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The Strengths and Difficulties Questionnaire (SDQ) for preschool children – a Swedish validation

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Abstract

Background

In Sweden 80-90% of children 1-5 years attend preschool and that environment is well suited to identify behaviours that may be signs of mental health problems. The Strengths and Difficulties Questionnaire (SDQ) is a well-known short and structured instrument measuring child behaviours that indicate mental health problems well suited for preschool use.

Aim

To investigate whether SDQ is a reliable and valid instrument for measuring behavioural problems in children aged 1-3 years and 4-5 years in a Swedish population, as rated by preschool teachers.

Methods

Preschools situated in different sized municipalities in Sweden participated. The preschool teacher rated each individual child. Concurrent validity was tested using the Child-Teacher Report Form (C-TRF) and Child Engagement Questionnaire (CEQ). Exploratory factor analysis was conducted for age groups, 1-3 years and 4-5 years.

Results

The Preschool teachers considered most of the SDQ items relevant and possible to rate. For the children aged 1-3 years, the subscales “Hyperactivity” (Cronbach alpha=0.84, split half=0.73) and “Conduct” (Cronbach alpha=0.76, split half = 0.80) were considered to be valid. For the age group 4-5 years, the whole original SDQ scale, four- factor solution was used and showed reasonable validity, (Cronbach alpha=0.83, split half=0.87).

Conclusion

SDQ can be used in a preschool setting by preschool teachers as a valid instrument for identifying externalizing behavioural problems (hyperactivity and conduct problems) in young children.

Clinical implications

SDQ could be used to identify preschool children at high-risk for mental health problems later in life.

Key words: preschool children - mental health – psychometrics – screening – strengths and difficulties questionnaire

Background

Mental health problems have been recognized as a cause of considerable human suffering and a major contributory factor in societal costs ⁽¹⁻³⁾. The risk of mental health problems occurs throughout a person's entire life cycle. Children (under the age of 5) who show early signs of mental health problems often develop symptoms in the same or overlapping domains years later, with a high risk of life-long suffering ^(4, 5). It is important to pay attention to such early signs in order to identify high-risk groups for health problems later in life ⁽⁵⁾.

Mental health in children can be seen as an absence of symptoms or the presence of well-functioning patterns. Co-Existence of symptoms across disorder is the rule rather than the exception⁽⁵⁾.

Thus, merely applying diagnoses does not provide a complete picture of the child's functioning and may underestimate the number of children in need of support. Studying individual behaviours gives a more detailed picture, and presents an opportunity to identify children at risk for future mental health problems⁽⁶⁾. Earlier research has also identified a positive relationship between satisfactory functioning and children's engagement⁽⁷⁾.

Preschool staffs have a recognized high level of knowledge about child development. This makes the kindergarten/preschool setting with preschool teacher as informants an appropriate context for identifying signs of mental health problems among young children⁽⁸⁾.

The full C-TRF including 98 statements is not suitable as a screening instrument in a preschool setting since the amount of items is too large for the preschool teacher's workload ⁽⁹⁾. In an earlier study, Almqvist reduced the items to 25 statements after consulting with preschool teachers, and found a high Cronbach alpha of 0.85 ⁽⁸⁾.

The Strengths and Difficulties Questionnaire (SDQ) is a well-known questionnaire measuring child behaviour. It can be used by parents, teachers and as a self-report by older children ⁽¹⁰⁻

¹³). It is short and structured, which makes it well suited for use in kindergartens/preschools. SDQ has not been validated for young children aged 1-3.

Aim

To investigate whether SDQ is a reliable and valid instrument for measuring behavioural problems in children aged 1-3 years and 4-5 years in a Swedish population, as rated by preschool teachers.

Methods

Instruments

Strengths and Difficulties questionnaire (SDQ):

The SDQ is a 25-item screening questionnaire. The Swedish translation is validated for parental use for children of 6-10 years old, and it has demonstrated good psychometric properties ⁽¹⁴⁾. Recently, SDQ was used in a normative sample of parents of children aged 2-5 ⁽¹⁵⁾. The SDQ preschool version has been confirmed to identify 3-4 years old children with emotional and behavioural difficulties ⁽¹⁶⁾. The self-report has also been validated in Sweden ⁽¹⁷⁾.

