



## Schizotypy, emotional–behavioural problems and personality disorder traits in a non-clinical adolescent population

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### ABSTRACT

The main goal of the present study was to examine the relationship between the schizotypy dimensions, emotional–behavioural problems and personality disorder traits in non-clinical general adolescent population. A total of 1455 participants ( $M = 15.9$  years;  $S.D. = 1.2$ ) were administered the Oviedo Schizotypy Assessment Questionnaire (ESQUIZO-Q), the Strengths and Difficulties Questionnaire (SDQ) and the Personality Diagnostic Questionnaire-4+ (PDQ-4+). Correlation analyses revealed significant associations between the schizotypy and emotional–behavioural problems self-reported by adolescents. Participants with high scores in schizotypy dimensions, reported higher rates of affective and behavioural problems than those with low scores. Also, schizotypy dimensions and personality disorder traits were closely related in adolescent population. These data indicate, as occurs in clinical samples, the high overlap between schizotypy and personality disorder traits. Affective dysregulation and behavioural problems are present at the subclinical level in non-clinical adolescent population. These results have implications for the integration of schizotypy studies within the paradigms of developmental psychology and dimensional models of personality.

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### 1. Introduction

The study of personality disorder (PD) traits in adolescents has increased since the growth of the developmental psychology paradigm and dimensional models of personality (Widiger and Lowe, 2008), and of efforts to integrate the two approaches within a common framework (De Clercq et al., 2009; Shiner, 2009; Tackett et al., 2009). Adolescence is a stage of great interest for the study of certain personality features, not only because it is a critical period in development in which there can occur a wide range of psychological disorders (Costello et al., 2003; Cohen et al., 2005), but also because many disorders (e.g., schizophrenia or PDs) that emerge in adulthood appear to originate at earlier stages of development (Cohen, 2008; Welham et al., 2009; Widiger et al., 2009). Thus, the study of PD traits in non-clinical population is of great importance for the establishment of links between the normal and maladaptive personalities, the understanding of psychological mechanisms and underlying processes of the disorders, the identification of risk markers for the development of mental disorders, and the development of programmes for prevention and early detection and intervention in at-risk adolescents.

Schizotypy is a complex construct that has been associated at a historical, genetic, cognitive, behavioural, neuropsychological and psy-

chophysiological level with schizophrenia (Raine, 2006; Lenzenweger, 2010). It is made up of an aggregation of cognitive, emotional, and behavioural traits grouped in a multidimensional structure (Positive, Negative and Disorganized factors) similar to that found in patients with schizophrenia (Raine, 2006; Kwapił et al., 2008; Fonseca-Pedrero et al., 2010a). Schizotypal traits are present in the general population and are distributed along a continuum of adjustment, the clinical disorder (psychosis) being found at its extremity (Claridge, 1997). Along this continuum we can find “intermediate” phenotypical expressions which, without reaching a clinical level, are associated with greater current psychopathological intensity, severity and related impairment (Nelson and Yung, 2009; van Os et al., 2009; Armando et al., 2010; Barragan et al., 2011). Moreover, individuals with high scores in self-reports for schizotypy – or Psychotic-Like Experiences (PLEs) – are at greater future risk of developing schizophrenia-spectrum disorders (Poulton et al., 2000; Gooding et al., 2005; Welham et al., 2009; Dominguez et al., 2011). In this sense, schizotypal experiences in healthy individuals may represent the behavioural expression of proneness to psychotic disorders (van Os et al., 2009).

In particular, in adolescent populations schizotypal features – or PLEs – and emotional and behavioural symptoms have frequently been found to be associated, showing a high degree of overlap (Yung et al., 2009; Armando et al., 2010; Fonseca-Pedrero et al., 2011a; Wigman et al., 2011). For instance, Fonseca-Pedrero et al. (2011b), exploring the relationship between schizotypal traits and depressive symptoms in a sample of 1384 Spanish adolescents, found that the

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correlations between the two variables ranged from 0.15 to 0.45. In another study, Wigman et al. (2011), using the Community Assessment of Psychic Experiences (CAPE) in a sample of 5442 non-clinical adolescents, found that those individuals who reported PLEs also presented higher levels of emotional and behavioural symptomatology. Nevertheless, there is a need for further studies with independent samples representative of the general adolescent population which analyze the relationship between the different schizotypy dimensions and emotional-behavioural symptoms at a subclinical level. It may be that the relation between schizotypy and emotional symptomatology varies according to the schizotypy dimension analyzed.

