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Early psychopathological features in Spanish adolescents

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Schizotypal experiences and depressive symptoms are quite common among adolescents, and have been considered as risk markers for schizophrenia-spectrum and mood disorders. The main goal of the present study was to analyze the relationship between schizotypal experiences and depressive symptoms in a community sample of non-clinical adolescents. The sample comprised a total of 1653 participants, 794 male (48%), with an average age of 15.94 years (SD = 1.23). Results showed that schizotypal traits and depressive symptoms were closely related at a subclinical level. Canonical correlation analysis indicated that the two sets of variables shared approximately 48% of the variance. The study of the dimensionality underlying the subscales of the self-reports revealed the presence of three components, namely: Depressive, Anhedonia and Reality Distortion. These results are convergent with previous studies conducted in both clinical and non-clinical samples, indicating overlap between schizotypal experiences and depressive symptoms.

Rasgos psicopatológicos tempranos en adolescentes españoles. Las experiencias esquizotípicas y la sintomatología depresiva son fenómenos psicológicos comunes entre la población adolescente, y han sido considerados como marcadores de riesgo para los trastornos del espectro esquizofrénico y los trastornos del estado de ánimo. El principal objetivo de este estudio fue analizar la relación entre las experiencias esquizotípicas y la severidad de la sintomatología depresiva autoinformada en una muestra comunitaria de adolescentes. La muestra la conformaron un total de 1.653 participantes, 794 varones (48%), con una edad media de 15,94 años (DT= 1,23). Los resultados mostraron que los rasgos esquizotípicos y los síntomas depresivos se encontraron estrechamente relacionados a nivel subclínico. El análisis de correlación canónica indicó que ambos conjuntos de variables compartían aproximadamente el 48% de la varianza. El estudio de la dimensionalidad subyacente a las subescalas de los autoinformes reveló la presencia de tres componentes, a saber: Depresivo, Anhedonia y Distorsión de la Realidad. Estos resultados son convergentes con los estudios previos llevados a cabo tanto en muestras clínicas como no clínicas, indicando el solapamiento entre ambas entidades.

Adolescence is a developmental period of particular interest in which it is frequent to find the onset of a wide range of mental disorders, such as schizophrenia and mood disorders (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003; Harrop & Trower, 2003). Epidemiological studies indicate that schizotypal experiences (e.g., delusional ideation, magical thinking or hallucinations) and depressive symptoms are quite common psychological phenomena within this age group (Fonseca-Pedrero, Lemos-Giráldez, Paino, Sierra-Baigrie et al., 2009; Kessler et al., 2005). Moreover, schizotypal traits and depressive symptoms are considered to be risk markers for the subsequent development of schizophrenia-spectrum and mood disorders (Domínguez, Wichers, Lieb, Wittchen, & van Os, in press; Klein, Shankman, Lewinsohn, & Seeley, 2009; Lewinsohn, Solomon, Seeley, & Zeiss, 2000; Poulton et al., 2000; Welham et al., 2009). In this regard, it is interesting to analyze the links between different vulnerability markers without the confounding effects commonly found in patients (e.g., medication), with a view to understanding the possible underlying aetiological mechanisms involved in the development of these disorders and to development effective strategies for early detection of individuals at risk for schizophrenia-spectrum disorders.

Schizotypal experiences make up a group of traits that are present in the general population and that are distributed along a continuum of adaptation, finding the clinical disorder (psychosis) at its most extreme end (van Os, Linscott, Myin-Germeys, Delespaul, & Krabbendam, 2009). Within this continuum intermediate manifestations can be found that vary as a function of severity, intensity and associated impairment, such as psychotic-like experiences, clinical signs of schizophrenia and personality disorders (e.g., schizotypal or schizoid). The relationship among schizotypal traits, psychotic-like experiences, clinical psychosis and depressive symptoms has been widely studied both at the clinical and subclinical levels. At the clinical level it has been found that: a) patients with nonaffective psychosis and their

