

Paranoia in the General Population: a revised version of the General Paranoia Scale for
Adults

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Abstract

Background: Paranoid ideation has been regarded as a cognitive and a social process used as a defense against perceived threats. According to this perspective, paranoid ideation can be understood as a process extending across the normal-pathological continuum.

Methods: In order to refine the construct of paranoid ideation and to validate a measure of paranoia, 906 Portuguese participants from the general population and 91 patients were administered the General Paranoia Scale (GPS), and two conceptual models (one and tridimensional) were compared through Confirmatory Factor Analysis (CFA).

Results: Results from the CFA of the GPS confirmed a different model than the one-dimensional model proposed by Fenigstein and Vanable (1992), which comprised three dimensions (Mistrust Thoughts, Persecutory Ideas and Self-depreciation). This alternative model presented a better fit and increased sensitivity when compared to the one-dimensional model. Further data analysis of the scale revealed that the GPS is an adequate assessment tool for adults, with good psychometric characteristics and high internal consistency.

Conclusion: The model proposed in the current work lead to further refinements and enrichment of the construct of paranoia in different populations, allowing the assessment three dimensions of paranoia and the risk of clinical paranoia in a single measure for the general population.

Keywords: adulthood, assessment, continuum, paranoid ideation refinement, social defense.

Key Points

Paranoid ideation is not a one-dimensional construct, it presents several dimensions that allow a better understanding of this phenomena

The General Paranoia Scale was devised to assess paranoid ideation in the general population, and this study presents an alternative model that is more sensitive in assessing more dysfunctional processes in non-clinical samples.

A better understanding of the paranoid ideation construct is fundamental to clinical practice and research on the development and manifestation of paranoia across the lifespan.

Introduction

Paranoid ideation has been conceptualized as a cognitive process (Campbell & Morrison, 2007; Combs, Michael & Penn, 2006; Fenigstein & Vanable, 1992; Michael, Shaffner & Shultze, 2011; van Os, Linscott, Myin-Germeys, Delespaul & Krabbendam, 2009; Verdoux & van Os, 2002) through which individuals explain social situations and behaviors, and that is triggered upon the perception of threats (Bentall, Kinderman & Kaney, 1994; Ellet, Lopes & Chadwick, 2003; Fenigstein & Vanable, 1992; Freeman et al., 2005; Gilbert, 1998, 2001). Paranoia is understood as the perception of intentional harm from others (Freeman, Garety, Kuipers, Fowler & Bebbington, 2002) and is a phenomena that has been included by some authors in the conceptualizations of social anxiety, to the extent that it focuses on the hostile intents and criticism from others and can be characterized by feelings of mistrust and vulnerability to harm from others (Beck & Rector, 2005; Gilbert, Boxall, Cheung & Irons, 2005). However, the main distinction between paranoid ideation and other

cognitions related to social anxiety is the attribution of malevolent intent to others (Ellet et al., 2003; Fenigstein & Venable, 1992; Freeman et al., 2005; Gilbert et al., 2005).

Paranoid ideation is, therefore, a defense against the hostility from others or other kinds of social threats (Freeman et al., 2002; Gilbert, 1998, 2001).

One of the first models to regard psychopathological symptoms and traits as fully dimensional and representative of a healthy diversity of individual differences in psychiatry was the proposal by G. Claridge (1985, 1994), in which schizotypal traits were conceptualized as any other personality trait, as opposed to an attenuated form of the psychotic symptomatology. From this theoretical framework, several authors focused on other aspects previously regarded as exclusive symptoms from nosological entities and adopted this fully dimensional approach. According to this perspective, contrary to the conceptualizations of paranoia as a symptom associated with psychotic syndromes (specifically, schizophrenia), paranoia has been regarded as a continuous process ranging from normal to pathological, encompassing more adaptive or more severe and disruptive cognitions, such as delusional beliefs (Barreto Carvalho, Pinto-Gouveia, Peixoto & da Motta, 2014a; Ellet et al., 2003; Esterberg & Compton, 2009; Freeman et al., 2002; Freeman et al., 2005; Freeman, Pugh, Vorontsova, Antley & Slater, 2010; van Os, Hanssen, Bijl & Raveli, 2000; Verdoux & van Os, 2002; Yung et al., 2009). According to Freeman et al. (2005), paranoid ideation is a normative, daily process that can have adaptive value for individuals. One study by Verdoux & van Os (2002) pointed out that 15% to 20% of the general population has paranoid thoughts regularly, further emphasizing the continuity of these phenomena in non-clinical populations. Freeman et al. (2005) represented this continuum in a hierarchical model of the manifestations of paranoid ideation. At the base of this hierarchy are the more general concerns about social evaluation, and at the top of this hierarchy are more

disruptive and problematic cognitions, including persecutory ideas and delusional beliefs, for instance, that can attain clinical significance (Freeman et al., 2005).

