included a longitudinal component; **studies with the SDQ that included a help-seeking component; T = teacher; P = parent; S = self; CFA = confirmatory factor analysis.

school performance or ability) and SES as predictors of parental help-seeking.

Since prior literature has suggested that severity of symptoms predict help-seeking (Garralda & Bailey, 1988), we hypothesised that parents who rated their children as having more psychopathology i.e. with higher SDQ scores, would be more likely to seek help over the following year than children with lower scores. SDQ ratings were obtained from two sources, parents and teachers, because having ratings from more than one informant is one of the advantages of the SDQ (Rothenberger & Woerner, 2004). Although rates of disorder sometimes vary according to who is the informant (Achenbach, 1991; Goodman *et al.*, 2002; Hay *et al.*, 1999), both may be valuable in predicting subsequent help-seeking. The age range of the current sample (7–11 years) precluded the use of the self-report version of the SDQ, restricting us to two sources of information (parent and teacher).

Our second aim was to investigate whether patterns of SDQ scores over time i.e. increases or decreases in repeated SDQs, would be predictive of help-seeking behaviour. For instance, although an initial SDQ might not predict help-seeking behaviour, persistence, or changes in score levels, over more than one assessment wave (initial, six months and one year) might be associated with help-seeking behaviours. A strength of the current study was therefore its use of a repeated measures design and longitudinal analysis of individual trends in SDQ scores. We note that the SDQ has seldom been administered repeatedly in longitudinal studies (Rothenberger & Woerner, 2004).

Method

Participants

The current study is part of a longitudinal study that investigates the social-cognitive correlates of emotional-behaviour problems in children (the Child Behaviour Study). Parents of 2950 7–11-year-olds (primary school years 3 to 6) of sixteen primary schools from a mixed socio economic catchment of rural and urban areas in Cambridgeshire, UK were asked to participate. Response rates for individual schools ranged from 14 per cent to 40 per cent resulting in 20 per cent of the children taking part in the study ($n = 659$; 319 boys and 340 girls).

Reasons for the low response rate in the current study are discussed elsewhere (Sharp *et al.*, in press). Briefly, two procedures were employed to determine participation bias. First, permission was obtained from the school board for teachers of one of the schools to complete a screening measure of common emotional and behaviour problems, the Strengths and Difficulties Questionnaire (Goodman, 1997, 2001; Goodman *et al.*, 2000) on all the children in the school, in such a way that all children remained anonymous. Children whose families completed the questionnaire were compared with those who did not. Independent sample *t*-tests revealed no evidence of any differences between the participants ($n = 61$) and non-participants ($n = 232$) when the five sub scales of the SDQ (hyperactivity, emotional symptoms, conduct problems, peer problems, prosocial behaviour) were compared.

Second, comparison of sociodemographic characteristics also revealed no evidence of participation bias. The mean age of the sample was 9 years 3 months (SD = 1 year 2 months), mean IQ was 105 (SD = 15) and there were 319 boys (48 per cent) and 340 girls (52 per cent). The ethnic distribution in the sample was in line with regional statistics (Office of National Statistics, 1991) for Eastern England (97 per cent white, 2 per cent Asian, 0.5 per cent black and 0.5 per cent Oriental). According to ACORN (see *Measures* section for description); our sample comprised 40 per cent wealthy achievers, 9 per cent urban prosperity, 28 per cent comfortably well-off, 9 per cent moderate means and 14 per cent hard pressed. According to the National Office of Statistics (Office of National Statistics, 2001) this is typical for Eastern England.

Measures

The Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997). The questionnaire consists of 25 items that form five sub scales of five items each. Five sub-scale scores are generated for emotional symptoms, conduct problems, hyperactivity inattention, peer problems and prosocial behaviour. The most commonly used summary score is for SDQ total difficulties: the sum of all items in the first four scales. For the current study we will use the SDQ total difficulties score as a continuous variable – the higher the score, the poorer the psychosocial outcome. Similarly for the subscale scores, with the exception of the prosocial scale which will not be used in the current study as we focus on the predictive validity of symptoms and not strengths.

Service-use questionnaire. Given the length of service-use questionnaires already available (Ford *et al.*, 2003) we developed a brief, postal service-use questionnaire to cover informal, front-line and specialist help-seeking behaviour.