The items are divided into five subscales of five items each, generating scores for emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems and pro-social behaviours. There is also an impairment supplement consisting of questions about the impact on the child's daily life of the problem identified ^(18, 19). In this study, the teacher version was used; including the impairment supplement for children aged 2-4.

An expert panel consisting of five well-experienced preschool teachers evaluated each item for its relevance, in relation to the children they meet in their occupational profession, through a consensus discussion. Based on these results and since the sample included different developmental-ages, a question about relevance (yes/no) was included after each SDQ item.

Test-retest was carried out, with the instruction to do the retest within a minimum of 2 weeks, if possible the same teacher scoring the same child on both occasions.

Child-Teacher Report Form (C-TRF):

C-TRF is the preschool teacher version of the Child Behaviour Check List (CBCL), which is regarded as the golden standard for screening children's mental health problems ^(9, 20). Each item is scored on a three-point scale: not true; somewhat true; and certainly true. The full C-TRF including 98 statements is not suitable as a screening instrument in a preschool setting since the amount of items is too large for the preschool teacher's workload. In an earlier study, Almquist reduced the items to 25 statements after consulting with preschool teachers, and found a high Cronbach alpha of 0.85 ⁽⁸⁾. In this study, this shortened version was used and showed a Cronbach alpha of 0.91.

Children's Engagement Questionnaire (CEQ):

The Child Engagement Questionnaire (CEQ), ⁽²¹⁾ is a 32-item instrument designed to rate children's global engagement by free – recall impression as: not at all typical, somewhat typical, typical, or very typical. The CEQ consists of four levels of engagement; competence, persistence, undifferentiated behaviour, and attention. The translation of CEQ into Swedish resulted in minor adaptations and the use of 26 of the original 32 items ⁽⁸⁾. The Cronbach alpha coefficient for internal consistency was 0.92 for teachers' ratings ⁽⁸⁾. In this study the Cronbach alpha was 0.94.

Procedure

This study uses data from the first data collection wave of a longitudinal project, aimed to study preschool children's mental health, and functioning in preschool setting, "Early detection Early intervention"⁽²²⁾.

Preschools from a stratified sample of different sized Swedish municipalities, representing both large, middle sized and small municipalities were invited to participate. The aim was to get a representative sample with regard to socio-economic circumstances and the number of children with a mother tongue other than Swedish. All preschool managements in the various municipalities were contacted, informed and asked for their consent to participate. Written and video filmed information was distributed to management, teachers and parents.

The managements addressed the preschool teachers (N=311) in 81 different preschool classes in six municipalities. To include a preschool class at least one preschool teacher had to consent to participate. The preschool teacher addressed all parents (N=3230) for individual consent, and both parents had to provide written consent for their child's participation. The preschool teacher responded on SDQ, C-TRF (shorter version) and CEQ for an average of two children each.

Population

In all, 690 children (352 boys and 338 girls) with a mean age of 44.4 months (SD=15.34, range 15-71) took part in the study, see Table 1. In the small municipalities, 17 preschool classes participated, parents of 228 children were invited and 94 (41.2%) of them gave their consent. In the medium-sized municipalities, 60 preschool classes participated, parents of 1290 children were invited and 529 of them agreed (41%). In the large municipalities, 4 preschool classes participated, parents of 97 children were invited and 40 (41%) of them agreed to participate in the study.

A clinical sample of 22 children was recruited from the Child Health, Child and Adolescent Psychiatry, and Child and Youth Habilitation services. Inclusion according to ESSENCE criteria (i.e. suspected neurodevelopmental and/or behavioural problems) ⁽⁵⁾, a formal diagnose was not required.

These children came from 18 different kindergartens and from different parts of Jönköping and Linköping County - both medium-sized municipalities.