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biological relatives present higher rates of depressive symptoms than controls (Baron & Gruen, 1991; Hafner, 2005; Keshavan, Diwadkar, Montrose, Rajarethinam, & Sweeney, 2005; Peralta & Cuesta, 2009); b) patients with affective disorders also report more psychotic-like symptoms by comparison with control groups (Varghese et al., in press); and c) depressive symptomatology is present in the prodromal phases of individuals at risk of schizophrenia, being an important predictor in the transition to the clinical state (Yung et al., 2003). At the subclinical level it has been found: a) follow-up studies show that participants with high scores on the Wisconsin Schizotypy Scales (Chapman, Chapman, & Kwapil, 1995) or on the Peters et al. Delusion Inventory-21 (PDI-21) (Peters, Joseph, Day, & Garety, 2004) have a greater future transition probability toward mood disorders, compared with those scoring low on these scales (Chapman, Chapman, Raulin, & Eckblad, 1994; Gooding, Tallent, & Matts, 2005; Verdoux, van Os, & Maurice-Tison, 1999); b) the transition to schizophrenia is more common among those who present both hallucinatory-type experiences and depressive symptoms, than among those who present these types of psychotic-like experiences but without affective problems (Köhler et al., 2007; Krabbendam et al., 2005); c) several factorial studies have found a dimensional structure made up of the Positive and Negative dimensions of schizotypy, to which is added a Depressive or Negative Affect dimension (Lewandowski et al., 2006; Stefanis et al., 2002); d) schizotypal features have been shown to be closely associated with affective symptoms, in both adolescent populations (Armando et al., 2010; Fonseca-Pedrero, Paino, Lemos-Giráldez, & Muñiz, in press; Scott, Martin et al., 2009; Wigman et al., in press; Yung et al., 2009) and also in non-clinical young adult samples (Kwapil, Barrantes Vidal, & Silvia, 2008; Lewandowski et al., 2006); and e) studies conducted in the general population indicate that the great majority of psychotic experiences occur in a context of affective dysregulation and with a bidirectional relationship between both categories of symptoms (van Rossum, Domínguez, Lieb, Wittchen, & van Os, in press).

In particular, in adolescent populations, positive schizotypal features —also known as psychotic-like symptoms— and depressive symptoms have frequently been found to be associated, showing a high degree of overlap (Armando et al., 2010; Fonseca-Pedrero et al., in press; Scott, Martin et al., 2009; Wigman et al., in press; Yung et al., 2009). For example, Fonseca-Pedrero et al., (in press) exploring the relationship between schizotypal traits and depressive symptoms in a sample of 1384 Spanish adolescents, found that the correlations between the two variables ranged from .15 to .45. In another study, Scott et al., (2009) found that those adolescents who reported hallucinatory experiences also presented higher levels of depressive symptoms. Recently, Yung et al., (2009) and Armando et al., (2010), using the Community Assessment of Psychic Experiences (CAPE), also found the positive symptoms of schizotypy to be related to depressive symptomatology. Nevertheless, and although the data are quite consistent, there is a need for further studies with independent samples representative of the general adolescent population that will make it possible to explore in more depth the links between schizotypal experiences and the dimensions of depressive symptomatology at a subclinical level.

Within this research context, the main goal of the present study was to analyze the degree of association between schizotypal experiences and depressive symptoms in a community sample of adolescents. In this regard, it is interesting to examine which types of schizotypal experiences are most closely related to the different dimensions of depressive symptoms at this subclinical level. This would allow us to better understand the role of schizotypal traits and depressive symptomatology as risk markers for schizophrenia-spectrum disorders and affective disorders, without the inconveniences of the associated confounding effects frequently found in patients with schizophrenia (Kwapil et al., 2008). Furthermore, it would help us to better understand the expression of the psychotic phenotype and its relationship with a closely associated variable, depression, in general populations and at a developmental stage of special risk for the development of psychological disorders. We are guided, therefore, by the hypothesis that depressive symptoms and schizotypal traits are closely related in adolescence at a non-clinical level. It is expected that the correlations between both variables will be moderate, sharing a high percentage of associated variance. Likewise, in congruence with previous factorial studies, it is hypothesized that a dimensional structure will be found, composed of three factors: Positive, Negative, and Depressive.

