

MULTIDIMENSIONALITY OF SCHIZOTYPY UNDER REVIEW

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The purpose of this article was to review dimensional studies of schizotypy in the last decade, particularly on its nature and structure, with a view to a better understanding and definition of this construct. Data from these studies indicate that schizotypy is a multidimensional construct consisting of three or four dimensions. A Positive factor (Unusual experiences) and a Negative factor (Anhedonia) were widely confirmed, but a third or even a fourth dimension (Disorganization, Impulsive Nonconformity, Paranoia or Social Anxiety) were also found. Dimensions of schizotypy vary according to gender and age, men presenting higher scores in the Negative dimension than women, while women score higher than men in the Positive dimension and in the Social Anxiety factor; however, a precise comparison is hindered by the instruments, the samples, and the statistical model used. The Schizotypal Personality Questionnaire is the most widely studied instrument, as it shows good consistency in a tri-factorial solution. Factorial analyses of schizotypy were carried out in widely differing cultures. Future research should bear several aspects in mind, notably: methodological shortcomings, the combined use of different measures of schizotypy, the study of this construct in different cultures, and the relationship of schizotypy to other variables.

Key words: Review, Schizotypy, Psychosis proneness, schizotypal traits, Factor analysis

El objetivo del presente trabajo consistió en llevar a cabo una revisión de las dimensiones de la esquizotipia en la última década. La finalidad fue estudiar la naturaleza y estructura de la esquizotipia de cara a una mejor comprensión y delimitación del constructo. Los datos indican que la esquizotipia es un constructo multidimensional que se puede concretar en tres o cuatro dimensiones. El factor Positivo (Experiencias Inusuales) y el factor Negativo (anhedonia) han sido ampliamente replicados. El tercer y/o cuarto se concreta en una dimensión de Desorganización, de No Conformidad Impulsiva, de Paranoia o Ansiedad Social. Las dimensiones de la esquizotipia varían en función del sexo y la edad. Los varones tienden a puntuar más elevado que las mujeres en la dimensión negativa mientras que las mujeres lo hacen en la dimensión positiva y en el factor Ansiedad Social. La comparación estricta entre los estudios factoriales se encuentra dificultada por el tipo de instrumento, la muestra empleada y el modelo estadístico utilizado. El Schizotypal Personality Questionnaire es el cuestionario más investigado, mostrando gran consistencia en su solución trifactorial. Los estudios factoriales de la esquizotipia se han realizado en una amplia variedad de culturas. Las futuras investigaciones deberán tener presente las limitaciones metodológicas, la aplicación de diferentes medidas de esquizotipia de forma conjunta, el estudio del constructo a través de las diferentes culturas y la relación de la esquizotipia con otras variables.

Palabras clave: Revisión, Esquizotipia, Propensión a la psicosis, Rasgos de la esquizotipia, Análisis factorial

One of the most important challenges for psychopathology today is the study of the features and characteristics that make people vulnerable to the appearance of psychological disorders. Thus, current research efforts are aimed at detection of and early intervention in people with a propensity for developing psychological problems. In this regard, studies on early intervention in schizophrenia are quite well-developed by comparison with those on other disorders. The literature indicates that early intervention in schizophrenia is a

good predictor of obtaining better results in treatment (McGlashan & Johannessen, 1996), a finding that has led to the development of a wide variety of programmes throughout the world (Vallina, Lemos Giráldez, & Fernández, 2006).

Schizotypy has been since its origins closely related to psychosis. The schizotypy concept, also referred to by the term psychosis proneness (Chapman, Edell, & Chapman, 1980), can be seen as a normal personality dimension or as an indicator of predisposition to psychoses (Claridge, 1997; Cyhlarova & Claridge, 2005). Diverse studies indicate that psychotic experiences are present in the normal population, suggesting the existence of a

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dimensional continuum (Johns & van Os, 2001) between the normal population and such experiences (Verdoux & Van Os, 2002). Schizotypy is within the framework of this model (Claridge, 1997), also extending from non-pathological personality (health) to psychosis (illness). Variations along this continuum describe different degrees of predisposition to psychotic disorders. Such vulnerability or predisposition to schizophrenia is expressed, then, along a psychopathological continuum.

