




Paranoia and risk of personality disorder in the general population

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ABSTRACT

Background – We hypothesized that paranoia is associated with personality disorder (PD) in the general population.

Method – This was a population-based cross-sectional survey carried out in Andalusia (Spain) using a representative sample of 4 507 participants. Paranoia was measured using the Green Paranoid Thought Scale, and risk of having a PD was screened using the Standardized Assessment of Personality Abbreviated Scale whilst borderline personality disorder (BPD) was measured with the CEPER-III Exploratory Interview of Personality disorder. Adjusted Pearson's correlations between paranoia and PD or BPD were calculated.

Results – Paranoia was associated with the risk of having PD and, more robustly, with BPD. Both associations held true for both personality outcomes (PD and BPD) when tested for two Green Paranoid Thought Scale paranoia subtypes (persecutory and reference) after accounting for the effects of age, sex and child abuse.

Conclusions – Paranoia seems to either augment the risk for, or be part of, PD/BPD. © 2019 John Wiley & Sons, Ltd.

Introduction

The relationship between paranoia and personality disorders (PD) is poorly understood at a population-based level as there have been few epidemiological studies focused on its nature. A better understanding of this relationship could be of clinical relevance because the presence of paranoia may entail a risk factor for future psychosis,¹ it may be associated with more frequent criminal behaviour² and it has also a considerable impact over somatic and mental health.³ Thus, exploring symptomatic dimensions such as paranoia could be of clinical value when clinically profiling a PD

case. Moreover, to study this relationship can add a better understanding on the PD construct.

However, the evidence coming from epidemiological studies is rather patchy and scarce. Thus, some general population studies on PDs have tangentially explored their relationship with paranoia.^{4–7} The prevalence of PD in general population has been poorly studied, with only a few community surveys^{5,6,8,9} describing a prevalence between 4.4% and 14.8%, ranging that of paranoid personality disorder (PPD) between 0.7%⁵ and 2.4%.⁶ In addition, the concept of paranoia and PD can also be considered from different perspectives (dimensional, categorical, trait-centred,

etc.). Thus, clinically, paranoia has been mainly understood in two ways. Either as a core symptom in PPD⁷ or as a one more symptom within the construct of another PD such as the schizotypal personality disorder,¹⁰ borderline personality disorder (BPD)^{11,12} and narcissistic personality.^{7,13} In addition, the authors of the task-force group PD cluster B¹⁴ have indicated that paranoid ideas or paranoid delusions as in PPD can be found in another PD, although they side on caution because the symptoms 'are more transient, reactive interpersonally and are modified before the external structure'. Accordingly, some study¹⁵ pointed out the close relationship between BPD and paranoid symptoms and thus concluded that most of patients with BPD experience paranoid symptoms in a wide range between 68% and 97%.

Another studies also found the existence of paranoid delusions in a lesser degree.^{11,12} This kind of inner relationship between paranoia and PD can be understood from a dimensional point of view. Thus, over the past decades, and more recently in DSM-5, there has been a call for a dimensional conceptualization of PD.¹⁴ Moreover, a dimensional structure of paranoia across general population has been confirmed by several studies.^{16–18} Some authors have even insisted that should PPD not prove to add any useful information on neurobiology, impairment, prognosis or treatment response, then it should be deleted as a distinct category and substituted by a suspiciousness dimension.⁷ Furthermore, as in hybrid model's DSM-5 calls concluded that it would be 'reasonable to remove PPD as an independent diagnosis from the next edition of DSM, and instead to encourage clinicians to code trait-paranoia using a dimensional approach'.⁶ Furthermore, the relationship between both entities, paranoia and PD, could be theorized from the interplay between certain personality traits and paranoia, and between the latter one and PD, thus some cross-sectional non-representative studies have demonstrated that personality traits such as novelty seeking or harm avoidance are associated to paranoia.¹⁹ More recently, a longitudinal study

has demonstrated that an explosive character profile, consisting of high novelty seeking, high harm avoidance and a low reward dependence, also predicts the development of paranoid ideation in general population.²⁰ Furthermore, from a biological viewpoint, paranoia and PD could also be sharing some endophenotypes. Thus, brain DRD2 receptor density has been negatively correlated to personality traits as novelty seeking, impulsivity or harm avoidance²¹ and parallelly the dopamine metabolism, especially the DRD2 receptor has been implied in schizophrenia.²² Novelty seeking is also a well-known common personality trait to both paranoia²⁰ and BPD²³ and is associated to genetic variability in dopamine receptors²⁴ that are also altered in paranoia and BPD.²⁵

This study sets out to explore, in a large and representative sample of the general population, the dimensionally measured association between paranoia and PD (both any PD and BPD).