Several attempts to characterize paranoid ideations have been carried out, and different models have been proposed to encompass the diversity of paranoid thoughts and processes. An important characteristic is presented by Trower & Chadwick (1995), in which two different forms of paranoia were distinguished as “poor me” and “bad me” paranoia. In the first case, individuals present high self-esteem and believe to be the target of persecution and/or rejection from others, regarding themselves as innocent victims and others as malevolent and guilty. The “bad me” paranoia is usually present in individuals presenting low self-esteem, regarding oneself as guilty and deserving of the rejection and persecution from others (Trower & Chadwick, 1995). Evolutionary psychologists and social-rank theorists present models in which individuals believe themselves to be “easy targets”, placing other in higher social ranks and as more threatening or hostile, from whose individuals must defend themselves from (Allan & Gilbert, 1997; Buss, 1999; Gilbert, 1993; Wakfield, 1999). Contrarily, paranoid individuals who regard themselves as occupying higher social ranks tend to avoid interactions with lower-rank individuals in order to avoid potential threats to their dominant status (Dixon, 1998; Gilbert, 1998). The evolutionary perspective points out that humans have natural defenses to protect themselves against loss and threat (i.e. social status, social bonds), and that psychopathology arises from the inflexibility and over activation of these defense mechanisms to perceived threats (Gilbert, 2001).

Fenigstein & Vanable (1992) have also distinguished subclinical and clinical forms of paranoia. The first occurs in daily behaviors and is characterized by self-reference, mistrust feelings, grudges and resentment towards others, and beliefs of external influence and control (Fenigstein & Vanable, 1992; Fenigstein, 1997). The

latter encompasses persecutory ideations and delusional beliefs of more clinical nature (Fenigstein & Venable, 1992; Fenigstein, 1997). The authors have developed a scale, aiming at the study of paranoid ideation in the general population, the General Paranoia Scale (GPS - Fenigstein & Venable, 1992). The GPS encompasses aspects of paranoia such as resentment and mistrust towards others, and depreciation and rejection from others, in order to abridge the thought processes that are more common in everyday life.

In the original studies by Fenigstein & Venable (1992), the GPS presented a one-dimensional structure. However, in a study by Barreto Carvalho et al., (2014b), in which GPS was administered to 1718 Portuguese adolescents, it was observed that not only paranoid ideation is also a common phenomenon among youths, suggesting that this social defense mechanism is present since early developmental stages, but also found a three-factor structure. This three-dimensional structure encompassed different factors, Mistrust Feelings, Persecutory Ideations and Self-deprecation, and was a more robust model than a one-dimensional structure, and more useful for the understanding of paranoid ideation in youths (Barreto Carvalho et al., 2014b). It is important to emphasize that the validation and dissemination of measures with good psychometric properties among professionals and researchers worldwide are a key factor in the refinement of constructs and their studies in cross-cultural settings, and one of the advantages of disposing of measures in Portuguese is that, as the fourth most spoken language in the world by number of native-speakers (Paul, Simons & Fenning 2014), its applicability is extended to individuals from the five continents.

Thus, the present study aims are (1) to confirm the latent structure of GPS in adults, by comparing the one-dimensional model of general paranoid ideation proposed by Fenigstein & Venable (1992) with three-factor model proposed by Barreto Carvalho et al. (2014b), (2) to refine current conceptualization of paranoid ideation in adults by

evaluating processes in the general population that represent increased risks to psychopathology and (3) to verify the developmental continuum of paranoid experiences from adolescence to adulthood.

Methods

Participants and Procedures

Data was collected from individuals from the general population and patients diagnosed with schizophrenia in São Miguel Island, in the Azores. Participants from the general population were recruited by convenience sampling. Prior to contacting the patients, clinical directors and psychiatrists from the National Health System were contacted in order to receive information on the goals, procedures and the pertinence of the current study. The necessary authorizations to conduct the study in the clinical sample were obtained from the Ethical Boards from three local institutions. A sample of patients with diagnosed with Paranoid Schizophrenia was constituted with the cooperation of psychiatrists from each institution. Diagnosis was confirmed by the psychiatrists and through clinical records, and only patients with a confirmed diagnosis over 6 months were included in the sample.