The relevance of research on schizotypal features rests on three basic points. First of all, it helps to improve understanding of the mechanisms underlying schizophrenia, exploring the links between the two entities. Secondly, it permits the study of subjects free of psychotic illness, without the side effects of medication and iatrogeny (Heron, Jones, Williams, Owen, Craddock, & Jones, 2003; Martinena Palacio et al., 2006). Thirdly, it offers the possibility of detecting, by means of self-reports and interviews, participants with a high probability of developing disorders on the schizophrenic spectrum, in the so-called psychometric high-risk paradigm (Lenzenweger, 1994).

Studies on assessment of schizotypal personality fall basically within the framework of psychometric high-risk research. Their purpose is none other than to detect, by means of psychometric tests, those subjects likely to develop disorders on the schizophrenic spectrum, such as schizophrenia, schizoaffective disorders or schizoid, paranoid or schizotypal personality. Thus, high scores in the schizotypy measure appear to indicate a certain proneness to the development of disorders on the schizophrenic spectrum (Chapman, Chapman, Raulin, & Eckblad, 1994; Gooding, Kathleen, & Matts, 2005; Kwapil, Miller, Zinser, Chapman, & Chapman, 1997), and also constitute the best predictor with respect to subsequent development of this type of disorder among a broad range of psychopathological variables (Gooding et al., 2005). With the aim of measuring the schizotypy concept, a wide variety of self-report instruments have been created, the most notable of which are the *Schizotypal Personality Questionnaire*, in both its long and its short versions (Raine, 1991; Raine & Benishay, 1995), and the scales designed by the Wisconsin-Madison University group: *Perceptual Aberration Scale* (Chapman, Chapman, & Raulin, 1978), *Magical Ideation Scale* (Eckblad & Chapman, 1983), *Physical and Social Anhedonia Scales* (Chapman, Chapman, & Raulin, 1976) and *Revised Social Anhedonia Scale* (Eckblad,

Chapman, Chapman, & Mishlove, 1982). The majority of these scales have been adapted and translated for Spanish samples by different research groups (Mata, Mataix-Cols, & Peralta, 2005; Muntaner, García-Sevilla, Fernández, & Torrubia, 1988).

As in the case of schizophrenia, a multidimensional structure has been proposed for schizotypy. There has been extensive debate in recent years on the structure of schizotypy, with attempts to determine the nature and number of psychopathological dimensions. The objective of the present work is to study the nature and structure of schizotypy through the different factorial studies carried out on assessment self-reports. The purpose is to provide an up-to-date picture of schizotypy and to clarify its structure, in terms of number and content of factors, with a view to understanding, defining and working with this construct.

MULTIDIMENSIONALITY OF SCHIZOTYPY

Research on the dimensionality of schizotypy is closely linked to the technique of factor analysis and the notion of factor itself. Therefore, before embarking on the study of the schizotypy dimensions it is necessary to clarify the objective of factor analysis and what we understand by factor. According to the main proponent of this technique in Spain, Mariano Yela: "*The aim of factor analysis is to reveal the dimensions of common variability in a given field of phenomena. Each dimension of common variability is called a factor*" (Yela, 1997, p. 25).

Concentrating on the factor analyses of schizophrenia and schizotypy, the accumulated empirical evidence indicates that schizophrenia is a multifactorial construct (John, Khanna, Thennarasu, & Reddy, 2003; Lemos Giráldez et al., 2006; Lindenmayer et al., 2004). The factors found in schizotypy emerge as phenotypically parallel to those found in schizophrenia. This similarity between the two entities may indicate a common aetiological mechanism (Meehl, 1962), though not necessarily so (Venables & Rector, 2000).