Method

A full description of the PISMA-ep Study methods has been published elsewhere.²⁶ A summary of its methods as applicable to this paper follows.

Sample and design

It was a cross-sectional study performed in Andalusia, Southern Spain. In 2013, it had a population of 8 421 274 inhabitants with 62% of the population living in cities with more than 20 000 inhabitants according to the 2001 census.²⁷ In this study, we interviewed 4 507 individuals, aged between 18 and 75 years, implementing a door-knocking approach. The interviews were performed by interviewers from a poll company specialized in health surveys. All provinces in Andalusia were included. The study was conducted over a 1-year period (2013–2014). A sample size of some 4 518 was calculated. Sampling procedure is described fully elsewhere.²⁶ In brief, municipal

censuses of the identified towns to be included were used and different standard stratification levels that were utilized as follows. First, we stratified the sample according to region (Eastern Andalusia and Occidental Andalusia) and second, according to city size (urban, intermediate and rural). Additionally, we also stratified taking into account the eight Andalusian provinces and, within each one of them, between one and five towns were selected using a simple random method. Following this, and using the same simple random method and bearing in mind gender and age, the final sample was achieved using the census section of all towns included. Subsequently, one in every four consecutive homes was visited per district. If there was no response after two consecutive calls at a house, it was visited on two subsequent occasions at different times of the day. If there was no immediate response after this, the interviewer went to the following house that had not yet been called upon within the predetermined route. If necessary, this process was repeated until an eligible participant was finally found. All the participants completed an informed consent form and were informed about the aim of the study before being asked to provide consent to participate.

Data gathering quality was ensured by one interviewer coordinator per province who checked twice whether all questionnaires had been completed adequately and who telephoned a random sample of participants to check on their responses (approximately from 5 to 10 per province). The coordinator of each province randomly double-entered 15% of the questionnaires from their province into a computer file and compared their data with that of general data central administrator who had independently entered all study data, accepting up to an error rate of up to 1%.²⁶

Variables and measures

Assessment of paranoia. We used the Spanish version of the Green Paranoia Thoughts Scale (GPTS)²⁸ to ascertain paranoia. This scale has been validated for its use in general or clinical

populations and has demonstrated reliability adequate levels of and validity. The GPTS consists of 32 items rated using a Likert-like five-point scale. These 32 items are also clustered into two subscales of 16 items each. Subscale-A assesses ideas of social reference whilst the subscale-B focuses on persecutory ideas. Scores in each subscale range between 16 and 80 points with the highest scores reflecting a higher level of delusional thought. An overall GPTS paranoia score can also be calculated by adding both subscales' scores. The GPTS is a self-applied tool and takes approximately 10–15 min to complete.

Assessment of personality disorder. Standardized Assessment of Personality Abbreviated Scale (SAPAS).²⁹ It is a short and simple self-administered screening interview valid to identify highly probable cases of PD. The SAPAS derives from a previously published longer interview known as the Standardized Assessment of Personality³⁰ and was originally validated on a clinical sample by Paul Moran (2003) and subsequently validated for the general population.³¹ The SAPAS consists of eight dichotomously rated items. The scores of the eight items can be added together to produce a total score between 0 and 8. Currently, this scale has good psychometric properties and has the power to predict a PD in 90% of patients with a sensitivity and specificity of 0.94 and 0.85 respectively in clinical samples.²⁹ In general population, the cut-off score of 4 correctly classified 58% of individuals on the screening³¹ with an area-under-the-curve of 0.70, indicating moderate overall discriminatory accuracy.

Borderline personality disorder was screened using the CEPER-III Exploratory Interview of Personality Disorder that has been validated to identify PD cases in community samples.³² This scale is short and self-administered evaluating 14 PD/styles and including a BPD section that is the one used in this study. The CEPER-III BPD subscale consists of 12 items, measured with a Likert's scale from 1 to 7 and it can be used independently from the other subscales. CEPER-III has been

validated in the Spanish population showing a very good construct validity against the MCMI-II ($r = 0.91$) and a very high internal consistency (Cronbach's $\alpha = 0.97$). Regarding cut-off scorings, a 38 points and above score suggests enough severity for mental health referral and scores of 58 and above have been reported as an indicator of severe BPD.³²

Other assessments. The IQ of each participant was calculated with a Spanish version of the Barona by Bilbao and Seisdedos.³³ This formula uses the sociodemographic variables of age, gender, educational level, urban status and geographic region to estimate the participant's IQ. Childhood mistreatment is a variable influencing both, paranoia and PD,³⁴ for this reason, it was also assessed collecting retrospective data on three types of mistreatment during childhood (psychological and physical mistreatment and sexual abuse) using the abbreviated Childhood Trauma Questionnaire.³⁵ For the purpose of this report, we dichotomized the existence of any abuse at any time in childhood. Age has demonstrated to be a variable affecting to the prevalence of personality traits in the community³⁶ and was recorded. We also recorded data on sex, education level and urbanicity.

