

ASSESSING BEHAVIOURAL AND EMOTIONAL DIFFICULTIES IN THE CHILD-ADOLESCENT POPULATION: THE STRENGTHS AND DIFFICULTIES QUESTIONNAIRE (SDQ)

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El Cuestionario de Capacidades y Dificultades (SDQ) es una herramienta de screening que permite la evaluación de dificultades emocionales y comportamentales así como del comportamiento prosocial en la infancia y adolescencia, desde una perspectiva multi-informante. El objetivo de este trabajo es llevar a cabo una revisión selectiva de las características epidemiológicas así como de las principales evidencias a nivel psicométrico del SDQ. Las propiedades psicométricas referidas a la fiabilidad de las puntuaciones son adecuadas y el modelo dimensional de cinco factores (Problemas Emocionales, Problemas Conductuales, Problemas con los Compañeros, Hiperactividad y Prosocial) es el más ampliamente replicado. Asimismo, se han obtenido evidencias de validez que apoyan la utilidad de este instrumento de medida para su uso en el contexto escolar y clínico. Los resultados también indican que el género y la edad influyen en la expresión fenotípica de las dificultades emocionales y comportamentales. En conclusión, el SDQ es un instrumento de medida breve, sencillo de administrar y útil para la valoración de este tipo de problemática en la infancia y adolescencia y puede ser de sumo interés para su uso en población infanto-juvenil española.

Palabras clave: SDQ, Evaluación, Adolescencia, Problemas emocionales, Revisión, Propiedades psicométricas.

The Strengths and Difficulties Questionnaire (SDQ) is a screening tool that enables the assessment of emotional and behavioural difficulties, and prosocial behaviour in children and adolescents from a multi-informant perspective. The main goal of this article is to carry out a selective review on the main evidence concerning the psychometric and epidemiologic characteristics of the SDQ. The psychometric properties are adequate with regard to the reliability of the scores and the five-factor structure is the most accepted (emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems, and prosocial behaviour). In addition, different studies support the appropriateness of the SDQ for use as an evaluation tool in clinical and school contexts. The results show that gender and age have an influence on the phenotypic expression of emotional and behavioural difficulties. In conclusion, the SDQ is a short, easy to use, and useful measurement tool for evaluating problems, difficulties, and capacities related to childhood and adolescence and it may be used with Spanish children and adolescents.

Key words: SDQ, Assessment, Adolescence, Emotional problems, Review, Psychometric properties.

MENTAL HEALTH IN CHILDHOOD AND ADOLESCENCE

S The Encuesta Nacional de Salud España 2006 [Spain National Health Survey 2006], conducted with the Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997), indicated that between 19.2 and 26.6% of Spanish children and adolescents between the ages of 4 and 15 years old were at risk of mental health problems (Fajardo, León, Felipe, & Ribeiro, 2012). Previous studies carried out in Spain show similar prevalence rates of behavioural and emotional symptoms and disorders, both in the general population (Blanco et al., 2015; Bones, Pérez, Rodríguez-Sanz, Borrell, & Obiols, 2010; Haro et al., 2006) and in the child population (Cuesta et al., 2015; Diaz de Neira et al., 2015; Fonseca-Pedrero, Paino, Lemos-Giraldez, & Muñiz, 2012; Ortuño, Fonseca-Pedrero, Paino, & Aritio-Solana, 2014). Considering the possible methodological differences, these rates are similar to those found in epidemiological studies worldwide (Olsson, Blanco, Wang, Laje, & Correll, 2014; Polanczyk, Salum, Sugaya, Caye, & Rohde, 2015; Wichstrøm et al., 2012). For example, in an excellent review conducted by Polanczyk et al. (2015), which included 41 studies conducted in 27 countries in all regions of the world, it was found that

the prevalence of mental disorders in children and adolescents was 13.4% (95% confidential interval: 11.3 to 15.9).

The previous literature indicates that a significant percentage of children and adolescents present difficulties in psychological adjustment throughout their life, which has a clear impact not only on the personal, academic, family and social areas, but also at the health and economic levels (Blanchard, Gurka, & Blackman, 2006; Domino et al., 2009; Simpson, Bloom, Cohen, Blumberg, & Bourdon, 2005). Such symptoms tend to start in about 50% of cases before the age of 15 and they usually remain stable until adulthood (Copeland, Shanahan, y Costello, 2011; Costello, Copeland, & Angold, 2011; Davies et al., 2015; Widiger, De Clercq, & De Fruyt, 2009). Furthermore, the presence of emotional and behavioural subclinical symptoms at these ages increases the subsequent risk of developing a severe form of mental disorder (e.g., depression, psychosis) and general health problems of various kinds (Cullins & Mian, 2015; Klein, Shankman, Lewinsohn, & Seeley, 2009; Najman et al., 2008; Welham et al., 2009).

There is no doubt that the patterns of health and disease in childhood and adolescence have changed in recent decades, in what is known as the "new morbidity" (Cullins & Mian, 2015; Palfrey, Tonniges, Green, & Richmond, 2005). While epidemics have been declining gradually, mental health problems, such as emotional or behavioural disorders, have become more significant (Drabick & Kendall, 2010; Polanczyk et al., 2015), generating a progressive social process of becoming aware

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of the needs in matters of child and adolescent mental health (Mulloy, Evangelista, Betkowski, & Weist, 2011). To this could be added the significant increase in the prevalence rates of certain mental disorders, which begin in childhood and adolescence and are clearly linked to our current lifestyle (Mulloy et al., 2015). In this sense, it is necessary to have rigorous tools for screening and assessment as well as effective psychological interventions for this sector of the population (Fonagy et al., 2015), to reduce or mitigate the global burden and the associated disability and morbidity, and ultimately, to help improve the quality of life of individuals and society.

