Journal of Psychiatric Research 146 (2022) 135–148

Contents lists available at ScienceDirect

Journal of Psychiatric Research

journal homepage: www.elsevier.com/locate/jpsychires

Impact of conspiracist ideation and psychotic-like experiences in patients with schizophrenia during the COVID-19 crisis

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ARTICLE INFO

Keywords:
Conspiracist ideation
Psychotic-like experiences
Schizotypy
Schizophrenia
COVID-19
SARS-CoV-2

ABSTRACT

Conspiratorial belief is a type of argument that accepts implausible explanations in situations of great uncertainty or mystery. Claiming that the coronavirus is an artificial fabrication of laboratories is an example of conspiracist belief. The aim of this research was to analyze the impact of conspiracist ideation and psychotic-like experiences in patients with schizophrenia, patients with other mental disorders, and participants with no psychiatric history with a 132-day follow-up during the COVID-19 crisis. Analysis of variance (ANOVA) was applied and Bayesian inferences were carried out. The results conclude that conspiracist ideation and psychotic-like experiences increased significantly after 132 days of social-health restrictions in the general population. However, psychotic-like experiences did not increase in patients with schizophrenia. Conspiracist ideation has a quantitative degradation similar to the continuum model of psychosis; it is present both in patients with schizophrenia and in those participants with no clinical history. The psychopathological value of conspiracist ideation within the spectrum of psychosis is discussed.

Conspiracy theory beliefs consist of the acceptance of unnecessary and improbable assumptions in the face of other more plausible explanations (Aaronovitch, 2009). A current example of conspiracy theory is the claim that the coronavirus was intentionally created and released by pharmaceutical laboratories (e.g., Escolà-Gascón et al., 2020a; Escolà-Gascón, 2021). There are many conspiracy theories, and some of them are related to behaviors and decisions that put people's health at risk (Brotherton et al., 2013; Jolley and Douglas, 2014), a leading example being the denial of the existence of the AIDS virus, which has led to many people not adopting the necessary prophylactic measures to prevent HIV transmission (Bogart et al., 2010; Ojikutu et al., 2020). The same is true for theories denying the efficacy of vaccines, which encouraged many people to decide not to adhere to vaccination programs against COVID-19 (Escolà-Gascón et al., 2021; Kata, 2010; Offit, 2011). In fact, conspiracy theories are related to pseudoscientific beliefs because they take scientifically unproven facts as truth (see Shermer, 2011; Fasce and Picó, 2018).

Beliefs in conspiracy theories are related to a number of individual differences, which appear stable in healthy subjects and characterize conspiracist ideation (Swami et al., 2010, 2011, 2013; Swami and Furnham, 2012; Swami, 2012; Kay, 2021). From a psychological perspective, these individual differences are characterized by the presence of anxiety, stress, cognitive biases, and a tendency to experience new emotions (openness to experience) (Brotherton and French, 2014; Swami et al., 2016; Cichocka et al., 2015). At the psychiatric level, subclinical symptoms associated with paranoid and schizotypal personality traits predominate (Darwin et al., 2011; Barron et al., 2014; Dagnall et al., 2015; Dyrendal et al., 2021). Along these lines, there are also studies linking conspiracy theories to psychotic-like experiences (PLE) (Kelleher and Cannon, 2010; Livet et al., 2020). Although this concept is very broad, it is often considered an anomalous experience for two reasons (e.g., Brett et al., 2008): on the one hand, because they are disorders present in both the general and clinical population (see van Os et al., 2008; Moriyama et al., 2020), and on the other hand, because they are unusual or infrequent experiences when they occur in healthy subjects (Bourgin et al., 2020). Both schizotypy and PLEs are part of the psychotic phenotype (Preti et al., 2012). The psychotic phenotype is based on the idea that people with attenuated psychotic symptoms and PLEs are more at risk for severe psychotic pictures than individuals without this type of symptom (Murphy et al., 2018; Fonseca-Pedrero et al., 2020). Following this idea, it is very likely that conspiracist ideations are also related to the psychotic phenotype and continuum since

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https://doi.org/10.1016/j.jpsychires.2021.12.022
Received 18 July 2021; Received in revised form 29 November 2021; Accepted 10 December 2021
Available online 24 December 2021

they represent one more feature of schizotypy (see Barron et al., 2014; van der Tempel and Alcock, 2015). Although the scientific literature yields strong evidence linking conspiracist ideation to schizotypy and PLEs in subjects without a psychiatric history, no studies have been identified that analyzed the individual differences in conspiracist ideation between healthy subjects and patients diagnosed with schizophrenia (Kwapil et al., 2020).

The COVID-19 pandemic generated changes in people's lifestyle and mental health (Khan et al., 2020; Mattioli et al., 2020). Some studies reported an increase in depressive symptoms of anxiety pictures in the general population during the first months of the pandemic (Choi et al., 2020; Shevlin et al., 2020). Similarly, there is evidence that PLEs varied in the adolescent population before, during and after the first COVID-19 crisis (e.g., Wu et al., 2021). In this direction, there is also research that found an increase in psychotic symptomatology in healthy subjects and patients with severe psychosis (see Brown et al., 2020; Escolà-Gascón et al., 2020b). Considering these increases and that conspiracist ideation should probably be related to the psychotic phenotype, an analysis of the presence of conspiracist ideation in subjects with schizophrenia, its variation over the months of the COVID-19 pandemic and its comparison with scores in healthy subjects is imperative.

In the context of the COVID-19 crisis, the investigation of conspiracist ideation is crucial because it represents a variation of irrational thinking that has ceased to be marginal in society and has become a more predominant thought structure in the general population. This type of studies is essential since it helps to understand whether the impact of the popularization of conspiracy theories has developed similarly in healthy individuals and in patients suffering from schizophrenia or not. In addition, this could provide new insights into how conspiracy beliefs may be risk behaviors that predispose healthy individuals to suffer from possible psychotic episodes (see Escolà-Gascón and Wright, 2021).

Therefore, in this research, the following hypotheses are proposed: (1) subjects with schizophrenia will present more intense conspiracist ideation than healthy subjects; and (2) between October 2020 and February 2021, conspiracist ideation will have increased in both subjects with schizophrenia and subjects with no psychiatric history. The main objective of this research was to understand the relationship between psychotic symptoms and conspiracist ideation. Likewise, we also wanted to analyze how conspiracist ideation and psychotic symptoms varied throughout the coronavirus pandemic. Understanding these dynamics will enable more effective preventions aimed at combatting conspiracist ideation and psychotic symptomatology.

1. Methods

1.1. Statement of ethical guarantees

The author of this manuscript declares that this research was reviewed and favorably evaluated by the Committee of Ethical Guarantees of Ramon Llull University. Likewise, the author declares that all data collected from this study were anonymous and were blinded (including data related to the clinics and psychiatric centers that participated in this research). The procedures of this study adhere to the Spanish Government Data Protection Act 15/1999 and the Declaration of Helsinki of 1975, revised in 2013.

1.2. Participants

A total of 121 participants residing in Spain participated, of whom 39 had been formally diagnosed with schizophrenia, 43 had a psychiatric history (not including psychotic spectrum disorders) and 39 had no clinical mental health history. Sociodemographic information for all participants is provided in Table 1.

All the participants answered the questionnaires for this study completely voluntarily and anonymously. Likewise, the participants were also previously informed in writing of the development, stages and phases of this study. The application of the questionnaires was carried out completely online. Instead of signing a written consent form, participants had to click on an acceptance box that ensured their voluntary participation. Subsection 1.3.2 explains in more detail the procedures related to the test applications and inclusion criteria used in this project.

1.3. Procedures

1.3.1. Study design

The design of this research was quasi-experimental (i.e., no random assignment of subjects to the three groups mentioned). Comparisons were made between groups of participants with schizophrenia, with psychiatric history and healthy subjects. Analyses were longitudinal (based on repeated samples) and cross-sectional (based on independent samples).

Regarding the longitudinal analysis, due to the increase in psychotic symptomatology and pseudoscientific beliefs in the general population during the first social confinement related to coronavirus (see Escolà-Gascón et al., 2020b; Escolà-Gascón et al., 2021), it was decided to test whether these symptoms had remained stable between October (pretest) and February (posttest). The first week of October 2020 was chosen because a new wave of infections had started in Spain and new restrictive measures were implemented based on (1) the application of confinement by districts and/or municipalities; (2) the implementation of a 10 p.m. curfew; (3) the closure of establishments considered nonessential (e.g., gyms, cinemas, etc.); (4) the application of telematization at work and university; (5) the cancellation of popular parties and social events of more than six people; and (6) the closure of children's areas and public gardens. This new wave of infections was also experienced by some countries, such as the United Kingdom, France and Germany. Initially, the posttests were intended to be carried out between the last week of December 2020 and the first week of January 2021 because these were the dates when the government would phase out the restrictions for the Christmas holidays. However, the cases did not decrease sufficiently, and the measures were extended into February. At the beginning of the second week of February 2021, the application of the posttests began because some of the social measures mentioned above were withdrawn. Between the first application of the tests and the second, approximately 132 and 139 days had elapsed.