Participation in this study was voluntary and information on the study goals and confidentiality was provided to all participants, who signed an informed consent form prior to administration of the assessment protocol. Participants who had difficulties filling questionnaires (e.g. Reading difficulties) were aided by the researchers.

Statistical analysis

Descriptive statistics, independent sample tests, logistic regressions and principal components and reliability analysis were calculated with SPSS v. 20.0 (IBM Corp.,

2011). Logistic Regression (LR) analysis was calculated from a set of independent variables (Distrust Feelings, Persecutory Ideas and Self-depreciation) in order to assess their influence and predictive value on the outcome (a dependent dichotomous variable: presence/absence of a diagnosis).

Confirmatory Factor Analysis (CFA) was calculated with Amos v. 20.0 (IBM, 2011). After verifying the test assumptions of lack of asymmetry and kurtosis (≤ 3 and 7 , respectively) (Maroco, 2010), the Maximum Likelihood estimation method was used. In CFA, the quality of model adjustments was assessed through the specific fit indices: Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI), with reference values of adjustment above .90; Parsimony CFI with acceptable values above .06; Root Mean square Error of Approximation (RMSEA) close to .05, and Akaike Information Criterion (AIC) for model comparisons. The reference values are according to suggestions by Kline (2011) and Maroco (2010). Nested model comparisons were made by chi-square with critical values for 95% confidence interval and CFI difference tests below .001 for attesting model invariance, in accordance with reference values and procedures established by several authors (Byrne, 2008; Kline, 2011; Meredith, 1993; Schmitt & Kuljanin, 2008). Construct reliability and validity was evaluated through Composite Reliability (CR) and construct validity was assessed through Average Variance Extracted (AVE). Fornell & Larcker (1981) established reference values of CR $\geq .70$ and AVE $\geq .50$ as indicators of good construct validity and reliability.

Measures

General Paranoia Scale (GPS; Fenigstein & Vanable, 1992; Portuguese version by Lopes & Pinto-Gouveia, 2010). The scale comprises 20 items, answered in a Likert-like scale ranging from 1 (never) to 5 (always). Total scores vary between 20 and 100, and

higher scores indicate more frequent paranoid ideation. In the original study by Fenigstein & Venable (1992), the Cronbach's alpha is 0.84. Because the study of the GPS latent structure and psychometric properties is the primary aim of the current study, psychometric properties and a confirmatory analysis of the measure will be presented in the results section.

Results

Sample characteristics

The sample in this study included 906 participants, with ages between 18 and 94 years old ($M = 37.22$, $SD = 11.39$), 553 males (61%) and 353 (39%) females. Within this group, 815 (89.9%) were drawn from the general population, and the remaining 91 (10.1%) were patients diagnosed with Paranoid Schizophrenia. Most participants were married (48.9%) and had completed 12 years of compulsory education (49.7%). Socioeconomic status (SES) was calculated based on participant's occupation (e.g. unemployed, retired, liberal workers, etc.). Most participants were middle-class workers, Medium SES (85.5%, $n=774$), followed by Lower SES (12.1%, $n=110$), Higher SES (1.9%, $n=17$) and, finally, students (0.5%, $n=5$). Sample characteristics are presented in Table 1.

(**Insert Table 1 about here**)

In order to allow the comparisons of clinical and non-clinical groups and to perform LR analysis, a subsample of participants from the general population was randomly drawn (10% of the cases) in order to create a homogenous group that matched the 91 participants from the clinical population in sample size. In the group from the general

population, 55 participants were male (60.4%) and 36 females (39.6%), with an average age of 38.16 years old. Considering the sample of patients, 44 participants were males (48.4%) and 47 females (51.6%), with an average age of 43.73 years old. Most patients were single (60.4%) and had completed less than 9 years of education, or elementary school (72.5%). Most participants from the clinical sample were from a low SES (80.2, n = 73) and the remaining had a medium SES (19.8, n=18). Despite the groups being equivalent regarding age, both groups differed in variables such as marital status, years of education and SES. These differences and characteristics are similar to most studies, including participants with psychiatric problems.