Within this context, the main objective of this work is to carry out a selective review of the Strengths and Difficulties Questionnaire (Goodman, 1997), as a tool for screening and evaluating emotional and behavioural difficulties as well as prosocial type skills during childhood and adolescence. Specifically, once the importance of carrying out early identification and detection in this sector of the population has briefly been analysed, this study will include the following steps: 1) expose some of the measuring instruments for assessing psychopathology as well as emotional and behavioural problems, focusing on the multi-informant SDQ system; 2) analyse the psychometric properties of the SDQ regarding the reliability of scores and obtaining different evidence of validity in studies carried out both nationally and internationally; 3) analyse the influence of gender and age on the phenotypic expression of the difficulties and capabilities through the SDQ; and 4) finally, to recapitulate, the main conclusions are discussed as well as the possible directions of future research.

THE IMPORTANCE OF EARLY DETECTION IN MENTAL HEALTH

There is now greater awareness among mental health professionals regarding the consequences of a lack of early detection of such difficulties and the benefits associated with early prophylactic intervention in childhood and adolescence (Moscoso, Jovanovic, & Rojnic, 2015; Mulloy et al., 2011; Steinberg & Morris, 2001). The delay in identifying the clinical or subclinical conditions (e.g., affective symptoms) can be associated, among other things, with increased symptoms in adulthood, as well as a worse outcome or prognosis in the medium to long term (e.g., Drancourt et al., 2013). Helping mental health practitioners in the early detection of this set of experiences and symptoms, both clinical and subclinical, it is a goal of great interest with clear practical implications.

The scientific evidence suggests the need to increase and improve the early detection of the indicators of psychological maladjustment in child population (Moscoso et al., 2015). All of this has the aim of preventing the possible consequences and managing the existing resources (e.g., healthcare, school) more effectively. The detection, prevention and treatment of these types of emotional and behavioural problems is a cardinal issue, not only in order to solve specific problems, but also to improve adult functioning and prevent the consolidation of difficulties and problems in future generations (Brimblecombe et al., 2015; Ford, Goodman, & Meltzer, 2003; Stockings et al., 2015). Similarly, the early detection of existing psychological difficulties enables us to identify subclinical symptoms that may go unnoticed and become the potential cause of other, bigger, personal, social and economic problems, given the possibility of escalation and worse prognosis (Aebi, Giger, Plattner, Winkler Metzke, & Steinhausen, 2014; Levitt, Saka, Romanelli, & Hoagwood, 2007).

Despite the efforts dedicated to early identification and detection, various investigations suggest that only a minority of the child and youth population in need of intervention in the area of mental health comes to specialised services (Angold et al., 1998; Ford, Hamilton, Meltzer, & Goodman, 2008). In other words, strategies for primary prevention and secondary prevention are not yet well established in this sector of the population (Du, Kou, & Coghill, 2008). This causes the increase of tertiary prevention in the treatment of psychological problems, once the clinical condition has manifested, which results in the intervention being more difficult, with poorer results and additional costs (Ford et al., 2008).

At present, within the field of education, school psychologists are focusing their functions and tasks beyond mere intervention, paying greater attention to prevention, prioritising universal screening over selective and indicated screening (Cummings et al., 2004; Hoagwood & Johnson, 2003). This has generated the need for short, simple instruments with adequate psychometric characteristics that enable the rigorous evaluation and measurement of the emotional, behavioural and prosocial adjustment of children and adolescents (Hill & Hughes, 2007). The school context also is of great significance in the analysis of different types of mental health problems and difficulties, since it is in this context that many of these problems occur, so it is an ideal and crucial framework for the detection of different mental health problems (Mulloy et al., 2011).

PSYCHOPATHOLOGICAL ASSESSMENT IN CHILDREN AND ADOLESCENTS: AN INTRODUCTION TO THE SDQ

Over recent years there have been great advances in the measurement and evaluation of the psychological adjustment of children and adolescents. Two of the main measuring instruments, now classics, for the assessment of psychopathology and behavioural and emotional problems in childhood and adolescence are the Rutter questionnaires (Rutter & Graham, 1966) and those belonging to the ASEBA system (Achenbach System of Empirically Basic Assessment) (Achenbach, 1991a, 1991b, 1991c; Achenbach & Rescorla, 2001, 2007). Also, and more recently, the SDQ has also become particularly significant (Goodman, 1997), since, as will be discussed below, it has a number of features such as its brevity or the inclusion of a subscale of prosocial behaviour, which could make it more recommendable compared to the previous two, always bearing in mind the objective of the assessment and intervention, of course.

In the sixties, the Rutter questionnaires (Rutter & Graham, 1966) were developed for detecting emotional and behavioural problems, and the adequate reliability of their scores and their validity evidence were confirmed (Goodman, 1994; Rutter & Graham, 1966). However, these measuring instruments do not include a number of current areas of interest for psychology and child and adolescent psychiatry, such as prosocial type capabilities or hyperactivity (Koskelainen, Sourander, & Kaljonen, 2000) (see Table 1). The ASEBA system, originally built by Achenbach (Achenbach, 1991a, 1991b, 1991c), is one of the best-known multiaxial assessment systems that has been extensively validated and has proven useful in the detection of mental health problems in child-youth population. In its 2001 version, it was enriched by the inclusion of updated versions aimed at both young people (*Youth Self Report*, YSR/11-18 years), as well as teachers (*Teachers' Report Form*, TRF/6-18 years) and parents (*Child Behavior Checklist*, CBCL/6-18 years) (Achenbach & Rescorla, 2001). This version also offered the

possibility of generating scores that are equivalent to the criteria of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)*.

