

## Well-being in schizotypy: The effect of subclinical psychotic experiences

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### Abstract

**Background:** Schizotypy is a multidimensional construct that includes positive, negative, and disorganized dimensions. The healthy schizotypal model suggests that positive schizotypal features could be associated with better psychological functioning. The aim of this study was to analyze whether schizotypal features are associated with subjective and psychological well-being, and consider whether psychotic-like experiences affect well-being. **Method:** These relationships were investigated in two hundred non-clinical Spanish adults (mean age = 34.80, *S.D.* = 14.20). **Results:** Negative schizotypal features were associated with lower well-being, whereas positive schizotypal features were related with greater well-being. Individuals with subclinical psychotic experiences scored lower for psychological well-being than individuals without these experiences. **Conclusions:** The study suggests that some positive features may be beneficial for well-being while others are associated with lower well-being.

**Keywords:** Schizotypy, subjective well-being, psychological well-being, subclinical psychotic experiences.

### Resumen

**Bienestar en esquizotipia: efecto de las experiencias psicóticas atenuadas.** **Antecedentes:** la esquizotipia es un constructo multidimensional que incluye las dimensiones positiva, negativa y de desorganización cognitiva. El modelo de esquizotipia saludable sugiere que los rasgos esquizotípicos positivos podrían estar asociados con un mejor funcionamiento psicológico. El objetivo de este estudio fue analizar si los rasgos esquizotípicos se asociaban con el bienestar subjetivo y psicológico, y si las experiencias psicóticas atenuadas afectaban al bienestar. **Método:** en el estudio participaron 200 adultos españoles (edad media = 34.80, *S.D.* = 14.20). **Resultados:** los rasgos esquizotípicos negativos se asociaron con bajo bienestar y los positivos con mayor bienestar. Los individuos con experiencias psicóticas atenuadas obtuvieron puntuaciones más bajas en bienestar psicológico que las personas sin estas experiencias. **Conclusiones:** el estudio sugiere que ciertos rasgos positivos de la esquizotipia pueden ser beneficiosos para el bienestar, mientras que otros pueden perjudicarlo.

**Palabras clave:** esquizotipia, bienestar subjetivo, bienestar psicológico, experiencias psicóticas atenuadas.

Schizotypy is a trait that is continuously distributed throughout the population; it can describe normal functioning, signal risk status for disorder, and, at the upper extreme, even indicate vulnerability to schizophrenia (Barrantes-Vidal, Grant, & Kwapis, 2015). The study of the underlying latent structure of schizotypy reveals that it is a multidimensional construct that includes: a positive dimension characterized by perceptual distortions, such as unusual perceptual experiences; a negative dimension characterized by interpersonal deficits, such as introvertive anhedonia; and a disorganized dimension characterized by manifestations of distorted thinking, such as odd speech and disrupted thoughts (Fonseca-Pedrero et al., 2014). The benign schizotypy model suggests that a healthy schizotypy profile is defined as the presence of positive schizotypal features and the absence of negative and disorganized features (Mohr & Claridge, 2015).

Previous research has demonstrated that some subclinical forms of psychotic experiences (SPE), such as perceptual distortions, in

individuals unaffected by schizophrenia could act as premorbid indicators of vulnerability to this or related diseases (Barrantes-Vidal et al., 2013; Brett, Peters, & McGuire, 2015; Fonseca-Pedrero & Debbané, 2017; Simon, Umbrecht, Lang, & Borgwardt, 2014) and are associated with a lower level of perceived well-being (Freeman et al., 2014; Langer et al., 2015). Clinical and non-clinical groups show a distinctive pattern of similarities and differences in psychotic experiences, suggesting that some types of psychotic experiences are more benign than others (Peters et al., 2016; Ruiz, Gutiérrez-Zotes, Oyarzábal, Pàmies, & Alquézar, 2010). Thus, the sentence about mind-reading ('have you ever felt that you are communicating with another person telepathically?') has been linked to greater risk of transition to psychosis among clinical high-risk patients (Salokangas et al., 2013). In a non-clinical sample, the two lowest rates of endorsement were for sentences from the unusual perceptual experiences subscale ('I often hear a voice speaking my thoughts aloud' and 'have you ever seen things invisible to other people?') (Rossi & Daneluzzo, 2002).