Regarding the cross-sectional analyses, it was decided to compare groups of subjects with a diagnosis of schizophrenia, and with and

Table 1
Data on sociodemographic variables for each group of subjects. Considering the sample size, only direct counts are given.

Groups	Age Means (SD)	Sex		Education level			Community		
		M	W	HS	VT	US	CLM	MAD	BNC
Patients with schizophrenia	35.38 (3.911)	35	4	13	21	5	9	18	12
Participants with a psychiatric history	36.37 (3.946)	19	24	17	15	11	13	16	14
Participants with no psychiatric history	35.05 (3.960)	18	21	11	12	16	9	9	21
Total	35.6 (3.339)	72	49	41	48	32	31	43	47

Note: SD = Standard deviation; M = Men; W = Women; HS = High school; VT = Vocational training; US = University studies; CLM = Castilla-La Mancha; MAD = Madrid; BCN = Barcelona.

without a psychiatric history. To assess the subjects who had received a diagnosis of schizophrenia and had a psychiatric history, six private mental health clinics collaborated. The participation of the clinics was voluntary, anonymous and with no profit motive. Each center assigned a responsible clinical psychologist or psychiatrist to manage the data collection. In contrast, participants with no clinical history were contacted from the original Escolà-Gascón (2020a) database, in which each participant had an e-mail address. This database consisted of 3224 cases. The collection and follow-up of the sample is explained in subsection 1.3.3.

1.3.2. Inclusion criteria and data collection

All participants with a diagnosis of schizophrenia had to meet the following study inclusion criteria. (1) The patient had to possess a formal diagnosis of schizophrenia or the equivalent (e.g., psychotic spectrum disorders according to DSM-5) (see American Psychiatric Association, 2013) and the diagnosis had to be chronic (made at least one year prior to the date on which the patient agreed to participate in this study). (2) The patient had to be undergoing outpatient psychological treatment (with a minimum frequency of one visit per month, individually or in a group). (3) The patient had to be on a pharmacological treatment regimen supervised by a physician-psychiatrist. (4) The patient had to be in a stable phase of his or her illness (patients with acute psychotic symptoms were not included). (5) The patient had to be between 28 and 45 years of age. (6) The patient had to be in an adequate medical and psychological disposition to consciously answer the questionnaires of this study, meaning the following were not eligible: (6.1.) patients with cognitive deficits or impairments; (6.2.) patients hospitalized for medical reasons unrelated to this diagnosis; (6.3.) patients hospitalized because of their schizophrenia or on a day-hospital basis; or (6.4.) patients with other formally diagnosed chronic psychiatric disorders in addition to the diagnosis of schizophrenia. In this way, an attempt was made to reduce the variance associated with the comorbidity of psychotic disorders. Neither were (6.5.) patients with active suicidal ideation and/or previous suicide attempts accepted, or (6.6.) patients with declared handicaps or other medical illnesses that would disqualify them from participation in this study.

A clinical psychologist and/or psychiatrist previously evaluated which patients from their respective centers could be included in this study. What the research consisted of was then explained to the patient, who was asked if he or she wished to participate on a completely anonymous and voluntary basis. Only the psychologists or psychiatrists responsible for each center were aware of the patients' data. Patient identification data were not recorded in the online application of the questionnaires. An alphanumeric code purposely developed by the heads of the collaborating clinical centers was used. The center coordinators were to give the code to each participant so that the combination of digits and letters could be recorded in the online application. The author and researcher of this study only used this code to correctly relate the data between the pretests and posttests. Likewise, the investigator at no time had contact with the patients. There were no incidents related to the treatment of patient data throughout the development of this study.

The inclusion criteria for participants who had or had a psychiatric history were as follows: (1) not having or having had a diagnosis of schizophrenia; (2) possess or be formally diagnosed with any mental disorder not included in the psychotic spectrum disorders; the diagnosis did not necessarily have to be chronic; (3) be between 28 and 45 years of age; (4) be receiving or having received psychological and/or psychiatric treatment in the past; and (5) be in a medically and psychologically adequate disposition to consciously answer the questionnaires of this study. This criterion includes items 6.1., 6.2., 6.5. and 6.6. of the previous paragraph. In this case, the same conditions explained in the previous paragraph were applied for the anonymous collection of data. Thus, the researcher had no direct contact with these participants and was guided by an alphanumeric code for the appropriate relationship between the results of the pretests and posttests.

Finally, the inclusion criteria for the group with no psychiatric history were as follows: (1) not having any psychiatric diagnosis; and (2) never having consulted with either a psychiatrist or a psychologist for clinical purposes. The exclusion criteria 6.1., 6.2., 6.5. and 6.6. of the previous paragraphs were also used. For this type of participant, the researcher had to use the e-mail from the Escolà-Gascón (2020a) database to properly follow up with the participants between pretests and posttests. The email was the only identifying data the researcher collected from this group of participants.

1.3.3. Obtaining the sample

The collection of the sample was possible thanks to the collaboration of six private mental health clinics located in the communities of Madrid, Catalonia and Castilla-La Mancha. Considering that the health clinics were private and did not want outsiders to know that their patients were participating in research projects, the centers that collaborated with the study chose to remain anonymous. Each center assigned a professional who would be responsible for assessing the suitability of the patients who would participate according to the inclusion criteria specified in subsection 1.3.2 (Fig. 1).

1.4. Materials

1.4.1. Community assessment of Psychic Experiences-42

This scale evaluates the psychotic phenotype with three dimensions: (1) *Positive Dimension* (PD), consisting of 20 items, (2) *Negative Dimension* (ND), consisting of 14 items, and (3) *Depressive Dimension* (DD), consisting of 8 items. The answers are coded using a Likert scale between 1 ("rarely") and 4 ("almost always"). In this research, only *positive dimension and negative dimension* were used. The Community Assessment of Psychic Experiences-42 (CAPE-42) presents enough evidence to endorse its validity and reliability (see Stefanis et al., 2002). The Spanish adaptation of the scale was used in this study (Fonseca-Pedrero et al., 2012). Cronbach's alpha coefficients of this sample were satisfactory for all dimensions (>0.8).

1.4.2. Multivariable multiaxial suggestibility Inventory-2

The Multivariable Multiaxial Suggestibility Inventory-2 (MMSI-2) is a psychometric inventory developed by Escolà-Gascón (2020a) consisting of 174 broad spectrum items whose subject matter focuses on anomalous phenomena as perceptual alterations (psychotic-like experiences). The MMSI-2 also includes other subclinical personality scales and other psychological indicators to detect unconscious lying, cognitive biases, inconsistencies and deliberate fraud. Nevertheless, in this study, only 6 of the 20–22 total scales of the test were used. The scales used are described as follows: (1) *Visual-Auditory Anomalous Phenomena* (Pva) (11 items); (2) *Tactile Anomalous Phenomena* (Pt) (7 items); (3) *Olfactory Anomalous Phenomena* (Po) (7 items); (4) *Cenesthesic Anomalous Phenomena* (Pc) (9 items); (5) *Schizotypy* (Ez) (11 items); and (6) *Paranoia* (Pa) (10 items). In the MMSI-2 items, participants had to indicate to what degree (from 1 to 5) they considered the content of each item to be true. The MMSI-2 offers guarantees of validity and reliability (omega coefficients >0.8) (see Escolà-Gascón, 2020a; 2020b). Cronbach's alpha coefficients of this sample were also satisfactory for all scales (>0.8).