However, the different versions of the ASEBA system have a number of disadvantages. Specifically, while it is true that the CBCL and YSR (Achenbach & Rescorla, 2001) have the advantage of being more current than the Rutter questionnaires and they cover a larger number of facets in the evaluation, they are also more time-consuming in their administration since they contain more than 100 items (Bourdon, Goodman, Rae, Simpson, & Koretz, 2005; Koskelainen et al., 2000). Thus, the measuring instruments belonging to the ASEBA system, in any of their forms, as well as others used for similar purposes, such as the *Behavior Assessment System for Children (BASC)* (Reynolds & Kamphaus, 1992), have the disadvantage of being slow to administer, resulting arduous and repetitive, in some cases, for the children and adolescents (Ruchkin, Kuposov, & Schwab-Stone, 2007). The brevity of the measuring instrument is a characteristic that enables people to engage more with it and value it more positively. It can be used in assessment situations where there is a lack of time or economic resources, or where it is necessary to carry out a more holistic evaluation, not only considering variables related to the mere psychopathological exploration of emotional and behavioural problems.

In this regard, as shown in Table 1, using the SDQ allows us to obtain reliable scores as it is a short questionnaire and it is easy to administer, correct and interpret (Ruchkin, Jones, Vermeiren, & Schwab-Stone, 2008; Vostanis, 2006). At the same time, it is a screening tool that could be of significant value for school psychologists with regard to practices aimed at prevention and public healthcare (Hoagwood & Johnson, 2003). Finally, the SDQ multi-informant system is a screening tool available for free use on the internet (<http://www.sdqinfo.com/>). From the website you can download the SDQ in different formats and languages, together with the systems of scoring and correcting and various supplementary materials (e.g., syntax for SPSS).

TABLE 1
COMPARISON OF THE MAIN FEATURES OF THE RUTTER QUESTIONNAIRES, ACHENBACH SYSTEM OF EMPIRICALLY BASED ASSESSMENT (ASEBA) AND THE STRENGTHS AND DIFFICULTIES QUESTIONNAIRE (SDQ)

	SDQ	Rutter	ASEBA
Number of items	25-34	More than 100	More than 100
Positive items	+		
Versions:			
Parents	+	+	+
Teachers	+	+	+
Self-report	+	-	+
Follow-up version available	+	-	-
Coverage of:			
Behavioural problems	+	+	+
Emotional symptoms	+	+	+
Hyperactivity/attention deficit	+	+	+
Peer relationships	+	+	+
Prosocial behaviour	+	-	-
Impact of symptoms	+	-	-

The Difficulties And Capabilities Questionnaire comprises a total of five dimensions or sub-scales (Goodman, 1997), namely: 1) Emotional Problems, 2) Behavioural Problems, 3) Peer Problems, 4) Hyperactivity, and 5) Prosocial Behaviour. Each dimension is evaluated using five items. The first four subscales constitute a Total Difficulties score. The simple version of the SDQ, with its 25 items, is complemented with an extended version called the *impact supplement*, aimed at parents, as well as teachers and the children/adolescents themselves. In both versions there is a Likert response format with three options: No, not at all; Sometimes; Yes, always (scoring 0, 1 and 2, respectively). It is true however, that other response formats have also been used in the literature (e.g., Likert format with five options, according to the degree of adherence) (Ortuño-Sierra et al., 2015), with the aim of improving the reliability of the scores of the different facets that make up the SDQ in its self-report version.

Goodman (1997) established a set of criteria for the construction of the SDQ which corresponds to its final form. It must: a) not be longer than one page; b) meet at least an age range between 4 and 17 years old; c) have identical versions for parents and teachers, and a very similar self-report version (11-16 years); d) address both the challenges and the strengths of the person; and e) have the same number of items in each dimension of the measuring instrument (Goodman, 1997).

As mentioned there are three versions of the SDQ: one for parents, one for teachers and another self-report version. The versions for parents and teachers are intended for children and adolescents aged 4 to 17 years old, while the self-report version is recommended to be administered from the age of 11, because at this age a level of introspection is assumed that is necessary to complete the assessment. There is also an extended version (SDQ Extended Version) (Goodman, 1997), as well as versions for parents and teachers which cover only the ages of 3-4 years in which the items corresponding to antisocial behaviour have been replaced with items that measure opposition to rules, due to their greater adjustment to the characteristics of this stage of development.

THE PSYCHOMETRIC PROPERTIES OF THE SDQ

Psychometric studies on the SDQ internationally

The psychometric properties of the SDQ, in its different versions have been analysed extensively (see Brown, 2006; Kersten et al., 2015; Niclasen et al., 2012). Estimating the reliability of the scores has found adequate levels of internal consistency in most studies. However, the Behavioural Problems subscale and, especially, the subscale of Peer Problems show in some cases levels lower than 0.70 (Essau et al., 2012; Goodman, 2001; Mieloo et al., 2014; Niclasen, Skovgaard, Andersen, Somhovd, & Obel, 2013; Ortuño-Sierra, Fonseca-Pedrero, Paino, Sastre i Riba, & Muñoz, 2015b; Ortuño-Sierra et al., 2015c; Ruchkin et al., 2008; Ruchkin et al., 2007; Stevanovic et al., 2014; Sveen, Berg-Nielsen, Lydersen, & Wichstrøm, 2013; Theunissen, Vogels, De Wolff, & Reijneveld, 2013; Williamson et al., 2014; Yao et al., 2009). For example, in the study by Rothenberg et al. (2008) a Cronbach's alpha of 0.82 was found for the Total Difficulties score, while values for the subscales of Behavioural Problems and Peer Problems were the lowest, with values of 0.58 and 0.62, respectively. Other studies have examined the test-retest reliability of the SDQ (Borg, Pälvi, Raili, Matti, & Tuula, 2012; Downs, Strand, Heinrichs, & Cerna, 2012; Mellor, 2004; Svedin & Priebe, 2008), obtaining adequate values ranging between 0.47 and 0.76.



