

## **SELF-REPORTED PSYCHOTIC-LIKE EXPERIENCES: DIFFERENCES BY AGE AND ASSOCIATED PSYCHOPATHOLOGY**

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### **Abstract**

This study aims to explore the differences in psychopathological symptoms that may exist in the general adult population with or without psychotic-like experiences (PLEs), depending on the age range. The presence of PLEs, self-reported general psychopathological symptomatology, and different sociodemographic and psychosocial characteristics were assessed in 216 participants without any record of personal psychiatric antecedents. The sample was divided into young adults (18-35 years) and mature adults (36-60 years). The young adults showed a higher expression of PLEs (33.6%). The mature adults with PLEs presented more psychopathological symptoms in the dimensions of hostility-anger, somatization, depression, and anxiety than mature adults without PLEs. Young adults with PLEs showed significantly more symptoms in the same dimensions, and in the obsession-compulsion dimensions, paranoid ideation, and psychoticism, than participants of this age without PLEs. PLEs are more frequent in people between 18-35 years old; however, PLEs can be present in different age ranges and could serve as an alert to high levels of affective and anger-hostility symptoms.

**KEY WORDS:** *psychotic experiences, general population, adults, age groups, psychopathology.*

### **Resumen**

Este trabajo pretende explorar las diferencias en sintomatología psicopatológica que puede haber en la población general adulta con o sin experiencias psicóticas (EP) en función del rango de edad. Se evaluó la presencia de EP, la sintomatología psicopatológica general y diferentes características sociodemográficas y psicosociales en 216 personas sin antecedentes psiquiátricos personales. La muestra se dividió en adultos jóvenes (18-35 años) y maduros (36-60 años). Los jóvenes mostraron una mayor expresión de EP (33,6%). Los adultos

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maduros con EP presentaban más sintomatología psicopatológica en las dimensiones de hostilidad-ira, somatización, depresión y ansiedad que los adultos maduros sin EP. Los adultos jóvenes con EP mostraron significativamente más síntomas en las mismas dimensiones, así como también en las dimensiones de obsesión-compulsión, ideación paranoide y psicoticismo que los participantes de esta edad sin EP. Las EP son más frecuentes en personas de 18-35 años, sin embargo, pueden estar presentes en distintos rangos de edad y podrían alertar de la presencia de niveles elevados de sintomatología afectiva y de ira-hostilidad.

**PALABRAS CLAVE:** *experiencias psicóticas, población general, adultos, grupos de edad, psicopatología.*

## Introduction

Psychosis is a mental state characterized by the onset of a series of specific symptoms that show altered global functioning, such as hallucinations, delusions, cognitive alterations and/or bizarre behavior that can extend variably over time, and it can be classified into different mental disorders (such as psychotic disorders, ranging from brief acute psychotic disorder to schizophrenia, through schizoaffective disorder, schizophreniform disorder, bipolar disorder or depression with psychotic symptoms) (Linscott & van Os, 2013; Nuevo et al., 2012; van der Steen et al., 2019; van Os & Linscott, 2012).

Different studies have proposed the existence of a widespread psychosis phenotype in the general population. Thus, it is suggested that psychosis may exist as a continuum with different levels of severity of the psychotic experience, instead of the existence of independent entities within psychotic disorders (Linscott & van Os, 2013; Nuevo et al., 2012; van Os & Linscott, 2012). Psychotic-like experiences (PLE), such as magical thinking or subclinical hallucinatory or delusional ideation, are mostly transient (Linscott & van Os, 2013; van der Steen et al., 2019) and have been conceptualized as risk factors for the subsequent development of psychotic disorders (Fusar-Poli et al., 2014; Kaymaz et al., 2012; Zammit et al., 2013).

Different researches suggest that PLE could be a non-specific marker of psychological distress and general mental pathology (Isaksson et al., 2020; Kelleher, Keeley et al., 2012; McGrath et al., 2016) since, on the one hand, PLE are also associated with a greater likelihood of presenting non-psychotic mental disorders, such as anxiety and depression disorders, substance abuse disorders and eating disorders (Bhavsar et al., 2021; Heinze et al., 2018; McGrath, Saha, Al-Hamzawi, Andrade et al., 2016; Pignon et al., 2018; van der Steen et al., 2019). On the other hand, in community samples of the adult population, self-reported PLE are related to greater general psychopathological symptoms (Saha et al., 2011; Unterrassner, Wyss, Wotruba, Ajdacic-Gross et al., 2017; Unterrassner, Wyss, Wotruba, Haker et al., 2017) and greater use of mental health services (Bhavsar et al., 2021; Bhavsar et al., 2018). More specifically, several studies show a specific

positive association of PLE with affective psychopathological manifestations (anxiety, phobic anxiety, obsessive-compulsive, somatization, and depression), with symptoms of interpersonal sensitivity and anger-hostility (Armando et al., 2010; Saha et al., 2011; Unterrassner, Wyss, Wotruba, Haker et al., 2017), and with the subsequent severity and psychological distress (Saha et al., 2011; Unterrassner, Wyss, Wotruba, Ajdacic-Gross, et al., 2017).