Parental concern. This construct was measured by two questions. First, parents were asked whether they were worried about their child's mental health. If so, they were asked how worried they were, indicating on a 10-point scale the concern they felt. Parents who reported not being worried about their children were asked to skip further questions related to parental worry and responses to the skipped questions were coded as missing data.

IQ. A shortened version (vocabulary and block design) of the Wechsler Intelligence Scale for Children (Wechsler, 1992) was individually administered and scored according to Sattler's (1988) guidelines.

Socio economic status. To determine socio-economic status, we used a geodemographic tool called ACORN which is freely available on the Internet. ACORN categorises all 1.9 million UK postcodes, which have been described using over 125 demographic statistics within England, Scotland, Wales and Northern Ireland, and 287 lifestyle variables, making it a powerful discriminator for social class. For our purposes we used ACORN's five-class system to determine membership to one of the following: 0 for wealthy achievers, 1 for urban prosperity, 2 for comfortably well off, 3 for moderate means and 4 for hard pressed.

Procedures

After headteachers had consented for their school to participate, invitation letters were sent home with children to obtain positive consent from parents. Parents were informed that part of the consent implied that their child's class teacher would complete the SDQ. Parents and teachers completed the SDQ on three occasions, at baseline, six months and twelve months' follow-up. At baseline, IQs were obtained through individual assessments with the children at school. At one year, in addition to the SDQ, parents were asked to complete the service-use questionnaire and measure of worry/concern. To increase retention rates, parents or headteachers were phoned twice if follow-up questionnaires were not returned within one week of posting.

Data analytic approach

Descriptive statistics. Continuous measures are summarised using means and standard deviations. Categorical (binary) measures are described using proportions.

Regression analysis. Regression analyses were used to identify predictors of help-seeking and parental worry at one year. The influence of age gender, IQ (as index or marker of achievement/performance level) and SES as predictors of parental help-seeking were investigated using logistic regression (1 = sought help, 0 = did not). Logistic regression was also used for all the analyses where parental worry (1 = worried, 0 = not worried) at one-year follow-up was the outcome measure. The significance level was set at $p < .05$. In the logistic regression

analyses of parental worry pair-wise deletion was used, so missing data were excluded. The data were analysed using the Statistical Package for Social Sciences (SPSS), Windows version 11.01.

Longitudinal analyses. Repeated measures of the SDQ parent and teacher scores were analysed using latent variable growth modelling techniques with random slopes for rate of linear change and random intercepts. The latent growth modelling analyses were carried out only for those children whose parents were worried at one-year follow-up because only those parents had reason to seek help. Version 3.11 of the Mplus software was used to conduct growth model analyses (Muthén & Muthén, 1998–2004).

Latent growth models (LGM) have become a commonly used method to analyse longitudinal data because they define within-person changes and enable these to be related to covariates or outcomes (Browne & Du Toit, 1991; McArdle, 1986, 1988; McArdle & Anderson, 1990; McArdle & Bell, 2000; McArdle & Epstein, 1987; Meridith & Tisak, 1990). Linear growth modeling is typically used to estimate the average rate of change (mean growth) in a repeatedly measured outcome. Random effects enable the amount of variation across individuals around the growth intercepts and slopes to be quantified, and the effects of covariates on these individual variations to be explored. In a growth modelling framework, intermittent missing data which typically occur in longitudinal designs can be included in the analysis using direct maximum-likelihood estimation based on the partially missing (incomplete) data patterns (Muthén, 2004). This makes full use of all available data and avoids bias due to drop out or missing data waves. Missing data on all other variables used in the growth modelling analyses were thus handled using maximum likelihood estimation under a missing-at-random assumption. Standard errors were robust to non-normality. The Mplus MLR estimator was used since it is recommended for small

and medium-sized samples. All models took into account the clustering effect of school (i.e. parent and teacher reports from the same school are typically more similar to each other than the reports from different schools) and model standard errors were adjusted for the clustering effect (TYPE = COMPLEX analysis). In general this increases the width of the estimated standard errors.

Separate growth models were estimated for the parent and teacher SDQ total difficulties scores and also for each of the SDQ symptom subscales (conduct, emotionality, hyperactivity, peer problems). For each of the growth models we hypothesized that observed scores at the three time points were influenced by two latent factors: (a) the initial level or intercept factor, which reflects the level of the variable on the first occasion of measurement, and (b) the linear rate of change or slope factor, which summarises the pattern of growth. Our latent growth model is depicted in Figure 1.