Schizotypy dimensions have also been associated with the features of PDs in non-clinical adult population (Kwapil et al., 2008). For example, Kwapil et al. (2008) found that the negative schizotypy dimension was significantly associated with interview ratings of schizotypal, schizoid, and paranoid symptoms, and the positive dimension was associated with high ratings of psychotic-like, schizotypal, and paranoid symptoms. Longitudinal studies have found that participants with high scores in schizotypy present higher rates of schizophrenia-spectrum disorders (e.g., schizoid and paranoid personality disorders) (Chapman et al., 1994; Gooding et al., 2005); however, there has been no examination of the relationship between schizotypy (based on self-reports specially designed for use with adolescents) and PDs traits in non-clinical adolescents, which is why it is interesting to carry out empirical studies that analyze this relationship.

Within this research context, the main goal of the present study was to examine the relationship between schizotypy dimensions, emotional-behavioural problems and PD traits in a representative sample of adolescents from the general population. This objective contributes to advancing our understanding of the links between schizotypy, emotional problems and PD traits in non-clinical adolescent populations without the confounding effects of medication and stigmatization frequently associated in patients with schizophrenia. It will also facilitate the integration of the schizotypy paradigm within dimensional models of personality and developmental psychology. We are guided by the hypothesis that schizotypy dimensions would be associated with emotional dysregulation and behavioural symptomatology self-reported by adolescents. We also hypothesized that the schizotypy dimensions are closely related to PD traits.

## 2. Method

### 2.1. Participants

Selection of participants was carried out using 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 according to geographical area – East, West, Central and South – and educational stage – compulsory and post-compulsory – and the probability of a school being selected depended on the number of students. Pupils were from different types of secondary school – public, grant-assisted private, and private – and from vocational/technical schools. The sample selection guarantees the representativeness of the sample of adolescents from this geographical region. The initial sample consisted of 1628 adolescents, but participants were discarded if they: a) obtained a high score on the Oviedo Infrequency Scale (more than 2 points) ( $n=64$ ); b) presented learning difficulties ( $n=6$ ); c) were older than 18 ( $n=35$ ); d) omitted demographic data ( $n=49$ ); and e) presented outlier scores ( $n=19$ ). The final sample was made up of a total of 1455 students, 705 male (48.5%) and 750 female (51.5%), from 28 schools and 90 classes. Mean age was 15.92 years ( $S.D.=1.18$ ), with a range of 14 to 18. Distribution of the sample by age was as follows: age 14 ( $n=194$ ; 13.3%), age 15 ( $n=357$ ; 24.5%), age 16 ( $n=411$ ; 28.2%), age 17 ( $n=357$ ; 24.5%) and age 18 ( $n=136$ ; 9.3%).

### 2.2. Measures

#### 2.2.1. The Oviedo Schizotypy Assessment Questionnaire (ESQUIZO-Q)

The ESQUIZO-Q (Fonseca-Pedrero et al., 2010b) is a self-report developed for the assessment of schizotypal traits in adolescent population. It is based on the diagnostic criteria proposed in the DSM-IV-TR (American Psychiatric Association, 2000) and on Meehl's (1962) schizotaxia model on genetic predisposition to schizophrenia. The ESQUIZO-Q items were selected on the basis of an exhaustive review of the literature on

schizotypy (Fonseca-Pedrero et al., 2008). It comprises a total of 51 items with Likert-type response format in 5 categories (from 1 "totally disagree" to 5 "totally agree"). Its 10 subscales are derived empirically by means of factor analysis, which in turn are grouped into three general dimensions: Reality Distortion (Ideas of Reference, Magical Thinking, Unusual Perceptual Experiences and Paranoid Ideation), Negative (Physical Anhedonia and Social Anhedonia) and Social Disorganization (Odd Thinking and Speech, Odd Behaviour, Lack of Close Friends and Excessive Social Anxiety). The validation of the ESQUIZO-Q was carried out in a sample of 1653 non-clinical adolescents. Internal consistency levels for the subscales ranged from 0.62 to 0.90, and we obtained different sources of validity evidence (Fonseca-Pedrero et al., 2010b, 2011a).