With regards to the analysis of the internal structure of the SDQ by exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), the different investigations carried out on the three versions of the SDQ reveal a five-factor structure as the most suitable (Downs et al., 2012; Niclasen et al., 2012; Ortuño-Sierra et al., 2015b; Richter, Sagatun, Heyerdahl, Oppedal, & Røysamb, 2011; Ruchkin et al., 2008; Stevanovic et al., 2014; Van Roy, Veenstra, & Clench-Aas, 2008; Williamson et al., 2014; Yao et al., 2009). This five-factor model corresponds to the scales of the SDQ: Emotional Problems, Behavioural Problems, Peer Problems, Hyperactivity and Prosocial. However, other studies have shown that the five-dimensional structure does not fit the data well, suggesting a four-factor solution as the most appropriate (Muris, Meesters, Eijkelenboom, & Vincken, 2004) and, in some cases, a three-factor one (Goodman, Lamping, & Ploubidis, 2010). On the other hand, a recent study proposes the inclusion of a bifactor model as the most relevant for explaining the factorial structure underlying the SDQ scores (Caci, Morin, & Tran, 2015). The bifactor model postulates that in addition to the five factors above (or the specific factors), a general factor can be added that explains the variability of scores on the SDQ items. Table 2 presents a selective review of the scientific literature published on the analysis of the factorial structure of the SDQ, both the versions for parents and teachers, and the self-report version.

Also, different validity evidence has been obtained in the previous research. For example, in its version for parents and teachers the SDQ has shown evidence of concurrent validity with different measuring instruments and diagnostic interviews (Downs et al., 2012; Mieloo et al., 2014; Theunissen et al., 2013). Likewise, evidence of the discrimination capacity of the SDQ has been proven in several studies (De Giacomo et al., 2012; Petermann, Petermann, & Schreyer, 2010). For example, a recent study shows the usefulness of the SDQ as a screening tool in the child-youth population, noting adequate levels of diagnostic sensitivity for internalising behavioural problems (Silva, Osorio, & Loureiro, 2015). Similarly, a longitudinal study conducted in the UK with children aged between 3 and 7 years old (Croft, Stride, Maughan, & Rowe, 2015), showed the predictive validity of the SDQ in detecting problems such as autism spectrum disorders or attention deficit hyperactivity disorder (ADHD). However, it is equally true that other research shows inadequate levels of sensitivity and specificity (Bekker, Bruck, & Sciberras, 2013; Mathai, Anderson, & Bourne, 2004). In general terms, there is sufficient empirical evidence supporting the validity of the SDQ as a tool for detection and screening in the child-youth population.

Psychometric studies of the SDQ nationwide

As we have seen, a large number of works have studied the psychometric properties of the SDQ both in Europe, and in America and Asia, though for the moment, there have been few studies in Spain and in Spanish-speaking countries (Ortuño-Sierra et al., 2015b). Some studies focus on the analysis of the psychometric properties of the Spanish version of the SDQ (García et al., 2000) in the child population and the versions for parents and teachers, in both cases revealing a structure of five factors as the most appropriate (Ezpeleta, Granero, de la Osa, Penelo, & Doménech, 2012; Fajardo et al., 2012; Gómez-Beneyto et al., 2013; Rodríguez-Hernández et al., 2012). For example, in the study by Rodríguez-Hernández et al. (2012), conducted with 595 children aged 7-10 years and administered to parents and teachers, a five-factor structure was found to be the most appropriate through principal component analysis and CFA. Another study conducted in

Spain by Ezpeleta et al. (2012), with three year olds, revealed a factorial structure of five factors with two second order factors, which include the Internalising factor (Emotional Problems and Peer Problems) and the Externalising factor (Behavioural Problems and Hyperactivity), as the most appropriate for explaining the underlying dimensionality of the scores, both in the version for parents and the one for teachers.

Moreover, a recent study has highlighted the validity of the instrument as a tool for detection of ADHD in the version for parents (Carballo, Rodríguez-Blanco, García-Nieto, & Baca-García, 2014). The SDQ has shown evidence of discriminant validity in the Spanish version, obtaining the optimal diagnosis point 20 in the Total Difficulties score, which is the one that reveals the best values of sensitivity (0.96) and specificity (0.95) (Fajardo et al., 2012). The normative values in the parent version of the SDQ have been calculated and are available for use in Spain (Barrusio-Lapresa, Hernando-Arizaleta, & Rajmil, 2014).