Statistical analysis

Demographic data are presented with mean and standard deviations (SD). Internal Consistency was estimated by Cronbach's alpha and split half. Since the data were skewed, correlation estimates were made using the Spearman correlation coefficient (Spearman's rho), and group comparisons were analysed with non-parametric methods (Mann-Whitney, two-sided). A principal component analysis (PCA) with oblique rotation was made to investigate factor structure, since theory predicted that there would be a correlation between the factors. The PCA was conducted on two age groups, 1-3 years and 4-5 years, since SDQ had earlier been validated primarily for the 4-15 years age group. The positive and negative predictive values were calculated and specificity and sensitivity for SDQ with regard to C-TRF. All data were analysed in SPSS version 22.

Ethical considerations

The Regional Ethical Review Board in Linköping approved the study (Dnr 2012/199-31). Written informed consent was provided by preschool management, preschool teachers and both parents of all children. All questionnaires were coded and the coding key was kept separate from questionnaires after the data was collected.

Results

Face validity: Table 2 presents the opinions of the preschool teachers concerning the relevance of the different items in SDQ. Among the younger children (1-3 years) the two questions with the highest proportions of a “not relevant” rating were “Often Volunteers to help others” (13.5%) and “Can be spiteful to others” (13.3%). In the group of older children (4-5 years) the two questions with highest percentages of “not relevant” were, “Can be spiteful to others” (11%) and “Often fights with other children or bullies them” (9.2%). Overall, most of the items were considered relevant and possible to rate in both age groups.

Exploratory factor analysis and reliability testing

The PCA was conducted within the two age groups (1-3 years and 4-5 years).

Age 1-3 years (15-47 months):

Inspection of the Correlation matrix showed that no item had an inter-correlation above 0.8 but there were several items with some correlations higher than 0.3. All items from the original emotional scale and peer problem scale had less than 3 correlations above 0.3, except for the item “Generally liked by other children” (Peer problem scale) which is not a question involving the child’s behaviour. Due to the limited number of correlations above 0.3 in these subscales, it was decided to exclude all the items from the original emotional and peer problem scale in the further analysis. The principal component analysis with oblimin rotation indicated that the Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, KMO=0.85, and all the KMO values for the individual items were >0.79. In addition, Bartlett’s test of sphericity Chi² was (1180.536, df 45), p<0.000, indicating that the correlations between items were sufficiently large for a PCA. An initial analysis was run to obtain eigenvalues for each component in the data. Two factors had eigenvalues over Kaiser’s

criterion of 1 and explained 58.2% of the variance. The screen plot also showed an inflection after factor 2. Factor loadings are presented in Table 3.

The items were loaded on the same factor as in the original questionnaire except for item “Generally obedient, usually does what adults request”, which loaded on the Hyperactivity factor and only as second on the Conduct problem scale.

The Goodman’s whole original scale that emerged in the PCA had a Cronbach alpha of 0.86 and a split half of 0.77.

For the original subscale, the Hyperactivity construct that emerges in the PCA had a Cronbach alpha 0.84 and split half 0.73, and for the Conduct subscale the Cronbach alpha was 0.76 and split half 0.80.

Age 4-5 years (48-71 months):

A second PCA was conducted for the age group 4-5 years. Since SDQ has been validated for this age group (with the parental version), the PCA was conducted with all the items included. The scree plot showed an inflexion after 4 factors, though looking at the eigenvalues, six factors had an eigenvalue above 1. The PCA was run with a fixed number of factors set at 4. The model predicted 50.9% of the variance. The structure and the pattern matrix are presented in Table 4.

Cronbach alpha was high for the whole scale, at 0.83, and the Guttman split half 0.87. Three items (3, 8, 24) did not affect the reliability, using Chronbach alpha, neither if they were used in the calculation nor if they were excluded.

Test- retest

In the test-retest analysis, 43 children (mean age =43.5 months, SD =15.32) were scored. The correlation for the total scale in age-range 1-3 year was $r = 0.84$, for Conduct problems r

=0.68, and Hyperactivity $r = 0.49$; and for the subscales Emotional $r = 0.63$, Peer Problems $r = 0.26$, Prosocial $r = 0.87$. The correlation for the total scale in the age group 4-5 year was $r = 0.56$, for Conduct problems $r = 0.48$, and Hyperactivity $r = 0.38$; and for the subscales Emotional $r = 0.87$, Peer Problems $r = 0.65$, Prosocial $r = 0.57$, see Table 5.

