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## ORIGINAL ARTICLE

# The assessment of emotional and Behavioural problems: Internal structure of The Strengths and Difficulties Questionnaire



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### KEYWORDS

Adolescents;  
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Instrumental study

**Abstract** The main purpose of this study was to analyze the internal structure and measurement invariance across gender and age of the Strengths and Difficulties Questionnaire (SDQ), self-reported version, in Spanish adolescents. The sample consisted of 1,547 participants, 606 were male (39.1%), with a mean age of 15.15 years ( $SD = 1.99$ ). Results from the confirmatory factor analysis showed a five-factor model and a bifactor model with correlated errors added as the most appropriate. Nevertheless, the bifactor model displayed lower and non-significant factor loadings. The hypothesis of measurement invariance of the SDQ scores across gender and age was supported. The level of internal consistency of the Total difficulties score was .84, ranging between .71 and .75 for the SDQ subscales. The study of the psychometric properties showed that the Spanish version of the SDQ, self-reported form, seems to be an adequate tool for the screening of emotional and behavioural problems during adolescence. Future research should analyze the internal structure of the SDQ in other regions and testing the measurement invariance across cultures.

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### PALABRAS CLAVE

Adolescentes;  
estructura factorial;  
invarianza de  
medición;

### Evaluación de problemas emocionales y comportamentales: estructura interna del Strengths and Difficulties Questionnaire

**Resumen** El principal objetivo del presente estudio fue analizar la estructura interna y la invarianza de medición en función del género y la edad del Strengths and Difficulties Questionnaire (SDQ), versión autoinforme, en adolescentes españoles. La muestra está formada

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SDQ;  
estudio instrumental

por 1.547 participantes, 606 varones (39,1%), con una media de edad de 15,15 años ( $DT = 1,99$ ). Los resultados del análisis factorial confirmatorio mostraron que el modelo de cinco factores y el modelo bifactor con modificaciones presentaron los mejores índices de bondad de ajuste. Sin embargo, en el modelo bifactor algunas cargas factoriales no fueron estadísticamente significativas. La hipótesis de invarianza de medición de las puntuaciones del SDQ en función del género y la edad fue confirmada. El nivel de consistencia interna de la puntuación Total de dificultades fue 0,84, mientras que para las subescalas osciló entre 0,71 y 0,75. El estudio de las propiedades psicométricas de la versión española del SDQ autoinforme parece indicar que se trata de una herramienta adecuada y útil para el cribado de problemas emocionales y comportamentales en la adolescencia. En investigaciones futuras se debería analizar la estructura interna del SDQ en otras regiones y someter a prueba la invarianza de medición en función de las culturas.

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Interest in the detection of children and adolescents at-risk for emotional disorders or behavioural problems has increased in the last two decades (Blanco et al., 2015; Carli et al., 2014; Fonseca-Pedrero, Paino, Lemos-Giráldez, & Muñiz, 2013). Despite the efforts in early detection, different research studies have suggested that only a minority of the adolescent population with needs of intervention in the area of mental health comes in direct contact with specialized services (Costello, Copeland, & Angold, 2011; Ford, Hamilton, Meltzer, & Goodman, 2008). Early detection, identification and treatment of those individuals at-risk may delay or prevent the onset of the clinical outcome; however prior to early identification and prevention efforts, we need brief, well-validated, and psychometrically sound assessment tools.

The assessment of emotional and behavioural problems in children and adolescents is a priority issue for public health policy. The Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997) is a screening tool for behavioural and emotional problems that similarly allows the assessment of capacities in the social sphere. The SDQ is composed of 25 items, Likert response format with three options, which are grouped into five subscales: Emotional symptoms, Conduct problems, Hyperactivity, Peer problems, and Prosocial behaviour. The first four subscales form a Total difficulties score. In total, 15 items reflect problems and 10 strengths, of which five belong to the Prosocial subscale and five should be recoded, since they belong to the Total difficulties score. The inclusion of these positive items increased the acceptability of the instrument between parents and teacher. Moreover as it addresses contemporary issues like impulsiveness or bullying is widely accepted by clinicians.

Specifically, psychometric properties of the SDQ have been analyzed previously and different types of validity evidence, according to the international Standards, have been gathered (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 2014). Previous studies have indicated an adequate reliability scores in the self-report version of the SDQ (Gómez, 2012; Muris, Meesters, & van den Berg, 2003); nevertheless, a significant number of studies

have detected low values of reliability through Cronbach's alpha coefficient ( $\alpha < .60$ ), especially in the subscales of Conduct problems and Peer problems (Capron, Therond, & Duyme, 2007; Mellor & Stokes, 2007; Muris & Maas, 2004; Rønning, Helge Handegaard, Sourander, & Mørch, 2004; Ruchkin, Jones, Vermeiren, & Schwab-Stone, 2008; Ruchkin, Koposov, & Schwab-Stone, 2007; Yao et al., 2009).

Factorial studies conducted in order to test the internal structure of the SDQ scores, self-reported version, yielded contradictory results. Previous studies, using confirmatory factor analysis (CFA), have supported the five-factor model (Emotional symptoms, Conduct problems, Hyperactivity, Peer problems, and Prosocial behaviour) as the most appropriate solution (He, Burstein, Schmitz, & Merikangas, 2013; Ruchkin et al., 2008; Svedin & Priebe, 2008; Van Roy, Veenstra, & Clench-Aas, 2008; Yao et al., 2009); however, other studies concluded that a solution with three dimensions was as satisfactory as the five-factor solution (Percy, McCrystal, & Higgins, 2008; Ruchkin et al., 2008). The three-factor model is composed by: a) Internalizing symptoms, resulting of the Emotional and Peer problems subscales, b) Externalizing symptoms, comprising Conduct problems and Hyperactivity subscales, and c) the Prosocial subscale. Also, a five-factor model with two second order factors (Internalizing and Externalizing) (Goodman, Lamping, & Ploubidis, 2010) has been proposed. Nonetheless, 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 SDQ subscales, indicating that the factorial structure of the SDQ scores was not appropriate or was needed of modifications (Ortuño-Sierra, Fonseca-Pedrero, Paino, Sastre i Riba, & Muñiz, 2015; Percy et al., 2008; Rønning et al., 2004). One of the added values of the SDQ, the inclusion of several positive items, could be a key factor in explaining low levels in Cronbach's alpha coefficient and the inconsistency of factorial solutions (Ortuño-Sierra et al., 2015). The fact that the difficulties subscales include these type of items can mean that they behave as part of a distinct construct (Dickey & Blumberg, 2004; van de Looij-Jansen, Goedhart, De Wilde, & Treffers, 2011).

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