Scale dimensionality and Model Comparisons

Scale reliability was assessed in the total sample (N=906) and showed good internal consistency ($\alpha = .91$). Preliminary analysis of scale dimensionality was performed with the total sample (N=906), with Principal Components Analysis (PCA) with oblique rotation (Direct oblimin). Bartlett sphericity test ($\chi^2 = 7011.12$; $p = .00$) and Kaiser-Meyer-Olkin index (KMO = .94) showed that the data is factorable. Using an extraction method based on Eigenvalues > 1 revealed 3 latent components, explaining 51.7% of the total variance of the scale, suggesting the latent structure of the scale is not one-dimensional, as initially proposed by Fenigstein and Venable (1992), and was more similar to the three-dimensional latent structure found in adolescents in the studies by Barreto Carvalho et al., (2014b), including dimensions referring to Mistrust Thoughts, Persecutory Ideas and Self-deprecation.

Confirmatory Factor Analysis (CFA) was performed in two different models. Based on the model proposed by Fenigstein and Venable (1992), an initial one-dimensional model was tested (Model 1), grouping 20 items of the scale in a single latent factor

(General Paranoia). All items presented adequate factor loadings ($\lambda_{ij} \geq 0.5$), but model fit indexes from the proposed model suggested a poor fit: $\chi^2_{(170)} = 1306.45, p = .00$; TLI = .82; CFI = .84; RMSEA = .09, $P(\text{rmsea} \leq .05) = .00$; PCFI = .75; AIC = 1426.45.

Modification indices indicated that freeing some parameters would improve the fit of this model. Further adjustments were made in Model 1, freeing four parameters based on the highest modification indices. Correlations were established between the errors of the following items: #13 and #2, #12 and #8, #6 and #7, #7 and #1. After freeing these parameters, the model presented more adequate fit indexes: $\chi^2_{(166)} = 1059.01, p = .00$; TLI = .85; CFI = .87; RMSEA = .08, $P(\text{rmsea} \leq .05) = .00$; PCFI = .76; AIC = 1187.01.

However, these fit indices were still below their desirable thresholds established in current literature.

Taking into account the three-factor model obtained in Portuguese validation for adolescents (Barreto Carvalho et al., 2014b) and components obtained with our sample in PCA, a three-factor model was tested, grouping items in latent factors designated as Mistrust Thoughts, Persecutory Ideas and Self-deprecation (Model 2). The three-factor model showed better fit indices than Model 1: $\chi^2_{(167)} = 1036.77, p = .00$; TLI = .86; CFI = .87; RMSEA = .08, $P(\text{rmsea} \leq .05) = .00$; PCFI = .77; AIC = 1162.77. Similar to Model 1, further adjustments were made in the three-factor model by freeing parameters based on the highest modification indices. Correlations were established between the residuals items that belonged into the same factor: #8 and #12, #4 and #20 from the Mistrust Thoughts factor; #18 and #2, #13 and #2, #13 and #18 from the Persecutory Ideas factor. After freeing these parameters, the model presented good fit indexes: $\chi^2_{(162)} = 842.20, p = .000$; TLI = .89; CFI = .90; RMSEA = .07, $P(\text{rmsea} \leq .05) = .00$; PCFI = .77; AIC = 978.20. Two models are presented in Table 2.

**** Insert Table 2 about here****

Cross validation

The complete dataset was randomly divided in two and nested model comparisons were calculated in order to further explore the three-factor model invariance (Model 2).

Results of nested model comparisons are presented in Table 3.

All chi-square test statistics were below critical values for a 95% confidence interval and CFI differences were below .001, attesting model invariance in the multiple group analysis.

****Insert Table 3 about here****

Model reliability and validity

Composite Reliability (CR) was calculated to assess models' discriminant validity. All factors presented good CR ($\geq .70$): $CR_{\text{Mistrust Thoughts}} = .82$; $CR_{\text{Persecutory Ideas}} = .86$; $CR_{\text{Self-depreciation}} = .71$. Construct validity was assessed through Average Variance Extracted (AVE), and all factors presented values slightly below the reference values ($\leq .50$): $AVE_{\text{Mistrust Thoughts}} = .36$; $AVE_{\text{Persecutory Ideas}} = .44$ and $AVE_{\text{Self-depreciation}} = .38$ (Fornell & Larcker, 1981).