Statistical analysis

Descriptive statistics for all variables in the study were initially calculated. Then, we performed bivariate Pearson's correlations between GPTS scoring and SAPAS or CEPER-III scorings. We finally adjusted such correlations by potential confounding co-variables using multivariable correlations to take into account the potential effect of sex, age, Barona IQ and childhood abuse. All the calculations were carried out with the SPSS.20 program.

Ethical statement

The study was approved by the Andalusian Research Ethics Committee (PEIBA).

Results

The sample

This sample was one of 4 507 individuals, out of which 2 293 were men (50.9%) and 2 214 (49.1%) were women. Table 1 summarizes the sample's sociodemographic characteristics. In brief, the age range was stratified into four subgroups and 33.8% of the sample was within the 31–45 years subgroup. Additionally, 69.9% were

Table 1: Sociodemographic variables

Sample characteristics	Descriptive features	Total subsample and percentage
Gender	Men	2 293 (50.9%)
	Women	2 214 (49.1%)
Age range	18–30	1 106 (24.5%)
	31–45	1 522 (33.8%)
	46–60	1 135 (25.2%)
	61–75	744 (16.5%)
Andalusia's province	Almeria	375 (8.3%)
	Cadiz	665 (14.8%)
	Cordoba	430 (9.5%)
	Granada	496 (11%)
	Huelva	280 (6.2%)
	Jaen	361 (8%)
	Malaga	870 (19.3%)
	Seville	1 030 (22.9%)
Civil status	Stable relationship	2 747 (60.9%)
	Separated	178 (3.9%)
	Widow/widower	188 (4.2%)
	Divorced	182 (4%)
	Single	1 212 (26.9%)
Employment situation	Employed	1 942 (43.1%)
	Unemployed	1 222 (27.1%)
	Retired	504 (11.2%)
	Disabled	81 (1.8%)
	Housewife/husband	442 (9.8%)
Educational level	Illiterate	52 (1.2%)
	Literate not finish	562 (12.5%)
	Primary	1 751 (38.8%)
	Secondary	1 332 (29.6%)
	University	789 (17.5%)
Population size	Urbans >10 000	3 593 (79.7%)
	Intermediate.: 2 001–10 000	758 (16.1%)
	Rural: <2 001	156 (3.5%)

married or within a stable relationship and 26.9% were single; 52.5% of the sample had primary or lower education and about 17.5% had achieved a university degree. The majority of the sample came from an urban area (79.7%) and 43.1% was currently employed whilst unemployment was 27.1%. Mean Barona-measured IQ was 110.42 ($SD = 18.84$). The prevalence of child abuse was 5.8% ($n = 260$). Finally, GPTS, SAPAS and CEPER-III mean scores were as follows: GPTS total ($M = 40$; $SD = 12.9$; Range (32–160)), GPTSa (persecutory delusions) ($M = 22$; $SD = 7.5$; Range (16–80)), GPTSb (reference delusions) ($M = 18.7$; $SD = 6.3$; Range (16–80)), SAPAS ($M = 1.6$; $SD = 1.5$; Range (0–8)) and CEPER-III ($M = 19$; $SD = 9.6$; Range (12–83)).

The relationship between paranoia and personality disorders

We found a significant and positive correlation between GPTS paranoia and PD or BPD ($r = 0.301$ and $r = 0.574$ respectively; $p < 0.0001$). Such correlation was also true for GPTS paranoia subtypes: persecutory paranoia associated significantly with both, PD and BPD ($r = 0.310$ $p < 0.0001$ and $r = 0.567$, $p < 0.0001$ respectively), and reference paranoia also associated with PD and BPD ($r = 0.246$, $p < 0.001$; $r = 0.500$, $p < 0.0001$ respectively).

We also found that both PD ($r = 0.65$, $p < 0.01$) and BPD ($r = 0.129$, $p < 0.01$), on the one hand, and GPTS paranoia ($r = 0.144$; $p < 0.01$), on the other, correlated positively with having suffered child abuse. Furthermore, paranoia

score correlated negatively with the IQ scores ($r = -0.45$ and $p < 0.01$; Table 2). Consequently, we adjusted earlier-reported correlations between paranoia and PD/BD by sex, age, IQ and child abuse and found that all correlations remained positive. Thus, GPTS paranoia showed adjusted positive correlations with PD and BPD. Persecutory paranoia and reference paranoia also independently and significantly correlated with PD and BPD. See Figure 1 and Table 3 for correlation coefficient values.