With regards to the psychometric properties of the SDQ in its self-report version, various studies have found evidence of its validity and adequate levels of internal consistency for use in adolescents (Fajardo et al., 2012; Ortuño-Sierra, Chocarro, Fonseca-Pedrero, Sastre i Riba, & Muñoz, 2015a; Ortuño-Sierra et al., 2015b). As is the case with the versions for parents and teachers, the self-report version reveals a five-factor structure as the most appropriate. For example, in the study by Ortuño-Sierra et al. (2015a) the five-factor structure revealed goodness of fit indices superior to the three-factor model, however, various modifications to the original model were necessary to achieve optimal goodness of fit indices. Similarly a bifactor model (Caci et al., 2015) has been proposed as an alternative, although it is also true that its suitability has not yet been confirmed (Ortuño-Sierra et al., 2015a).

In conclusion, the SDQ is an interesting and useful tool for the measurement and detection of emotional and behavioural problems in this sector of the population. Most of the psychometric properties have been proven in the different versions within Spain for use by professionals as a screening tool in educational and/or care centres as well as in research. Future studies should continue to analyse and seek new evidence of validity which will allow us to make informed decisions and make inferences from the scores obtained with the SDQ.

INFLUENCE OF GENDER AND AGE ON SDQ SCORES

The studies analysed in this section refer to the impact of gender and age on the phenotypic expression of emotional and behavioural difficulties as well as prosocial behaviour, assessed with the SDQ.

As seen in Table 3, in terms of gender, the majority of the studies reviewed internationally find that females earn higher mean scores than males in Emotional and Prosocial Behaviour; however, males tend to earn higher mean scores than females in Behaviour Problems, Hyperactivity and/or Relationship Problems (Di Riso et al., 2010; Giannakopoulos et al., 2009; Koskelainen, Sourander, & Vauras, 2001; Ortuño et al., 2014; Svedin & Priebe, 2008; Van Roy, Grøholt, Heyerdahl, & Clench-Aas, 2006; van Widenfelt, Goedhart, Treffers, & Goodman, 2003; Yao et al., 2009). For example, in the study conducted by Giannakopoulos et al. (2009) on Greek adolescents, the mean scores were found to be higher in Prosocial Behaviour and Emotional Problems in girls but not in Behavioural Problems, Hyperactivity or Relationships among boys.

Other studies reveal results that contradict the previous ones, as is the case of the study in Finland conducted by Koskelainen et al. (2001) with



TABLE 2
THE MAIN STUDIES THAT ANALYSE THE INTERNAL STRUCTURE OF THE SCORES OF
THE STRENGTHS AND DIFFICULTIES QUESTIONNAIRE (SDQ)

Study	Sample		SDQ Version	Type of factor analysis	Number of factors found
	Nationality	N / Age Range			
Koskelainen, Sourander & Kaljonen (2000)	Finland	735 / 7-15	SDQ (P,T,S)	PCA	5
Thabet, Stretch & Vostanis (2000)	Gaza	322 / 3-16	SDQ (P,T,S)	CFA	5
Goodman (2001)	Great Britain	10438 / 5-15	SDQ (P,T,S)	PCA	5
Koskelainen, Sourander & Vauras (2001)	Finland	1458 / 13-17	SDQ (S)	PCA	53
Muris, Meesters & van den Berg (2003)	Holland	562 / 9-15	SDQ (P,T,S)	PCA	5
Becker et al., (2004)	Germany	214 / 11-17	SDQ (S)	PCA	5
Dickey & Blumberg (2004)	USA	9574 / 4-17	SDQ (P)	EFA, PCACFA	3
Muris, Meesters, Eijkelboom & Vincken (2004)	Holland	1111 / 8-13	SDQ (S)	PCA	45
Rønning, Helge Handegaard, Sourander & Mørch (2004)	Norway	4167 / 11-16	SDQ (S)	CFA	5 but with poor fit
Kashala, Elgen, Sommerfelt & Tylleskar (2005)	Congo	1187 / 7-9	SDQ (T)	PCA	52 of Hyperactivity
Mojtabai (2006)	USA	8034	SDQ (P)	CFA	3
	U.K.	7970 / 5-16	SDQ (P)	CFA	3
Van Leeuwen, Meerschaert, Bosmans, De medts & Braet (2006)	Germany	3179 / 4-8	SDQ (P, T)	CFA EFA	35
Mellor & Stokes (2007)	Australia	914 / 7-17	SDQ (P,T,S)	CFA	5 with poor fit
Palmieri & Smith (2007)	USA	733 / M= 56.1	SDQ (P)	PCA	34 better
Ruchkin, Kuposov & Schwab-Stone (2007)	Russia	2892 / 13-18	SDQ (S)	CFA	5
Mazur, Tabak & Kololo (2007)	Poland	774 / 14	SDQ (S)	EFA	5
d'Acremont (2008)	Switzerland	557 / Adolescents	SDQ (T)	CFA	5
Matsuishi et al. (2008)	Japan	2899 / 4-12	SDQ (P)	EFA	5
Percy, McCrystal & Higgins (2008)	Ireland	3753 / 12	SDQ (S)	EFA CFA	EFA: 3 CFA: 5 questionable
Rothenberg et al. (2008)	Germany	2406 / 7-16	SDQ (P,S)	EFA CFA	5
Ruchkin, Jones, Vermeiren & Schwab-Stone (2008)	USA	>5000 / 13-14	SDQ (S)	EFA and PCACFA	53 better
Svedin & Priebe (2008)	Sweden	1015 / 17-19	SDQ (S)	CFA	75
Van Roy, Veenstra & Clench-Aas (2008)	Norway	26269 / 10-19	SDQ (S)	CFA	5
Giannakopoulos et al. (2009)	Greece	1194 / 11-17	SDQ (P,S)	CFA	5
Sanne, Torsheim, Heiervang & Stormark (2009)	Norway	6430 Parents / 8999 Teachers	SDQ (P,T)	CFA EFA	5 better3
Yao et al., (2009)	China	1135 / 11-18	SDQ (S)	CFA	5
Di Riso (2010)	Italy	1394 / M= 9.04	SDQ (P)	CFA	3
Goodman, Lamping & Ploubidis (2010)	Great Britain	18222 / 5-16	SDQ (P,T,S)	PCA CFA	35 and 2 of second order
Petermann, Petermann & Schreyer (2010)	Germany	1738 / 3-5	SDQ (P)	CFA	5
Stone, Otten, Engels, Vermults & Janssens (2010)	Review of 48 studies	131223 / 4-12	SDQ	CFA	8 studies= 45 studies= 5
Richter, Sagatun, Heyerdahl, Oppedal & Røysamb (2011)	Norway	>6000 / 15-16	SDQ (S)	CFA	5
Van de Looij-Jansen, Goedhart, de Wilde & Treffers (2011)	Holland	11881 / 11-16	SDQ (S)	CFA	5 better4
Ezpeleta, Granero, de la Osa, Penelo & Domènech (2012)	Spain	1341 / 3-4	SDQ (P, T)	CFA	55 and 2 second order
Gómez (2012)	Australia	2021 / 2-17	SDQ (P,T,S)	CFA	5
Mieloo et al., (2012)	Germany	5514 / 5-6	SDQ (P,T)	CFA	5
Nidasen, Teasdale, Andersen, Skovgaard, Elberling & Obel (2012)	Denmark	71840 / 5-12	SDQ (P,T)	CFA	55 and 2 second order
Rodríguez-Hernández et al. (2012)	Spain	595 / 7-10	SDQ (P, T)	PCA CFA	5
Ruchkin, Kuposov, Vermeiren & Schwab-Stone (2012)	Russia	528 / 13-18	SDQ	CFA	5
Essau et al. (2012)	5 European countries	2418 / 12-17	SDQ (S)	CFA	35
Shevlin, Murphy & McElearney (2012)	Ireland	202	SDQ (P, S)	CFA	5
Liu, Chien, Shang, Lin, Liu & Gau (2013)	China	3534 / 6-15	SDQ (P,T,S)	PCA	4 (P,T)5 (S)
He, Burstein, Schmitz & Merikangas (2013)	USA	6483 / 13-18	SDQ (P)	CFA	5
Theunissen et al. (2013)	Holland	839 / 3-4	SDQ (P)	CFA	5