Scores on the dimensions obtained from CFA analysis were calculated for the total sample ($N = 906$). The highest scores were observed in Mistrust Thoughts ($M = 2.59$, $SD = .65$), followed by Persecutory Ideas ($M = 2.15$, $SD = .66$) and Self-Depreciation ($M = 1.90$, $SD = .68$). Correlations between the three factors were moderate or strong: Mistrust Thoughts and Persecutory Ideas $r = .73$ ($p = .00$); Persecutory Ideas and Self-Depreciation $r = .64$ ($p = .00$); Mistrust Thoughts and Self-depreciation $r = .54$ ($p = .00$).

Reliability analysis based on Cronbach's alpha was calculated for each factor in the final three factor model was: Mistrust Thoughts, $\alpha = .82$; Persecutory Ideas, $\alpha = .86$; and Self-depreciation, $\alpha = .71$. All values are either good or very good reliability.

Logistic Regression

A Forward Logistic Regression (LR) was calculated and Table 4 summarizes the logistic regression coefficients and their significance in the model. Results indicated that the Mistrust Thoughts factor did not present a statistically significant effect over the probability Logit of the general population to manifest paranoid ideation ($b_{\text{Mistrust Thoughts}} = -.71$; $\chi^2_{\text{Wald}}(1) = 3.28$; $p = .07$; OR = .49). However, Persecutory Ideas ($b_{\text{Persecutory Ideas}} = .95$; $\chi^2_{\text{Wald}}(1) = 6.76$; $p = .01$; OR = 2.58) and Self-depreciation ($b_{\text{Self Depreciation}} = 1.02$; $\chi^2_{\text{Wald}}(1) = 12.42$; $p = .00$; OR = 2.76) presented statistically significant effects, according to the Logit adjusted model ($G^2(3) = 48.16$; $p < .00$; $\chi^2_{\text{HL}}(8) = 10.77$; $p = .22$; $R^2_{\text{CS}} = .23$; $R^2_{\text{N}} = .31$).

(**Insert Table 4 about here**)

With the Forward:LR method, a statistically significant model was adjusted, ($G^2(2) = 44.71$; $p < .00$; $\beta^2_{\text{HL}}(8) = 10.97$; $p = .20$; $R^2_{\text{CS}} = .22$; $R^2_{\text{N}} = .29$), including the factors Persecutory Ideas ($b_{\text{Persecutory Ideas}} = .51$; $\chi^2_{\text{Wald}}(1) = 3.78$; $p = .05$; OR = 1.67) and Self-depreciation ($b_{\text{Self Depreciation}} = .96$; $\chi^2_{\text{Wald}}(1) = 11.54$; $p = .00$; OR = 2.61). According to this model, higher frequencies of persecutory ideas and self-depreciation exponentially increases the probability of individuals presenting psychopathology in 66.5% and 160.7% respectively

The adjusted LR model was also used to classify the subjects in this study (clinical and healthy participants), with the correct classification of 69.8%. The adjusted model also presents a high sensitivity (69.2%) and specificity (70.3%). In contrast, the one-dimensional model presents 67.6% of correct classification, 71.4% of sensitivity and 63.7% of specificity. Despite higher sensitivity value in unidimensional model, in general, values of three dimensional model indicate increased utility to identify and sort the two populations.

Group comparisons of GPS scores in clinical and non-clinical samples

The mean scores of the two subsamples (clinical and non-clinical groups) in the three factors of GPS were compared and are shown in Table 5.

(**Insert Table 5 about here**)

Statistically significant differences were found between the means of the non-clinical and clinical samples on the three factors: Mistrust Feelings ($t_{(180)} = -3.12; p = .00$), Persecutory ideas ($t_{(180)} = -5.78; p = .000$), Self-deprecation ($t_{(180)} = -6.87; p = .00$) and the total score of the GPS ($t_{(180)} = -5.76; p = .00$). The mean scores of the participants in the clinical sample are significantly higher than those of the participants from the non-clinical sample, and demonstrates that not only both populations endorse the different aspects of paranoid ideation, but also the discriminant ability of the latent factors of GPS.

Discussion

According to current literature, paranoid ideation is a social and cognitive process that allows individuals to defend against perceived social threats (Barreto Carvalho et al., 2014a; Combs et al., 2006; Ellet et al., 2003; Fenigstein & Vanable, 1992; Freeman et al., 2005; Gilbert, 1998, 2001; Gilbert et al., 2005; Yung et al., 2009). Due to this function, paranoid ideation can be closely tied to the different social roles and positions in the social rank that individuals occupy (Gilbert, 2001, 2010).