There is also an association between these PLE in the general population and socio-contextual factors. PLE is associated to suffering from stressful life events (e.g., bullying, abuse and maltreatment in childhood) (Bell et al., 2019; Cristóbal-Narváez et al., 2016; Guerrero-Jiménez et al., 2018; Sun et al., 2017; van der Steen et al., 2019) and to substance abuse, such as alcohol, cannabis or amphetamines abuse (Guerrero-Jiménez et al., 2018; Linscott & van Os, 2013; Rognli et al., 2018). Regarding the sociodemographic variables, previous studies have identified that being a younger person, being unemployed, having lower levels of income and education, residing in urban environments, being a migrant or belonging to an ethnic minority are factors related to the expression of PLE (Linscott & van Os, 2013; McGrath et al., 2015; Pignon et al., 2018; Scott et al., 2008; Unterrassner, Wyss, Wotruba, Ajdacic-Gross, et al., 2017). In addition, the presence of self-reported PLE in this population group seems to be associated to functional deterioration at a psychosocial and socio-occupational level (Boyda & McFeeters, 2015; Guerrero-Jiménez et al., 2018; van der Steen et al., 2019; Wigman et al., 2012).

Considering age and the prevalence of PLE, these experiences were observed in 17% of children aged 9-12 years, 7.5% in adolescents between 13-18 years, and 7.2% in adults (Kelleher, Connor et al., 2012; Linscott & van Os, 2013). However, in this last population group, the overall prevalence of manifesting at least one PLE ranged between 0.8-31.4% (Nuevo et al., 2012). Even though younger people showed a higher frequency of PLE and the first appearance of these experiences occurred in adolescence or early adulthood (Kelleher, Connor et al., 2012; McGrath, Saha, Al-Hamzawi, Alonso et al., 2016; Pignon et al., 2018), approximately 25% of people more likely to manifest PLE will present them after the age of 40 years (McGrath, Saha, Al-Hamzawi, Alonso, et al., 2016).

Related to this, different studies have used the evolutionary periods indicated by Havigurst (1978) that include young adulthood (18-35 years) and mature adulthood (36-60 years) for the study of psychopathological manifestations and health-related quality of life in adulthood (Becerra-García et al., 2020; Huang & Zhao, 2020; Kaal et al., 2018; Ordóñez-Carrasco et al., in press; Thewes et al., 2018). Specifically, this age range can help identify differences in the general symptomatology of anxiety, depression, hostility-anger, and self-reported interpersonal sensitivity by the general adult population (Becerra-García et al., 2020; Huang & Zhao, 2020). Therefore, the objective of this study was to examine

PLE in a sample of adults from the general population based on age range and to explore whether there are differences in self-reported psychopathological symptoms and in psychosocial variables depending on the presence of PLE and on the age group [young adults (18-35 years) or mature adults (36-60 years)].

## Method

### *Participants*

The initial number of participants who agreed to enroll in the study was 287. Considering the personal history of self-reported psychopathology, 71 participants (24.7%) were excluded from the analysis. Finally, the study sample consisted of a total of 216 participants.

The participants were selected by non-probabilistic incidental sampling. The inclusion criteria were: a) being between 18 and 60 years and b) completing all the items of the different instruments used. The exclusion criteria were: a) having an age outside the specified range and b) presenting a history of psychiatric disorders (reporting having received a diagnosis of a psychopathological disorder). The online evaluation format made it possible to collect the information from the participants who completed all the variables under study since they had to complete all the elements of the survey in order to move forward and finish. After that, their participation was recorded.

### *Instruments*

- a) *Ad hoc questionnaire about sociodemographic and psychosocial data.* Concerning the sociodemographic variables, information was collected on age, gender, place and area of residence, nationality, academic level, marital status, the people with whom you live, if you are working at the time of the evaluation and employment situation. Regarding the psychosocial variables we collected the following information: the frequency of relationships and contacts with friends per week, the preference for activities in the free time, the suffering of stressful events throughout life, the number and type of events reported, the number of consultations to a mental health professional for psychological problems, the history of psychopathological disorder, the presence of a mental health diagnosis and use or abuse of any substance and the type of substance of abuse that participants used.
- b) *Adolescent Psychotic Symptom Screener (APSS; Kelleher et al., 2011).* The APSS is a self-administered instrument that permits a quick assessment of different hallucinatory (visual and auditory) and delusional (persecution, control and grandiosity) PLE (Addington et al., 2015; Kelleher et al., 2011) both in the adolescent population in school age, and in the general adult

population (over 18 years of age) and clinical samples of adult patients (Bolsoni et al., 2018; Kelleher, Keeley et al., 2012; Nolan et al., 2018). It consists of 7 items with a Likert-scale response format with three response options that include: "Yes, without a doubt", "Maybe", "Never". Each element is scored as follows: yes, 1 point; maybe 0.5 points; no, 0 points. The total score is calculated by adding the scores for each item and ranges from 0-7. The higher the score, the higher the self-reported PLE level. In the sample of the present study, the internal consistency of the instrument was adequate, presenting a Cronbach's alpha value of  $\alpha = .76$ . Regarding validity, the analysis of the principal components of the APSS showed a factorial solution that explained 59.7% of the total variance.