Method

Participants

Stratified random cluster sampling was carried out at the classroom level, in a population of approximately 37,000 students selected from the Principality of Asturias, a region in northern Spain. The students were from various public and state-subsidized secondary schools and vocational training centres, as well as from a range of socio-economic levels. The strata were created on the basis of geographical zone (East, West, and Centre) and educational stage (compulsory —to age 16— and post-compulsory), where likelihood of inclusion depended on the number of students in the school. The initial sample comprised 1780 participants, but 127 were discarded for one or more of four reasons: three points or more on the *The Oviedo Infrequency scale* (n= 69); being older than 19 (n= 17); failing to provide their demographic data (n = 9); and failing to respond to one or more of the administered self-reports (n= 32). Thus, the final sample was made up of 1653 participants, 794 boys (48%) and 859 girls (52%), from a total of 41 schools and 91 classrooms. The mean age was 15.94 years (SD= 1.23), with an age range of 14 to 19 years.

Instruments

The Oviedo Schizotypy Assessment Questionnaire (ESQUIZO-Q) (Fonseca-Pedrero, Muñiz, Lemos-Giráldez, Paino, & Villazón-García, 2010) is a self-report composed of 51 items in a 5-point Likert-type response format (1: «*completely disagree*»; 5: «*completely agree*») designed to assess schizotypal traits in adolescents, although it can also be used in epidemiological studies (Fonseca-Pedrero, Lemos-Giráldez, Paino, Sierra-Baigrie et al., 2009). The ESQUIZO-Q is based on the diagnostic criteria proposed in the DSM-IV-TR (*American Psychiatric Association*, 2000) and on Meehl's (1962) schizotaxia model. The items of ESQUIZO-Q were selected on the basis of an exhaustive review of the literature on schizotypy (Fonseca-Pedrero et al., 2008). The ESQUIZO-Q comprises a total of 10 subscales and three second-order dimensions derived

empirically by means of factorial analysis: the *Reality Distortion* dimension (Ideas of Reference, Magical Thinking, Paranoid Ideation and Unusual Perceptual Experiences), the *Negative* dimension (Physical Anhedonia and Social Anhedonia) and the *Interpersonal Disorganization* dimension (Odd Language and Thinking, Odd Behaviour, Lack of Close Friends and Excessive Social Anxiety). Internal consistency levels for the ESQUIZO-Q subscales ranged from .62 to .90 (Fonseca-Pedrero, Muñiz et al., 2010; Fonseca-Pedrero, Paino, Lemos-Giráldez, Vallina-Fernández, & Muñiz, 2010).

The Reynolds Adolescent Depression Scale (RADS) (Reynolds, 2002) is a self-report used for assessing the severity of depressive symptomatology in adolescents between the ages of 11 and 20. It comprises a total of 30 statements with 4-point Likert-type response format (1 «*almost never*»; 4 «*nearly always*»). Scores range from 30 to 120, and the cut-off point above which depressive symptomatology is judged as severe is 77 points (Reynolds, 2002). Reynolds (2002) proposed four subscales: Anhedonia, Somatic Complaints, Negative Self-Evaluation and Dysphoria. The RADS has been widely used, and has adequate psychometric properties (Maharajh, Ali, & Konings, 2006; Walker et al., 2005). In the present study, we used the Spanish version validated in a sample of non-clinical and clinical adolescents. Internal consistency and test-retest reliability ranged from .82 to .90 (non-clinical sample) and from .84 to .91 (clinical sample) (Figueras-Masip, Amador-Campos, & Peró-Caballero, 2008).