1.4.3. Generic conspiracist beliefs scale

The Generic Conspiracist Beliefs Scale (GCBS) is a 15-item questionnaire that measures the degree to which a person believes and accepts conspiracy theories as true. This test includes five conspiracy beliefs related to government malfeasance, extraterrestrial cover-up, malevolent global and personal wellbeing, and control of information. Responses are coded on a Likert scale from 1 to 5. The participant must indicate how much he/she agrees with each item. The GCBS has a total score that is reliable and valid (Brotherton et al., 2013). Subsequent

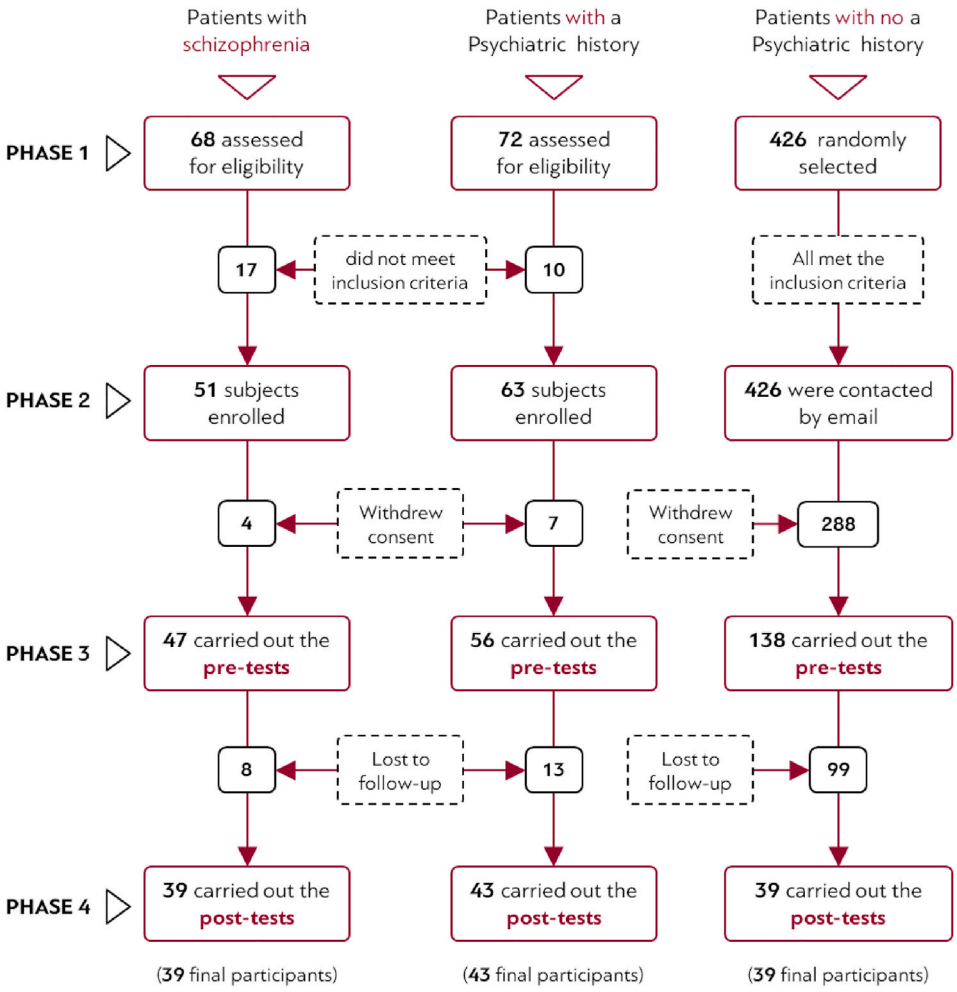

Fig. 1. Participants selection process and follow-up.

replications confirmed its psychometric goodness (see Drinkwater et al., 2020). In this study, we used a Spanish translation of our own elaboration. The reliability index based on the omega coefficient for the total test score was very satisfactory (>0.9). Cronbach's alpha coefficient for this sample was excellent (>0.9).

1.5. Statistical analysis

The data were processed with JASP and JAMOVI software, which use the R programming language and are part of the same university project (see The Jamovi Project, 2020). A 2-factor *analysis of variance* (ANOVA) was applied: one factor was longitudinal (with pretest and posttest measures), and the other was completely randomized (had the categories "patients with schizophrenia", "participants with a psychiatric history" and "participants with no psychiatric history"). Statistical normality tests were previously analyzed with the *Shapiro-Wilk* fit coefficient, and the homogeneity of variances between the groups of the completely randomized factor was also examined. Effect size indices (based on the squared *partial eta squared* coefficients) and the Bayes factor in favor of the alternative hypothesis (BF_{10}) were added as a complement. The a priori probabilities were set at 50% for both the null hypothesis and the alternative hypothesis. In the case of mean comparisons, the BF_{10} can be calculated from the following formula:

$$BF_{10} = \frac{\int_{\Theta_{H_1}} P(D|\theta_{H_1}, H_1)\cdot\pi(\theta_{H_1}|H_1)d\theta_{H_1}}{\int_{\Theta_{H_0}} P(D|\theta_{H_0}, H_0)\cdot\pi(\theta_{H_0}|H_0)d\theta_{H_0}} = \frac{P(D|H_1)}{P(D|H_0)} \quad (1)$$

where:

$P(D|H_1)$ is the probability that the empirical data fit the distribution associated with the alternative hypothesis. In contrast, $P(D|H_0)$ is the probability that the data fit the expected distribution by chance. A BF_{10} greater than 10 provides evidence to discard the null hypothesis and retain the alternative.

2. Results

2.1. Descriptive statistics and normality tests

Descriptive statistics were calculated for all variables. Descriptive statistics are presented for both the marginal measures and the measures for each group. This information can be found in Tables 2 and 3.

The probability that the observed data conformed to statistical normality was also calculated. These calculations are presented in Appendix A. All variables were classified according to patient groups and participants with and without psychiatric history sufficiently to the properties of the normal distribution.

2.2. Analysis of variance (ANOVA) 2x3

In two-factor ANOVAs, there are 4 types of effects to be analyzed: main effects, interaction effects, simple effects (also called simple main effects) and simple interaction effects between cells. Both main and interaction effects analyze differences based on marginal means. In contrast, the 2 types of simple effects are based on the comparison of the

Table 2
Descriptive marginal statistics for each variable and group.

DV	Patients with schizophrenia		Participants with a psychiatric history		Participants with no psychiatric history		Pretests (all 3 groups categories)		Posttests (all 3 groups categories)	
	M	SD*	M	SD*	M	SD*	M	SD*	M	SD*
CI	52.13	1.270	46.48	1.270	49.39	1.250	47.04	0.783	51.63	0.783
Ez	42.09	0.948	25.34	0.948	27.71	0.932	31.82	0.601	31.60	0.601
Pa	33.82	0.830	21.46	0.830	23.11	0.817	26.08	0.513	26.18	0.513
Pva	27.08	0.583	21.47	0.583	22.81	0.574	23.01	0.376	24.56	0.376
Pt	20.25	0.597	14.28	0.597	16.43	0.587	16.54	0.366	17.44	0.366
Pc	22.46	0.443	16.51	0.443	18.29	0.436	18.79	0.285	19.39	0.285
Po	18.32	0.611	16.15	0.611	17.59	0.601	17.31	0.378	17.40	0.378
PD	41.37	0.627	26.20	0.627	30.78	0.617	32.44	0.381	33.14	0.381
ND	36.63	0.693	26.82	0.693	28.17	0.682	30.48	0.436	30.60	0.436

Note: DV = Dependent variables; M = Means; SD = Standard deviation; CI = Conspiracist ideation; Ez = Schizotypy; Pa = Paranoia; Pva = Anomalous Visual/Auditory Perceptions; Pt = Anomalous Tactile Perceptions; Po = Anomalous Olfactory Perceptions; Pc = Anomalous Synesthetic Perceptions; PD = Positive Dimension; ND = Negative Dimension.
*SDs are based on marginal recounts (see also Table 4). Participants with no psychiatric history had different SDs because one group of this variable had four participants more than the others.

Table 3
Descriptive statistics per variables and groups.