Concurrent Validity

Concurrent validity was tested separately for the younger age group (1-3 years) and the older age group (4-5 years). In the younger age group, only Goodman's Hyperactivity and Conduct subscales were used. Concurrent validity was tested using the prosocial scale, supplementary questions in SDQ, and the total scores for C-TRF and CEQ, respectively.

Younger age group

In the younger age group, the SDQ (Hyperactivity and Conduct scale) showed a significant negative correlation with the prosocial scale, $r = -0.61$, $p = 0.01$. It also correlated with the supplementary question "Overall, do you think that this child has difficulties in one or more of the following areas: emotions, concentration, behaviour or being able to get on with other people?" $r = 0.25$, $p < 0.01$. How the child's difficulties interfered in everyday life in "Organized situations", $r = 0.38$, $p = 0.01$ and "During routines", $r = 0.34$, $p = 0.01$. "If the difficulty is an encumbrance on you or the child group" $r = 0.50$, $p < 0.01$. SDQ showed no significant correlation with the question "If the difficulties bothered the child".

There were also significant correlations with C-TRF, $r = 0.64$, $p = 0.01$ and with CEQ, $r = -0.41$, $p = 0.01$. The prosocial scale correlated significantly with CEQ, $r = 0.58$, $p = 0.01$.

Using the 90th percentile for SDQ total problem scores and C-TRF, provided a sensitivity of 90.6% and a specificity of 24.7%, PPV=76.8%, NPV=48.7%, see Table 6.

The SDQ total scores were significantly higher for the identified children (Median=11.0, n=9), compared to the normal sample (Median=6.0, n=252), $p=0.004$. Comparing the different subscales, Conduct, Hyperactivity and Peer Problem were significantly higher in identified children than in the normal sample, whereas the Emotional and Prosocial scale did not show a significant difference, see Table 7.

Older age group

Concurrent validity analysis was conducted for the age range 4-5 years, using Goodman's factor solution. SDQ total problem scores showed significant correlations with the supplementary questions "Overall, do you think that this child has difficulties in one or more of the following areas: emotions, concentration, behaviour or being able to get on with other people?" $r=0.43$, $p<0.01$. "If the difficulty is an encumbrance on you or the child group" $r=0.54$, $p<0.01$, "Do the difficulties interfere with the child's everyday life in free play" $r=0.42$, $p<0.01$, "disturbs during organisation" $r=0.47$, $p=0.01$, and "during routines" $r=0.48$, $p=0.01$. "Do the difficulties upset or distress the child" $r=0.40$, $p=0.01$. No significant correlation was found to the supplement question "If the child's difficulties upset or distressed the child"

The SDQ total problem score showed a significant negative correlation with the Prosocial subscale $r=-0.52$, $p=0.01$, and showed a positive high correlation with C-TRF $r=0.65$, $p<0.01$ and a negative correlation with CEQ $r=-0.48$, $p<0.01$. The Prosocial subscale correlated significantly with CEQ $r=0.47$, $p=0.01$.

Using the 90th percentile for SDQ total problem scores and C-TRF, a sensitivity of 97.4 % and a specificity of 13.8 % was calculated, PPV=79.1%, NPV=61.5%, see Table 8.

The SDQ total scores for the identified children were significantly higher compared to the normal sample: Identified children (Median=11, n=8), normal sample (Median=3.0, n=252), $p=0.001$. Comparing the different subscales, Conduct, Hyperactivity and Peer Problem were significantly higher in identified children than in the normal sample. The Prosocial scale was significantly lower in identified children than in the normal sample. The Emotional scale did not show a significant difference between the identified group and the normal sample, see Table 7.