As a first step, the models that did not include predictors for the growth factors were fitted and the model fit was assessed. The main criteria used to judge model fit included an absolute fit index, the root mean square error of approximation (RMSEA; Steiger & Lind, 1980; Widaman & Thompson, 2003), and two relative fit indices (a) Tucker–Lewis index (TLI; Bentler & Bonett, 1980; Tucker & Lewis, 1973) and (b) the comparative fit index (CFI; Bentler, 1990). These indices of model fit were selected based on the results and recommendations of several recent investigations of fit indices used in structural equation modelling (Bentler, 1990; Hu & Bentler, 1999; Widaman & Thompson, 2003). A non significant chi-square test statistic indicates good fit; comparative fit index (CFIs) and Tucker–Lewis indices (TLIs) are considered acceptable when greater than .90 (Dedrick *et al.*, 1997); for good model fit the RMSEA should be less than 0.08.

As a second step, disclosure variables were regressed on the growth factors one
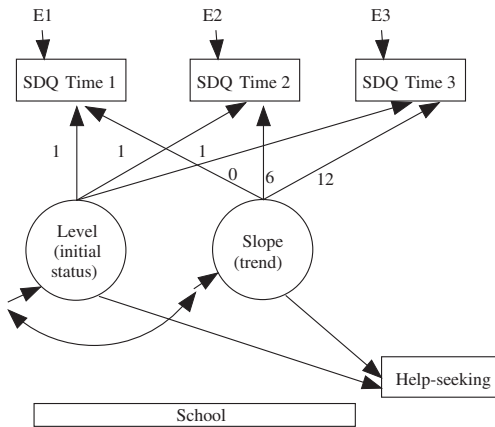
Figure 1: SDQ and help-seeking behaviour LGMs. E1, E2 and E3 represent residual error terms for the observed variables

at a time using Mplus. These models did not include any covariates (gender, SES, age).

Results

Response rates

The response rates for the parent-report were as follows: baseline 88 per cent ($n = 581$), six months 77 per cent ($n = 509$), one year 71 per cent ($n = 466$). The response rates for teacher-report were 97 per cent ($n = 639$), 63 per cent ($n = 416$) and 61 per cent ($n = 402$) respectively. These rates can be considered good retention for a longitudinal community study. We addressed the issue of missing data in our longitudinal analysis by employing an analytic technique and estimation method that enabled the inclusion of partially missing data (see MLR estimation in the methods section above). However, no data were missing for predictors of disclosure (IQ, age, SES, and gender) and for the disclosure variables.

Levels of service contact

At one-year follow-up 173 (25 per cent) parents felt worried about their child's mental health. Family and friends were the commonest reported sources of help, being consulted by 76 per cent (family) and 56 per cent (friends); 46 per cent sought help from

the school; 33 per cent sought help from the GP; 1.4 per cent of children received specialist mental health treatment and 0.5 per cent remained on the waiting list. Due to the small numbers in the treatment and waiting list categories we excluded these from the rest of our analyses.

Descriptive statistics

Table 2 presents descriptive statistics and correlations for the four observed SDQ summary scores for teacher and parent report and the outcome variables. Parent SDQ scores were consistently higher, indicating more psychopathology, than the teacher reported scores. Teacher SDQs increased over time while the parent scores were the highest at time 1 and lower at times 2 and 3. The variability in both teacher and parent scores increased over time.

As expected, the SDQs for the first two time points was more highly correlated with each other than for the first and third time points. At this level of analysis, none of the correlations between the SDQs and help-seeking were large enough in magnitude to reach conventional levels of statistical significance. The correlations between the SDQs and whether or not parents were worried about their children at time 3 (yes/no) were low and increased over the three time points.

Age, gender, IQ and SES as predictors of help-seeking behaviour

Results of the logistic regression analyses indicated that gender, IQ, age and SES were not significant predictors of seeking help (any versus none) from family, friends or school. Gender and SES were not significant predictors of seeking help (any versus none) from a GP, but age (odds ratio (OR) = 0.970, $d.f. = 1$, $p < 0.016$) and IQ (odds ratio (OR) = 1.029, $d.f. = 1$, $p < 0.013$) were statistically significant. Parents of children with higher IQ and parents of younger children were also more likely to talk to a GP.