DV	Pretests						Posttests					
	Patients		With a psychiatric history		With no psychiatric history		Patients		With a psychiatric history		With no Psychiatric history	
	M (AA)	SD	M (BA)	SD	M (CA)	SD	M (AB)	SD	M (BB)	SD	M (CB)	SD
CI	50.90	9.017	46.47	8.857	43.74	8.902	53.36	8.567	52.33	8.185	49.21	8.125
Ez	42.15	6.831	27.88	6.142	25.82	6.920	42.28	6.621	27.79	6.108	25.13	7.083
Pa	33.85	6.327	23.16	5.389	21.54	5.633	34.00	6.061	23.26	5.174	21.59	5.255
Pva	27.13	4.444	21.26	3.155	20.74	3.126	27.10	5.165	24.42	4.233	22.26	4.339
Pt	20.15	4.777	15.54	3.494	13.97	3.475	20.39	5.260	17.37	3.310	14.62	3.529
Pc	23.44	3.478	17.40	2.735	15.59	2.721	21.54	4.242	19.23	2.671	17.49	2.684
Po	18.36	4.960	17.51	3.960	16.03	3.688	18.26	5.077	17.65	3.491	16.26	3.545
PD	41.31	5.872	30.14	2.503	26.08	3.475	41.56	5.871	31.58	3.164	26.46	3.153
ND	36.82	5.485	28.30	1.466	26.54	4.844	36.59	5.369	28.19	4.344	27.30	4.865

Note: DV = Dependent variables; M = Means; SD = Standard deviation; CI = Conspiracist ideation; Ez = Schizotypy; Pa = Paranoia; Pva = Anomalous Visual/Auditory Perceptions; Pt = Anomalous Tactile Perceptions; Po = Anomalous Olfactory Perceptions; Pc = Anomalous Synesthetic Perceptions; PD = Positive Dimension; ND = Negative Dimension.
Warning: AA, BA, CA, AB, BB and CB are mathematical notations that correspond to Table 5. Use these notations to understand the analyses of simple effects and simple interaction effects (see Tables 7–14).

direct means of each of the variables distributed according to the groups to be tested. Table 4 should be consulted for a better understanding of these types of effects.

Table 4 makes it easy to understand which contrasts were applied in this research. Comparisons between the means of the marginal cells are equivalent to main effects. In contrast, comparisons of the means between the "ij" cells (e.g., AA vs. BB) correspond to simple effects. Table 5 presents the main and interaction effects for the nine dependent variables.

Table 4
Example of a contingency table with the location of each cell. Each cell contains the mean corresponding to each dependent variable.

Groups	Longitudinal tests		Main effects
	A_j- Pretests	B_j - Posttests	
A_i - Patients with Schizophrenia	Means AA	Means AB	Means A+
B_i - Participants with a psychiatric history	Means BA	Means BB	Means B+
C_i - Participants with no psychiatric history	Means CA	Means CB	Means C+
Main effects	+A	+B	Means +++

Note: The annotations in this table come from the proposals for Pardo and Ruiz (2015). Use the codes in each cell to understand the comparisons of the means in Tables 6–13.

The results in Table 5 indicate that there was significant variation between the pretests and posttests of conspiracist ideation (CI) and anomalous tactile perceptions (Pt). The marginal means (see Table 2) indicated that beliefs in conspiracy theories and tactile perceptual disturbances had increased after this second period of social-health restrictions. The other variables showed no significant changes. Therefore, the hypothesis that beliefs in conspiracy theories increased during the coronavirus pandemic is maintained. Social health restrictions explained 35.2% of the increase in scores.

The groups of patients and participants with and without psychiatric history showed significant differences for all variables except for anomalous olfactory perceptions (Po), in which no significant results were observed. The marginal means of each type of group (see Table 2) indicated that patients diagnosed with schizophrenia presented the highest scores compared to the rest of the groups. However, the Bayes factor for the conspiracist ideation variable was less than 10, and the variance explained was 6%. This means that there are reasons to be conservative and maintain the null hypothesis; patients with schizophrenia did not have higher CI scores than the other subject groups. Table 6 through 13 present the analyses of the simple effects and simple interaction effects.

The simple effects of the Po variable were not included because the results in Table 5 for this variable were not significant. The results in the above tables are summarized according to subject groups:

Table 5
Analysis of variance, main effects of variables and Bayesian approach.

DV	IV	*F* (*p* values)	Post hoc *p* values with Bonferroni correction	BF_{10} (% estimated error)	$P(H_1\|D)$	$\eta^2_{Partial}$
CI	Prepost	64.094 (<0.001*)	–	20.860 (1.669%)	0.954	0.352
	Groups	4.854 (0.009*)	1 vs. 2 = 0.377 1 vs. 3 = 0.007* 2 vs. 3 = 0.306	5.319 (2.465%)	0.842	0.060
	Interaction	3.463 (0.003*)	–	1.219 (2.957%)	0.549	0.005
Ez	Prepost	0.183 (0.670)	–	0.158 (2.944%)	0.136	0.002
	Groups	90.366 (<0.001*)	1 vs. 2 = <0.001* 1 vs. 3 = <0.001* 2 vs. 3 = 0.230	27.184 (3.047%)	0.965	0.605
	Interaction	0.223 (0.801)	–	0.090 (4.009%)	0.083	0.004
Pa	Prepost	0.068 (0.794)	–	0.146 (2.251%)	0.127	0.001
	Groups	64.567 (<0.001*)	1 vs. 2 = <0.001 * 1 vs. 3 = <0.001* 2 vs. 3 = 0.475	24.824 (2.327%)	0.961	0.523
	Interaction	0.006 (0.994)	–	0.078 (2.972%)	0.072	<0.001
Pva	Prepost	20.539 (<0.001*)	–	9.944 (1.695%)	0.909	0.148
	Groups	24.883 (<0.001*)	1 vs. 2 = <0.001* 1 vs. 3 = <0.001* 2 vs. 3 = 0.310	840.308 (1.569%)	0.999	0.297
	Interaction	7.377 (<0.001*)	–	28.939 (2.205%)	0.967	0.111
Pt	Prepost	12.232 (<0.001*)	–	37.769 (1.450%)	0.974	0.094
	Groups	25.199 (<0.001*)	1 vs. 2 = <0.001* 1 vs. 3 = <0.001* 2 vs. 3 = 0.011	32.933 (4.169%)	0.971	0.299
	Interaction	3.585 (0.031)	–	1.605 (3.522%)	0.616	0.057
Pc	Prepost	5.764 (0.018)	–	1.428 (13.593%)	0.588	0.047
	Groups	46.583 (<0.001*)	1 vs. 2 = <0.001* 1 vs. 3 = <0.001* 2 vs. 3 = 0.015	28.454 (13.593%)	0.966	0.441
	Interaction	23.827 (<0.001*)	–	16.300 (13.655%)	0.942	0.288
Po	Prepost	0.100 (0.752)	–	0.146 (4.038%)	0.127	0.001
	Groups	3.195 (0.045)	1 vs. 2 = ~1 1 vs. 3 = 0.044 2 vs. 3 = 0282	1.581 (3.510%)	0.613	0.051
	Interaction	0.121 (0.886)	–	0.098 (6.336%)	0.089	0.002
PD	Prepost	7.811 (0.006*)	–	5.890 (2.417%)	0.855	0.062
	Groups	150.952 (<0.001*)	1 vs. 2 = <0.001* 1 vs. 3 = <0.001* 2 vs. 3 = <0.001*	47.188 (2.669%)	0.979	0.719
	Interaction	2.360 (0.099)	–	0.564 (6.221%)	0.361	0.038
ND	Prepost	0.120 (0.730)	–	0.147 (2.515%)	0.128	0.001
	Groups	58.121 (<0.001*)	1 vs. 2 = <0.001* 1 vs. 3 = <0.001* 2 vs. 3 = 0.500	19.447 (3.182%)	0.951	0.496
	Interaction	0.686 (0.506)	–	0.133 (3.055%)	0.117	0.011

Note: *$p < 0.01$; DV = Dependent variables; IV = Independent variables; 1 = patients with schizophrenia; 2 = participants with psychiatric history; 3 = participants with no psychiatric history; *F* = Fisher's tests; BF_{10} = Bayes Factors in favor to alternative hypothesis; Eta partial square = explained variance of the VIs over VDs; CI = Conspiracist ideation; Ez = Schizotypy; Pa = Paranoia; Pva = Anomalous Visual/Auditory Perceptions; Pt = Anomalous Tactile Perceptions; Po = Anomalous Olfactory Perceptions; Pc = Anomalous Synesthetic Perceptions; PD = Positive Dimension; ND = Negative Dimension.

(1) For the group of subjects with no psychiatric history, the CI, Pva, Pt, Pc and ND scores significantly increased after the period of health restrictions. The effect sizes for these variables were medium (~0.4) and small (~0.1).
(2) For the group of subjects with a psychiatric history, the scores of the CI, Pva, Pt, Pc and PD scales significantly increased after the confinement period.
(3) For patients with schizophrenia, only the CI and Pc scale scores showed significant variations. Beliefs in conspiracy theories had increased. In contrast, cenesthetic hallucinations had decreased.

One result to note is the following: Table 6 shows significant differences between the CI scores of patients with schizophrenia and those of participants with no psychiatric history. In this case, the healthy subjects scored 7.154 points lower than the patients with schizophrenia. The effect size of this contrast was medium (0.333). This result in the simple effects replaces the hypothesis decision taken from Table 5. Therefore, the subjects with schizophrenia did score higher on CI than the other groups of participants.