- c) *Symptom Assessment-45 Questionnaire* (SA-45; Davison et al., 1997), Spanish version by Sandín et al. (2008). The SA-45 is a self-report instrument derived from the Symptom Checklist-90-R (SCL-90-R; Derogatis, 2002) that examines nine dimensions of psychopathological symptoms: hostility-anger, anxiety, somatization, paranoid ideation, phobic anxiety, obsession-compulsion, interpersonal sensitivity, psychoticism and depression. We obtained a measure of these nine dimensions in groups of 5 items, using a 5-point Likert scale (from 0= "Not at all" to 4= "Very much or extremely"). The total score in each dimension ranges from 0-20 points. The higher the score, the higher the level of self-reported psychopathological symptomatology. Regarding the reliability of the test, in the version used, the ranges of Cronbach's alpha values for the different psychopathological dimensions were between .63-.85 (Sandín et al., 2008). In content validity, the structure with the best goodness of fit for the SA-45 items was formed by a model of 9 correlated factors (Sandín et al., 2008).

### *Procedure*

A cross-sectional observational study was carried out. An online survey was developed through the Google Forms tool, which comprised the *ad hoc* questionnaire of sociodemographic, psychosocial and health variables and the previously described APSS and SA-45 instruments. This web platform was used since it is a tool that is readily usable by the participants, because of its adaptability to any electronic device, its low cost, and the fact that it is a widely used instrument in the literature for research using online surveys in psychology and health (Banerjee et al., 2019; Becerra-García et al., 2020; Lahiry et al., 2019; Vitale et al., 2020). On the first page, we described the objective of the study and the voluntary nature of participation, which guarantees confidentiality and anonymity of the provided information. Before accessing the survey, the participants had to give informed consent to participate in the study. This survey was administered

using different web platforms, social networks and email. The participants' responses were collected between April 30<sup>th</sup>, 2019 and September 15<sup>th</sup>, 2019. The study was approved by the International University of La Rioja Research Ethics Committee (code PI002/2019) and followed the principles of the Declaration of Helsinki and its subsequent amendments (Goodyear et al., 2007).

Once the data collection was completed, the sample was categorized into different groups according to the total score obtained in the APSS instrument and the age range of the participants. Regarding the APSS score level, participants were grouped into 1) a group that reported experiencing PLE (APSS total score  $\geq$  0.5 points) and 2) a group that did not report PLE (APSS total score = 0). Concerning the age variable, the participants were divided into two groups, a group of young adults (which included participants aged between 18-35 years) and a group of mature adults (participants aged between 36-60 years), following the criteria used by different studies that include similar age ranges for the analysis of samples of the general adult population (Becerra-García et al., 2020; Havigurst, 1978; Huang & Zhao, 2020; Kaal et al., 2018; Ordóñez-Carrasco et al., in press; Thewes et al., 2018).

### *Data analysis*

A descriptive analysis was carried out using measures of central tendency and dispersion for the quantitative data and measures of distribution of frequencies and percentages for the qualitative data. Comparisons in the psychopathological and psychosocial variables between the groups of participants who report PLE and those who do not manifest it in each age group were accomplished with the t-test statistic (applying Levene's correction) or with the Mann-Whitney's U test (after checking the assumption of normality) for continuous variables. In the case of categorical variables, we used the  $\chi^2$  test. These analyses were complemented with effect size tests. Specifically, Cramer's V statistics were used for variables analyzed by  $\chi^2$ , the Probability of Superiority (PS) for analysis of differences where the Mann-Whitney's U test and Cohen's d were used for comparisons where t-test was applied. Values of  $p < .05$  were considered statistically significant. The statistical program SPSS version 25 was used for the different statistical analyses performed.

## **Results**

### *General sociodemographic characteristics according to age and the presence of PLE*

From the total of participants ( $n = 216$ ), 75.9% ( $n = 164$ ) were women, and 24.1% ( $n = 52$ ) were men, with a mean age of  $36.82 \pm 9.06$  years. Moreover,

77.8% ( $n= 168$ ) were Spanish, and 83.8% ( $n= 181$ ) lived in urban environments. In the educational field, 89.4% ( $n= 193$ ) reported having undergraduate or postgraduate university studies. Regarding marital status and coexistence, 56% ( $n= 121$ ) reported being married or with a partner, and 61.1% ( $n= 132$ ) stated they lived with a partner. Regarding work, 83.7% ( $n= 181$ ) of participants indicated that they had a job at the time of the evaluation.

The sociodemographic data of the different groups of participants based on age and the presence of PLE are presented in Table 1.

As can be seen in Table 1, in the total sample, the people with PLE were significantly younger than those who did not report these PLE. The total number of participants who reported PLE were, in a higher proportion (36.4%), people of foreign nationality than those who did not report them. This higher proportion of people of another nationality (29.4%) was also significant among people who reported PLE in the mature adult group.