Table 1 shows the factor analyses carried out in the last decade and the number of factors, type of sample, instrument used and type of statistical analysis. It is important to mention that the factorial studies carried out differ clearly in sample type (clinical, non-clinical, culture of origin and age), number of participants, quantity and type of measurement instruments employed and methodological analyses, which makes their comparison extremely difficult (Álvarez López & Andrés Pueyo, 2006;

TABLE 1
PRINCIPAL RESEARCHERS FOR FACTORIAL
STUDIES ON SCHIZOTYPY, 1997-2007

Reference	N° of factors	Scales	Sample N; Mean (SD)	Type and nationality	Type of analysis
Chen, Hsiao, & Lin, 1997	3 Cognitive-Perceptual Interpersonal Disorganization	SPQ PAS	(1) 345; 42.9 (12.8) (2) 115; 14.0 (0.8)	(1) Adults (2) Adolescents from Taiwan	CFA
Wolfradt & Straube, 1998	3 Magical Ideation/Perceptual Experiences Ideas of reference/social anxiety Suspicion	STA	1362; 15.6 (1.12)	German adolescent students	EFA
DiDuca et al., 1999	5 Cognitive Perceptual Social Anhedonia Impulsiveness-Nonconformity Physical Anhedonia	JSS (MSTQ)	492; 15.5 (1.75)	English adolescent students	EFA-T
Martínez-Suárez et al., 1999	3 Positive Negative Impulsive Nonconformity	MSTQ (JSS)	721; 15.8	Spanish high-school students	EFA-T
Reynolds et al., 2000	3 Cognitive-Perceptual Interpersonal Deficits Disorganization	SPQ	1201; 23.3 (1.17)	Mauritians	CFA
Venables et al., 2000	3 Positive (disorganized) Negative Social Deficit	SS	330; 20.41 (5.89)	English student	CFA
Axelrod et al., 2001	3 Interpersonal Cognitive-Perceptual Disorganization	SPQ-B	237; 15.8 (1.4)	Adolescent psychiatric patients	EFA
Rawlings et al., 2001	5 Magical Thinking Paranoid Suspicion and Isolation Unusual Perceptual Experiences Social Anxiety	STA	1073; 39.9 (16.8)	English adults	EFA-T
Suhr et al., 2001	3 Positive Negative Disorganized	SPQ MAS MIS	1336	US university students	EFA
Suhr et al., 2001 (2)	3 Positive Negative Disorganized Paranoid Thinking	SPQ MAS MIS	348	US university students with high schizotypy	EFA
Rossi & Daneluzzo, 2002	3 Cognitive-Perceptual Interpersonal Deficits Disorganization	SPQ	347 5 subsamples group, Italians	Schizophrenics, bipolars, OCD, depressives and control M= between 25.4 and 43.4	CFA
Fossati et al., 2003	3 Cognitive-Perceptual Interpersonal Deficits Disorganization	SPQ	(1) 803; 21.93 (1.57) (2) 929; 16.43 (1.45)	(1) University students (2) Italian adolescent students	EFA
Stefanis et al., 2004	4 Cognitive-Perceptual Negative Paranoid Disorganization	SPQ	1335; 20.3 (1.8)	Greek reserve soldiers	CFA
Calkins et al., 2004	3 Cognitive-Perceptual Interpersonal Deficits Disorganization	SPQ	(1) 135; 46.5 (15.3) (2) 112; 34.6 (13.3)	(1) Relatives of psychotics (2) US adults	EFA
Linscott & Knight, 2004	4 Aberrant Beliefs Social Fear and Paranoia Anhedonia (physical and social) Aberrant Information Processing	TPSQ	216; 20.2 (3.8)	New Zealand university students	EFA-T