SDQ as predictor of help-seeking behaviour

All SDQ models based on data of those who endorsed being worried ($n = 173$) fit adequately. Criteria for determining precise cut-offs are not available and it is important to take into account a number of measures, the nature of data, and the model when interpreting fit indices. None of the chi-square tests of model fit returned significant values.

The majority of the variance estimates for the slope factors in the models for the parent data were statistically significant, indicating that children displayed reliably different starting-levels of SDQ scores and also different patterns of linear change over the three time points. The model results and fit indices are listed in Table 3. Estimated variances of the intercepts/initial levels for the teacher SDQ scores were also statistically significant, revealing individual differences in initial levels; however, the mean and variance estimates for the slope did not reach statistically significant levels, suggesting similar patterns of change in scores for all children. While the average linear trend (slope) for the parent SDQ scores was negative (i.e. on average parents reported more difficulties at the first measurement than at the last), the average linear trend (slope) of the teacher SDQ scores was positive, indicating an increase in SDQ score over time.

The four disclosure variables were included in Mplus models and regressed on the level and slope of the model one at a time. When the maximum likelihood estimator is used the effects of the predictors on the binary outcomes are estimated using logistic regression coefficients. A statistically significant coefficient for level would indicate that the initial SDQ score of either the parent or the teacher predicted help-seeking behaviour. A statistically significant coefficient for the slope would indicate that the pattern of change, i.e. increasing or decreasing linear rate of change for each child predicted help-seeking. Exponentiated coefficients from a logistic regression analyses yield odds ratios that indicate the increase or decrease in the odds of an outcome for each standard deviation unit change in continuous covariates, or for each category of discrete predictors (relative to a reference group).

The results listed in Table 4 indicated that *none* of the baseline parent-reported SDQ scores (total or subscales) predicted help-seeking at one-year follow-up. Parent-reported change scores (linear trend for each child) also did not seem to be related to help-seeking behaviours except for emotional problems which were associated with a 1.09 greater odds (95 per cent confidence interval 1.03–1.17) of seeking help from family.

In contrast, for teacher report, several aspects of the SDQ were associated with help-seeking behaviour. For brevity we detail here only the results of the SDQ total difficulties scores. Table 4 contains results for all subscale scores in addition to total difficulties scores. The teacher-reported baseline total difficulties were associated with greater odds of seeking help from the GP (OR = 0.17, 95 per cent confidence interval 0.03–0.82) and from a friend (OR = 14.88, confidence interval 1.55–148.41). The rate of change in the total teacher reported scores appears to be associated with greater odds of seeking help from school (OR = 1.13, 95 per cent confidence interval 1.13–1.54), GP (OR = 1.25, 95 per cent confidence interval 1.11–1.42), and friend (*OR* = 0.83, 95 per cent confidence interval 0.73–0.95). The significant odds ratio indicates that the higher the slope of the teacher scores (greater increases) the higher the odds that parents will seek help. Table 4 lists odds ratios and 95 per cent confidence intervals for all subscales.

SDQ as predictor of parental worry

The parent-reported total difficulties score at the final assessment (one year after baseline) was associated with whether or not parents endorsed being worried (OR = 1.063, *d.f.* = 1, *p* < .005). The teacher-reported total difficulties score at time 2 (six

		SDQ time 1	SDQ time 2	SDQ time 3	Worried time 3 (Y/N)	School (Y/N)	GP (Y/N)	Family member (Y/N)	Friend (Y/N)
						At time 3 parents sought help from			
Teacher Report									
Means SD		6.76 6.29	6.95 6.42	8.04 9.14	.39	.46	.33	.77	.55
SDQ time 1	*n*	1 617							
SDQ time 2	*n*	.776 345	1 363						
SDQ time 3	*n*	.392 369	.288 240	1 388					
Worried	*n*	.018 415	.122 238	.087 268	1 439				
School	*n*	.141 160	.183 91	.367 98	* 173	1 173			
GP	*n*	2.150 160	2.081 91	.085 98	* 173	2.025 173	1 173		
Family member	*n*	.078 160	.085 91	2.065 98	* 173	.035 173	2.053 173	1 173	
Friend	*n*	.215 160	.039 91	.102 98	* 173	.191 173	.034 173	.447 173	1 173
Parent report									
Means SD		13.67 3.85	9.91 5.84	9.75 6.79					
SDQ Time 1	*n*	1 555							
SDQ Time 2	*n*	.500 435	1 476						
SDQ Time 3	*n*	.383 409	.599 392	1 442					
Worried	*n*	.063 405	.177 388	.252 424	1 439				
School	*n*	.093 164	.156 158	.109 168	* 173	1 173			
GP	*n*	2.042 164	2.028 158	2.059 168	* 173	2.025 173	1 173		
Family member	*n*	2.014 164	.034 158	.080 168	* 173	.035 173	2.053 173	1 173	
Friend	*n*	.090 164	.087 158	.058 168	* 173	.191 173	.034 173	.447 173	1 173