#### *Frequency of PLE in the sample and general psychopathology according to age and the presence of PLE*

The frequency of PLE was 25.5% ( $n= 55$ ) in the total sample, 33.6% ( $n= 38$ ) in participants up to 35 years, and 16.5% ( $n= 17$ ) in adults between 36-60 years. The most frequently reported PLE were those of persecution (score  $\geq 0.5$  in item 3), with percentages of 12.5% ( $n= 27$ ) in the total sample, 19.5% ( $n= 22$ ) in the group of young adults and 4.9% ( $n= 5$ ) in the group of mature participants. In terms of the mean total score on the APSS, participants in the young adult group showed significantly higher PLE levels than participants in the mature adult group (young adults ( $M= 0.39$ ,  $SD= 0.86$ ) vs mature adults ( $M= 0.11$ ,  $SD= 0.27$ ) ( $t= 3.34$ ,  $p= .001$ ,  $d= 0.43$ ) with an effect size close to a medium magnitude.

Figure 1 shows the differences in the average score of the participants of the total sample who have or have not reported PLE in the different psychopathological domains examined. As seen in Figure 1, in the total sample, people who report having experienced some PLE have significantly higher levels of psychopathological symptoms in the nine dimensions assessed by the SA-45.

Table 2 shows the mean scores for psychopathological symptoms in participants who reported or did not report PLE depending on the age range. Considering the age group, in the group of young adults up to 35 years old, participants with PLE presented significantly higher scores in hostility-anger, somatization, depression, obsession-compulsion, anxiety, paranoid ideation and psychoticism. In the group of mature adults, the participants who reported some PLE presented significantly higher symptoms in the dimensions of hostility-anger, somatization, depression, and anxiety.

**Table 1**  
Comparison of the sociodemographic characteristics of the participants who reported or did not report psychotic-like experiences in the total sample and in the different age groups

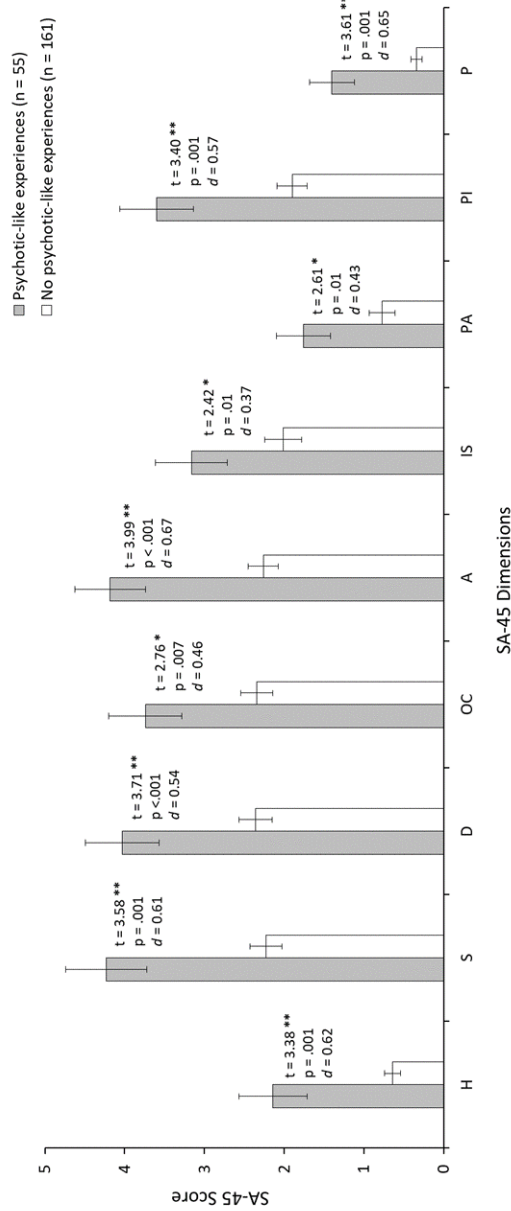
Sociodemographic characteristics	Total sample (n= 216)			Young adults (18-35 years) (n= 113)			Mature adults (36-60 years) (n= 103)		
	No PLE (n= 161)	PLE (n= 55)	t or $\chi^2$ [ES]	No PLE (n= 75)	PLE (n= 38)	t or $\chi^2$ [ES]	No PLE (n= 86)	PLE (n= 17)	t or $\chi^2$ [ES]
Age: M (DT)	38.11 (9.13)	33.05 (7.57)	3.67 [0.60]**	30.12 (3.44)	28.79 (3.67)	1.89 [0.37]	45.04 (6.42)	42.59 (5.65)	1.48 [0.40]
Gender: n (%)									
Men	41 (25.5)	11 (20)	0.67 [0.05]	14 (18.7)	6 (15.8)	0.14 [0.03]	27 (31.4)	5 (29.4)	0.02 [0.01]
Women	120 (74.5)	44 (80)		61 (81.3)	32 (84.2)		59 (68.6)	12 (70.6)	
Residence area: n (%)									
Rural	26 (16.1)	9 (16.4)	0.001 [0.003]	13 (17.3)	7 (18.4)	0.02 [0.01]	13 (15.1)	2 (11.8)	0.12 [0.03]
Urban	135 (83.9)	46 (83.6)		62 (82.7)	31 (81.6)		73 (84.9)	15 (88.2)	
Nationality: n (%)									
Other nationality	28 (17.4)	20 (36.4)	8.53 [0.19]**	19 (25.3)	15 (39.5)	2.39 [0.14]	9 (10.5)	5 (29.4)	4.33 [0.20]*
Spanish	133 (82.6)	35 (63.6)		56 (74.7)	23 (60.5)		77 (89.5)	12 (70.6)	
Educational level: n (%)									
Primary studies	0 (0)	1 (1.8)		0 (0)	1 (2.6)		0 (0)	0 (0)	
Secondary education	1 (0.6)	0 (0)		1 (1.3)	0 (0)		0 (0)	0 (0)	
Vocational training (superior grade)	1 (0.6)	0 (0)		0 (0)	0 (0)		1 (1.2)	0 (0)	
Vocational training (middle grade)	7 (4.3)	1 (1.8)		4 (5.3)	1 (2.6)		3 (3.5)	0 (0)	
High School	7 (4.3)	5 (9.1)	6.27 [0.17]	2 (2.7)	2 (5.3)	3.90 [0.18]	5 (5.8)	3 (17.6)	4.84 [0.21]
University studies	77 (47.8)	24 (43.6)		29 (38.7)	17 (44.7)		48 (55.8)	7 (41.2)	
Master	56 (34.8)	19 (34.5)		35 (46.7)	15 (39.5)		21 (24.4)	4 (23.5)	
Doctorate (PhD)	12 (7.5)	5 (9.1)		4 (5.3)	2 (5.3)		8 (9.3)	3 (17.6)	