The Oviedo Infrequency Scale (INF-OV) (Fonseca-Pedrero, Lemos-Giráldez, Paino, Villazón-García, & Muñiz, 2009) is a 12-item self-report with a 5-point Likert-type rating scale format (1 «*totally disagree*»; 5 «*totally agree*») developed according to the guidelines for test construction (Schmeiser & Welch, 2006). Its goal is to detect participants who respond randomly, pseudorandomly or dishonestly in these kind of studies based exclusively on the use of self-report questionnaires. Students with 3 or more incorrect responses on this test were removed from the sample.

Procedure

The questionnaires were applied in groups of 15-25 participants who were informed of the confidentiality of their responses and the voluntary nature of their participation. Written informed consent was obtained from participants and, in the case of those under 18, from their parents. Participants received no kind of incentive, monetary or otherwise. Application of the questionnaire 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 Department of Education of the Principality of Asturias.

Data analysis

First, the descriptive statistics for the ESQUIZO-Q and RADS subscales were calculated. The subscales of these two self-reports have been replicated empirically by means of factor analyses in representative samples of Spanish adolescents (Fonseca-Pedrero, Muñiz et al., 2010; Fonseca-Pedrero, Wells et al., 2010). Second, we examined the Pearson correlations between the subscales of the two self-report questionnaires. Third, Canonical Correlation Analysis was conducted. This multivariate technique permits the 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 2 synthetic variables. The contribution of each variable to the canonical correlation was carried out using the standardized canonical weights. Fourth, we analyzed the dimensional structure underlying the subscales of both self-reports, using a Principal Components Analysis with subsequent Oblimin rotation. For the statistical analyses we used the SPSS 15.0 program.

Results

Descriptive statistics

Table 1 shows the descriptive statistics for the total sample referring to the mean, standard deviation, asymmetry and kurtosis values and range of scores for the ESQUIZO-Q and RADS subscales. As it can be seen, the asymmetry and kurtosis values for the subscales are within the limits of normality.

Correlations between the ESQUIZO-Q and RADS subscales

We examined the Pearson correlations between the ESQUIZO-Q and RADS subscales. The results are shown in Table 2, and it can be observed that: a) the Physical Anhedonia subscale of the ESQUIZO-Q correlated negatively with the rest of subscales, and positively with the Anhedonia subscale of the RADS; b) the Social Anhedonia subscale of the ESQUIZO-Q also correlated statistically significantly with the Anhedonia

Table 1
Descriptive statistics of the Oviedo Questionnaire for the Assessment of Schizotypy (ESQUIZO-Q) and the Reynolds Adolescent Depression Scale (RADS)

Subscales	Mean	SD	Asymmetry	Kurtosis	Range
REF	06.37	2.70	1.40	2.16	4-20
MAG	08.08	3.22	1.29	1.73	5-25
EXP	10.86	4.69	1.78	3.84	7-35
OTL	14.30	4.71	0.39	-0.24	6-30
PA	08.49	3.43	1.19	1.55	5-25
PhysAnh	07.75	2.55	0.69	0.54	4-20
SocAnh	07.64	2.46	1.20	1.80	5-19
OB	07.06	2.89	1.23	1.59	4-20
LCF	09.93	3.76	0.29	-0.61	4-20
ANX	15.37	5.14	0.70	0.33	7-35
Dysphoria	13.97	3.49	0.97	1.60	8-31
Anhedonia	12.28	2.90	0.95	1.37	7-27
Negative self-evaluation	10.93	3.34	1.87	4.41	8-31
Somatic complaints	13.48	3.10	0.61	0.37	7-27

REF: Ideas of Reference; MAG: Magical Thinking; EXP: Unusual Perceptual Experiences; OTL: Odd Thinking and Language; PA: Paranoid Ideation; PhysAnh: Physical Anhedonia; SocAnh: Social Anhedonia; OB: Odd Behavior; LCF: Lack of Close Friends; ANX: Excessive Social Anxiety

subscale of the RADS; c) the Dysphoria subscale of the RADS correlated moderately with the Lack of Close Friends subscale of the ESQUIZO-Q; d) the Negative Self-Evaluation subscale of the RADS showed a statistically significant correlation with the Paranoid Ideation subscale of the ESQUIZO-Q; e) the Somatic Complaints subscale of the RADS correlated strongly with the Odd Language and Thinking subscale; and f) total score of the RADS correlated strongly with the Paranoid Ideation and Lack of Close Friends subscales of the ESQUIZO-Q.