Discussion

Overall, most of the SDQ items were considered relevant and possible to rate in preschool children in the age ranges 1-3 years and 4-5 years. The items that were judged as least relevant were questions that require that the child has the language and ability to see and understand other's need for support⁽²³⁾. Internal consistency and validity were found to be satisfactory. Preschool teachers pointed out that using SDQ helped them to understand the child's behaviour and also made it easier to communicate concerns with the parents; something that might contribute to earlier detection and help for children who needed special support.

For the younger children (age 1-3 years), the subscales Hyperactivity and Conduct were considered as valid and could reliably be coded by preschool teachers. The question "Generally obedient" loaded more strongly on the Hyperactivity scale, than on the Conduct scale as it did in the original analysis⁽¹³⁾. It can be argued that obedience in a young child may be more associated with not listening, and not a problem with authority, as in conduct problems. These two scales showed good reliability. The emotional and peer problem items were not found to aggregate into two distinct subscales. It might be that emotional problems in young children show a more diverse picture, or that emotional behaviours such as worried,

unhappy, nervous, and many fears are regarded as more “normal” in young children. Since some of these children have probably also just started kindergarten during this age period, they are more likely to feel sad and at a loss. Since young children’s verbal skills are not particularly well developed, it might be difficult to understand the child’s nervousness or fears together with complaints of headaches and stomachaches.

The “Peer problem scale” was also difficult to use with younger children. Playing with other children and the development of interpersonal relations are skills that emerge in this age range. This means that questions like “Has at least one good friend” or “Generally liked by other children” is dependent on both the child’s own functioning and the functioning of children in the peer group. The question “picked on or bullied by other children” did not correlate with any of the other questions and may be regarded as not appropriate for this age group. It might also be seen as an indicator of group problems rather than as a child characteristic.

The total scores and the scores for the subscales “Hyperactivity and Conduct” correlated well with the additional questions in the supplement, C-TRF, and negatively with the prosocial scale and CEQ, arguing for the validity of SDQ as a screening instrument in this setting. These two subscales could also differentiate between the normal sample and children previously identified as children with behavioural problems, as did the peer problem subscale, but not the emotional scale. These results should be interpreted with some caution because of low statistical power, due to the relatively small clinical sample in both age groups.

For the older age group (4-5 years), SDQ for teachers and parents has been validated previously. A decision was therefore made to do a PCA with four factors, as in the original

work by Goodman ⁽¹⁸⁾. The result was not fully conclusive. The Hyperactivity and Conduct subscales showed a pattern similar to the original validation. The items of the original subscales Emotional and Peer problems were loaded in a mixed way on factor three and four in this PCA. This may be due to the narrow age group compared to earlier work, where samples often included children in the age-range 4-10 years or up to 16 years ⁽¹³⁾. As a consequence of children's development during childhood and adolescence, identical behaviours can have different functions at different ages and developmental phases ⁽²³⁾. Behavioural problems may therefore call for different explanations during different developmental phases. However, the total score correlated well with supplementary questions, C-TRF and CEQ. The total score and the subscales Conduct, Hyperactivity and Peer Problems scores could also differentiate the identified children from the normal sample. This was not the case for the subscale Emotional problems, something that may indicate that children identified with problems are identified mostly as a result of external problems and peer problems. The Prosocial scale scores showed no difference for identified children compared to the normal sample in younger children but could differentiate them for the older age group. In both age groups, the scales showed good sensitivity, which is accurate for a screening instrument. The specificity was low, indicating that SDQ cannot be regarded as a diagnostic instrument.

The present study has some limitations. The use of proxy informants when assessing especially emotional problems in children is a well-known problem. Teachers often miss these symptoms also in school age children ⁽¹⁴⁾. Here a comparison with ratings done by parents could have been helpful ⁽²⁴⁾. Also direct observation of children at the preschool could have been of value. A large number of preschool teachers participated in the study and no evaluation of inter-rater reliability was made. A rather high proportion of parents did not give consent to participation and it is possible that their children had different symptomatology

compared to the included. However, this should not affect the psychometric investigation of SDQ that is presented here. The main strength is the considerably large sample, representative for preschool children in Sweden that corresponds well with demographic data presented from the Swedish National Agency for Education⁽²⁵⁾.