Well-being is of great relevance for the prevention of mental illness. Two approaches to the study of well-being have been identified: one considers subjective well-being (SWB) and the other focuses on psychological well-being (PWB). Subjective pursuits are more related to carefreeness and positive emotions, while psychological pursuits are related to meaning and the

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actualization of human potential (Ryff & Singer, 2006). There is some consensus about the association between negative schizotypal features and deteriorated SWB in the form of lower life satisfaction and greater negative affect (Abbott & Byrne, 2012; Weintraub & Weisman de Mamani, 2015). On the other hand, several studies have found a positive link between some positive schizotypal signs and adaptive functioning or SWB (Tuchman & Weisman de Mamani, 2013). Magical thinking and strange ideas of reference, such as having the feeling of being noticed or otherwise, have been found to be significantly and positively associated with SWB (Abbott & Byrne, 2012; Unterrainer, Lewis, & Fink, 2014). Research in large epidemiological cohorts with longitudinal follow-up has shown that perceptual distortions, which are not associated with delusional formation and/or affective dysregulation and motivational impairment, have a lower likelihood for a clinical outcome (Downs, Cullen, Barragan, & Laurens, 2013).

Little is known about the role of schizotypal traits as protective factors against developing schizophrenia spectrum disorders. The study of schizotypy should allow for the identification of individuals who have a healthy personality as measured by their levels of adjustment and well-being. The purpose of this study was to identify the positive and negative features that promote SWB and PWB in a non-clinical population. First, it was hypothesized that women and younger adults would obtain higher scores in the cognitive-perceptual schizotypal dimension, while men and older individuals would achieve higher scores in the negative dimension (Scott et al., 2008). Second, it was hypothesized that positive schizotypal features – ideas of reference and magical thinking – would be positive predictors of greater SWB and PWB, whereas negative and disorganized schizotypal features would be positive predictors of deteriorated well-being (Abbott & Byrne, 2012; Weintraub & Weisman de Mamani, 2015; Tuchman & Weisman de Mamani, 2013; Unterrainer et al., 2014). Third, it was expected that individuals who have experienced some kind of perceptual distortion would show lower well-being (Langer et al., 2015).

### Method

#### Participants

Two hundred non-clinical Spanish adults (age range 19–65, mean = 34.80, *S.D.* = 14.20), 71% female, were recruited for this study. Informed consent was obtained for the participant sample. 20.5% had completed primary school, 25.5% had completed secondary school, and 54% had academic university-level studies.

#### Instruments

The Schizotypal Personality Questionnaire (SPQ) is a yes/no self-report of 74 items (Raine, 1991) that cover three domains: cognitive-perceptual or positive features, interpersonal or negative features, and disorganized features. They take the form of nine subscales (excessive social anxiety, constricted affect, no close friends, suspiciousness, ideas of reference, magical thinking, unusual perceptual experiences, odd speech, and odd behavior). Adequate reliability has been met for the Spanish sample, ranging from .80 to .91 (Fonseca-Pedrero et al., 2014).

We identified three items from the SPQ that would indicate subclinical perceptual experiences (SPE): one item about auditory verbal distortion (item 31: "I often hear a voice speaking my

thoughts aloud"); another about visual perceptual distortion (item 40: "Have you ever seen things that are invisible to other people?"); and a final item about mind control and communication attempts (item 55: "Have you ever felt that you are communicating with another person telepathically (by mind-reading)?"). The criterion for inclusion in the SPE group was answering 'yes' to at least one of these items.

