Experiential avoidance mediates the association between paranoid ideation and depressive symptoms in a sample from the general population

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Highlights

• The mechanisms underlying the association between paranoid ideation and negative outcomes remain unclear.

• Experiential avoidance is a transdiagnostic mechanism whose relationship with paranoid ideation in nonclinical samples has not been tested.

• Experiential avoidance partially mediates the associations between paranoid ideation and stress and anxiety symptoms.

• Experiential avoidance fully mediates the association between paranoid ideation and depressive symptoms.

• Bidirectional associations between PI and symptomatology are plausible and require further research

Abstract

Psychotic experiences are prevalent in the general population and are associated with negative outcomes, including depressive symptoms. The mechanisms underlying this relationship remain unclear, but new insights could be obtained by exploring the role of transdiagnostic processes such as experiential avoidance, defined as a person's attempts or desires to suppress unwanted internal experiences like thoughts, emotions, memories, or bodily sensations. Studies analyzing the link between negative emotional states and psychotic experiences are scant. We explored the association between a specific kind of psychotic experience (paranoid ideation), experiential avoidance, and depressive, anxiety, and stress symptoms in a sample from the general population. We found that experiential avoidance partially mediates the associations between paranoid ideation and stress and anxiety symptoms and that it fully mediates the association between paranoid ideation and depressive symptoms. Our results suggest that the presence of paranoid ideation and the usage of experiential avoidance to cope with it are vulnerability factors associated with psychological distress.

Keywords: Psychotic experiences, paranoid ideation, experiential avoidance, depressive symptoms, mediation analysis.

1. Introduction

It is well known that psychotic experiences (PEs) are prevalent in the general population and are associated with several negative outcomes, including greater use of mental health services (Bhavsar et al., 2014), poor functioning (Maijer et al., 2019), depressive and anxiety symptoms (Oh et al., 2019; Deng et al., 2020), and stress sensitivity (Devylder et al., 2016). The underlying mechanisms that explain the associations between PEs and these psychiatric symptoms remain unclear (McGrath et al., 2016), but it is currently accepted that negative emotional states (NES) play a prominent role (Kimhy et al., 2020). For instance, PEs co-occur with depressive symptoms (DS) (Fusar-Poli et al., 2013; Heinze et al., 2018; Krabbendam et al., 2004; Varghese et al., 2011), which may contribute to the maintenance of psychotic symptoms such as paranoia. However, the evidence about the links between PE and DS is controversial. Whereas Wigman et al. (2011) reported that one does not predict change in the other, the longitudinal study by Sullivan et al. (2014) showed that PE at age 12 were associated with depressive symptoms at age 18. Moreover, bidirectional associations have been previously reported (McGrath et al., 2016; Moritz et al., 2016, Zavos et al., 2016). Moreover, anxiety has been posited as a crucial dimension in the psychosis continuum, acting as a mediator between PEs and social functioning in the general population (Deng et al., 2020). Likewise, stress symptoms –mainly those related to paranoid and threatening appraisals– have been shown to be associated with PEs (Peters et al., 2017). As stated by Collip et al. (2013), the role of specific underlying processes that might explain the observed associations with specific PEs is a relevant unresolved issue. Therefore, new insights could be gained by examining the unknown influence of processes not truly understood and scantily explored (Sullivan et al., 2014), like emotional difficulties (Kimhy et al., 2020) and cognitive processes (McCleery et al., 2019), recognized as core features of psychotic spectrum disorders.