Further research needs to be done into how young children's internalizing problems can be identified as observable behaviours. The factor structure should also be examined, using confirmatory factor analysis.

Conclusion

SDQ can be used in a preschool setting by preschool teachers as a valid instrument for identifying early signs of distress/behavioural problems in young children. In children less than four years of age, the subscales hyperactivity and conduct worked well, while the subscales emotional, and peer problems were problematic. In the age group 4-5 years, the four original SDQ subscales produced reasonable results.

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Declaration of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

Table 1: Demographic data including gender, age and age group, population and pre-school information.

	Frequency	%
Girls	338	48,8
Boys	352	50,9
Mean Age (SD)	44.4 months (15.34)	
Age range	15-71 months	
1-3 years	375	54.2
4-5 years	315	45.5
Normal population	668	96.8
Identified children	22	3.2
Living with		
	Both parents	90.3
	Only mother	4.9
	Only father	0.3
	Shared living	3.4
	Other	0.6
Mother tongue other than Swedish		25.7
Need for special support		6.5
Preschool class size mean (SD)	23 Children (10.8)	
Municipality size	Small	13.9
	Middle	79.9

Large

6.2

Table 2. Frequencies of Preschool teacher's opinions of relevance of the questions for the individual child.

SDQ Questions	1-3 years Not relevant (%)	4-5 years Not relevant (%)
1. Considerate of other people's feelings.	12 (3.5%)	1 (3%)
2. Restless, overactive, cannot stay still for long.	8 (2.3%)	6 (2.1%)
3. Often complains of headaches, stomach-ache or sickness.	41 (11.8%)	9 (3.1%)
4. Shares readily with other children.	19 (5.5%)	9 (3.1%)
5. Often has temper tantrums or hot temper.	12 (3.4%)	8 (2.7%)
6. Rather solitary, tends to play alone.	8 (2.3%)	6 (2.1%)
7. Generally obedient, usually does what adults request.	8 (2.3%)	26 (8.9%)
8. Many worries, often seems worried.	22 (6.3%)	5 (1.7%)
9. Helpful if someone is hurt, upset or feeling ill.	21 (6%)	5 (1.7%)
10. Constantly fidgeting or squirming.	11 (3.2%)	1 (0.3%)
11. Has at least one good friend.	26 (7.5%)	0 (0%)
12. Often fights with other children or bullies them.	29 (8.3%)	27 (9.2%)
13. Often unhappy, down-hearted or tearful.	11 (3.2%)	6 (2.1%)
14. Generally liked by other children.	9 (2.6%)	1 (0.3%)
15. Easily distracted, concentration wanders.	9 (2.6%)	2 (0.7%)
16. Nervous or clingy in new situation, easily loses	10 (2.9%)	22 (7.5%)

SDQ in a preschool setting

confidence.

17. Kind to younger children.	27 (7.8%)	25 (8.6%)
18. Often argumentative with adults.	14 (4.0%)	23 (7.9%)
19. Picked on or bullied by other children.	24 (6.9%)	21 (7.2%)
20. Often volunteers to help others (parent, teacher, other children).	47 (13.5%)	1 (0.3%)
21. Can stop and think things out before acting.	36 (10.4%)	3 (1.0%)
22. Can be spiteful to others.	46 (13.3%)	32 (11%)
23. Gets on better with adults than with other children.	16 (4.6%)	3 (1%)
24. Many fears easily scared.	6 (1.7%)	5 (1.7%)
25. Sees tasks through to the end, good attention span.	19 (5.4%)	1 (0.3%)

Table 3: Age group 1-3 years. Pattern Matrix and Structure Matrix from the PCA, Oblimin rotation with Kaiser Normalization.