Ryff's PWB scales, with 84 items, were used to assess psychological well-being (Ryff, 1989). The items were answered using a Likert-type scale ranging from 1 (strongly disagree) to 6 (strongly agree). The questionnaire assessed six well-being indicators: self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth. Stability coefficients of .80 or higher have been found after one month for all six PWB scales (Ryff, 1989). The Spanish version has shown an acceptable Cronbach's alpha ranging from .74 to .86 (Marrero & Carballeira, 2012).

The Subjective Happiness Scale (Lyubomirsky & Lepper, 1999) comprises a Likert-type scale ranging from 1 (no happiness at all) to 7 (totally happy). An acceptable Cronbach's alpha between .60 and .65 has been found for the Spanish sample (Vázquez, Duque, & Hervás, 2013).

The Satisfaction with Life Scale or SWLS (Diener, Emmons, Larsen, & Griffin, 1985) was used as a cognitive measure of whole life satisfaction. A total of 5 items were answered using a Likert-type scale ranging from 1 (not satisfied at all) to 7 (very satisfied). The Cronbach's alpha for the Spanish population was between .82 and .88 (Vázquez et al., 2013).

The Positive and Negative Affect Schedule or PANAS (Watson, Clark, & Tellegen, 1988) assessed affect by means of 20 positive and negative adjectives referring to the present, using a Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). In the original validation study, both the positive and negative affect scales were substantially stable after an 8-week interval, even in the moment ratings. Reliability ranges of these scales for the Spanish sample are .87-.89 for positive affect and .84-.91 for negative affect (Sandín et al., 1999).

#### Procedure

An ex post facto study has been used. Participants of different genders, ages, and professions, selected at random from the community, were recruited through psychology students at the University of La Laguna. Informed consent was obtained from the research participants after the aim of the research, the anonymous nature of the study, and the confidentiality of the information gathered was explained; all decided to participate voluntarily. Participants completed the battery of questionnaires on-line within a maximum period of two weeks.

#### Data analysis

Statistical analyses were conducted using the package SPSS v21. First, we analyzed the descriptive statistics on schizotypal features and well-being indicators in the sample. A preliminary Spearman and Pearson's correlational analysis was carried out to identify if there were any sociodemographic variables that could be influencing the relationship between schizotypy and well-being, and ruled that there were no multicollinearity problems.

The next step was to carry out several stepwise regression analyses with the nine schizotypal subscales as predictors and the

well-being indicators as criteria. The sociodemographic variables that had shown a relation to a well-being indicator – gender and age – were entered in the first block (for personal growth only), and the schizotypal features were included in the next block.

To analyze differences in well-being between participants who had reported SPE versus those who had not, a MANCOVA was carried out, controlling for gender and age.

## Results

### Preliminary analyses

Descriptive statistics for all measures are presented in Table 1. The means obtained for each of the SPQ subscales indicated that the participants did not meet the criteria for schizotypal personality disorder (Raine, 1991).

Bivariate correlations were calculated between all variables. These showed that gender was significantly and positively associated with unusual perceptual experiences ( $r = .15, p < .05$ ) and inversely associated with constricted affect ( $r = -.16, p < .05$ ). Women presented a greater number of unusual perceptual experiences and men showed higher constricted affect. Significant inverse correlations were found between age and a number of schizotypal subscales: ideas of reference ( $r = -.21, p < .01$ ), unusual perceptual experiences ( $r = -.26, p < .01$ ), suspiciousness ( $r = -.20, p < .01$ ), excessive social anxiety ( $r = -.31, p < .01$ ), odd or eccentric behavior ( $r = -.23, p < .01$ ), and odd speech ( $r = -.22, p < .01$ ). Both gender and age showed significant positive and inverse correlations, respectively, with personal growth ( $r = .16, p < .01$  and  $r = -.35, p < .001$ ).