Sociodemographic characteristics	Total sample (n= 216)			Young adults (18- 35 years) (n= 113)			Mature adults (36-60 years) (n= 103)		
	No PLE (n= 161)	PLE (n= 55)	t or $\chi^2$ [ES]	No PLE (n= 75)	PLE (n= 38)	t or $\chi^2$ [ES]	No PLE (n= 86)	PLE (n= 17)	t or $\chi^2$ [ES]
Civil status: n (%)									
Single	60 (37.5)	23 (41.8)		45 (60)	21 (55.3)		15 (17.6)	2 (11.8)	
Married/with a couple	92 (57.5)	29 (52.7)	0.38 [0.04]	29 (38.7)	16 (42.1)	0.41 [0.06]	63 (74.1)	13 (76.5)	0.50 [0.07]
Separated/divorced	8 (5)	3 (5.5)		1 (1.3)	1 (2.6)		7 (8.2)	2 (11.8)	
Living together: n (%)									
Live with your partner	105 (65.2)	27 (49.1)		36 (48)	17 (44.7)		69 (80.2)	10 (58.8)	
Live alone	24 (14.9)	7 (12.7)		14 (18.7)	4 (10.5)		10 (11.6)	3 (17.6)	
Live with parents	18 (11.2)	11 (20)		16 (21.3)	10 (26.3)		2 (2.3)	1 (5.9)	
Live with one parent	5 (3.1)	4 (7.3)	9.21 [0.20]	5 (6.7)	4 (10.5)	3.41 [0.17]	0 (0)	0 (0)	5.59 [0.23]
Live with other relatives	5 (3.1)	5 (9.1)		1 (1.3)	2 (5.3)		4 (4.7)	3 (17.6)	
Live with friends-acquaintances	4 (2.5)	1 (1.8)		3 (4)	1 (2.6)		1 (1.2)	0 (0)	
Work situation: n (%)									
Full-time job	87 (54)	28 (50.9)		39 (52)	17 (44.7)		48 (55.8)	11 (64.7)	
Part-time job	9 (5.6)	4 (7.3)		4 (5.3)	4 (10.5)		5 (5.8)	0 (0)	
Autonomous	17 (10.6)	4 (7.3)		3 (4)	1 (2.6)		14 (16.3)	3 (17.6)	
Student	24 (14.9)	7 (12.7)	2.69 [0.11]	14 (18.7)	6 (15.8)	2.03 [0.13]	10 (11.6)	1 (5.9)	3.45 [0.18]
Student - part-time job	22 (13.7)	10 (18.2)		14 (18.7)	9 (23.7)		8 (9.3)	1 (5.9)	
Not work or study	2 (1.2)	2 (3.6)		1 (1.3)	1 (2.6)		1 (1.2)	1 (5.9)	

Notes. PLE= Psychotic-like experiences; ES= Effect size (Cohen's d for Student's t - Cramer's V for  $\chi^2$ ). \* $p < .05$ ; \*\* $p < .01$ .

**Figure 1**  
 Mean score and differences in psychopathological domains between participants who do or do not report psychotic-like experiences in the total sample



Notes. The error bars denote the standard error of the mean. SA-45= Symptom Assessment-45 Questionnaire; H= Hostility-anger; S= Somatization; D= Depression; OC= Obsession-compulsion; A= Anxiety; IS= Interpersonal sensitivity; AF= Paranoid ideation; PI= Paranoid ideation; P= Psychoticism; d= Cohen's delta. \* $p < .01$ , \*\* $p < .001$ .