	Pattern Matrix		Structure Matrix	
	Factor 1 Hyper-activity	Factor 2 Con-duct	Factor 1 Hyper-activity	Factor 2 Con-duct
25. Sees tasks through to the end, good attention span	0.87		0.80	
15. Easily distracted, concentration wanders	0.79		0.81	0.45
21. Can stop and think things out before acting	0.74		0.71	0.31
10. Constantly fidgeting or squirming	0.71		0.76	0.45
2. Restless, overactive, cannot stay still for long	0.70		0.79	0.53
7. Generally obedient, usually does what adults request	0.43		0.56	0.47
22. Can be spiteful to others		0.83	0.40	0.82
18. Often argumentative with adults		0.79	0.34	0.76
12. Often fights with other children or bullies them		0.76	0.51	0.82
5. Often has temper tantrums or hot temper		0.68	0.38	0.70

Table 4. Age group 4-5 years. Pattern Matrix and Structure Matrix from the PCA, Oblimin rotation with Kaiser Normalization.

	Pattern matrix				Structure matrix			
	1	2	3	4	1	2	3	4
	Hyper-activity	Emotional and Peer	Conduct	Peer and Emotional	Hyper-activity	Emotional and Peer	Conduct	Peer and Emotional
2. Restless, overactive, cannot stay still for long	0.72				0.76			
15. Easily distracted, concentration wanders	0.72				0.75			
21. Can stop and think things out before acting	0.72				0.72			
25. Sees tasks through to the end, good attention span	0.71				0.69			
10. Constantly fidgeting or squirming	0.67				0.72		0.32	
7. Generally obedient, usually does what adults request	0.56				0.59			
16. Nervous or clingy in new situations, easily loses confidence		0.73				0.71		
13. Often unhappy, down-hearted or tearful		0.70				0.70		

SDQ in a preschool setting

19. Picked on or bullied by other children		0.66			0.63	
14. Generally liked by other children	0.32	0.56		0.41	0.64	
11. Has at least one good friend		0.54		0.34	0.62	0.34
24. Many fears, easily scared		0.45			0.49	0.38
22. Can be spiteful to others			0.64			0.66
18. Often argumentive with adults	0.31		0.63	0.43		0.67
5. Often has temper tantrums or hot temper	0.35		0.62	0.51		0.71
12. Often fights with other children or bullies them			0.56	0.34	0.36	0.58
3. Often complains of headaches, stomach-ache or sickness			0.54			0.50
6. Rather solitary, tends to play alone				0.82		0.81
23. Gets on better with adults than with other children				0.73		0.74
8. Many worries, often seems worried		0.31		0.33	0.38	0.42

Table 5. Test-retest of SDQ, children **1-3 years** (n=25) and children **4-5 years** (n=18), Spearman's rho.

SDQ	1-3 years	p	4-5 years	p
Total score	0.84	0.001	0.56	0.015
Emotional Symptoms	0.63	0.001	0.87	0.001
Conduct Problems	0.68	0.001	0.48	0.041
Hyperactivity	0.49	0.026	0.38	0.114
Peer Problems	0.26	0.238	0.65	0.004
Prosocial	0.87	0.001	0.57	0.014

Table 6. Cross tabulation between the 90th percentile for SDQ and C-TRF for children, 1-3 years.

	C-TRF < 90 percentile	C-TRF > 90 percentile
SDQ < 90 percentile	182	55
SDQ > 90 percentile	19	18

Table 7. SDQ in identified children and normal sample.

	1-3 years Identified children		Normal sample					4-5 years Identified children		Normal sample
SDQ	Median	n	Median	n	p	<i>U</i>	<i>Z</i>	Median	n	Median
Total score	11.0	9	6.0	252	0.004	552	-2.62	11.0	8	3.0
Emotional Symptoms	1.0	11	0	307	n.s.			1.0	9	0
Conduct Problems	2.0	10	1.0	295	0.018	905	-2.15	4.0	10	0
Hyperactivity	4.0	9	2.0	306	0.039	910	-1.75	3.0	9	1.0
Peer Problems	4.0	10	1.0	306	0.001	507	-3.65	4.0	10	0
Prosocial	6.0	9	6.0	288	n.s.			6.0	9	9.0

Table 8. Cross tabulation between the 90th percentile for SDQ and C-TRF for children, 4-5 years.

	C-TRF < 90 percentile	C-TRF > 90 percentile
SDQ < 90 percentile	189	50
SDQ > 90 percentile	5	8