<i>Table 1</i> Descriptive statistics for demographic, schizotypal and well-being indicators			
	Mean	S.D.	Range
Age	34.80	14.20	19-65
<i>Positive schizotypy</i>			
Ideas of reference	2.63	2.23	0-9
Odd beliefs or Magical thinking	0.87	1.32	0-6
Unusual perceptual experiences	1.57	1.77	0-9
Suspiciousness	2.46	2.20	0-8
<i>Negative schizotypy</i>			
Excessive social anxiety	3.11	2.50	0-8
No close friends	2.28	1.96	0-8
Constricted affect	1.73	1.58	0-8
<i>Disorganized schizotypy</i>			
Odd or eccentric behavior	1.25	1.72	0-6
Odd speech	2.33	2.14	0-9
<i>Subjective well-being</i>			
Happiness	20.67	4.21	8-28
Life satisfaction	24.47	5.49	8-35
Positive affect	33.61	6.15	14-50
Negative affect	22.70	6.90	10-45
<i>Psychological well-being</i>			
Autonomy	34.04	6.37	14-47
Environmental mastery	27.39	4.65	13-36
Personal growth	32.37	4.95	18-42
Positive relations with others	25.88	6.12	10-36
Purpose in life	27.94	5.45	11-36
Self-acceptance	26.19	5.34	6-36

### Prediction of schizotypal features on well-being

Stepwise multiple-regression analyses were conducted using all nine schizotypal subscales on SWB and PWB. It was found that between 10% and 21% of the variance of SWB measures could be explained by two or three predictors in each case. Excessive social anxiety was a significant negative predictor of happiness ( $\beta = -.33, p < .001$ ) and life satisfaction ( $\beta = -.23, p < .01$ ), and a significant positive predictor of negative affect ( $\beta = .20, p < .01$ ). Having no close friends contributed significantly to relatively poor positive affect ( $\beta = -.33, p < .001$ ). Positive effects were found for magical thinking on happiness ( $\beta = .17, p < .05$ ) and positive affect ( $\beta = .17, p < .05$ ) (Table 2).

Regarding PWB measures, constricted affect had a significant inverse effect on four measures: positive relations with others ( $\beta = -.27, p < .01$ ), self-acceptance ( $\beta = -.33, p < .001$ ), autonomy ( $\beta = -.23, p < .01$ ), and purpose in life ( $\beta = -.20, p < .01$ ), showing a unique contribution of 2.6% to 19.8% of the variance of each outcome variable (Table 3). Also, excessive social anxiety was a significant negative predictor of three PWB measures: autonomy ( $\beta = -.26, p < .001$ ), personal growth ( $\beta = -.25, p < .01$ ), and self-acceptance ( $\beta = -.24, p < .01$ ). Odd or eccentric behavior provided a significant positive contribution to autonomy ( $\beta = .15, p < .05$ ), explaining 1.8% of the variance. Also, magical thinking was a significant positive predictor of environmental mastery ( $\beta = .26, p < .001$ ) and personal growth ( $\beta = .14, p < .05$ ), explaining 5% and 2% of the variance, respectively.

### Inter-group effects of SPE and well-being

For SWB, a MANCOVA comparing participants with SPE versus those without showed no significant differences, except for negative affect, which was very close to the threshold of significance,  $F(1, 163) = 3.81, p = .053, \eta^2 = .02$ . The SPE group

<i>Table 2</i> Stepwise regression model of subjective well-being on the schizotypal features					
Variable	R <sup>2</sup> adj	ΔR	β	F	
<i>VD: Happiness</i>					
Step 1: Excessive social anxiety	.09	.09	-.31***	21.14***	
Step 2: Excessive social anxiety Odd beliefs/magical thinking	.12	.03	-.33*** .17*	14.02***	
<i>VD: Life Satisfaction</i>					
Step 1: Excessive social anxiety	.08	.09	-.29***	18.67***	
Step 2: Excessive social anxiety Constricted affect	.10	.02	-.23** -.16*	11.68***	
<i>VD: Positive Affect</i>					
Step 1: No close friends	.10	.10	-.32***	21.98***	
Step 2: No close friends Odd beliefs/magical thinking	.12	.03	-.33*** .17*	14.56***	
<i>VD: Negative Affect</i>					
Step 1: Suspiciousness	.15	.16	.40***	37.13***	
Step 2: Suspiciousness Excessive social anxiety	.20	.05	.28*** .25***	25.23***	
Step 3: Suspiciousness Excessive social anxiety Odd speech	.21	.02	.21** .20** .17*	18.66***	
Note: $p < .05^*, p < .01^{**}, p < .001^{***}$					