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Reference	N° of factors	Scales	Sample N; Mean (SD)	Type and nationality	Type of analysis
Cyhlarova et al., 2005	3 Unusual Perceptual Experiences Paranoid Ideation/Social Anxiety Magical Thinking	STA (children)	317; 13.3 (1.2)	English adolescent students	EFA
Lewandowski et al., 2006	3 Positive Schizotypy Negative Schizotypy Negative affect	PAS MIS PhARSoA BDI BAI	1258;19.4 (3.7)	US university students	CFA
Aycicegi et al., 2005	2 Positive Negative	SPQ-B	(1) 190; 20.3 (1.8) (2) 260; 18.7 (1.2)	(1) Turkish university students (2) US university students	EFA
Mata et al., 2005	3 Interpersonal Disorganization Cognitive-Perceptual	SPQ-B	477; 21.1/20.2 (4.6/4.3)	Spanish university students	EFA-T
Badcock et al., 2006	3 Cognitive-Perceptual Interpersonal Deficits Disorganization	SPQ	352; 39.9 (10.9)	Australian adults	CFA
van Kampen, 2006	3 Positive Schizotypy Negative Schizotypy Asocial Schizotypy	SSQ	771; 36.1 (10.3)	Dutch adults	EFA
Wuthrich et al., 2006 (1)	3 Cognitive-Perceptual Interpersonal Disorganization	SPQ	558; 22.7 (6.4)	Australian university students	CFA
Wuthrich et al., 2006 (2)	3 Cognitive-Perceptual Interpersonal Disorganization	MIS PAS RoSA SPQ	277; 21.7(5.3)	Australian university students	CFA
Mass et al., 2007	6 Negative/Interpersonal Positive Cognitive-Perceptual Disorganized Schizotypy Magical Thinking Social Anxiety Psychotic Experiences	ESI,PAS, SPQ,STA and SPI	159; 26.3 (5)	German secondary and university students	EFA-O
Fonseca-Pedrero et al., 2007	4 Aberrant Information Processing Social Paranoia Anhedonia Aberrant Beliefs	TPSQ	321; 13.8 (1.3)	Spanish adolescents	EFA-T
Compton et al., 2007	3 Cognitive-perceptual Interpersonal Disorganization	SPQ-B	118; 46.2 (12.2)	US normal first-order relatives	CFA

Note: JSS: *Junior Schizotypy Scales*; CSTQ: *Combined Schizotypal Traits Questionnaire*; MIS: *Magical Ideation Scale*; PAS: *Perceptual Aberration Scale*; MSTQ: *Multidimensional Schizotypal Traits Questionnaire*; PhA: *Physical Anhedonia*; RSoA: *Revised Social Anhedonia*; SPQ: *Schizotypal Personality Questionnaire*; SPQ-B: *Schizotypal Personality Questionnaire Brief*; SS: *Schizotypal Scale*; STA: *Schizotypal Personality Scale*; STB: *Borderline Personality Scale*; SSQ: *Schizotypal Syndrome Questionnaire*; BDI: *Beck Depression Inventory*; BAI: *Beck Anxiety Inventory*; O-LIFE: *Oxford-Liverpool Inventory of Feelings*. TPSQ: *Thinking and Perceptual Style Questionnaire*; ESI: *Eppendorf Schizophrenia Inventory*; SPI: *Schizotypal Personality Inventory*.

CFA: Confirmatory Factor Analysis; EFA-T: Orthogonal Exploratory Factor Analysis; EFA- O: Oblique Exploratory Factor Analysis.

Stefanis, Smyrnis, Avramopoulos, Evdokimidis, Ntzoufras, & Stefanis, 2004).

As occurs in the case of schizophrenia, there seems to be no agreement on the number of dimensions. Factorial

studies do not yet present a unitary picture with respect to the structure underlying schizotypy. The numbers proposed are two (Aycicegi, Dinn, & Harris, 2005), three (Compton, Chien, & Bollini, 2007; van Kampen, 2006;

Wuthrich & Bates, 2006) four (Mason & Claridge, 2006; Rawlings, Claridge, & Freeman, 2001; Stefanis et al., 2004), five (DiDuca & Joseph, 1999), or even six (Mass et al., 2007) dimensions. These factors vary according to participants' sex and age (Mata et al., 2005).