The current study focused on the refinement of the general paranoia model proposed by Fenigstein & Vanable (1992), presenting a three-factor model that was confirmed in the Portuguese adult population similarly to the studies of the GPS in Portuguese youths (Barreto Carvalho et al., 2014b). From the results obtained in this study, it was possible to verify that the GPS presents good internal consistency in the Portuguese adult population, similar to the studies in adults by Fenigstein & Vanable (1992). However, in the current study, the three-factor model presented a better model fit, and provided a more robust way to assess paranoid ideation, and also to understand paranoid ideation in non-clinical samples. Each factor presented good reliability within the model, indicating the discriminant validity of the factors in the model and overall fit indices show that the three-factor model is the more adjusted in the GPS structural analysis than the original one-dimensional structure. The correlations between them may have determined the lower AVE scores, indicating that the variance of some items may be shared with other items in a different factor. Nevertheless, the nested model comparison attested the model invariance all levels of analysis and results from the LR provided further evidence that the alternative model has more specificity and sensitivity in distinguishing clinical and non-clinical samples. The alternative model showed a

higher percentage of correctly identified cases (69.8%) than the one-dimensional model (67.6%), thus being more useful in distinguishing both samples.

Results allowed to demonstrate that paranoid ideation in the general population is not a one-dimensional construct. In addition to presenting a three-factor structure identical to the latent structure found in younger samples, the emergence of the three latent dimensions (Mistrust Thoughts, Persecutory Ideas and Self-depreciation) can possibly reflect the hierarchy of paranoid ideation similar to the proposals by Freeman et al., (2005), that can range from more normative suspicions towards others (Mistrust Thoughts, the less discriminant factor), to the attribution of malevolence and persecutory intents in others (Persecutory Ideas factor).

As for the frequencies endorsed in each dimension, the clinical and non-clinical samples presented significant differences and, as expected, the clinical group scored higher on the three factors. Moreover, the clinical group scored higher on more severe manifestation of paranoid ideation (persecutory ideas), a type of ideation placed higher on the hierarchy defined by Freeman et al. (2005). Thoughts about social evaluation were the most frequently endorsed type in the general population (Mistrust feelings), which is located in a lower rank in that hierarchy (Freeman et al., 2005) and of less clinical significance. This seems to suggest that this is a more adaptive and normative aspect of paranoia, as different authors sustain that a certain level of mistrust is a normative phenomenon, and being more cautious about others, particularly unknown individuals who do not belong to their social group, may be an adaptive strategy in certain situations (Freeman et al., 2005; Gilbert, 2001). This result also reflects that the fears and preoccupations about social evaluation (e.g. feeling vulnerable, beliefs about the world being a threatening or dangerous place) are also in consonance to the hierarchy defined by Freeman and colleagues (2005), in which these thought processes

are more common and adaptive (Barreto Carvalho et al., 2014a; Freeman et al., 2005). Because humans have developed defense mechanisms to detect social threats, looking up to them and perceiving them as standing in a higher social rank may also lead to perception of others as more dominant, superior, dangerous or as competitors (“top dog” vs. “underdog”), and their behaviors to be read as threatening. This may elicit the more common forms mistrust toward others and their behaviors (Gilbert, 2010). Thus, this factor has emerged as the more general and a less distinctive feature of paranoid ideation between the clinical and the non-clinical group. It is noteworthy that these types of thoughts do not necessarily imply a problem of clinical relevance, as the clinical relevance derives from the degree of irrationality and excess with which these thoughts occur (Freeman et al., 2005), and the extent to which the defense mechanisms are overactive and trigger inflexible interpersonal strategies in different contexts (Gilbert, 2001).

Interestingly, the self-deprecation dimension is congruous to the conceptualizations on “bad-me” paranoia as defined Trower & Chadwick (1995) and has an important predictive role in the manifestations of paranoid ideations. A negative view of the self is frequently found as underlying several types of psychiatric problems and dysfunctional behaviors. In the specific case of paranoia, a negative view of the self may lead individuals to feel more vulnerable and to accept threats from others as punishment, thus increasing the probability of presenting more rigid or delusional forms of paranoid thoughts (Fenigstein & Vanable, 1992; Trower & Chadwick, 1995). More often than not, individuals with negative view of themselves who grew in abusive environments and experienced more threats in close relationships are not only more prone to perceive threats, as they may position themselves in a lower position in the social rank, lacking self-reliance to respond or defy others (Dixon, 1998; Gilbert, 1993, 1998). Thus, the

perception of others as more dominant, attractive or powerful help maintaining self-depreciative thoughts and representations, may further increase the frequencies and risks of paranoid ideation (Dixon, 1998; Gilbert, 1998, 2001; Gilbert et al., 2005).