Discussion/conclusions

Few population studies have focused on the relationship between paranoia and PD. Hence, we aimed at specifically exploring such association in a large, general-population sample on which a thorough assessment of paranoia was made. Our results showed a moderate but significant correlation between paranoia and PD in general and a stronger one when considering BPD. However, given the cross-sectional nature of this study, we are not able to establish the direction of the association. The correlation between paranoia and PD or BPD could hence be understood as paranoia being a risk factor for PD or BPD or, alternatively, personality traits might precede the emergence of paranoia.

Paranoia and personality disorder

Our finding of a correlation between paranoia and PD raises important and interesting epidemiological issues. Some studies have previously reported

Table 2: Correlations between child abuse, IQ and GPTS, SAPAS and CEPER-III

	GPTS total	GPTSa	GPTSb	SAPAS	CEPER-III	IQ	Child abuse
Child abuse	0.144**	0.130**	0.140**	0.065**	0.129**	-0.045*	X
IQ	-0.100**	-0.092**	-0.095**	-0.050**	-0.069**	X	-0.045*

GPTS, Green Paranoid Thought Scale; SAPAS, Standardized Assessment of Personality Abbreviated Scale.

* $p < 0.03$.

** $p < 0.01$.

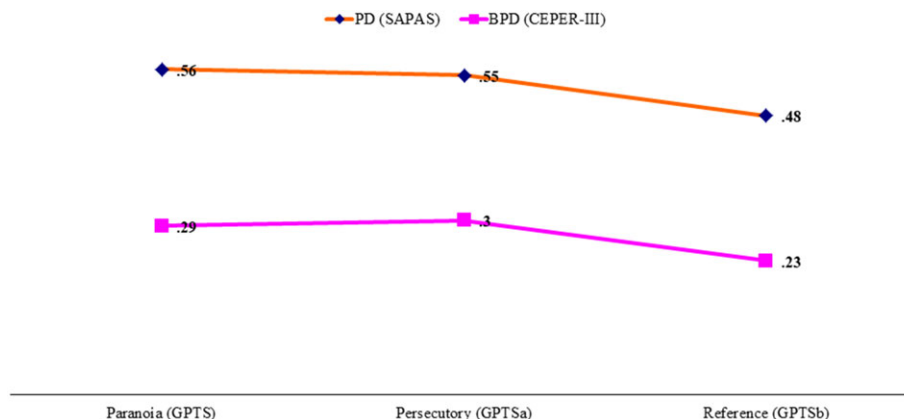


Figure 1: Adjusted correlation coefficients between paranoia, PD and BPD. BPD, borderline personality disorder; GPTS, Green Paranoid Thought Scale; PD, personality disorder. [Colour figure can be viewed at wileyonlinelibrary.com]

Table 3: Correlations between GPTS and SAPAS and CEPER-III after adjustment by age, sex, IQ and child physical abuse

N = 4 507	Paranoia (GPTS)	Persecution (GPTSa)	References (GPTSb)	SAPAS	CEPER-III
GPTS total	X	0.944*	0.918*	0.287*	0.560*
Persecution (GPTSa)	0.944*	X	0.736*	0.298*	0.553*
References (GPTSb)	0.918*	0.736*	X	0.232*	0.486*
SAPAS	0.287*	0.298*	0.232*	X	0.452*
CEPER-III	0.560*	0.553*	0.486*	0.452*	X

GPTS, Green Paranoid Thought Scale; SAPAS, Standardized Assessment of Personality Abbreviated Scale.

* $p < 0.001$.

the existence of psychotic symptoms, including paranoia, in PD cases, mainly in BPD.^{7,11,12} This association between paranoia and PD can be interpreted in different ways. Thus, it is known that paranoia is an underlying dimension identifiable in general population studies^{16–18} and we suggest that it might be over-expressed in PD cases. In our view, paranoia and PD can share some psychopathological elements and, indeed, symptomatic dimensions of PD can be found within the phenomenological profile of paranoia and vice versa.