Table 2: Descriptive statistics and Pearson correlations for the four observed SDQ summary scores and the outcome variables. *Could not be computed because all those who sought help also reported to be worried

Parent SDQ (n = 172)	Model fit			Level		Slope	
	CFI	TLI	RMSEA	Mean (SE)	Variance (SE)	Mean (SE)	Variance (SE)
Total difficulties	.99	.98	.05	13.95 (.34)*	11.68 (2.87)*	−1.33 (.34)*	4.23 (.88)*
Emotional symptoms	.95	.93	.08	2.52 (.17)*	3.66 (.63)*	.25 (.12)*	.41 (.28)
Conduct problems	.97	.91	.08	2.64 (.09)*	1.01 (.48)*	.25 (.08)*	.29 (.07)*
Hyperactivity inattention	.99	.99	.02	4.13 (.10)*	2.49 (.60)*	−.07 (.08)	1.58 (.33)*
Peer problems	.98	.95	.05	4.63 (.12)*	.70 (.21)*	−1.10 (.20)*	.59 (.20)*
Teacher SDQ (n = 168)							
Total difficulties	.99	.98	.05	6.18 (.57)*	34.09 (9.03)*	.68 (.43)	3.05 (5.03)
Emotional symptoms	.96	.96	.07	1.54 (.21)*	2.78 (.84)*	.14 (.11)	.52 (.47)
Conduct problems	.95	.92	.05	.81 (.15)*	1.45 (.35)*	.10 (.12)	−.22 (.16)
Hyperactivity inattention	.92	.88	.08	2.38 (.20)*	5.95 (.40)*	.23 (.17)	.40 (.24)
Peer problems	.98	.93	.08	1.42 (.19)*	2.97 (.97)*	.24 (.09)*	.10 (.37)

Table 3: LGM results and model fit indices for individual differences in initial level and rate of change for parent and teacher SDQ scores. CFI = the comparative fit index; TFI = Tucker–Lewis index; RMSEA = the root mean square error of approximation; *significant at .05 level

months) was significantly associated with reports of parental worry (OR = 1.123, $d.f. = 1$, $p < .014$). Parent-reported emotional problems at baseline (OR = .849, $d.f. = 1$, $p < .026$) and Time 3 (OR = 1.326, $p < .001$) predicted reports of parental worry. Teacher-reported peer problems at baseline (OR = .787, $p < .054$) and time 2 (six months) (OR = 1.565, $p < .001$) were predictive of reports of parental worry. The higher the parent- or teacher-reported SDQ scores the more likely parents were to endorse being worried. For all other SDQ variables no predictive validity could be demonstrated in our regression analyses.

Discussion

A review of 47 recent empirical studies on parental and adolescent help-seeking behaviour demonstrated that few studies of this nature have been carried out in the UK (Zwaanswijk *et al.*, 2003). Most of the work in this field may therefore not be generalisable to UK services as differences in organisation and financing may affect help-seeking behaviour and service use (Canino, *et al.*, 1995; Ford *et al.*, 2003). A strength of the current study is therefore its focus on help-seeking in a British community sample of primary school age children. A second strength of the current study is that it is the first reported study to investigate whether SDQ scores at baseline are predictive of different levels of help-seeking