In relation to the simple interaction effects of CI, it is crucial to note that the increase in conspiratorial beliefs in the healthy posttest subjects (M = 49.21) did not exceed the value of the mean of the subjects with schizophrenia pretests (M = 50.90). However, this difference was not significant. This observation is essential because the simple pretest and posttest effects on CI did show significant differences between patients and participants with no psychiatric history. The increase in CI in the healthy participants reached similar levels as in the patients with schizophrenia. This calls into question whether the patients' CI values are clinically significant scores or whether they are results within the subclinical (nonpsychopathological) spectrum. Figs. 2 and 3 show the graphs of the CI means for each of the groups.

2.3. Correlation analysis

Taking into account the above significant differences, the scores of the dependent variables were correlated to test the degree of relationship between psychotic-like experiences, conspiracist ideation and psychotic phenotype. The pretest scales were correlated with the

Table 6
Simple main and interaction effects analysis for Conspiracist ideation (CI).

Means comparison			Mean difference	Confidence Interval (95%)		Standard error	t-test	Cohen's d
				Lower	Upper			
CA	vs.	BA	−2.722	−8.400	2.957	1.905	−1.429	−0.130
CA	vs.	AA	−7.154	−12.970	−1.338	1.950	−3.668*	−0.333
CA	**vs.**	**CB**	**−5.462**	**−8.487**	**−2.436**	**1.010**	**−5.409***	**−0.492**
CA	vs.	BB	−8.582	−14.261	−2.903	1.905	−4.506*	−0.410
CA	vs.	AB	−9.615	−15.431	−3.800	1.950	−4.930*	−0.448
BA	vs.	AA	−4.432	−10.111	1.247	1.905	−2.327	−0.212
BA	vs.	CB	−2.740	−8.419	2.939	1.905	−1.439	−0.131
BA	**vs.**	**BB**	**−5.860**	**−8.742**	**−2.979**	**0.962**	**−6.094***	**−0.554**
BA	vs.	AB	−6.894	−12.573	−1.215	1.905	−3.620*	−0.329
AA	vs.	CB	1.692	−4.123	7.508	1.950	0.868	0.079
AA	vs.	BB	−1.428	−7.107	4.251	1.905	−0.750	−0.068
AA	**vs.**	**AB**	**−2.462**	**−5.487**	**0.564**	**1.010**	**−2.438**	**−0.222**
CB	vs.	BB	−3.120	−8.799	2.558	1.905	−1.638	−0.149
CB	vs.	AB	−4.154	−9.970	1.662	1.950	−2.130	−0.194
BB	vs.	AB	−1.033	−6.712	4.645	1.905	−0.543	−0.049

Note: *$p < 0.01$. Bonferroni's correction was applied to all comparisons.
Warning: Pretest and posttest comparisons (simple main effects) are highlighted in bold.

Table 7
Simple main and interaction effects analysis for Schizotypy (Ez).

Means comparison			Mean difference	Confidence Interval (95%)		*Standard error*	*t-test*	*Cohen's d*
				Lower	Upper			
CA	vs.	BA	−2.063	−6.417	2.290	1.462	−1.411	−0.128
CA	vs.	AA	−16.333	−20.792	−11.875	1.497	−10.909*	−0.992
CA	**vs.**	**CB**	**0.692**	**−2.010**	**3.394**	**0.902**	**0.768**	**0.070**
CA	vs.	BB	−1.970	−6.324	2.383	1.462	−1.348	−0.123
CA	vs.	AB	−16.462	−20.920	−12.003	1.497	−10.994*	−0.999
BA	vs.	AA	−14.270	−18.624	−9.917	1.462	−9.761*	−0.887
BA	vs.	CB	2.756	−1.598	7.109	1.462	1.885	0.171
BA	**vs.**	**BB**	**0.093**	**−2.480**	**2.666**	**0.859**	**0.108**	**0.010**
BA	vs.	AB	−14.398	−18.752	−10.045	1.462	−9.848*	−0.895
AA	vs.	CB	17.026	12.567	21.484	1.497	11.371*	1.034
AA	vs.	BB	14.363	10.010	18.717	1.462	9.824*	0.893
AA	**vs.**	**AB**	**−0.128**	**−2.830**	**2.574**	**0.902**	**−0.142**	**−0.013**
CB	vs.	BB	−2.662	−7.016	1.691	1.462	−1.821	−0.166
CB	vs.	AB	−17.154	−21.612	−12.695	1.497	−11.457*	−1.042
BB	vs.	AB	−14.491	−18.845	−10.138	1.462	−9.912*	−0.901

Note: *$p < 0.01$. Bonferroni's correction was applied to all comparisons.
Warning: Pretest and posttest comparisons (simple main effects) are highlighted in bold.

Table 8
Simple main and interaction effects analysis for Paranoia (Pa).

Means comparison			Mean difference	Confidence Interval (95%)		*Standard error*	*t-test*	*Cohen's d*
				Lower	Upper			
CA	vs.	BA	−1.624	−5.345	2.096	1.248	−1.302	−0.118
CA	vs.	AA	−12.308	−16.118	−8.497	1.278	−9.631*	−0.876
CA	**vs.**	**CB**	**−0.051**	**−2.057**	**1.955**	**0.669**	**−0.077**	**−0.007**
CA	vs.	BB	−1.717	−5.438	2.003	1.248	−1.376	−0.125
CA	vs.	AB	−12.462	−16.272	−8.651	1.278	−9.751*	−0.886
BA	vs.	AA	−10.683	−14.404	−6.963	1.248	−8.561*	−0.778
BA	vs.	CB	1.573	−2.148	5.294	1.248	1.261	0.115
BA	**vs.**	**BB**	**−0.093**	**−2.003**	**1.817**	**0.638**	**−0.146**	**−0.013**
BA	vs.	AB	−10.837	−14.558	−7.117	1.248	−8.684*	−0.789
AA	vs.	CB	12.256	8.446	16.067	1.278	9.590*	0.872
AA	vs.	BB	10.590	6.870	14.311	1.248	8.486*	0.771
AA	**vs.**	**AB**	**−0.154**	**−2.160**	**1.852**	**0.669**	**−0.230**	**−0.021**
CB	vs.	BB	−1.666	−5.387	2.055	1.248	−1.335	−0.121
CB	vs.	AB	−12.410	−16.221	−8.600	1.278	−9.711*	−0.883
BB	vs.	AB	−10.744	−14.465	−7.024	1.248	−8.610*	−0.783

Note: *$p < 0.01$. Bonferroni's correction was applied to all comparisons.
Warning: Pretest and posttest comparisons (simple main effects) are highlighted in bold.

Table 9
Simple main and interaction effects analysis for Visual-Auditory Anomalous Phenomena (Pva).

Means comparison			Mean difference	Confidence Interval (95%)		*Standard error*	*t-test*	*Cohen's d*
				Lower	Upper			
CA	vs.	BA	−0.512	−3.233	2.208	0.914	−0.560	−0.051
CA	vs.	AA	−6.385	−9.171	−3.599	0.936	−6.820*	−0.620
CA	**vs.**	**CB**	**−1.513**	**−3.316**	**0.290**	**0.602**	**−2.514**	**−0.229**
CA	vs.	BB	−3.675	−6.395	−0.955	0.914	−4.020*	−0.365
CA	vs.	AB	−6.359	−9.145	−3.573	0.936	−6.792*	−0.617
BA	vs.	AA	−5.872	−8.593	−3.152	0.914	−6.424*	−0.584
BA	vs.	CB	−1.001	−3.721	1.720	0.914	−1.095	−0.100
BA	**vs.**	**BB**	**−3.163**	**−4.880**	**−1.446**	**0.573**	**−5.519***	**−0.502**
BA	vs.	AB	−5.847	−8.567	−3.126	0.914	−6.396*	−0.581
AA	vs.	CB	4.872	2.086	7.658	0.936	5.204*	0.473
AA	vs.	BB	2.710	−0.011	5.430	0.914	2.964	0.269
AA	**vs.**	**AB**	**0.026**	**−1.777**	**1.829**	**0.602**	**0.043**	**0.004**
CB	vs.	BB	−2.162	−4.883	0.558	0.914	−2.365	−0.215
CB	vs.	AB	−4.846	−7.632	−2.060	0.936	−5.176*	−0.471
BB	vs.	AB	−2.684	−5.404	0.037	0.914	−2.936	−0.267

Note: *$p < 0.01$. Bonferroni's correction was applied to all comparisons.
Warning: Pretest and posttest comparisons (simple main effects) are highlighted in bold.

Table 10
Simple main and interaction effects analysis for Tactile Anomalous Phenomena (Pt).