One of the processes that probably influences how people cope with distressing PEs is experiential avoidance (EA), defined as a person's attempts or desires to suppress unwanted internal experiences (thoughts, emotions, memories, or bodily sensations), even when this leads to actions that are inconsistent with personal values and goals (Hayes et al., 1996; Hayes et al., 2004). EA is a key component of contextual behavior approaches such Acceptance and Commitment Therapy (ACT). Specifically, EA is conceptualized as a transdiagnostic process involved in the development and maintenance of a number of mental disorders such depression and anxiety (Mellick., et al 2019) and psychopathological-related processes not only in clinical samples, but also in the general population) (Brereton et al.2020; Kashdan et al., 2006), where psychiatric symptoms and subclinical manifestations are common (Smith et al., 2018). Despite its relevance as a pathological process involved in several mental disorders (Fernández-Rodríguez et al., 2018; Spinhoven et al., 2014), studies analyzing its relationships with psychotic symptoms are still scarce (Yıldız, 2020). Goldstone et al. (2011) reported significant associations between EA and delusions and delusional distress in both non-clinical individuals and paranoid patients, while Udachina et al. (2014) found that this association could be mediated by self-esteem in adult paranoid patients. Recently, Sedighi et al. (2019) observed associations between EA and positive, negative, and general psychotic symptoms assessed by the PANSS in adult schizophrenia patients, suggesting that EA might predict a broad array of psychotic symptoms in these subjects. To the best of our knowledge, only Langer

47 et al. (2011) have examined the relationships between PEs and EA in the general
48 population. In a sample of university students, these authors found that the variables that
49 best predict the predisposition to auditory hallucinations were depression and experiential
50 avoidance. However, the variance explained by the regression model was low, suggesting
51 that other mechanisms could also be important in this association. Under the general
52 framework of the extended psychosis phenotype (van Os & Linscott, 2012), analyzing PEs
53 in non-clinical samples and examining their associations with transdiagnostic factors is
54 strongly encouraged nowadays (DeRosse & Karlsgodt, 2015; Unterrasner et al., 2018).
55 Given the evidence suggesting bidirectional influences between PEs and DS (McGrath et
56 al., 2016), that DS might not clearly predict PEs (Moritz et al., 2016; Sullivan et al., 2014),
57 and the low certainty about the mechanisms underlying the associations between PEs and
58 DS, anxiety (AS), and stress symptoms (SS), we explored the relationships between PEs
59 and these symptoms in a sample from the general population. Supported by findings
60 revealing associations between EA and paranoid symptoms in both clinical and nonclinical
61 samples (Udachina et al., 2009; 2014a) and between negative affect and experiences of
62 paranoia (Kramer et al., 2014), as well as by evidence showing that suspiciousness
63 phenomena could reflect a higher vulnerability to certain specific psychosis manifestations
64 (negative symptoms) (Unterrasner et al., 2017; 2018), we hypothesized that the associations
65 between paranoid ideation (PI) and DS, AS, and SS are mediated by EA and that this
66 mediation effect will be meaningful when PI is used as the independent variable. Because
67 recent evidence shows that both sex and age differentially impact on psychotic symptoms
68 in the general population (Schultze-Lutter et al., 2020), we did control for their possible
69 effect.
70
71 **2. Method**
72
73 **2.1. Participants**
74
75 The participants were 302 volunteers (182 women) of legal age (mean= 36.96 years old,
76 standard deviation= 15.50; range= 18 - 89) from the city of Valdivia, Chile. All the
77 volunteers had no previous psychiatric diagnosis, were not receiving drug treatment, and
78 were not visually impaired. The participants were mostly from community groups and the
79 Universidad Austral de Chile. Convenience sampling was used.
80
81 **2.2. Instruments**
82
83 The participants' mental health was evaluated using the Depression, Anxiety and Stress
84 scale (DASS-21; Lovibond and Lovibond, 1995). In this study, we used the Chilean
85 validation (Antúnez & Vinet, 2012), whose reliability is adequate (Cronbach's α = .91).
86 This scale is made up of twenty-one items assessing symptoms of depression (7 items),
87 anxiety (7 items), and stress (7 items). Responses are recorded on a scale ranging from 0
88 ("*It didn't happen to me*") to 3 ("*It happened to me a lot, or most of the time*"). In the
89 present sample, the reliability of the DASS-21 total scores was estimated to be satisfactory
90 (Cronbach's α = .92; McDonald's ω= .92). On a per-dimension basis, the internal
91 consistencies were α = .83 and ω = .84 for stress scores, α= .80 and ω= .81 for anxiety
92 scores, and α= .84 and ω= .84 for depression scores.
93