TABLE 2
THE MAIN STUDIES THAT ANALYSE THE INTERNAL STRUCTURE OF THE SCORES OF
THE STRENGTHS AND DIFFICULTIES QUESTIONNAIRE (SDQ) (Continued)

Study	Sample		SDQ Version	Type of factor analysis	Number of factors found
	Nationality	N / Age Range			
Sveen et al. (2013)	Norway	845 / 4	SDQ (P, T)	CFA	5
Williamson et al. (2014)	Australia	717 / 4-17	SDQ (P)	CFA	5
Stevanovic et al. (2014)	7 European, African and Asian countries	2367 / 13-18	SDQ (S)	CFA	Bifactor and 5
Ortuño-Sierra et al. (2015a)	Spain	1547 / 11-19	SDQ (S)	CFA	5
Ortuño-Sierra et al. (2015b)	5 European countries	3012 / 12-17	SDQ (S)	CFA	5
Caci, Morin & Tran (2015)	France	889 / 4-17	SDQ (P)	CFA	Bifactor

Note. SDQ (P,T,S): *Strengths and Difficulties Questionnaire (Parent, Teacher, Self-Report)*; PCA: *Principal Component Analysis*; CFA: *Confirmatory Factor Analysis*; EFA: *Exploratory Factor Analysis*; CBCL: *Child Behaviour Checklist*; YSR: *Youth Self Report*.

a sample of 1458 adolescents aged 13-17 years, which showed mean scores that were significantly higher in girls in the total difficulties and problems associated with hyperactivity compared with boys. More recently, Reinholdt-Dunne et al. (2011), in a sample of 834 Danish adolescents aged 12-14 years, found higher mean scores on the subscale Emotional Problems in favour of girls, with no statistically significant differences according to gender in the rest of the subscales.

Regarding age, the results are more inconsistent than in the case of gender. Some studies show an increase in problems with increasing age (Giannakopoulos et al., 2009; Koskelainen et al., 2001; Rønning, Helge Handegaard, Sourander, & Mørch, 2004; Yao et al., 2009), while others find a reverse trend (Muris, Meesters, & van den Berg, 2003; Van Roy et al., 2006), or they do not find any association (Prior, Virasinghe, & Smart, 2005). Theoretically, it is speculated that adolescents are more exposed to the presentation of behavioural or relational problems in the early years, giving way at the beginning of middle and late adolescence to a greater capacity for problem management, behavioural regulation and control, management of social behaviours and increased capacity for prosocial behaviours (see Table 3).

For example, the study by Van Widenfelt et al. (2003), with 970 German teenagers aged between 11 and 16 years old, showed higher mean scores on Emotional Problems, Behavioural Problems and Hyperactivity among the younger participants. Similarly, Armand et al. (2012), in their study with 2,000 Iranian children and adolescents aged 6-18 years old, found that the problems of Hyperactivity and Total Difficulties were higher among those of a younger age. In Norway, Lien, Green, Welander-Vatn and Bjertness (2009), with a sample of 3,790 schoolchildren aged 15-19, found higher scores for internalising problems in older participants, whereas externalising problems were more frequent among the younger participants. However, as noted, other research contradicts the above in part. For example, the results achieved in Italy by di Riso et al. (2010) showed a greater number of Relationship Problems in the older participants.