Means comparison			Mean difference	Confidence Interval (95%)		*Standard error*	*t-test*	*Cohen's d*
				Lower	Upper			
CA	vs.	BA	−1.561	−4.215	1.094	0.890	−1.753	−0.159
CA	vs.	AA	−6.179	−8.898	−3.461	0.911	−6.780*	−0.616
CA	**vs.**	**CB**	**−0.641**	**−2.002**	**0.720**	**0.454**	**−1.411**	**−0.128**
CA	vs.	BB	−3.398	−6.052	−0.743	0.890	−3.818*	−0.347
CA	vs.	AB	−6.410	−9.129	−3.692	0.911	−7.033*	−0.639
BA	vs.	AA	−4.619	−7.274	−1.964	0.890	−5.190*	−0.472
BA	vs.	CB	0.919	−1.735	3.574	0.890	1.033	0.094
BA	**vs.**	**BB**	**−1.837**	**−3.133**	**−0.541**	**0.433**	**−4.246***	**−0.386**
BA	vs.	AB	−4.850	−7.504	−2.195	0.890	−5.449*	−0.495
AA	vs.	CB	5.538	2.820	8.257	0.911	6.076*	0.552
AA	vs.	BB	2.782	0.127	5.436	0.890	3.125	0.284
AA	**vs.**	**AB**	**−0.231**	**−1.592**	**1.130**	**0.454**	**−0.508***	**−0.046**
CB	vs.	BB	−2.757	−5.411	−0.102	0.890	−3.097	−0.282
CB	vs.	AB	−5.769	−8.488	−3.051	0.911	−6.330*	−0.575
BB	vs.	AB	−3.013	−5.667	−0.358	0.890	−3.385	−0.308

Note: *$p < 0.01$. Bonferroni's correction was applied to all comparisons.
Warning: Pretest and posttest comparisons (simple main effects) are highlighted in bold.

Table 11
Simple main and interaction effects analysis for Cenesthesic Anomalous Phenomena (Pc).

Means comparison			Mean difference	Confidence Interval (95%)		*Standard error*	*t-test*	*Cohen's d*
				Lower	Upper			
CA	vs.	BA	−1.806	−3.866	0.255	0.692	−2.609	−0.237
CA	vs.	AA	−7.846	−9.956	−5.736	0.709	−11.069*	−1.006
CA	**vs.**	**CB**	**−1.897**	**−3.242**	**−0.553**	**0.449**	**−4.228***	**−0.384**
CA	vs.	BB	−3.643	−5.703	−1.583	0.692	−5.263*	−0.478
CA	vs.	AB	−5.949	−8.059	−3.839	0.709	−8.392*	−0.763
BA	vs.	AA	−6.041	−8.101	−3.980	0.692	−8.727*	−0.793
BA	vs.	CB	−0.092	−2.152	1.968	0.692	−0.133	−0.012
BA	**vs.**	**BB**	**−1.837**	**−3.118**	**−0.557**	**0.427**	**−4.298***	**−0.391**
BA	vs.	AB	−4.143	−6.203	−2.083	0.692	−5.986*	−0.544
AA	vs.	CB	5.949	3.839	8.059	0.709	8.392*	0.763
AA	vs.	BB	4.203	2.143	6.264	0.692	6.073*	0.552
AA	**vs.**	**AB**	**1.897**	**0.553**	**3.242**	**0.449**	**4.228***	**0.384**
CB	vs.	BB	−1.745	−3.806	0.315	0.692	−2.522	−0.229
CB	vs.	AB	−4.051	−6.161	−1.941	0.709	−5.715*	−0.520
BB	vs.	AB	−2.306	−4.366	−0.246	0.692	−3.331	−0.303

Note: *$p < 0.01$. Bonferroni's correction was applied to all comparisons.
Warning: Pretest and posttest comparisons (simple main effects) are highlighted in bold.

Table 12
Simple main and interaction effects analysis for Positive Dimension (PD).

Means comparison			Mean difference	Confidence Interval (95%)		*Standard error*	*t-test*	*Cohen's d*
				Lower	Upper			
CA	vs.	BA	−4.063	−6.827	−1.299	0.926	−4.387*	−0.399
CA	vs.	AA	−15.231	−18.061	−12.400	0.948	−16.058*	−1.460
CA	**vs.**	**CB**	**−0.385**	**−1.694**	**0.925**	**0.437**	**−0.880**	**−0.080**
CA	vs.	BB	−5.504	−8.268	−2.740	0.926	−5.943*	−0.540
CA	vs.	AB	−15.487	−18.318	−12.657	0.948	−16.328*	−1.484
BA	vs.	AA	−11.168	−13.932	−8.404	0.926	−12.059*	−1.096
BA	vs.	CB	3.678	0.914	6.442	0.926	3.971	0.361
BA	**vs.**	**BB**	**−1.442**	**−2.689**	**−0.195**	**0.416**	**−3.464**	**−0.315**
BA	vs.	AB	−11.425	−14.189	−8.661	0.926	−12.335*	−1.121
AA	vs.	CB	14.846	12.016	17.677	0.948	15.653*	1.423
AA	vs.	BB	9.726	6.962	12.490	0.926	10.502*	0.955
AA	**vs.**	**AB**	**−0.256**	**−1.566**	**1.053**	**0.437**	**−0.587**	**−0.053**
CB	vs.	BB	−5.120	−7.884	−2.356	0.926	−5.528*	−0.503
CB	vs.	AB	−15.103	−17.933	−12.272	0.948	−15.923*	−1.448
BB	vs.	AB	−9.983	−12.747	−7.219	0.926	−10.779*	−0.980

Note: *$p < 0.01$. Bonferroni's correction was applied to all comparisons.
Warning: Pretest and posttest comparisons (simple main effects) are highlighted in bold.

Table 13
Simple main and interaction effects analysis for Negative Dimension (ND).

Means comparison			Mean difference	Confidence Interval (95%)		*Standard error*	*t-test*	*Cohen's d*
				Lower	Upper			
CA	vs.	BA	−1.764	−4.923	1.396	1.061	−1.663	−0.151
CA	vs.	AA	−10.282	−13.518	−7.046	1.086	−9.466*	−0.861
CA	**vs.**	**CB**	**−0.718**	**−2.602**	**1.166**	**0.629**	**−1.142**	**−0.104**
CA	vs.	BB	−1.648	−4.807	1.512	1.061	−1.553	−0.141
CA	vs.	AB	−10.051	−13.287	−6.816	1.086	−9.253*	−0.841
BA	vs.	AA	−8.518	−11.678	−5.359	1.061	−8.031*	−0.730
BA	vs.	CB	1.046	−2.114	4.206	1.061	0.986	0.090
BA	**vs.**	**BB**	**0.116**	**−1.678**	**1.910**	**0.599**	**0.194**	**0.018**
BA	vs.	AB	−8.287	−11.447	−5.128	1.061	−7.813*	−0.710
AA	vs.	CB	9.564	6.328	12.800	1.086	8.805*	0.800
AA	vs.	BB	8.634	5.475	11.794	1.061	8.141*	0.740
AA	**vs.**	**AB**	**0.231**	**−1.653**	**2.115**	**0.629**	**0.367**	**0.033**
CB	vs.	BB	−0.930	−4.089	2.230	1.061	−0.876	−0.080
CB	vs.	AB	−9.333	−12.569	−6.098	1.086	−8.592*	−0.781
BB	vs.	AB	−8.404	−11.563	−5.244	1.061	−7.923*	−0.720

Note: *$p < 0.01$. Bonferroni's correction was applied to all comparisons.
Warning: Pretest and posttest comparisons (simple main effects) are highlighted in bold.

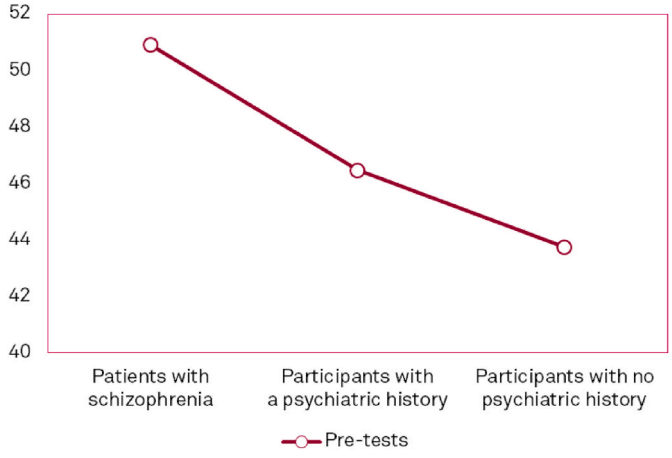

Fig. 2. Mean plot of the conspiracist ideation variable pretests.