94   To evaluate experiential avoidance, we administered the Acceptance and Action
95   Questionnaire-II (AAQ-II; Bond et al., 2011), a widely used instrument for assessing EA.
96   This is a 7-item self-administered scale with 7-point Likert-type response options from 1
97   (never) to 7 (always). A higher AAQ-II total score indicates a higher level of experiential
98   avoidance. The AAQ-II has shown a unifactorial internal structure (Bond et al., 2011) and
99   has been adapted to different cultural contexts and populations with satisfactory results (e.g.
100   Turkey, Yavuz et al., 2017; China, Zhang et al., 2014; Malaysia, Shari et al., 2019; Serbia,
101   Žuljević et al., 2020; Greece, Karekla & Michaelides, 2017). Also, even though experiential
102   avoidance is considered a cognitive/verbal process, the AAQ-II has shown factorial
103   invariance among non-clinical populations from six European countries with different
104   languages (Monestès et al., 2018). In this study, the scores of the Spanish version of the
105   AAQ-II (Ruiz et al., 2013), as estimated through Cronbach's alpha coefficient and the
106   Omega coefficient, were found to be adequately reliable ($\alpha = .84$; $\omega = .84$).
107
108   To assess paranoid ideation, we used a subscale of the Community Assessment of Psychic
109   Experiences-Positive Scale (CAPE-P15; Capra et al., 2013). This is a 15-item self-report
110   questionnaire addressing paranoid ideation (PI; 5 items), bizarre experiences (BE; 7 items),
111   and perceptual anomalies (PA; 3 items). Responses to items range from 1 (*never*) to 4
112   (*almost always*). CAPE total scores and subscale scores have shown good internal
113   consistency in adolescents from Chile (McDonald's $\omega= 0.91$, PI$= 0.77$, BE$= 0.83$, and PA$=$
114   0.88; Núñez et al., 2015). In our sample, the internal consistency of the CAPE-15 total
115   scores was satisfactory ($\alpha = .84$; $\omega=.84$), while the internal consistency of the PI subscale
116   scores was acceptable ($\alpha= .68$; $\omega=.69$).
117

2.3. Procedure

119
120   The questionnaire was administered in person in both university and community settings by
121   members of the research group. Respondents had approximately fifteen minutes to answer
122   the questionnaires. All subjects gave their informed consent and the research protocol was
123   approved by the Ethics Committee of the Universidad Austral de Chile.
124

2.4. Statistical analyses

126
127   First, we determined descriptive statistics and calculated bivariate correlations among the
128   variables. No missing data were present. Thereafter, to test the main hypothesis, we
129   computed a mediation model. The independent variable of the model was paranoid
130   ideation, the mediating variable was experiential avoidance, and the dependent variables
131   were stress, anxiety, and depression. Age and gender were used as covariates. The
132   mediation model was run using a maximum likelihood estimator. Bootstrap estimates were
133   based on 5,000 bootstrap samples. The confidence intervals were calculated through the
134   bias-corrected confidence estimates at a 95% confidence level (Biesanz, Falk, & Savalei ,
135   2010; Preacher & Hayes, 2008). This method provides an estimate (i.e. the mean of all
136   resamples) and a confidence interval for each of the indirect effects. If the interval does not
137   comprise a value of 0, it can be said that there is a significant mediating effect. All analyses
138   were performed with JASP (Version 0.14; JASP Team, 2020).
139
140

3. Results

3.1. Descriptive and correlational analyses

Descriptive statistics show relatively low mean total scores for all variables. Likewise, the correlations between all study variables were positive, moderate-strong, and statistically significant ($p < .001$) (Table 1).

3.2. The mediating effect of experiential avoidance

As shown in Table 2, significant total indirect effects were observed (as confidence intervals did not contain a zero) for stress, anxiety, and depression. Regarding the direct effects, experiential avoidance partially mediated the paranoid ideation-stress and paranoid ideation-anxiety relationships. In the case of depression, the mediation of experiential avoidance is complete. The mediation model with covariates explained about 32% of the total variation in stress, 22% of the total variation in anxiety, and 31% of total variation in depression. The path coefficients of direct and indirect effects are depicted in Figure 1.