Stepwise regression model of psychological well-being on the schizotypal features									
Variables	R <sup>2</sup> adj	ΔR	β	F	Variables	R <sup>2</sup> adj	ΔR	β	F
VD: Autonomy					VD: Personal Growth				
Step 1: Excessive social anxiety	.15	.16	-.39***	32.91***	Step 1: Age	.11	.12	-.35***	24.68***
Step 2: Excessive social anxiety			-.30**		Step 2: Age			-.45***	
Constricted affect	.19	.04	-.23**	21.89***	Excessive social anxiety	.20	.09	-.32***	24.26***
Step 3: Excessive social anxiety			-.24**		Step 3: Age			-.42***	
Constricted affect			-.18*		Excessive social anxiety			-.22**	
Ideas of reference	.21	.02	-.18*	16.86***	No close friends	.22	.02	-.17*	18.30***
Step 4: Excessive social anxiety			-.26***		Step 4: Age			-.44***	
Constricted affect			-.23**		Excessive social anxiety			-.25**	
Ideas of reference			-.21**		No close friends			-.17*	
Odd or eccentric behavior	.22	.02	.15*	13.92***	Odd beliefs/magical thinking	.24	.02	.14*	15.23***
VD: Environmental mastery					VD: Purpose in life				
Step 1: Odd speech	.14	.15	-.38**	31.60***	Step 1: Odd speech	.21	.21	-.46***	50.87***
Step 2: Odd speech			-.43***		Step 2: Odd speech			-.35***	
Odd beliefs/magical thinking	.19	.05	.23***	22.37***	Constricted affect	.24	.03	-.20**	29.42***
Step 3: Odd speech			-.37***		VD: Self-acceptance				
Odd beliefs/magical thinking			.26***		Step 1: Constricted affect	.18	.19	.43***	43.10***
Suspiciousness	.22	.03	-.22**	18.04***	Step 2: Constricted affect			-.33***	
VD: Positive Relations with others					Excessive social anxiety	.23	.05	-.24***	28.23***
Step 1: Constricted affect	.19	.20	-.44***	45.77***					
Step 2: Constricted affect			-.27**						
No close friends	.22	.03	-.24**	27.10***					

Note:  $p < .05^*$ ,  $p < .01^{**}$ ,  $p < .001^{***}$

had higher scores in negative affect than the group without these experiences. For the PWB indicators, significant differences were found – although they represent a small effect – for self-acceptance,  $F(1, 163) = 4.21$ ,  $p < .05$ ,  $\eta^2 = .02$ , autonomy,  $F(1, 163) = 6.02$ ,  $p < .05$ ,  $\eta^2 = .04$ , and purpose in life,  $F(1, 163) = 7.18$ ,  $p < .01$ ,  $\eta^2 = .04$ . Also, environmental mastery was close to the threshold of significance,  $F(1, 163) = 3.17$ ,  $p = .077$ ,  $\eta^2 = .02$ . The group with SPE reported lower PWB than the group without these experiences.

## Discussion

The purpose of this study was to examine the relationships between schizotypal features and well-being and determine if subclinical psychotic experiences affect well-being. Our analyses provided two main findings. First, results indicated a positive relationship between one positive schizotypal feature – magical thinking – and several components of well-being – happiness, positive affect, environmental mastery and personal growth – as well as an inverse relationship between all negative schizotypal features and all components of well-being. Second, individuals with SPE scored lower in certain indicators of PWB – self-acceptance, autonomy, and purpose in life – than individuals without these experiences.