Parent SDQ	Level		Slope	
	OR	95% CI	OR	95% CI
School				
Total difficulties	2.20	0.56–8.67	1.08	0.90–1.32
Emotional symptoms	1.73	0.93–3.25	1.01	0.95–1.07
Conduct problems	1.27	0.96–1.68	1.00	0.94–1.06
Hyperactivity inattention	0.85	0.50–1.46	1.06	0.98–1.16
Peer problems	1.17	0.77–1.79	1.02	0.96–1.08
GP				
Total difficulties	0.63	0.16–2.41	0.98	0.84–1.14
Emotional symptoms	0.94	0.52–1.70	1.05	0.97–1.15
Conduct problems	0.82	0.54–1.25	0.97	0.93–1.00
Hyperactivity inattention	0.80	0.44–1.49	1.00	0.94–1.05
Peer problems	0.90	0.70–1.16	0.98	0.94–1.02
Family				
Total difficulties	0.84	0.28–2.48	1.14	0.97–1.34
Emotional symptoms	1.13	0.41–1.28	**1.09**	1.03–1.17[a]
Conduct problems	1.14	0.71–1.38	1.03	1.00–1.06
Hyperactivity inattention	1.14	0.68–2.29	1.04	0.93–1.15
Peer problems	1.14	0.69–1.75	0.97	0.92–1.03
Friend				
Total difficulties	2.18	0.73–6.49	1.01	0.85–1.19
Emotional symptoms	1.15	0.81–2.97	1.01	0.97–1.05
Conduct problems	1.14	0.68–1.46	1.02	0.96–1.08
Hyperactivity inattention	1.14	0.73–1.77	1.00	0.92–1.08
Peer problems	1.14	0.93–1.75	1.00	0.94–1.05
Teacher SDQ				
School				
Total difficulties	5.58	0.80–38.86	**1.13**	1.13–1.54[a]
Emotional symptoms	1.14	0.49–1.65	**1.14**	1.06–1.22[a]
Conduct problems	1.14	0.86–1.97	**1.06**	1.02–1.12[a]
Hyperactivity inattention	1.16	0.87–6.11	**1.07**	1.01–1.15[a]
Peer problems	1.16	1.38–3.67	1.04	0.99–1.09
GP				
Total difficulties	**0.17**	0.03–0.82	**1.25**	1.11–1.42[a]
Emotional symptoms	0.64	0.39–1.02	1.13	1.00–1.27
Conduct problems	**0.60**	0.44–0.82	**1.05**	1.02–1.09[a]
Hyperactivity inattention	0.57	0.24–1.32	1.04	0.95–1.15
Peer problems	0.80	0.52–1.25	1.01	0.99–1.07

Table 4: Exponentiated coefficients (odds ratios) for the disclosure variables for the level and slope of the SDQ parent and teacher scores from Mplus models with each disclosure variable regressed on growth factors one at a time and no predictors. [a]A confidence interval that excludes the null value of 1 is consistent with a statistically significant odds ratio at $\alpha = .05$

(*Continued*)

Teacher SDQ	Level		Slope	
	OR	95% CI	OR	95% CI
Family				
Total difficulties	3.10	0.22–43.82	0.57	0.15–2.23
Emotional symptoms	1.54	0.64–3.63	0.95	0.88–1.03
Conduct problems	1.04	0.56–1.93	0.96	0.90–1.02
Hyperactivity inattention	2.05	0.82–5.16	0.98	0.92–1.05
Peer problems	0.87	0.36–2.10	0.97	0.90–1.05
Friend				
Total difficulties	**14.88**	1.55–148.41	**0.83**	0.73–0.95[a]
Emotional symptoms	**3.13**	1.32–7.39	**0.62**	0.41–0.91[a]
Conduct problems	1.21	0.75–1.97	0.97	0.93–1.02
Hyperactivity inattention	1.75	0.66–4.62	1.01	0.94–1.07
Peer problems	2.10	0.90–1.01	0.94	0.77–1.14

Table 4: *Continued.*

behaviour from parents over a one-year follow-up period. Our repeated measures design not only enabled us to investigate the effect of baseline SDQ scores (intercepts) but also the effect of change in SDQs over three time points (summarised as child specific linear slopes). Given the dearth of studies that address both help-seeking in the UK and the predictive validity of the SDQ, we will discuss our results as far as possible within the context of UK studies, but also refer to studies that have been carried out in community samples in the US where relevant.