Table 2
Pearson correlations between the subscales of the Oviedo Questionnaire for the Assessment of Schizotypy (ESQUIZO-Q) and the Reynolds Adolescent Depression Scale (RADS)

	REF	MAG	EXP	OTL	PA	PhysAnh	SocAnh	OB	LCF	ANX
Dysphoria	.26*	.27*	.36*	.36*	.40*	-.13*	.04	.40*	.45*	.34*
Anhedonia	.12*	.11*	.19*	.20*	.28*	.22*	.32*	.31*	.33*	.24*
Negative self-evaluation	.29*	.27*	.42*	.43*	.50*	-.01	.18*	.43*	.48*	.26*
Somatic complaints	.24*	.26*	.38*	.43*	.39*	-.13*	.07*	.34*	.36*	.30*
Total RADS	.30*	.30*	.44*	.46*	.51*	-.03	.19*	.48*	.53*	.37*

* $p<.01$
REF: Ideas of Reference; MAG: Magical Thinking; EXP: Unusual Perceptual Experiences; OTL: Odd Thinking and Language; PA: Paranoid Ideation; PhysAnh: Physical Anhedonia; SocAnh: Social Anhedonia; OB: Odd Behavior; LCF: Lack of Close Friends; ANX: Excessive Social Anxiety

Canonical correlation analysis of the ESQUIZO-Q and RADS subscales

We next conducted a canonical correlation analysis between the ESQUIZO-Q and RADS subscales. The canonical correlation between the subscales of the ESQUIZO-Q (canonical variate 1) and the RADS (canonical variate 2) was .69, which represents 47.61% of variance shared. The subscales that contributed with the greatest standardized weights to this relationship were, in the case of the RADS, Negative Self-Evaluation (-.53) and Somatic Complaints (-.31), while in the case of the ESQUIZO-Q, they were Lack of Close Friends (-.41) and Paranoid Ideation (-.28).

Principal Components Analysis of the ESQUIZO-Q and RADS subscales

With the aim of examining the underlying dimensional structure and the nature of the relationships between the dimensions of the schizotypal features (ESQUIZO-Q) and depressive symptoms (RADS), we conducted a Principal Components Analysis with subsequent Oblimin rotation. The factorial weights, the eigenvalues and the percentage of explained variance are shown in Table 3. The sample adequacy measure was 7567.5 ($p<.001$), while the Kaiser-Meyer-Olkin (KMO) index was .89. In accordance with the scree plot and the Kaiser criterion, three components were extracted. The first component (F I) explained 35.63% of the total variance, and corresponded to the four RADS subscales and the ESQUIZO-Q subscales Lack of Close Friends, Excessive Social Anxiety, Odd Behaviour and Odd Thinking and Language. This component grouped aspects related to depressive symptomatology, cognitive disorganization and deficit in interpersonal relations, all of which are symptoms characteristic of depressed mood. It was labelled the *Depressive* factor. The second component (F II) explained 11.80% of total variance, and was formed on the basis of the Physical and Social Anhedonia subscales of the ESQUIZO-Q and the Anhedonia subscale of the RADS. This component was called *Anhedonia*. The third component (F III) explained 9.03% of total variance, and was formed on the basis of the Ideas of Reference, Magical Thinking,

Table 3
Principal Components Analysis of the Oviedo Questionnaire for the Assessment of Schizotypy(ESQUIZO-Q) and the Reynolds Adolescent Depression Scale (RADS)

