Journal of Adolescence 38 (2015) 49–56

Contents lists available at ScienceDirect

Journal of Adolescence

journal homepage: www.elsevier.com/locate/jado

Screening mental health problems during adolescence: Psychometric properties of the Spanish version of the Strengths and Difficulties Questionnaire

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ARTICLE INFO

Article history:
Available online 27 November 2014

Keywords:
SDQ
Self-report
Adolescents
Factorial structure
Measurement invariance
Behavioural problems

ABSTRACT

The main purpose of the present study was to test the psychometric properties of the Strength and Difficulties Questionnaire (SDQ), self-reported version, in Spanish adolescents, introducing a five-point Likert response scale. The sample consisted of 1474 adolescents with a mean age of 15.92 years ($SD = 1.18$). The level of internal consistency of the SDQ Total score was .75, ranging from .56 to .71 for the subscales. Results from exploratory factor analysis revealed a three-factor structure as the most satisfactory. Confirmatory factor analyses showed that the five-factor model (with modifications) displayed better goodness of-fit indices than the other hypothetical dimensional models tested. Furthermore, strong measurement invariance by age and partial measurement invariance by gender was supported. The study of the psychometric properties confirms that the Spanish version of the SDQ, self-reported form, is a useful tool for the screening of emotional and behavioural problems in adolescents.
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Introduction

Mental health problems in children and adolescents have an important impact not only in the individual but also in the family, in the school environment, and in the public global health (Gore et al., 2011; Meltzer, Gatward, Goodman, & Ford, 2003). Interest in the detection of children and adolescents at risk for emotional disorders or behavioural problems has increased in the last two decades (Carli et al., 2014; Erol, Simsek, Oner, & Munir, 2005; Kessler et al., 2012; Merikangas et al., 2010). Despite the efforts in early detection, different studies have suggested that only a minority of the adolescent population with needs in the area of mental health comes in direct contact with specialized services (Angold et al., 1998; Ford, Hamilton, Meltzer, & Goodman, 2008).

The assessment of emotional and behavioural problems in children and adolescents is a priority issue not only for public health policy, but also in the context of clinical practice and research. Standardized assessment by means of self-report allows

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http://dx.doi.org/10.1016/j.adolescence.2014.11.001
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the exploration of prevalence rates, the frequency and the distribution of psychological symptoms and disorders, and the testing of the underlying structure of empirically based taxonomies (Fonseca-Pedrero, Sierra-Baigrie, Lemos Giraldez, Paino, & Muñiz, 2012). The Strength and Difficulties Questionnaire (SDQ) (Goodman, 1997) is a screening instrument for behavioural and emotional problems that similarly allows the assessment of capacities in the social sphere. Furthermore, it is a brief, simple, and easy management tool for use in child and adolescent populations (Ruchkin, Jones, Vermeiren, & Schwb-Stone, 2008; Vostanis, 2006). The SDQ is composed of 25 items in a Likert response format with three options grouped into five subscales or dimensions (Goodman, 1997): Emotional symptoms, Conduct problems, Hyperactivity, Peer problems, and Prosocial behaviour. The first four subscales form a Total difficulties score. The items that compose the SDQ are both positively and negatively phrased in order to avoid the effect of response bias (e.g., acquiescence). In total, 15 items reflect problems and 10 capabilities, of which five belong to the Prosocial subscale and five should be recoded, since they belong to the difficulties subscale.