**Table 2**  
Differences in psychopathological domains between participants who do or do not report psychotic-like experiences based on the age range

Psychopathological domains	Young adults (18-35 years) (n= 113)			Mature adults (36-60 years) (n= 103)		
	PLE (n= 38) M (SD)	No PLE (n= 75) M (SD)	t or U [ES]	PLE (n= 17) M (SD)	No PLE (n= 86) M (SD)	t or U [ES]
Hostility-anger	2.23 (3.66)	0.64 (1.42)	2.58 [0.57]**	1.94 (1.81)	0.65 (1.16)	2.81 [0.85]**
Somatization	3.81 (3.58)	1.89 (2.43)	2.97 [0.63]**	5.17 (4.36)	2.53 (2.64)	2.41 [0.73]*
Depression	4.31 (3.63)	2.61 (3.07)	2.61 [0.51]**	3.41 (3.04)	2.13 (2.27)	1.98 [0.47]*
Obsession-compulsion	4.05 (3.66)	2.57 (3.04)	2.27 [0.44]*	3.05 (2.79)	2.15 (2.17)	1.26 [0.36]
Anxiety	4.23 (3.51)	2.32 (2.73)	3.18 [0.61]**	4.05 (2.72)	2.20 (2.16)	3.08 [0.75]**
Interpersonal sensitivity	3.42 (3.52)	2.21 (3.61)	1.69 [0.33]	2.58 (2.98)	1.82 (2.23)	1.21 [0.28]
Phobic anxiety	1.97 (2.72)	1.09 (2.74)	1.61 [0.32]	1.29 (2.02)	0.50 (1.14)	1.56 [0.48]
Paranoid ideation	4.02 (3.66)	2.02 (2.69)	2.98 [0.62]**	2.65 (2.64)	1.79 (2.16)	1.43 [0.35]
Psychoticism	1.55 (2.06)	0.41 (1.14)	3.16 [0.68]**	1.05 (2.16)	0.29 (0.73)	667.50 [0.45]

Notes. PLE= Psychotic-like experiences; ES= Effect size (Cohen's d for Student's t or PS for Mann-Whitney's U). \*p< .05; \*\*p< .01.

**Table 3**  
 Comparison of the psychosocial and health characteristics of the participants who reported or did not report psychotic-like experiences in the total sample and by age group

Psychosocial and health characteristics	Total sample (n= 216)			Young adults (18-35 years) (n= 113)			Mature adults (36-60 years) (n= 103)		
	No PLE (n= 161)	PLE (n= 55)	t or $\chi^2$ [ES]	No PLE (n= 75)	PLE (n= 38)	t or $\chi^2$ [ES]	No PLE (n= 86)	PLE (n= 17)	t or $\chi^2$ [ES]
Social relations-frequency: n (%)									
Once a week	55 (34.2)	20 (36.4)		26 (34.7)	18 (47.4)		29 (33.7)	2 (11.8)	
Twice a week	33 (20.5)	7 (12.7)	2.24 [0.10]	18 (24)	3 (7.9)	7.37 [0.25]	15 (17.4)	4 (23.5)	4.38 [0.20]
3 or more times/week	50 (31.1)	17 (30.9)		22 (29.3)	8 (21.1)		28 (32.6)	9 (52.9)	
Other (once a month, every few months, etc.)	23 (14.3)	11 (20)		9 (12)	9 (23.7)		14 (16.3)	2 (11.8)	
Free time preference: n (%)									
You like to be alone	11 (6.8)	10 (18.2)		6 (8)	8 (21.1)		5 (5.8)	2 (11.8)	
You like to be with friends	42 (26.1)	14 (25.5)	8.74 [0.20]	21 (28)	11 (28.9)	6.79 [0.24]	21 (24.4)	3 (17.6)	1.79 [0.13]
Do you like to be with your partner	79 (49.1)	20 (36.4)		38 (50.7)	12 (31.6)		41 (47.7)	8 (47.1)	
To be with relatives	25 (15.5)	11 (20)		9 (12)	7 (18.4)		16 (18.6)	4 (23.5)	
To be with coworkers-studies	4 (2.5)	0 (0)		1 (1.3)	0 (0)		3 (3.5)	0 (0)	
Number of stressful events: M (SD)	2.53 (2.21)	3.04 (2.31)	-1.44 [0.22]	2.08 (1.69)	2.76 (2.22)	-1.81 [0.34]	2.92 (2.53)	3.65 (2.44)	-1.09 [0.29]