Examples of such common symptomatic dimensions can be found in models like the one proposed by van Os (2016) and Keyes (2013). Van Os suggests the existence of an ‘extended psychosis phenotype’ including different levels of delusions, across the general population.³⁷ Moreover,

the Keyes’s model describes elements of thought disorder³⁸ in PD that have indeed been also reported in clinical samples of paranoia.³⁹ Thus, Keyes³⁸ suggests that thought disorder is one component of a wider, so-called internalizing dimension that, in turn, is present to a varying degree across a wide variety of disorders including PD and paranoia. Additionally, other authors have suggested the coexistence among these disorders of a common psychotic dimension.⁴⁰

On the other hand, paranoia might be a symptomatic dimension that could act as a risk factor for PD and, indeed, for a variety of other mental disorders. This notion is favoured by one recent study demonstrating that paranoia increases the risk for some non-psychotic mental disorders such as anxiety and depression⁴⁰ which, in turn, are

highly co-morbid with PD.^{41,42} Conversely, direction of association could be the other way around. Certain personality traits might precede the onset of paranoia. Thus, several cross-sectional studies have proven the association between a particular personality profile, characterized by high novelty seeking, high harm avoidance, low reward dependence and PPD.^{19,43,44} Moreover, the only longitudinal study exploring this relationship has reported that those personality traits predict the onset of paranoid thinking in the general population.²⁰ However, paranoia is not only mediated by personality traits as other social, psychological and biological factors can also determine its emergence.¹⁸

Our findings pose the need to develop further longitudinal studies to establish a more precise link between paranoia and PD. It would allow to improve our knowledge of the epidemiology of PD. Moreover, it could contribute to develop some kind of treatment or to implement the community mental health services or preventive strategies in some way. Thus, the attention to social determinants influencing both, paranoia³ and PD,⁴⁵ especially childhood mistreatment³⁴ could be crucial to design preventive strategies. If the link between paranoia and PD is confirmed, the relevance of treating paranoid symptoms in PD could be increased.

Paranoia and borderline personality disorder

The correlation between paranoia and BPD in our sample was of moderate intensity. Indeed, transient stress-related paranoia is a diagnostic criterion for BPD,¹⁴ and patients affected by BPD suffered psychotic symptoms very often.^{11,12} Some studies have emphasized the idea that the dimensional structure of BPD in the general population is similar to that in clinical populations,⁴⁶ what supports the notion of a borderline continuum.⁴⁷ It is, hence, plausible that, at a general population level, dimensional paranoia could be a component of the very construct of BPD or its continuum. Furthermore, an epistemic hypervigilance has

been described as core component underlying the BPD psychopathology.⁴⁸ This lack of a secure attachment in childhood would lead to the lack of epistemic confidence necessary to consider the knowledge of another person as reliable and trustworthy. Thereby, we hypothesized that this state of epistemic hypervigilance would be a state close to or close to the concept of non-clinical paranoia.

An additional explanation for our finding is that aggression and impulsivity are well-known and previously reported elements of BPD⁴⁹ and have also been reported as characteristic of clinical paranoia.³⁹ The study of paranoia in BPD is also clinically important as its occurrence, along with other psychotic symptoms, might worsen the prognosis of BPD and determine more hospitalizations.⁵⁰ In addition, psychotic symptoms are very frequent and can be permanent in BPD and their treatment is a part of integral BPD management.¹⁵ Furthermore, new psychological treatments for paranoia have been developed,¹⁸ and some authors have shown the utility of antipsychotics use to treat the psychotic symptoms and the rest of the symptoms of BPD.⁵¹ However, the use of pharmacotherapy in BPD should be prudent and pragmatic, avoiding polypharmacy, using these only for relieve symptoms and for a short period of time.⁵²

Strengths and limitations

To the best of our knowledge, this is the first study exploring the relationship between dimensional paranoia and dimensional PD in a general population. Moreover, the sample is quite large and representative of its target population. Besides, dimensional paranoia was measured using a complete, valid and reliable method.

The principal limitation of our study is that it is a cross-sectional study lacking a follow-up period. Consequently, we cannot establish the direction of the association between paranoia and PD or BPD. Additionally, the scales used to characterize PD and BPD (SAPAS and CEPER-III respectively) are screening tests and they do not provide the accuracy of firm clinical diagnoses for these

conditions. Likewise, SAPAS does not specify the type of PD identified and it is possible that the association with paranoia could be based on its association with certain PDs, maybe cluster A or B, and not global for PD in general.

Conclusions

Paranoia is associated to PD, the nature of this relationship should be further clarified, particularly whether the association is risk related or because of symptom sharing. This hypothesis should be tested in prospective designs as cohort studies in future investigations. The role of paranoia in PD, nonetheless, seems clinically important based in our results and must be addressed more deeply at the prevention, treatment and prognosis levels.

Conflict of interest

None.

Funding

The study was partially funded by grants from Consejería de Salud, Junta de Andalucía grant number PI322-2009 and Consejería de Innovación Proyecto de Excelencia grant number CTS-2010-6682.

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