The majority of studies present a three- or four-dimensional solution in which the positive (Cognitive-Perceptual or Unusual Perceptual Experiences) and negative (Anhedonia, Introverted Anhedonia or Interpersonal Deficits) dimensions of schizotypy have been widely replicated. The current debate focuses on the inconsistent nature of the third dimension (Suhr & Spitznagel, 2001). In the three-dimensional models some authors propose a (Cognitive) Disorganization dimension (Fossati, Raine, Carretta, Leonardi, & Maffei, 2003), while others prefer an Impulsive/Asocial Nonconformity dimension (DiDuca & Joseph, 1999; Martínez-Suárez, Ferrando, Lemos, Inda Caro, Paino-Piñero, & López-Rodrigo, 1999; van Kampen, 2006). In the case of the four-dimensional models the factors proposed are Positive (Unusual Experiences), Negative (Introverted Anhedonia), Cognitive Disorganization, and Impulsive (Mason & Claridge, 2006) or Paranoid (Stefanis et al., 2004; Suhr & Spitznagel, 2001) Nonconformity. The Paranoid factor is usually combined with a Social Anxiety factor (Cyhlarova & Claridge, 2005; Wolfradt & Straube, 1998). The Positive dimension breaks up, resulting in the emergence of a factor of Magical Thinking or Aberrant Thoughts (Cyhlarova & Claridge, 2005; Fonseca-Pedrero, Campillo-Álvarez, Muñoz, Lemos Giráldez, & García-Cueto, 2007; Linscott & Knight, 2004; Rawlings et al., 2001). The variety of the factors found depends to a large extent on the instrument employed for measuring the construct. The body of research currently available includes studies that have used in a combined way various types of self-reports for measuring schizotypal features; the three-dimensional solution (positive, negative and disorganization), with or without modifications, has emerged as the most appropriate and stable (Chen, Hsiao, & Lin, 1997; Suhr & Spitznagel, 2001; Wuthrich & Bates, 2006).

The Positive dimension of schizotypy, also known as Unusual/Anomalous Perceptual Experiences or Cognitive-Perceptual, refers to an excessive or distorted functioning of a normal process. Its facets include hallucinations, paranoid ideation, ideas of reference and thinking disorders. On the other hand, the Negative factor, also known as Anhedonia, Introverted Anhedonia

or Interpersonal Deficits, refers to a reduction or deficit in the person's normal behaviour. It embraces facets involving difficulties for experiencing pleasure at a physical and social level (anhedonia), flattened affect, absence of close confidants and difficulties in interpersonal relations. The Positive dimension is associated with temporolimbic dysfunctions, impulsiveness, antisocial behaviour (Dinn, Harris, Aycicegi, Greene, & Andover, 2002) and symptoms of anxiety and depression, indicating higher risk of presenting affective problems and non-affective psychotic disorders (Lewandowski, Barrantes-Vidal, Nelson-Gray, Clancy, Kepley, & Kwapil, 2006). The Negative dimension is associated with a deficit in frontal functions, social anxiety and obsessive-compulsive phenomena (Dinn et al., 2002). It appears to indicate a more specific risk of disorders in the schizophrenic spectrum (Lewandowski et al., 2006). Both the Positive and Negative dimensions of schizotypy have been associated with genetic vulnerability to schizophrenia (Calkins, Curtis, Grove, & Iacono, 2004; Vollema, Sitskoorn, Appels, & Kahn, 2002). The Disorganization factor describes thinking problems, strange or unusual language and strange behaviour. The Impulsive Nonconformity factor refers to aspects related to rebelliousness, impulsiveness and extravagance.

As Table 1 shows, with regard to type of sample in research on schizotypy, there are studies in children and adolescents (Cyhlarova & Claridge, 2005) and in adults (Badcock & Dragovic, 2006). Participants tend to be secondary-school pupils (Fonseca-Pedrero et al., 2007) or university students (Lewandowski et al., 2006), though there are also representative studies with reserve soldiers (Stefanis et al., 2004), in first-order relatives of schizophrenia patients (Calkins et al., 2004; Compton et al., 2007) and in other types of psychiatric population (Axelrod, Grilo, Sanislow, & McGlashan, 2001; Vollema & Hoijtink, 2000). Sample sizes vary considerably, from those with rather small numbers (Mass et al., 2007) to larger-scale ones (Suhr & Spitznagel, 2001).