Psychosocial and health characteristics	Total sample (n= 216)				Young adults (18-35 years) (n= 113)				Mature adults (36-60 years) (n= 103)			
	No PLE (n= 161)	PLE (n= 55)	t or $\chi^2$ [ES]		No PLE (n= 75)	PLE (n= 38)	t or $\chi^2$ [ES]		No PLE (n= 86)	PLE (n= 17)	t or $\chi^2$ [ES]	
Stressful events experienced: n (%)												
Family member death	73 (45.3)	22 (40)	0.47 [0.04]		23 (30.7)	15 (39.5)	0.87 [0.08]		50 (58.1)	7 (41.2)	1.63 [0.12]	
Family member disease	58 (36)	18 (32.7)	0.19 [0.03]		22 (29.3)	11 (28.9)	0.002 [0.004]		36 (41.9)	7 (41.2)	0.03 [0.005]	
Family events	59 (36.6)	26 (47.3)	1.94 [0.09]		29 (38.7)	19 (50)	1.32 [0.10]		30 (34.9)	7 (41.2)	0.24 [0.04]	
Personal illness	15 (9.3)	7 (12.7)	0.52 [0.04]		6 (8)	4 (10.5)	0.20 [0.04]		9 (10.5)	3 (17.6)	0.71 [0.08]	
Separation from partner	37 (23)	16 (29.1)	0.82 [0.06]		15 (20)	10 (26.3)	0.58 [0.07]		22 (25.6)	6 (35.3)	0.67 [0.08]	
Birth of a child	19 (11.8)	6 (10.9)	0.03 [0.01]		3 (4)	3 (7.9)	0.76 [0.08]		16 (18.6)	3 (17.6)	0.01 [0.01]	
School events	30 (18.6)	12 (21.8)	0.26 [0.03]		17 (22.7)	8 (21.1)	0.03 [0.01]		13 (15.1)	4 (23.5)	0.72 [0.08]	
Change of friends	21 (13.1)	9 (16.3)	0.46 [0.04]		10 (13.7)	4 (11.1)	0.14 [0.03]		11 (12.8)	5 (29.4)	2.98 [0.17]	
Discussions with friends, partner, etc.	33 (20.5)	21 (38.2)	6.83 [0.18]**		11 (14.7)	13 (34.2)	5.75 [0.23]**		22 (25.6)	8 (47.1)	3.17 [0.17]	
Job change	36 (22.4)	11 (20)	0.13 [0.02]		11 (14.7)	6 (15.8)	0.02 [0.01]		25 (29.1)	5 (29.4)	0.001 [0.003]	
Sexual abuse	3 (1.9)	5 (9.1)	6.01 [0.17]**		1 (1.3)	3 (7.9)	3.18 [0.16]		2 (2.3)	2 (11.8)	3.38 [0.18]	
Physical abuse	5 (3.1)	5 (9.1)	3.32 [0.12]		2 (2.7)	3 (7.9)	1.63 [0.12]		3 (3.5)	2 (11.8)	2.10 [0.14]	
Psychological abuse	9 (5.6)	7 (12.7)	3.04 [0.15]		3 (4)	4 (10.5)	1.84 [0.12]		6 (7)	3 (17.6)	2.02 [0.14]	
Consultation with a mental health professional: n (%)	48 (29.8)	26 (47.3)	5.54 [0.16]**		23 (30.7)	16 (42.1)	1.46 [0.11]		25 (29.1)	10 (58.8)	5.60 [0.23]**	
Substances of abuse: n (%)												
Alcohol	58 (36)	18 (32.7)	0.19 [0.03]		26 (34.7)	11 (28.9)	0.37 [0.05]		32 (37.2)	7 (41.2)	0.09 [0.03]	
Tobacco	24 (14.9)	9 (16.4)	0.06 [0.01]		10 (13.3)	8 (21.1)	1.12 [0.10]		14 (16.3)	1 (5.9)	1.23 [0.10]	
Cannabis	2 (1.2)	2 (3.6)	1.29 [0.07]		0 (0)	1 (2.6)	1.99 [0.13]		2 (2.3)	1 (5.9)	0.63 [0.07]	
Cocaine	1 (0.6)	1 (1.8)	0.64 [0.05]		0 (0)	1 (2.6)	1.99 [0.13]		1 (1.2)	0 (0)	0.20 [0.04]	
Ecstasy	1 (0.6)	0 (0)	0.34 [0.04]		1 (1.3)	0 (0)	0.51 [0.06]		0 (0)	0 (0)	--	
Tranquilizers-relaxants	0 (0)	1 (1.8)	2.94 [0.11]		0 (0)	0 (0)	--		0 (0)	1 (5.9)	5.11 [0.22]**	

Notes. PLE= Psychotic-like experiences; ES= Effect size (Cohen's d for Student's t or Cramer's V for  $\chi^2$ ). \*p< .05; \*\*p< .01.

### *Psychosocial characteristics according to age and the presence of PLE*

Regarding the psychosocial and health data (Table 3), in the total sample, the participants with PLE presented a significantly higher frequency of stressful events such as discussions with their couple, friends, etc. (38.2%), and sexual abuse (9.1%), than those who did not report PLE. The entire group of participants with PLE reported a significantly higher number of consultations with mental health professionals (47.3%) compared to the group that did not report PLE (Table 3).

According to age group (Table 3), young adults with PLE presented a significantly higher proportion of stressful events such as discussions with friends, couple, etc. (34.2%) relative to participants of this age who did not report PLE. Finally, the adult group aged 36-60 with PLE presented a higher percentage of participants who had consulted with a mental health professional (58.8%) and a higher frequency of consumption of tranquilizers-relaxants (5.9%) compared to participants of the same age without PLE.

## **Discussion**

Young adults presented a greater expression of PLE, with the most frequent PLE being delusional, similar to that reported by other authors (Bhavsar et al., 2021; Guerrero-Jiménez et al., 2018; Pignon et al., 2018). The results of this study also show that mature adults with PLE had significantly more psychopathological symptoms in the dimensions of hostility-anger, somatization, depression, and anxiety than mature adults without PLE. Likewise, young adults with PLE showed more psychopathological symptoms in the same dimensions and in the dimensions of obsession-compulsion, paranoid ideation, and psychoticism than participants of this same age range without PLE. These findings are consistent with previous studies reporting positive associations between PLE and self-reported symptom levels in different psychopathological dimensions (such as anger-hostility, anxiety, depression, somatization, obsession-compulsion, and interpersonal sensitivity) (Armando et al., 2010; Saha et al., 2011; Unterrassner, Wyss, Wotruba, Haker, et al., 2017) where significant differences have been found between groups with and without PLE in this study.