	Components		
Subscales	**I**	**II**	**III**
Dysphoria	.87		
Negative Self-Evaluation	.79		
Somatic Complaints	.75		
LCF	.70		
Anhedonia (RADS)	.55	.48	
ANX	.45		
OTL	.44		
OB	.40		
PhysAnh		.79	
SocAnh		.78	
REF			.85
MAG			.81
EXP			.76
PA	.38		.45
Eigenvalue	5.00	1.65	1.26
% of explained variance	35.63	11.80	9.03

Note: Factorial loadings under .35 have been eliminated
LCF: Lack of Close Friends; ANX: Excessive Social Anxiety; OTL: Odd Thinking and Language; OB: Odd Behavior; PhysAnh: Physical Anhedonia; SocAnh: Social Anhedonia; REF: Ideas of Reference; MAG: Magical Thinking; EXP: Unusual Perceptual Experiences; PA: Paranoid Ideation

Unusual Perceptual Experiences and Paranoid Ideation subscales of the ESQUIZO-Q. It was called *Reality Distortion*. Correlations between the components were as follows: FI-FII: .13; FI-FIII: .44; FII-FIII: .01.

Discussion and conclusions

The main goal of this study was to analyze the relationship between schizotypal experiences and depressive symptoms in a community sample of adolescents. Identification of the type of schizotypal experiences most closely related to the different dimensions of depressive symptomatology is relevant, since such experiences can have different psychopathological meanings, for instance, constituting a normal variation of a state of mental health or the expression of psychosis proneness (Yung et al., 2009). Moreover, adolescence is a period of particular risk for the development of schizophrenia-spectrum and affective disorders, so that the study of the relationship between different vulnerability markers may give clues as to the etiopathogenic mechanisms involved in these types of disorders, thus contributing valuable information in relation to current models of developmental psychopathology and personality disorders models (Esterberg, Goulding, & Walker, in press).

The results of the study indicate a high degree of overlap between schizotypal experiences and depressive symptoms in non-clinical adolescent populations at the subclinical level. The correlations found between the ESQUIZO-Q and the RADS were moderate and statistically significant. Examination of the relationship between the Physical and Social Anhedonia subscales of the ESQUIZO-Q revealed that they basically correlated with the Anhedonia subscale of the RADS, indicating differentiated behaviour in accordance with the facets assessed in the two constructs. For its part, the canonical correlation analysis showed that the ESQUIZO-Q and RADS subscales shared approximately 48% of the variance. Similar data have previously been found when exploring the relationship between depressive symptoms and psychosis or schizotypal experiences in both clinical and non-clinical populations. In adolescent populations, schizotypal traits (or psychotic-like experiences) and depressive symptoms are often found to be related (Armando et al., 2010; Fonseca-Pedrero et al., in press; Scott, Martin et al., 2009; Wigman et al., in press; Yung et al., 2009). For instance, Yung et al., (2009) and Armando et al., (2010), with samples of non-clinical adolescents, found a correlation of over .50 between the positive dimension of schizotypy and depressive symptoms. Also, Fonseca-Pedrero et al. (in press) found a canonical correlation between these 2 sets of variables of .63, which represents 39.69% of the shared variance. Such overlap between the two constructs has also been found in non-clinical adults (Lewandowski et al., 2006). For example, Lewandoski et al. (2006), with a sample of American undergraduates, found a strong association between depressive symptoms and the dimensions of schizotypy —particularly the positive dimension. The phenotypical expression of the schizotypal traits and their relationship with depressive symptomatology thus appears to be similar in samples of adults and adolescents, even though in adolescent populations the overlap between the two types of characteristics is slightly greater, possibly as a result of the scarce differentiation of the adolescents' emotional, affective and cognitive processes. These data suggest, on the one hand, the frequent coexistence of schizotypal experiences and depressive symptoms in adolescent samples of the general population and, on the other, that such overlap can be found in non-clinical samples, expanding beyond the international diagnostic criteria (e.g., DSM-IV-TR), and indicating the possible continuity between the clinical and subclinical phenotypes. In this regard, some authors indicate the possibility of a continuum between affective symptoms and psychosis (Hanssen et al., 2003; van Os, Verdoux, Bijl, & Ravelli, 1999) and highlights the role of affect in the ontogenesis of schizophrenia and related conditions (Birchwood & Trower, 2006).