Previous studies have reported adequate psychometric properties related to reliability and sources of validity evidences for the SDQ self-reported version (Gómez, 2012; Klasen et al., 2000; Muris, Meesters, & van den Berg, 2003). Nevertheless, several studies have detected low values of reliability through Cronbachs's alpha coefficient ($\alpha < .60$), especially in the subscales of Conduct problems and Peer problems (Becker, Hagenberg, Roessner, Woerner, & Rothenberg, 2004; Capron, Therond, & Duyme, 2007; Goodman, 2001; Koskelainen, Sourander, & Kaljonen, 2000; Mellor, 2004; Mellor & Stokes, 2007; Muris & Maas, 2004; Rønning, Helge Handegaard, Sourander, & Mørch, 2004; Ruchkin, Koposov, & Schwab-Stone, 2007; Yao et al., 2009). It is also noteworthy that the original format's response of the SDQ is a Likert type with three response options, which may also contribute to the low levels of reliability found. Previous studies have indicated that Likert response format, with few response options, have lower levels of reliability (Zumbo, Gadermann, & Zeisser, 2007). Moreover, the reformulation of the items in positive terms, could be a key factor in explaining low levels in Cronbach's alpha coefficient and the inconsistency of factorial solutions (van de Looij-Jansen, Goedhart, de Wilde, & Treffers, 2011). The fact that the problems subscales includes this type of items can generate that they behave as part of a distinct construct (Goodman, 2001). Therefore, reverse-worded items may influence the estimation of internal consistency due to their low correlation with the rest of the SDQ items that measure problems, and could, at the same time, affect the factor structure (van de Looij-Jansen et al., 2011).

Studies of the factor structure of the SDQ self-reported version yielded contradictory results. Previous studies, conducted using exploratory factor analysis, found support for the original five-factor structure (Goodman, 2001; Koskelainen, Sourander, & Vauras, 2001; Muris, Meesters, Eijkelenboom, & Vincken, 2004), while others reported a three-factor structure (Koskelainen et al., 2001; Percy, McCrystal, & Higgins, 2008; Ruchkin et al., 2008), and even a four-factor solution being most satisfactory (Muris et al., 2004). Regarding the confirmatory factor analysis, previous studies showed the five-factor solution as the most appropriate (He, Burstein, & Schmitz, 2013; Ruchkin et al., 2008; Ruchkin et al., 2007; Svedin & Priebe, 2008; Van Roy, Veenstra, & Clench-Aas, 2008; Yao et al., 2009), while others found the three-factor solution (Percy et al., 2008; Ruchkin et al., 2008), or even a five-factor solution with two second order factor (internalizing and externalizing) as the most satisfactory (Goodman, Lamping, & Ploubidis, 2010). Nevertheless, Mellor and Stokes (2007) reported that none of the five subscales was essentially one-dimensional, questioning the adequacy of the internal structure of the five-factor solution. Other research, likewise, discussed the adequacy of the setting of subscales, concluding that the SDQ factorial structure was not appropriate (Percy et al., 2008; Rønning et al., 2004).

Another important issue regarding the factor structure of the SDQ is the study of measurement invariance across groups. The evaluation of measurement invariance is important for determining the generalizability of latent constructs across groups and whether the measurement instrument and the construct being measured are operating in the same way across diverse samples of interest (Byrne, 2012). If measurement invariance does not hold, inferences and interpretations drawn from the data may be erroneous or unfounded. Different studies have analysed the measurement invariance of the SDQ, self-reported version in adolescents, across different variables (e.g., gender, age, race/ethnicity, and income) (He et al., 2013; Rønning et al., 2004; Ruchkin et al., 2008; van de Looij-Jansen et al., 2011). As yet, there has been no in-depth examination of the question of whether or not the dimensional structure of the SDQ is invariant across gender and age.

Although a significant number of investigations have studied the psychometric properties of the SDQ in Europe as well as in America and Asia, there are few studies in the review of the literature that analyse the psychometric quality of the SDQ in its Spanish version. Therefore, the main purpose of the present study was to study the psychometric properties of the SDQ scores, self-reported version, with a five Likert response format in a representative sample of Spanish adolescents. From this general goal three specific objectives have been formulated: a) to examine the internal consistency of the SDQ scores through Cronbach's alpha; b) to study the dimensional structure of the SDQ scores using exploratory and confirmatory factor analyses; and c) to test the measurement invariance of the SDQ scores across gender and age. Based in previous research and results, it is hypothesised that sound reliability will be established, and that the proposed five factor dimensional model will be supported. It is further hypothesised that the five factor dimensional model of SDQ will be equivalent by age and gender.

Method

Participants

Selection of participants was by means of stratified random sampling by clusters, at the classroom level, in a population of approximately 36,000 students from the Principality of Asturias (a region situated in the north of Spain). Strata were created

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