4. Discussion

We examined the associations between paranoid ideation, experiential avoidance, and psychiatric symptoms in subjects from the general population. We found that these three phenomena are correlated. Based on prior evidence that PE seems to longitudinally predict DS (Sullivan et al., 2014), and the inconclusive evidence on the association between PI and DS (Moritz et al., 2016), we explored the mediating role of EA, with PI being the predictor and depressive, anxiety, and stress symptoms being the outcome variables. We found that EA fully mediates the association between PI and DS and partially mediates the association between PI and AS and SS. Overall, this finding supports prior research showing that PEs could play a role as predictors of psychopathology in child (Downs et al., 2013), adolescent (Lindgren et al., 2019), and young cohorts (Heinze et al., 2018), with mood and anxiety disorders being among the most relevant predicted disorders (McGrath et al., 2016). Moreover, our findings are consistent with the work of Isaksson et al. (2020), who observed that PEs, even when after controlling for baseline psychiatric symptoms, predicted internalizing symptoms (depression and anxiety) three years later in adolescents from the general population. Our results do not run counter to Freeman and Garety's model, which outlines a path from depression to paranoia (Freeman and Garety, 2014); rather, they show that the opposite direction could also be also feasible, as observed in both general (Moritz et al., 2016) and clinical populations (Moritz et al., 2019).

Our findings suggest that the higher the usage of avoidance to cope with PI, the higher the likelihood of depressive, anxiety, and stress symptoms. This is relevant because it shows that it is not only the presence of the symptom which makes PI a psychopathological experience per se; indeed, the way in which a person copes with PI may be linked to his/her symptoms. In this regard, strategies based on avoidance and rejection of the experience may constitute a mechanism that helps to transform it into a stressful inner event. These

187 results are novel, complicating direct comparisons with prior research. However, similar
188 results were obtained by Varese et al. (2016) who, in a sample of voice-hearers, found that
189 the appraisals of voices and experiential avoidance were predictive of voice-related distress.
190 Moreover, Castilho et al. (2017) described that the impact of attachment anxiety on
191 paranoia was mediated by EA in a sample of patients with a psychosis-spectrum diagnosis.
192 Additionally, Moritz et al. (2019), in a sample of schizophrenia patients, observed a path
193 from paranoia to depression, arguing that the former could interfere with the patients'
194 functioning, leading to depressive symptoms through feelings of shame and entrapment and
195 lower perceived social status.
196
197 This study has some limitations. First, because of the cross-sectional design adopted, we
198 cannot establish causal relationships among variables. Second, we used a convenience
199 sampling method, which means that representativeness is not fully guaranteed. Third,
200 although the measurement scales are designed for general and subclinical populations, the
201 variables may have presented some variability restriction in their lower range (i.e. floor
202 effect), which could limit statistical power. Fourth, despite finding that experiential
203 avoidance fully mediates the relationship between paranoid ideation and depression, we
204 advise caution in the interpretation of this result since some specific circumstances of our
205 study, such as its modest sample size and the absence of other uncontrolled variables in the
206 model, could have played a role. In addition, although our work was based on the premise
207 that PEs are prevalent in the general population, it has been found that hallucinations may
208 not be exactly the same experience referred to by clinical and nonclinical populations
209 (Cangas, Langer, & Moriana, 2011); thus, cautious interpretations must be considered at
210 the moment to generalize these results to patients with psychosis. Moreover, we did not
211 include other transdiagnostic variables probably operating as additional underlying
212 mechanisms (e.g. emotion regulation, rumination, entrapment, social isolation). Finally, we
213 did not assess contextual factors such as attachment styles (Castilho et al., 2017) and
214 trauma-related life events strongly associated with PEs (Pan et al., 2018). Given their
215 relevance as factors potentially explaining specific psychopathological trajectories
216 associated with PEs, further research informed by more complex models is needed.
217 Additionally, due to the still scant evidence on the longitudinal covariation between PE and
218 DS, analyzing these associations and exploring underlying mechanisms is required.
219
220 In summary, we found that EA partially mediates the associations between PI and stress
221 and anxiety symptoms and fully mediates the association between PI and DS. This suggests
222 that the presence of PI and the usage of EA to cope with it are vulnerability factors
223 associated with psychological distress. Thus, interventions based on mindfulness and
224 acceptance may help nonclinical individuals to face distressing PI, reducing its association
225 with symptomatology, especially depression, and ultimately promoting good mental health.
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Figure 1