The most widely-used psychometric measure in factorial studies is the *Schizotypal Personality Questionnaire* (SPQ), in its two versions (Raine, 1991; Raine & Benishay, 1995). The SPQ has been used in different populations with a range of different characteristics, as well as in conjunction with other schizotypy assessment measures and with other statistical models. As Vollema and Hoijtink (2000) point out, the SPQ data appear to

indicate a certain convergence towards a tripartite structure of schizotypy, invariant across sex, age (Badcock & Dragovic, 2006; Fossati et al., 2003), culture (nationality), religious affiliation, family conditions (e.g., adversity or its absence), psychopathology (Reynolds, Raine, Mellinger, Venables, & Mednick, 2000), sample composition and statistical models (Vollema & Hoijtink, 2000).

The last ten years have seen a tendency among researchers to carry out both exploratory and confirmatory factor analyses, which show a clear equivalence. Of all the factorial studies reviewed, there is only one approach from Rasch's multidimensional model (Vollema & Hoijtink, 2000), even though there are others with different purposes (Graves & Weinstein, 2004). Nevertheless, studies have also been carried out using cluster analysis (Barrantes-Vidal, Fañanás, Rosa, Caparrós, Riba, & Obiols, 2003).

As regards the nationality of participants in factorial studies on schizotypy, the review carried out indicates the presence of a wide variety of cultures. There are studies with Spanish (Fonseca-Pedrero et al., 2007), Australian (Wuthrich & Bates, 2006), American (Lewandowski et al., 2006), Italian (Fossati et al., 2003), German (Wolfradt & Straube, 1998), Oriental (Chen et al., 1997), Greek (Stefanis et al., 2004), New Zealander (Linscott & Knight, 2004) and British (Rawlings et al., 2001) participants. The structure of schizotypal features across different nationalities indicates substantial cultural invariance, which lends greater support to the cross-cultural validity of the construct.

Finally, as mentioned above, the schizotypal dimensions vary according to participants' sex and age. As far as sex is concerned, women score higher than men in the so-called positive symptoms (Cyhlarova & Claridge, 2005; Mason & Claridge, 2006; Mass et al., 2007; Mata et al., 2005; Rawlings et al., 2001; Venables & Bailes, 1994), as well as presenting higher total scores in some self-reports (Claridge et al., 1996; Rawlings et al., 2001) and Social Anxiety (Badcock & Dragovic, 2006; Fossati et al., 2003; Mass et al., 2007). In contrast, men tend to score higher than women in the so-called Negative dimension of schizotypy (Claridge et al., 1996; Linscott & Knight, 2004; Mason & Claridge, 2006; Venables & Bailes, 1994; Wuthrich & Bates, 2006) and on the SPQ subscales of flattened affect, strange behaviour and lack of close friends (Badcock & Dragovic, 2006; Wuthrich & Bates, 2006). With regard to age, the factorial studies

carried out in adults indicate that the Negative factor (e.g., Introverted Anhedonia) is positively correlated with age, whilst the Positive factor is negatively correlated with it (Mason & Claridge, 2006; Mata et al., 2005; Rawlings et al., 2001). In comparisons of participants according to age, young people tend to score higher on the schizotypy scales and/or dimensions than those who are older (Chen et al., 1997; Fossati et al., 2003; Venables & Bailes, 1994). Factorial studies in adolescents indicate a certain tendency towards the paranoid ideation or thinking dimension (Cyhlarova & Claridge, 2005; Rawlings & MacFarlane, 1994; Suhr & Spitznagel, 2001; Venables & Bailes, 1994), though it should be borne in mind that schizotypal dimensions in this age group may form part of the processes of development and maturation (DiDuca & Joseph, 1999).

RECAPITULATION

The study of personality dimensions is a classic field but a highly pertinent one within psychology. In research on schizotypy there have so far been very few theoretical reviews attempting to provide a comprehensive account of the large number of studies on the subject. The aim of the present work is to explore the principal factor analyses of schizotypy. The purpose is none other than to analyze the structure and nature of schizotypy, in terms of the number and content of factors, with a view to better definition and understanding of the construct and consideration of its parallels with schizophrenic psychosis. The importance of schizotypy resides in the detection of people vulnerable to the development of disorders on the schizophrenic spectrum, in the study of symptoms similar to schizophrenia without side effects of the medication, and in an improved understanding of the mechanisms underlying schizophrenia and the links between the two entities.