Moreover, the literature reviewed includes the interrelationship between gender and age, revealing, for example, that the levels of total difficulties increase with age for females, while males show the opposite

trend (Van Roy, Grøholt, Heyerdahl, & Clench-Aas, 2010) or higher levels of prosocial behaviour at higher ages in males (Rønning et al., 2004). Other studies show more emotional problems with increasing age in females (Armand et al., 2012; d'Acremont & Van der Linden, 2008).

RECAPITULATION

A significant percentage of children and adolescents present mental health difficulties throughout their life, potentially having a clear impact not only on the personal areas but also at the health and economic levels (Blanchard, Gurka, & Blackman, 2006; Domino et al., 2009; Drabick & Kendall, 2010; Polanczyk et al., 2015; Simpson, Bloom, Cohen, Blumberg, & Bourdon, 2005). Among the different measuring instruments available for the assessment and detection of psychological difficulties in children is the Strengths and Difficulties Questionnaire (SDQ). The SDQ has a number of features that make it interesting for use by mental health practitioners. These include, for example, the fact that it is an instrument that is easy to access, available for free on the Internet, its brevity, its ease of administration and correction, the fact that it provides a multi-informant system, the inclusion of prosocial type behaviours, and its adequate psychometric properties.

The reliability studies reviewed found adequate levels of reliability in the SDQ scores, although the subscales of Behavioural Problems and Peer Problems show, in some cases, discrete or moderate levels. Data has also been obtained regarding the stability of the scores. We have collected various sources of validity evidence for the SDQ. The dimensional structure of the SDQ scores seems to be able to be explained through a five-factor model, although it is also true that other models (e.g., a two-factor model of second order or a bifactor model) are also factorial solutions for which some empirical support has been found. Similarly, other studies have analysed different sources of validity in relation to external variables, and adequate levels of sensitivity and specificity were obtained as well as the prediction of various mental health problems in child and adolescent population.

Moreover, in view of the different studies conducted with the SDQ, despite the existence of research that shows inconsistent results, there

TABLE 3
THE MAIN STUDIES CONCERNING GENDER AND AGE WITH
THE STRENGTHS AND DIFFICULTIES QUESTIONNAIRE

Study	Sample		SDQ Version	Gender		Age	
	Nationality	N Age Range		Males Higher Score	Females Higher Score	Higher age	Lower age
Koskelainen, Sourander & Vauras (2001)	Finland	1458 13-17	SDQ (S)	Behavioural Peers	Prosocial Hyperactivity Emotional Total	Emotional	
Knyazev et al. (2003)	Russia	146 7-17	SDQ (P,T, S)	Hyperactivity	Prosocial		
Muris, Meesters & van den Berg (2003)	Holland	562 9-15	SDQ (P,T,S)	Behavioural	Emotional Prosocial	Total Peers	
Van Widenfelt, Goedhart, Treffers & Goodman (2003)	Germany	1476 11-16	SDQ (P,T,S)	Behavioural Hyperactivity	Emotional Prosocial	Emotional Hyperactivity Peers	
Becker et al. (2004)	Germany	214 11-17	SDQ (S)	Behavioural	Prosocial Emotional	Emotional Prosocial	
Muris, Meesters, Eijkelboom & Vincken (2004)	Holland	1111 8-13	SDQ (S)	Behavioural	Emotional Prosocial		
Rønning, Helge Handegaard, Sourander & Mørch (2004)	Norway	4167 11-16	SDQ (S)	Behavioural Hyperactivity	Emotional Prosocial		
Bourdon, Goodman, Rae, Simpson & Koretz (2005)	USA	10367 4-17	SDQ (P)	Total			
Kashala, Elgen, Sommerfelt & Tylleskar (2005)	Congo	1187 7-9	SDQ (T)	Total Behavioural	Prosocial		
Prior, Virasinghe & Smart (2005)	Sri Lanka	1809 11-13	SDQ (P,T,S)	Total Behavioural	Prosocial	No differences	No differences
Simpson, Bloom, Cohen, Blumberg & Bourdon (2005)	USA	> 25000 4-17	SDQ (P,S)	Total		Total	
Becker et al. (2006)	European countries	1573 ADHD M=8,8	SDQ (P)		Emotional Prosocial	Total Hyperactivity Peers	
Mojtabai (2006)	USA UK	8034 7970 5-16	SDQ (P)	Behavioural	Emotional		
Thabet, Karim & Vostanis (2006)	Gaza	309	SDQ (P)	Hyperactivity			
Van Leeuwen, Meerschaert, Bosmans, De medts & Braet (2006)	Germany	3179 4-8	SDQ (P,T)	Total Behavioural Hyperactivity	Prosocial	Hyperactivity Emotional Total	Behavioural
Van Roy, Greholt, Heyerdahl & Clench-Aas (2006)	Norway	29631 10-19	SDQ (S)	Behavioural Peers	Emotional	Behavioural Peers	
Capron, Therond, & Duyme (2007)	France	1400 M=12,8	SDQ (P, S)	Behavioural Hyperactivity Peers	Prosocial Emotional		
d'Acremont & Van der Linden (2008)	Switzerland	557 13-18	SDQ (T)	Behavioural Peers Hyperactivity	Prosocial		
Du, Kou, & Coghill (2008)	China	2655 3-17	SDQ (P,T)	Hyperactivity Prosocial Behavioural			
Matsuishi et al. (2008)	Japan	2899 4-12	SDQ (P)	Total Peers Hyperactivity Behavioural	Emotional Prosocial		
Ravens-Sieberer et al. (2008)	Germany	2863 7-17	SDQ (P)				
Rothenberg et al. (2008)	Germany	2406 7-16	SDQ (P,S)	Total Behavioural Hyperactivity Peers	Emotional	Prosocial	Hyperactivity Total