We first hypothesized that age and gender could be related to schizotypal features and well-being. Our results showed that women scored higher in unusual perceptual experiences, men scored higher in constricted affect, and older individuals presented fewer schizotypal features. Previous research has shown that schizotypal personality disorder in young patients seems to be a substantial risk factor for developing psychosis, while this disorder seems to represent a stable condition for older samples

(Woods et al., 2009). Sociodemographic characteristics were not related to any of the well-being indicators, except personal growth. Our results were consistent with those of previous studies, in that women and young people showed greater personal growth (Ryff, 1989; Marrero & Carballera, 2012).

Second, the results showed that one positive schizotypal feature – magical thinking – was associated with greater SWB and PWB, whereas negative and disorganized schizotypal features explained diminished well-being. We found that negative schizotypal features explained greater negative affect, lower life satisfaction, fewer positive relations with others, and lower self-acceptance. Other studies have identified links between negative schizotypal features and unhappiness, dissatisfaction with regard to specific domains in life, and less quality of life and orientation of life (Abbott & Byrne, 2012; Gooding, Cohen, & Pfium, 2014). Our study provided a novel finding relative to the relationship between magical thinking and greater environmental mastery and personal growth. Magical thinking could be considered adaptive, because it allows the individual to organize cognitively events and experiences that appear incomprehensible (Abbott, Do, & Byrne, 2012; Mohr & Claridge, 2015; Peters et al., 2016) and regulate anomalous or paranormal experiences that threaten the individual's perceived safety (Goulding, 2005). Curiously, eccentric behavior predicted a higher autonomy. People who score high on autonomy evaluate the self by personal standards and are able to resist social pressures to think and act in certain ways (Ryff, 1989). Eccentric behaviors are specific to the individual and idiosyncratic, beyond what is prescribed socially.

Finally, our results confirmed that lower PWB may be present in individuals with SPE, although no differences were found in SWB. Our study has identified the experiences that could lead to lower well-being. This finding is important, in that responses

to three items about visual and auditory perceptual distortions allowed us to identify those individuals who showed lower well-being and perhaps also greater vulnerability to psychotic disorder. Also, the presence of magical thinking could have potential benefits; however, if certain perceptual distortions appear with poor reality testing, individuals could be at risk of decreased well-being (Alminhana, Farias, Claridge, Cloninger, & Moreira-Almeida, 2017; Peters et al., 2016). Anomalous experiences occur more frequently, though not exclusively, in those at putative risk of a psychotic disorder (Langer et al., 2015). Future studies are necessary to test whether the selected indicators are associated with schizophrenia liability.

A limitation of our study is the inherent difficulty of trying to accurately capture self-observation data using self-report measures. It should be noted, however, that equivalent features of schizotypy have been found in normal individuals evaluated with a self-report questionnaire and by a clinical interview designed to assess schizotypal personality disorder (Kendler et al., 1991). Additionally, the cross-sectional design of this study limits any inferences about causal relationships between schizotypy and well-being. It may be that schizotypal features cause lower well-being, or that the opposite is true, or that both are influenced by a third factor. In future, it would be of interest to assess the specific

schizotypal clusters to determine whether a critical point exists that decreases well-being, and if so, which factors could protect against this.

The present study has practical implications not only for prevention but also for treatment. The items referring to certain perceptual distortions, such as hearing voices speaking your thoughts aloud or seeing things that are invisible to others, have been shown to be signs of deteriorated well-being. Interventions would focus on individuals who experience some alteration in their state of awareness accompanied by a reduced perception of controllability following an anomalous experience (Korver-Nieberg, Berry, Meijer, & Haan, 2014). It is possible that a better understanding of what distinguishes positive schizotypal features from these SPE might indicate who may be at risk of worse outcomes, such as psychosis.

Our results support a healthy schizotypy model where magical thinking would be considered an adaptive feature that under certain unfavorable conditions can lead to low well-being or to the clinical expression of the psychotic disorder (Mohr & Claridge, 2015). Presumably, the relationship between schizotypy and well-being will require greater attention before we can understand the mechanisms involved that increase an individual's vulnerability to suffering a psychotic disorder.

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