The review of factor analyses reveals that schizotypy is a multidimensional construct based on three or four factors phenotypically similar to those found in schizophrenia. The Positive (Unusual Experiences) and the Negative (Anhedonia) dimensions appear in a consistent fashion throughout the literature. The third (or even fourth) dimension emerges as a factor of Disorganization, of Impulsive (Asocial) or Paranoid Nonconformity (sometimes linked to a Social Anxiety factor). In some studies the Positive factor of schizotypy breaks off, constituting a single factor called Magical Thinking or Aberrant Beliefs. The relationships between the factors

found are multiple, varied and confused, similar terms sometimes being used to define different dimensions. The variety of studies carried out over the last ten years reveals the richness of this field, in which there would seem to emerge a certain coherence in the nature and structure of schizotypy, even though it is still not a fully unitary concept. The main limitation found on making comparisons between factorial studies concerns the type and quantity of instruments, the nature of the sample, and the statistical model employed.

The *Schizotypal Personality Questionnaire* (SPQ), in both its long and its short versions, is the most widely used instrument for the assessment of schizotypy in the factorial studies reviewed. The samples used are basically made up of university students, among whom the schizotypy dimensions behave differently according to sex and age. As is also the case for schizophrenia, women tend to score higher than men in the Positive dimension, whilst men score higher in the Negative dimension.

The possible limitations observed in the review can be found at the methodological level. First of all, there are very few studies using samples selected at random from the population. Secondly, the majority of research concentrates on the normal population, on university students from introductory Psychology courses. Thirdly, there is scarce use of other, more recent models or statistical techniques, such as Item Response Theory (IRT). And fifthly, and as pointed out above, the features of schizotypal personality vary in accordance with certain characteristics of participants, with few studies evaluating systematically the differential functioning of the items (Guilera, Gómez, & Hidalgo, 2006).

Schizotypy has generated its own research line as regards its structure, nature and relationships with other constructs. Studies on schizotypy can be categorized according to three periods. The first of these saw the creation of scales for evaluating features similar to those of schizophrenia, such as the Wisconsin-Madison University group scales, referred to earlier. Subsequently, schizotypy measurement scales were designed from a multidimensional and comprehensive perspective of psychosis proneness, as is the case of the *Oxford-Liverpool Inventory of Feeling and Experiences* (O-LIFE) (Mason, Claridge, & Jackson, 1995). In a third period, the current one, researchers are carrying out factor analyses of a confirmatory type, as well as factor analyses employing in a combined fashion different self-reports for assessing the schizotypy dimensions. Work is also being

done using factor analyses in conjunction with other scales that measure constructs related to schizotypal features, such as dissociative experiences (Pope & Kwapil, 2000), obsessive-compulsive disorder (Suhr, Spitznagel, & Gunstad, 2006), Asperger's syndrome (Hurst, Nelson-Gray, Mitchell, & Kwapil, 2006) or anxious-depressive symptomatology (Lewandowski et al., 2006).

Future research in the field of schizotypy should take into account such methodological limitations. The relationship between schizotypy and other psychopathological constructs (such as obsessive-compulsive disorder) is interesting with regard to both clinical practice and comorbidity studies. The development of combined factorial studies employing different types of schizotypy assessment instruments also appears to make sense with a view to unification of the construct. Globalization and internationalization lead to an increase in the number of test adaptations and translations from one culture to another, and such adaptations and translations should be carried out with rigour, following the guidelines of the *International Test Commission* (Muñiz & Hambleton, 1996). Studies comparing schizotypy across cultures are of great relevance to improved understanding of the cross-cultural, universal nature of schizotypy. Finally, instruments for evaluating schizotypy should demonstrate their predictive value, sensitivity and specificity in independent studies with a view to early detection and intervention in those who are prone to the development of disorders on the schizophrenic spectrum.

ACKNOWLEDGEMENTS

This research was financed by the Spanish Ministry of Education and Science (BES-2006-12797, SEJ 2005-08924, SEJ-2005-08357), and by the Education Board of the Principality of Asturias (IB-05-02, COF05-005).

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