Despite these strengths, this study has a number of limitations. The sample size is modest when compared to those amassed in epidemiological investigations and national surveys (e.g. Meltzer *et al.*, 2000). Only limited steps were taken to investigate participation bias in this sample. And despite no evidence of ascertainment bias, our sample cannot claim to be fully representative. Nevertheless, our rates of disclosure to family and friends (76 per cent), service use (25 per cent) and the importance of schools (46 per cent) in the provision of services for children with emotional-behaviour problems were almost identical to rates reported for the only nationally representative study of children's service use in the UK for children

with psychiatric diagnoses (Ford *et al.*, 2003) and comparable to US population-based longitudinal studies of this kind (Farmer *et al.*, 2003). Our rates for GP contact (33 per cent) were slightly higher than those reported for the nationally representative British samples, and could reflect the higher educational level of the Cambridgeshire population. It has been shown that higher educational level predicts help-seeking (Zwaanswijk *et al.*, 2003).

The rates reported for CAMHS contact (1.4 per cent) were much lower than that previously reported for UK samples (22.1 per cent; Ford *et al.*, 2003), which may reflect the nature of the sample used in the latter study (children diagnosed with psychiatric disorder selected from a nationally representative sample).

The substantial use of the educational sector compared with primary care or CAMHS was not influenced by the child's gender, IQ, age or SES, which implies that parents regard schools as a source of support regardless of these characteristics. Age and IQ did, however, predict help-seeking from GPs, with the parents of younger children and children with higher IQs (which could be seen to reflect a higher educational level of the family) more likely to consult the GP.

The findings for the effect of age on parents' help-seeking behaviour in other studies have been mixed. In line with the findings here, some have found help-seeking to decrease with age (Cohen & Hesselbart, 1993); others have found an increase (Gasquet *et al.*, 1997; Leslie *et al.*, 2000) and in some cases no effect for age had been reported (Verhulst & van der Ende, 1997). The diversity of samples in terms of attainment and age groups in these studies may explain some of inconsistencies here, as may statistical power and the grouping of age categories across studies.

Contrary to findings in the US, SES did not predict help-seeking in this study. This finding highlights the limited generalisability of service-use findings from one country to another. We suspect that the explanation lies in the different healthcare systems that are found in the US and the UK.

By and large, from a primary health care perspective, the teacher-report form of the SDQ was found to much more predictive of help-seeking behaviour than the parent-report, and thus more useful for this purpose and in this context. These findings have clear implications for the SDQ to be used to address the population burden in CAMHS. Baseline scores were found to predict help-seeking from the GP (total difficulties and conduct scores) and help-seeking from a friend (total difficulties and emotional symptoms). Much more powerful, however, were teacher-reported *change scores* over time (i.e. increase in scores). Change scores on all subscales except the peer problems scale predicted help-seeking from school (total difficulties, emotional symptoms, conduct problems, hyperactivity). The total difficulties change scores furthermore predicted help-seeking from the GP.

These findings, and our finding that the SDQ also predicted parental worry, have direct practical implications for the use of the SDQ in community school settings. Often, the school is consulted before other professionals about mental health problems (Ford *et al.*, 2003), but teachers often do not know whether problems are transient or whether action should be taken. A measure like the SDQ, which has proved to detect concurrent psychiatric disorder (Goodman, Ford *et al.*, 2000; Goodman *et al.*, 2003; Goodman, Renfrew *et al.*, 2000) and which clearly predicts help-seeking behaviour one year later, as reported here, is a valuable tool to detect emotional-behaviour problems early in order to prevent further development into more pervasive psychiatric disorders. Persistent problems are usually harder to treat or require more complex intervention(s). Whilse all aspects of the SDQ is useful for predicting help-seeking from the school, the total difficulties and conduct scale seems most important for predicting help-seeking from the GP – this may reflect the fact that externalising problems are often a cause of greater concern for parents and it is thus not surprising that these types of behaviour motivate parents to seek help from their GP (Hill, 2002).

Taken together, our findings suggest that the SDQ is valuable for use in community settings like schools. Six-monthly SDQ completion by teachers may enable teachers to have an objective index of the development of emotional-behaviour problems as they change over time, with increased scores signalling true problem behaviour that may lead to help-seeking behaviour. This may improve early detection and consequent early intervention of such potential psychiatric problems in primary care settings, so as to also alleviate the population burden of secondary and tertiary CAMHS.

Acknowledgements

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