The study of the dimensional structure underlying the ESQUIZO-Q and RADS subscales revealed the presence of three differentiated broad dimensions. Grouped in the first dimension were subscales related to depressive symptomatology and interpersonal disorganization; in a second dimension, subscales related to difficulty for experiencing pleasure at a physical and social level; and at a third, subscales related to the positive symptoms of the schizotypy. Although comparisons between studies are hindered by the characteristics of the sample and the measurement instrument used, previous factorial studies have found a dimensional structure —similar to that found in the present work— made up of the Positive (Reality Distortion) and Negative (Anhedonia) dimensions of schizotypy, plus an additional dimension of Depression or Negative Affect (Lewandowski et al., 2006; Stefanis et al., 2002).

Likewise, these data are in line with those of previous studies indicating that individuals presenting schizotypal experiences report higher levels of affective, cognitive, social, interpersonal and behavioural alteration (Fonseca-Pedrero, Lemos-Giráldez, Paíno-Piñeiro, Villazón-García, & Muñiz, 2010; Kwapil et al., 2008; Lenzenweger, McLachlan, & Rubin, 2007; Raine, 2006; Yung et al., 2009). Thus, the alterations characteristic of patients with schizophrenia can also be found in samples of the general population below a clinical threshold, supporting the hypothesis of continuity of the psychotic phenotype (van Os et al., 2009). According to this hypothesis, schizotypal experiences would be situated at some point on this continuum, and could be seen as an «intermediate» phenotype, qualitatively similar to and quantitatively less serious than the symptomatology found in patients with schizophrenia, appearing with less intensity, persistence, frequency and associated impairment (Yung et al., 2009).

It is worth mentioning that the mere presence of these types of experiences in non-clinical populations is not a necessary or sufficient condition for developing a clinical disorder, given that the conjunction of other genetic, environmental and/or psychosocial factors is necessary (van Os et al., 2009). However, it is equally true that the coexistence of depressive symptoms and schizotypal experiences increases the risk of the subsequent development of psychotic disorders, in both high-risk and non-clinical samples (Krabbendam et al., 2005; Yung et al., 2003). Also, affective dysregulation may contribute causally to the persistence and clinical relevance of the schizotypal experiences. In this regard, depressive symptoms can be considered a relevant moderating factor influencing the transition toward a clinical condition in vulnerable individuals, so that their assessment and consideration within early detection and intervention programs could be helpful in reducing psychosis proneness, as well as the associated stress and need of care in those individuals at risk.

Our results should be interpreted in the light of the following limitations. First, the conclusions drawn are based exclusively on self-report type measures. It would have been interesting to also use external informants, such as parents or teachers. Second, this is a cross-sectional type study, so that no cause-effect inferences

can be made. Third, no information was gathered on psychiatric morbidity, medical history or on participants' use of psychoactive substances, aspects which could be partially modulating the results obtained. Future research should continue to explore the role of depressive symptoms in the identification of individuals at risk for schizophrenia-spectrum disorders in clinical samples of adolescents, as well as using other psychological variables (Bones Rocha, Pérez, Rodríguez-Sanz, Borrell, & Obiols, 2010; Fernández-Llebrés, Godoy, & Gavino, 2010; Kirchner, Forns, Amador, & Muñoz, 2010) in combination with clinical endophenotypes (Brown & Cohen, 2010) with a view to improving predictive capacity and prevention and early intervention strategies for schizophrenia.

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