TABLE 3
THE MAIN STUDIES CONCERNING GENDER AND AGE WITH
THE STRENGTHS AND DIFFICULTIES QUESTIONNAIRE (Continued)

Study	Sample		SDQ Version	Gender		Age	
	Nationality	N Age Range		Males Higher Score	Females Higher Score	Higher age	Lower age
Shojai, Wazana, Pitrou & Kovess (2008)	France	1348 6-11	SDQ (P)	Hyperactivity Behavioural	Prosocial		
Svedin & Priebe (2008)	Sweden	1015 17-19	SDQ (S)	Behavioural Peers	Emotional Prosocial		
Giannakopoulos et al. (2009)	Greece	1194 11-17	SDQ (P,S)		Prosocial Emotional	Hyperactivity Behavioural	
Lien, Green, Welander-Vatn & Bjertness (2009)	Norway	3790 15-19	SDQ			Internalising	Externalising
Ullah-Syed, Abdul-Hussein & Haidry (2009)	Pakistan	675 5-11	SDQ (P,T)	Behavioural Hyperactivity Total	Emotional		
Yao et al., (2009)	China	1135 11-18	SDQ (S)	Behavioural Peers	Emotional	Hyperactivity Prosocial	Peers
Di Riso et al. (2010)	Italy	1394 M= 9.04	SDQ (P)	Behavioural Hyperactivity	Prosocial Emotional	Peers	
Keskin & Çam (2010)	Turkey	38411-16	SDQ	Peers	Emotional Prosocial	Hyperactivity	Prosocial
Lai et al. (2010)	Hong Kong	> 4000 6-12	SDQ (P)	Behavioural Hyperactivity Peers	Emotional Prosocial		
Van Roy, Groholt, Heyerdahl & Clench-Aas (2010)	Norway	8154 10-13	SDQ (P,S)	Behavioural Hyperactivity Peers	Emotional Prosocial		
Fonseca-Pedrero, Paino, Lemos-Giráldez & Muñiz (2011)	Spain	1319 13-17	SDQ (S)	Behavioural Hyperactivity Peers	Emotional Prosocial	Hyperactivity Total	
Reinholdt-Dunne et. (2011)	Denmark	834 12-14	SDQ (S)		Emotional		
Wichstrøm et al. (2012)	Norway	2475 4	SDQ (P)	Hyperactivity			
Arman, Keypour, Maracy & Attari (2012)	Iran	2000 6-18	SDQ (P)	Behavioural Hyperactivity	Emotional		Hyperactivity Total
Mieloo et al. (2012)	Germany	5514 5-6	SDQ (P,T)	Total Behavioural Hyperactivity			
Ruchkin, Kuposov, Vermeiren & Schwab-Stone (2012)	Russia	528 13-18	SDQ (T)	Behavioural Hyperactivity			
Shoval et al. (2012)	Israel	1402 14-17	SDQ (P)	Externalising			
Liu et al. (2013)	China	3534 6-15	SDQ (P,T,S)	Emotional (S) Behavioural Peers Hyperactivity	Prosocial		Behavioural Peers
Armand, Amel & Maracy (2013)	Iran	1934 11-18	SDQ (S,P)	Behavioural Hyperactivity	Emotional	Emotional Behavioural Total (S)	Prosocial Total (P)
Sveen et al. (2013)	Norway	845 4	SDQ (P, T)	Behavioural	Emotional		
Barriuso-Lapresa, Hernando-Arizaleta & Rajmil (2014)	Spain	6266 4-15	SDQ (P)	Hyperactivity	Emotional Prosocial		Total Behavioural
Ortuño-Sierra et al. (2014)	Spain	508 11-18	SDQ (S)	Behavioural	Emotional Prosocial	Emotional Behavioural Hyperactivity Total	

Note. SDQ (P,T,S): *Strengths and Difficulties Questionnaire (Parent, Teacher, Self-Report)*; Emotional: Emotional Problems; Behavioural: Behavioural Problems; Peers: Peer Problems.

appears to be some consensus that externalising problems, such as behavioural problems and hyperactivity are more common among boys during adolescence. However, emotional problems are more common among girls, who also show higher values of prosocial behaviour. In terms of age, the results are more inconsistent, and there is research that reflects an increase in difficulties with increasing age as well as other studies that reveal the opposite; consequently, the heterogeneity of the results prevents us from being able to specify what kind of difficulties are more typical during early or late adolescence. There are also no conclusive results regarding the degree of presentation of prosocial type behaviours in relation to age.

In conclusion, the study of psychological adjustment and difficulties during these developmental stages is a subject of great importance given the impact and repercussions that these problem have on multiple levels (e.g., social, family, healthcare, etc.). The assessment and accurate detection of such difficulties is of great importance with regards to a possible early prevention and to avoid their potential consolidation in adulthood. Vulnerable or "high risk" groups should be identified as early as possible during childhood and adolescence in order to develop effective preventive interventions to prevent, mitigate or reduce the overall burden and the associated morbidity, and ultimately to help to improve one of the main causes of disability in our society.

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