#### 2.2.2. The Personality Diagnostic Questionnaire-4+ (PDQ-4+)

The PDQ-4+ (Hyle, 1994) is a self-report developed for the assessment of personality disorders according to the DSM-IV criteria (APA, 1994). The PDQ-4+ comprises a total of 99 items distributed across 12 subscales, 10 referring to diagnostic categories from the DSM-IV (Axis-I) and another 2 intended for the assessment of the personality categories in Appendix B of the APA manual. In the present study we used a Likert-type response format with 5 options (from 1 "totally disagree" to 5 "totally agree"), with the exception of two items which employ an inventory format in which respondents are required to indicate the presence of impulsive and anti-normative behaviours. The PDQ-4+ has been used in a wide variety of epidemiological studies, some of its items have been used in follow-up studies with adolescents (Cohen et al., 2005), and its properties are widely supported. Internal consistency levels range from 0.42 to 0.83 (Fossati et al., 1998; Davison et al., 2001; Fossati et al., 2005; Chabrol et al., 2007; Huang et al., 2007). In the present study we used the Spanish version adapted by Calvo Piñero et al. (2002) for use in young adults and psychiatric outpatients. Internal consistency levels for the Spanish version of the PDQ-4+ subscales were satisfactory, and we obtained different sources of validity evidence.

#### 2.2.3. The Strengths and Difficulties Questionnaire (SDQ)

The SDQ (Goodman, 1997) is a self-report widely used for the assessment of different social, emotional and behavioural problems related to mental health in children and adolescents over the previous 6 months. The SDQ is made up of a total of 25 statements grouped in 5 subscales (each with 5 items): Emotional Symptoms, Conduct Problems, Hyperactivity, Peer Problems and Prosocial Behaviour. The first four subscales yield a "total difficulty score". In this study we used a Likert-type response format with 5 options (from 1 "totally disagree" to 5 "totally agree"), so that the score on each subscale ranged from 5 to 25 points. The psychometric properties of the SDQ in its self-report version have been widely analyzed (Goodman, 1999, 2001; Bourdon et al., 2005; Vostanis, 2006; Ruchkin et al., 2008). In the present study we used the version adapted and translated into Spanish which is available on the Internet (<http://www.sdqinfo.com>).

#### 2.2.4. The Oviedo Infrequency Scale (INF-OV)

The INF-OV (Fonseca-Pedrero et al., 2009) is a 12-item self-report instrument with a Likert-type response format using 5 categories (from 1 "totally disagree" to 5 "totally agree"). Its objective is to detect those participants who respond to self-reports in a random, pseudo-random or dishonest fashion. Respondents who reply to more than two of these items incorrectly are automatically discarded as participants in the study.

### 2.3. Procedure

This study is part of broader research programme on the detection of psychological disorders in adolescence and early intervention. The questionnaire was administered collectively, in groups of 10 to 35 students, during normal school time and in a classroom specially prepared for this purpose. The study was presented to participants as part of a research project on the diverse characteristics of personality. For subjects under 18, parents were asked to provide written informed consent in order for their child to participate in the study. Participants were informed of the confidentiality of their responses and the voluntary nature of the study, and no incentive was provided for their collaboration. The administration took place under the supervision of the researchers. The study was approved by the Research and Ethics Committees at the University of Oviedo and the Education Department of the Principality of Asturias.

### 2.4. Statistical analysis

First, the descriptive statistics were examined in relation to the mean, standard deviation, asymmetry, kurtosis, score range and levels of internal consistency for the subscales. Second, the Pearson correlations between the SDQ subscales and the ESQUIZO-Q subscales and PDQ-4+ schizotypal subscale were analyzed, followed by the Pearson correlations between the subscales of the ESQUIZO-Q and the PDQ-4+. Third, we carried out Canonical Correlation Analysis. This multivariate technique permits examination of the degree of relationship between two sets of variables. The squared canonical correlation is the simple square of the canonical correlation. It represents the proportion of variance shared by two synthetic variables. Fourth, with the aim of examining the underlying structure of the subscales of the three self-report instruments, a Principal Components Analysis was conducted using Oblimin rotation. The number of components to be extracted was determined by the Kaiser criterion, the percentage of explained variance, and the interpretability of the obtained components. The SPSS 15.0 package was used for the statistical analyses.

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