Although the results align with previous research, the study of subclinical psychopathology and psychosocial characteristics related to the presence of PLE in adults has yet to be examined, analyzing different age ranges such as those proposed by Havigurst (1978). These previous researches have focused mainly on the study of community samples of young adults (aged between 18-23 years) (Cristóbal-Narvárez et al., 2016; Scott et al., 2008; Sun et al., 2017) or have not considered the analysis of different age groups, despite accomplishing researches with samples of great breadth of age (of between 18 and over 60 years) within

this evolutionary stage (Guerrero-Jiménez et al., 2018; Saha et al., 2011; Unterrassner, Wyss, Wotruba, Haker, et al., 2017).

This study addresses this aspect and shows, on the one hand, the presence of these PLE in the general population beyond the early adulthood examined by previous research (Cristóbal-Narváez et al., 2016; Scott et al., 2008; Sun et al., 2017). On the other hand, although PLE is more frequent in young adults, in the general adult population, the presence of PLE could be a factor associated with a greater intensity of affective symptoms (anxiety, somatization and depression) and anger-hostility in young and mature adults; and related to a greater intensity of obsessive-compulsive symptoms, delusional thoughts and manifestations of social alienation (psychoticism) (Derogatis, 2002) specifically in young adults. These findings would exemplify the configuration of comorbidity between PLE and general psychopathology in adults of different ages with no psychopathological clinical history, thus complementing what is reported by studies that do not analyze different age ranges or those that show relationships between PLE and the presence of mental disorders in this stage of development (Pignon et al., 2018; Saha et al., 2011; Unterrassner, Wyss, Wotruba, Haker, et al., 2017; Varghese et al., 2011).

In this research, we observed other variables related to the presence of PLE, such as foreign nationality, stressful events experienced, or the frequency of consultations with mental health professionals. These findings could indicate that in this sample, PLE has been related to different socio-contextual and psychosocial factors associated with these manifestations in previous studies, such as migration (Linscott & van Os, 2013; Pignon et al., 2018), greater suffering from stressful life events (Bell et al., 2019; Cristóbal-Narváez et al., 2016; Guerrero-Jiménez et al., 2018; Sun et al., 2017; van der Steen et al., 2019) and greater use of mental health services (Bhavsar et al., 2021; Bhavsar et al., 2018).

Regarding these psychosocial variables, the significant scores in general psychopathology reported by participants with PLE could explain, at least in part, the results. Thus, in healthy adults with PLE, the greater intensity of anger-hostility that they experience could justify the higher frequency of stressful experiences of discussion in different environments (with friends, with their couple, etc.) that they report. In this sense, anger-hostility would make them interact more irritably and aggressively with their environment (Derogatis, 2002; Sandín et al., 2008), and there is evidence that relates this symptomatology to situations of interpersonal conflict and adverse effects on social relationships (Beames et al., 2019; Sliter et al., 2011). Similarly, the greater mental health professional help-seeking reported by participants with PLE could be due to the greater intensity of general psychopathological symptomatology they display (especially mature adults who exhibit larger effect sizes on the dimensions of anger-hostility, somatization and

anxiety when compared with participants with the same age but without PLE), an aspect that different international studies have raised (Bhavsar et al., 2018, 2021).

It is necessary to point out different limitations of this study. First, external validity must be considered since it would be relevant to have a similar proportion of participants of both sexes. The online selection method of the sample may lead to the participation of only people with greater motivation or interest in the study or with adequate digital skills. In this sense, it would be relevant if the findings of this study could be replicated in larger, randomly selected samples of the Spanish population to facilitate the comparison of results. Secondly, since age is an important factor in the PLE manifestation, it could be interesting to study these experiences in the Spanish adult population in age ranges different from those examined in this research (for example, comparing adults in narrower age ranges than those examined). Finally, the instruments used for the cross-sectional evaluation of the PLE, the general psychopathological symptoms and the psychosocial and health variables are retrospective self-report measures, which could have a specific impact on the information provided by the participants since it is based on recall, as well as being affected by social desirability. In addition, also concerning the measures used, future research could consider the use of scaled instruments to deepen the study of stressful life events in the analysis of mental health variables in the general population.

In conclusion, in this sample, PLE would be a factor associated with the intensity of subclinical psychopathological manifestations. Thus, in adults of different age ranges, the disclosure of PLE could alert that the person may have a significantly higher level of affective symptoms and anger-hostility, even though there is no history of psychopathological disorders. In this sense, PLE would be a variable of interest to consider in the psychopathological examination of adults without a psychiatric history. Moreover, addressing the subjective experience of anger-hostility, aggressive behavior, and affective regulation, all of them could be therapeutic objectives to improve the mental health of people who manifest PLE at different stages of adulthood.

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