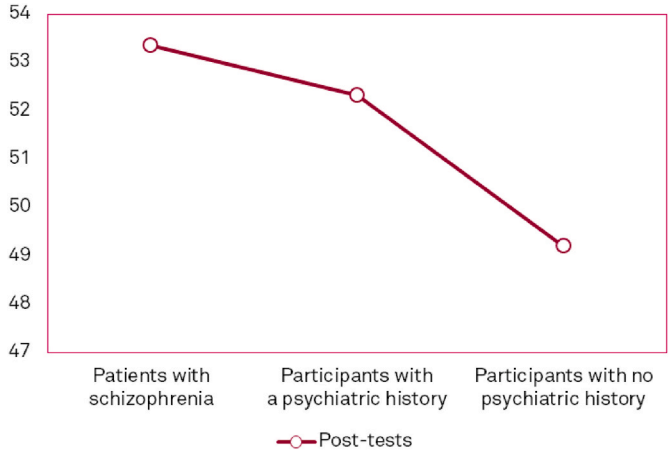

Fig. 3. Mean plot of the conspiracist ideation variable posttests.

posttests. Tables 14–16 provide Pearson's linear correlations.

Correlation matrices indicated that conspiracist ideation was significantly and positively correlated with schizotypy, psychotic-like experiences and positive symptoms of psychosis. These correlations were consistent for all three groups of subjects. Schizotypy was also positively correlated in all groups with some psychotic-like experiences

Table 14
Pearson correlation matrix between pretest scales and posttest scales for group patients.

		Pretests								
		CI	Ez	Pa	Pva	Pc	Pt	Po	PD	ND
Posttests	CI	0.759*	0.746*	0.302	0.557*	0.769*	0.774*	0.72*	0.447*	0.11
	Ez	0.678*	0.882*	0.274	0.476*	0.685*	0.692*	0.631*	0.566*	0.022
	Pa	0.303	0.198	0.763*	0.323	0.348	0.367	0.261	0.013	0.162
	Pva	0.376*	0.318	0.277	0.657*	0.733*	0.708*	0.614*	0.426*	0.151
	Pc	0.224	0.324	0.13	0.521*	0.587*	0.574*	0.627*	0.243	0.14
	Pt	0.273	0.377*	0.128	0.672*	0.744*	0.777*	0.695*	0.373	0.236
	Po	0.49*	0.491*	0.032	0.662*	0.891*	0.866*	0.787*	0.537*	0.235
	PD	0.554*	0.56*	0.116	0.65*	0.836*	0.822*	0.772*	0.767*	0.236
	ND	0.115	−0.18	0.072	0.076	0.178	0.133	0.037	−0.105	0.75*

Note: *p < 0.01. C I= Conspiracist ideation; Ez = Schizotypy; Pa = Paranoia; Pva = Anomalous Visual/Auditory Perceptions; Pt = Anomalous Tactile Perceptions; Po = Anomalous Olfactory Perceptions; Pc = Anomalous Synesthetic Perceptions; PD = Positive Dimension; ND = Negative Dimension.

Table 15
Correlation matrix between pretest scales and posttest scales for group participants with psychiatric history.

		Pretests								
		CI	Ez	Pa	Pva	Pc	Pt	Po	PD	ND
Posttests	CI	0.758*	0.478*	0.366*	0.394*	0.876*	0.731*	0.575*	0.58*	0.333
	Ez	0.813*	0.591*	0.214	0.313	0.686*	0.715*	0.542*	0.648*	0.384*
	Pa	0.165	−0.152	0.758*	0.213	0.398*	0.192	−0.069	−0.021	0.156
	Pva	0.373*	0.101	0.406*	0.7*	0.637*	0.505*	0.321	0.3	0.197
	Pc	0.467*	0.171	0.34	0.332	0.746*	0.655*	0.598*	0.454*	0.297
	Pt	0.468*	0.337	0.33	0.50*6	0.617*	0.74*	0.363*	0.333	0.199
	Po	0.606*	0.636*	0.142	0.315	0.753*	0.722*	0.638*	0.627*	0.255
	PD	0.533*	0.361*	−0.034	0.211	0.526*	0.475*	0.468*	0.762*	0.203
	ND	0.102	0.028	−0.168	0.106	0.138	0.062	0.138	0.186	0.399*

Note: *p < 0.01. CI = Conspiracist ideation; Ez = Schizotypy; Pa = Paranoia; Pva = Anomalous Visual/Auditory Perceptions; Pt = Anomalous Tactile Perceptions; Po = Anomalous Olfactory Perceptions; Pc = Anomalous Synesthetic Perceptions; PD = Positive Dimension; ND = Negative Dimension.

Table 16
Correlation matrix between pretest scales and posttest scales for group participants with no psychiatric history.

		Pretests								
		CI	Ez	Pa	Pva	Pc	Pt	Po	PD	ND
Posttests	CI	0.68*	0.663*	0.122	0.095	0.504*	0.531*	0.407*	0.74*	−0.239
	Ez	0.4*	0.451*	0.17	−0.183	0.198	0.186	0.268	0.575*	−0.284
	Pa	0.152	0.343	0.647*	0.605*	0.411*	0.414*	0.279	0.068	0.127
	Pva	0.225	0.437*	0.261	0.416*	0.609*	0.559*	0.312	0.266	0.055
	Pc	0.279	0.332	−0.105	0.363	0.486*	0.394*	0.302	0.34	0.285
	Pt	0.35	0.658*	0.003	0.332	0.575*	0.72*	0.662*	0.427*	0.079
	Po	0.632*	0.694*	0.3	0.396*	0.682*	0.663*	0.7*	0.515*	0.061
	PD	0.501*	0.602*	0.312	0.055	0.4*	0.417*	0.406*	0.893*	−0.268
	ND	−0.057	−0.221	−0.046	0.212	0.221	−0.014	−0.018	−0.21	0.791*

Note: *p < 0.01. CI = Conspiracist ideation; Ez = Schizotypy; Pa = Paranoia; Pva = Anomalous Visual/Auditory Perceptions; P t = Anomalous Tactile Perceptions; Po = Anomalous Olfactory Perceptions; Pc = Anomalous Synesthetic Perceptions; PD = Positive Dimension; ND = Negative Dimension.

and positive symptoms of psychosis but not with negative symptoms (ND). Overall, the most relevant correlations in Tables 14–16 supported the hypotheses put forward in this research.

3. Discussion

The aim of this research was to determine the impact of conspiracist ideation in groups of nonclinical, clinical and schizophrenia-diagnosed subjects. The impact of psychosis-like experiences and negative symptoms of psychosis was also analyzed. It is concluded that conspiracist ideation is more present in schizophrenic patients than in healthy participants. A reduction in Pc scores (Cenesthetic alternations) was observed in the posttests in the group of patients with schizophrenia. This result was not expected. The correlations in Tables 14 and 15 indicated that conspiracist ideation is related to schizotypy, psychotic phenotype, and some perceptual disturbances. The results raise the following questions: (1) Why on some scales did scores increase for participants with no clinical history and not for subjects with schizophrenia? (2) Why did psychotic-like experiences remain stable and cenesthetic hallucinations decrease in the posttests for the patient group? (3) Why was conspiracist ideation not correlated with negative symptoms of psychosis? and (4) Are there psychopathological risks associated with conspiracist ideation?

3.1. Interpretation of the results

In relation to the first and second questions, it is important to keep in mind that the patients with schizophrenia who participated in this research were treated with antipsychotics. In some cases, the therapeutic doses could have varied and increased, generating a decrease in perceived hallucinations (see Sommer et al., 2012). Similarly, it is possible that pharmacological treatment may have promoted the stabilization of psychotic-like experiences during these 132 days. These reasons may explain why the perceptual disturbances in the patient

group did not vary significantly. In addition, the patients with schizophrenia included in this study did not suffer any psychotic episodes during the follow-up of this investigation. This is also important because if they had, the scores on the Pva, Pc, Pt, Po and PD scales should have changed. Changes were observed in the scores relative to the rest of the groups, which are also in line with these arguments.