Persecutory ideas and self-deprecation have allowed a better discrimination of both samples in the current study, and results also suggested that these aspects represent increased risks to the manifestation of clinical paranoia.

Persecutory ideas are related to self-reference (e.g. “people are talking about me”, “I am being observed”) and occupy a higher position in the proposition by Freeman et al.

(2005), as they relate to hostile critic from others, beliefs about others having a negative view of the self or beliefs of being persecuted, and external influence (Freeman et al., 2002). This also represents a subclinical type of paranoid ideation as defined by Fenigstein & Venable (1992), and are less pervasive in the general population.

According to Dixon (1998), Gilbert (1998, 2001) and Wakefield (1999) these ideation may increase individual’s hostility and perceptions of threats from others and have increased clinical relevance. Frequent of thoughts of being persecuted by others may originate less adaptive interpersonal strategies, and ultimately disrupt social relationships and the pursue of social goals and resources (Barreto Carvalho et al., 2014a; Fenigstein & Venable, 1992; Freeman et al., 2005; Gilbert, 1998, 2001).

As stated earlier, it is the nature and content of paranoid ideation and their frequencies, rather than its mere presence, that constitute the most distinctive aspect of paranoid ideation. The results of the current study have shown the discriminant validity of the scale, particularly the persecutory ideas and self-deprecation dimensions, despite paranoia being present across the population continuum extending from healthy to psychopathological functioning (Barreto Carvalho et al., 2014a; Ellet et al., 2003;

Esterberg & Compton, 2009; Freeman et al., 2002, 2005, 2010; van Os et al., 2000; Verdoux & van Os, 2002; Yung et al., 2009).

Overall, the current study has presented a refinement of the underlying model of the GPS, which has also allowed the assessment of associated risk to different aspects of paranoid ideations in the general population (Fenigstein & Vanable, 1992). These results shed new light for the possible refinements of the construct of paranoia and a possible unification of the several existing conceptualizations within the evolutionary psychology framework.

The current study is not free from limitations. In the current study, AVE values were slightly below desired reference values to assure convergence within their parent factor. The generalization of results should be done carefully because this study was carried out on a convenience sample. In addition, the clinical sample presented differences in important sociodemographical differences (socioeconomic status), possibly due to limitations imposed by their psychiatric problems, and the possible effects these or other variables may have in the results of sample comparisons are unknown. Future studies should aim to clarify this issue.

Moreover, future directions in research should focus on the characterization and study predictive and mediational mechanisms of paranoid ideation in adult life (e.g. adverse rearing experiences, such as shaming, submission and parental hostility, abuse or neglect during childhood) in each dimension of paranoid ideation, and their associations or increased risk for the development of psychopathology or other dysfunctional behavioral manifestations.

Conclusion

This study is an important contribute to the understanding of paranoia in the general population and across the lifespan, refining the construct by encompassing three distinct dimensions. These dimensions were shown to be relevant not only in the distinction of clinical and non-clinical populations and the risk assessment of clinical manifestations of paranoid ideation, but also showing a continuity of the paranoid thoughts and experiences in a developmental continuum. Current results point out to future directions in clinical practice and research aiming at the comprehension of the underlying mechanisms and processes of paranoid ideation in the adult population.

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Tables

Table 1: Sample Characteristics

	Total sample (N=906)	General Population (n=91)	Clinical Population (n=91)		
	N (%)	N (%)	N (%)	χ^2	<i>p</i>
Male	553 (61%)	55 (60.4%)	44 (48.4%)	2.68	.10
Female	353 (39%)	36 (39.6%)	47 (51.6%)		
Marital Status					
Single	327 (36.1%)	30 (33%)	55 (60.4%)	28.52	.00
Married	443 (48.9%)	49 (53.8%)	21 (23.1%)		
Divorced	61 (6.7%)	5 (5.5%)	1 (1.1%)		
Widower	62 (6.8%)	6 (6.6%)	9 (9.9%)		
Living together	13 (1.4%)	1 (1.1%)	5 (5.5%)		
Socio-Economic Status (SES)					
Low	110 (12.1%)	4 (4.4%)	73 (80.2%)	112.23	.00
Medium	774 (85.5%)	84 (92.3%)	18 (19.8%)		
High	17 (1.9%)	3 (3.3%)	0		
Student	5 (.6%)	0	0		
Years of Education					
Did not attend to school	4 (.4%)	0	3 (3.3%)	76.52	.00
9 to 12 (middle and high school)	450 (49.7%)	49 (53.8%)	20 (22%)		