Figure legends

Figure 1. Test of direct and indirect effects (path coefficients) for experiential avoidance in the associations between paranoid ideation and the three subscales of the DASS (i.e., stress, anxiety, and depression).
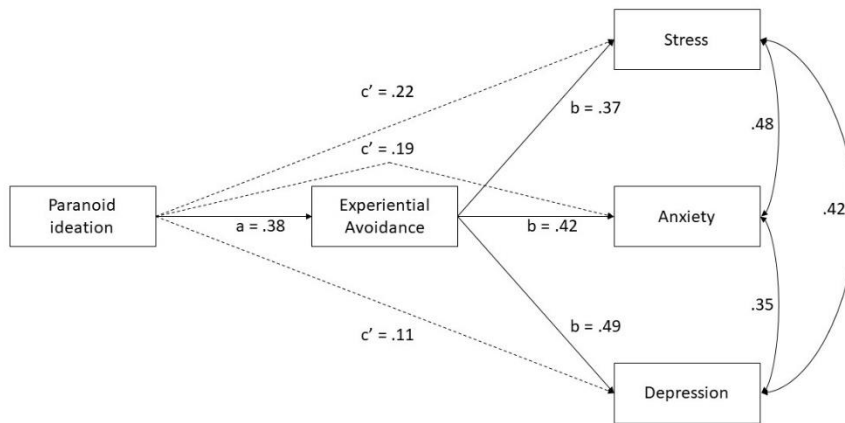
Figure 1.

Table 1. **Descriptive statistics and bivariate correlations**

Variables	1	2	3	4	5	*M*	*SD*	*Skewness*	*Kurtosis*	*Min*	*Max*
1. **Paranoid ideation**	-	.39*	.40*	.33*	.32*	8.70	2.37	1.40	3.12	5 (5)	20 (20)
2. **Experiential Avoidance**		-	.51*	.44*	.54*	17.56	8.89	0.73	-0.26	7 (7)	46 (49)
3. **Stress**			-	.74*	.66*	5.57	4.39	0.88	0.36	0 (0)	19 (20)
4. **Anxiety**				-	.67*	3.41	3.80	1.60	2.44	0 (0)	20 (20)
5. **Depression**					-	3.34	3.98	1.87	3.31	0 (0)	19 (20)

Note: M = mean; *SD* = Standard Deviation; *Min* = Minimum*; Max* = Maximum (in parentheses the minimum and maximum value that the total score of the scale can reach); * = *p* ≤ .001

Table 2

Table 2. **Parameter estimates of the mediation model**

Direct effects

		Path regression coefficient	Std. error	z-value	p	95% Confidence Interval	
						Lower	Upper
Paranoid ideation -->	Stress	0.41	0.10	4.13	< .001	0.170	0.645
Paranoid ideation -->	Anxiety	0.31	0.09	3.44	< .001	0.103	0.540
Paranoid ideation-->	Depression	0.19	0.09	2.13	.033	-0.032	0.414

Indirect effects

			Path regression coefficient	Std. error	z-value	p	95% Confidence Interval	
							Lower	Upper
Paranoid ideation -->	Experiential Avoidance -->	Stress	0.29	0.06	5.23	< .001	0.185	0.427
Paranoid ideation -->	Experiential Avoidance -->	Anxiety	0.22	0.05	4.79	< .001	0.128	0.345
Paranoid ideation -->	Experiential Avoidance-->	Depression	0.31	0.06	5.57	< .001	0.204	0.439

Total effects

		Path regression coefficient	Std. error	z-value	p	95% Confidence Interval	
						Lower	Upper
Paranoid ideation -->	Stress	0.70	0.10	6.92	< .001	0.472	0.918
Paranoid ideation -->	Anxiety	0.53	0.09	5.94	< .001	0.336	0.760

Paranoid ideation --> Depression	0.50	0.09	5.31	< .001	0.285	0.710

Declarations of interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Data availability statement: The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation (available on request).