12 or more (Higher education)	233 (25.7%)	27 (29.7%)	2 (2.2%)		
	M (SD)	M (SD)	M (SD)	<i>t</i>	<i>p</i>
Age (Years)	37.22 (11.39)	38.16 (12.21)	43.73 (12.56)	-3.01	.00

Table 2: Three-dimensional Model versus Unidimensional Model

Three dimensional Model	Items on the Paranoia Scale	Unidimensional Model
Distrust Feelings	<p>#4 “Some people have tried to steal my ideas and take credit for them.”</p> <p>#8 “Most people will use somewhat unfair means to gain profit or an advantage, rather than lose it.”</p> <p>#9 “I often wonder what hidden reason another person may have for doing something nice for you.”</p> <p>#10 “It is safer to trust no one.”</p> <p>#12 “Most people make friends because friends are likely to be useful to them.”</p> <p>#15 “Most people inwardly dislike putting themselves out to help other people.”</p> <p>#16 “I tend to be on my guard with people who are somewhat more friendly than I expected.”</p> <p>#20 “I have often found people jealous of my good ideas just because they had not thought of them first”.</p>	General Paranoia
Persecutory Ideas	<p>#1 “Someone has it in for me”.</p> <p>#2 “I sometimes feel as if I'm being followed”.</p> <p>#11 “I have often felt that strangers were looking at me Critically”.</p> <p>#13 “Someone has been trying to influence my mind”.</p> <p>#14 “I am sure I have been talked about behind my back”.</p> <p>#17 “People have said insulting and unkind things about me”.</p> <p>#18 “People often disappoint me”.</p> <p>#19 “I am bothered by people outside, in cars, in stores, etc. watching me.”</p>	
Self-Depreciation	<p>#3 “I believe that I have often been punished without cause.”</p> <p>#5 “My parents and family find more fault with me than</p>	

they should.”

#6 “No one really cares much what happens to you.”

#7 “I am sure I get a raw deal from life.”

Table 3. Chi-square values (with degrees of freedom), goodness-of-fit indices, and change in Chi-square and CFI values for measurement invariance models

Model	χ^2	<i>df</i>	<i>p</i>	$\Delta\chi^2$	<i>p</i>	RMSEA	CFI	Δ CFI
Unconstrained (invariant)	1059.52	324	.00			.050	.894	–
Configural Invariance	1072.97	341	.00	13.45	.705	.049	.894	–
Metric Invariance	1090.21	361	.00	30.69	.758	.047	.895	-.001
Scalar Invariance	1095.11	367	.00	35.60	.781	.047	.895	-.001
Invariant Uniqueness	1114.41	387	.00	54.89	.757	.046	.895	-.001

Table 4: *Logit* coefficients of the regression model including Mistrust Feelings, Persecutory Ideas and Self-depreciation

Factor	B	S.E.	χ^2_{Wald}	df	p	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Mistrust Thoughts	-.71	.39	3.28	1	.07	.49	.23	1.06
Persecutory Ideas	.95	.37	6.76	1	.01	2.58	1.26	5.28
Self Depreciation	1.01	.29	12.42	1	.00	2.76	1.57	4.86
Constant	-2.58	.69	13.79	1	.00	.08		

Table 5: Independent sample t-test of the three dimensions of the GPS

Variables	Non-Clinical sample	Clinical sample	<i>t</i>	<i>p</i>
	(n=91)	(n=91)		
	M (SD)	M (SD)		
Mistrust Thoughts	2.46 (.51)	2.79 (.86)	-3.12	.00
Persecutory Ideas	2.07 (.49)	2.76 (1.03)	-5.78	.00
Self Depreciation	1.78 (.59)	2.58 (.95)	-6.87	.00
GPS Total	43.38 (8.83)	54.74 (16.59)	-5.76	.00