The third question asks which dimensions of the psychotic phenotype (or schizotypy) conspiracist ideation are correlated. The results of this research show that conspiracist ideation is exclusively related to schizotypy on the dimension of positive symptoms and psychotic-like experiences. It is important to note that the MMSI-2 schizotypy scale (Ez) focuses its contents or items on positive symptoms but also includes magical thinking and irrational beliefs. Given this feature, it is very likely that conspiracist ideation is also correlated with magical ideation. Magical ideation is a schizotypal personality trait directly associated with paranormal and pseudoscientific beliefs (see Williams and Irwin, 1991; Karcher and Shean, 2012). This idea would be consistent with the results provided by Dyrendal et al. (2021), who propose magical and paranormal beliefs as a mediating variable in the relationship between schizotypy and conspiracist ideation. The lack of correlation between negative symptoms and conspiracist ideation is also consistent with other research, which noted that the negative dimension did not correlate directly with conspiracist ideation, although it did correlate indirectly (see Denovan et al., 2020). Some lines of research proposed that these types of beliefs were part of a "healthy schizotypy" because they did not generate any subjective discomfort and did not interfere with the emotional well-being of the patient (see McCreery and Claridge, 2002; Goulding, 2004, 2005). However, this idea of "healthy shizotypy" is controversial and is not accepted by all mental health professionals because it challenges the predominant model of the psychotic phenotype (see Chabrol and Raynal, 2018 for a review).

The fourth question is probably the most complex. If the psychotic phenotype assumes that attenuated symptoms of psychosis in the general population represent a risk to people's mental health (see Shapiro et al., 2019), to what extent conspiracist ideation would also constitute a psychopathological risk should also be discussed. Sticking to the results of this research, the means of conspiracist ideation (CI) obtained among the three groups present a quantitative degradation that is compatible with the continuum model of psychosis and psychotic phenotype. For example, the means in Figs. 2 and 3 clearly show a decreasing trend in CI scale values as participants do not suffer from any psychiatric disorder. This supports the supposition that conspiracist ideation may be an includable psychopathological risk within the psychosis spectrum.

However, simple interaction effects between patients (pretest conspiracist ideation) and participants with no history (posttest conspiracist ideation) showed no significant differences. This does not detract from the decreasing trend observed in Figs. 2 and 3. Moreover, this result warns that the conspiracist ideation scores of the healthy participants reached posttest levels similar to the levels obtained by the participants with schizophrenia. Does this mean that CI levels after the 132 days of social-health restrictions increased in the healthy subjects to psychopathological or clinically-significant levels? This research provides the first evidence that GCBS scale scores greater than 49 points could have a significant clinical impact and be a risk score within attenuated psychotic symptoms. The reason for this interpretation is that it was the patients with schizophrenia who showed values close to 50, and the differences between the means 49.21 and 50.90 were not significant (see Table 6). However, further research is needed to replicate these results and to expand the sample size used in this investigation.

If CI scores, psychosis-like experiences, and negative symptoms increased in participants with and without psychiatric histories during this 132-day period, it is necessary to question whether the restrictions and municipal confinements performed fostered attenuated psychotic states in the nonclinical population. Sociopolitical and medical decisions to prevent the spread of the coronavirus should not impair the quality of life of individuals and should not promote psychotic conditions in "healthy" subjects. The results indicate that psychotic symptoms and conspiracist ideation continued to worsen during this period of crisis. The urgency and necessity of vaccination and community immunization to remove these restrictions is emphasized.

3.2. Limitations

The main limitation of this research focuses on the following points: (1) the methodology used was not experimental; (2) the sample size was not large; and (3) the measurement instruments used were adequate, but the results may vary if other questionnaires were used; in fact, no instruments were used to assess the degree of psychopathological severity of the patients.

The methodology was not experimental because the direct effects of the social health restrictions on the study participants could not be controlled and the distribution of the subjects to the diagnostic groups was not random. Therefore, it is not possible to state that the cause of the increase in psychotic symptoms and conspiracist ideation is due to the social health restrictions. Considering the scores and the results, it is possible to infer a direct relationship that should be taken into account.

The sample size affects the external validity and the generalizability of the results. In this case, conclusions about generalizability should be made cautiously and should be applied mainly to the Spanish- or Spanish-speaking population. In addition, other Western countries during these 132 days applied other more severe restrictions, generating a social and medical context that differs from the Spanish social-health care panorama. This should be taken into account if the procedures of this study were to be replicated in the future. Along these lines, it would be advisable to include larger samples in which social-health factors were controlled or recorded as covariates. In this study, it was not possible to expand the sample because no new mental health clinics were located that wished to collaborate with the research. Access and follow-up of patients is a complex procedure and is limited to the conditions of the collaborating clinics.

Finally, it is crucial to explain that the tests used presented acceptable validity and reliability. The MMSI-2, CAPE-42 and GCBS scales were chosen because they were open access and their psychometric properties were excellent. However, in the case of the GCBS, a direct translation of the English version was used because the official Spanish adaptation was not available. This suggests that if other scales were used to measure conspiracist ideation, there may be a variance associated with the instrument that should be taken into account in future studies. This variability would be observed in the direct scores of the new application, which should be compared with the scores of the present report. Moreover, no structured protocols were used to measure the severity of psychotic symptoms (e.g., the PANSS scale; see Edgar et al., 2014). This should also be considered, since the observed differences could have a distinct variation if patients presented different levels of symptomatic severity. Nevertheless, in this study the majority of patients were in a stable episode of psychosis, which means that the observed differences should be consistent.

4. Conclusions

This research, the results and discussion allow us to highlight the following conclusions:

(1) Conspiracist ideation and psychotic-like experiences increased during the 132 days in which COVID-19 social health restrictions were applied. This increase was significant and especially worrisome for subjects with and without a psychiatric history. Surprisingly, patients with schizophrenia showed no significant variations between pretests and posttests. Specifically, patients with schizophrenia showed slightly elevated scores for conspiracist ideation and a significant reduction in cenesthetic hallucinations. These significant differences could be explained by

the pharmacological treatment taken by the patients that involved the intake of antipsychotics.

(2) Conspiracist ideation is highly correlated with schizotypy and psychotic-like experiences and correlates slightly with levels of paranoia. Thus, conspiracist ideation is an individually differential variable to be taken into account when assessing psychopathological risk related to psychosis. We found evidence supporting the possibility that conspiracist ideation could be integrated as a complementary attribute of the psychotic phenotype. However, conspiracist ideation was not correlated with negative symptoms of psychosis. A positive relationship was only obtained for positive symptoms of the psychotic phenotype.

(3) Patients with schizophrenia tend to have higher scores on the conspiracist ideation scale than the other subject groups. This tendency is also observed in the scores for psychotic-like experiences and the other variables. Thus, the measurement of conspiracist ideation also has a quantitative degradation that can be extrapolated to the psychosis continuum (see Figs. 2 and 3). However, this does not mean that it constitutes a severe psychopathological symptom, as it also occurs in milder subjects. Further studies are needed to confirm how to discriminate the threshold between clinical and subclinical scores.

Ultimately, this research contributes to the scientific literature because it provides evidence of the relationship between schizophrenia and conspiracist ideation as an attribute to be taken into account within the spectrum of psychosis.

Ethics approval and consent to participate

The author of this manuscript declares that this research was reviewed and favorably evaluated by the Committee of Ethical Guarantees of Ramon Llull University. Likewise, the author declares that all data collected from this study were anonymous and were blinded (including data related to the clinics and psychiatric centers that participated in this research). The procedures of this study adhere to the Spanish Government Data Protection Act 15/1999 and the Declaration of Helsinki of 1975, revised in 2013.

Funding

The author confirms there has been no significant financial support for this work that could have influenced its outcome.

Concerning preregistration

This study was not preregistered.

Declaration of competing interest

The author confirms that there are no known conflicts of interest associated with this publication.

Acknowledgements

The author wishes to acknowledge the anonymous participation of the patients and the six mental health clinics that made it possible to collect the sample for this research.

Appendix

Appendix A: Tests of Normality

Table A1
Appendix A. Tests of normality using Shapiro-Wilk coefficient.

DV	Pretests						Posttests					
	Patients		With a psychiatric history		With no psychiatric history		Patients		With a psychiatric history		With no Psychiatric history	
	S	*p*	S	*p*	S	*p*	S	*p*	S	*p*	S	*p*
CI	0.969	0.350	0.964	0.199	0.968	0.335	0.957	0.144	0.959	0.123	0.975	0.539
Ez	0.971	0.404	0.972	0.365	0.962	0.213	0.967	0.302	0.970	0.323	0.970	0.377
Pa	0.960	0.180	0.972	0.364	0.978	0.632	0.968	0.337	0.980	0.640	0.990	0.971
Pva	0.958	0.150	0.967	0.255	0.973	0.462	0.970	0.381	0.957	0.104	0.960	0.176
Pt	0.981	0.730	0.973	0.410	0.984	0.851	0.986	0.899	0.963	0.180	0.961	0.193
Pc	0.966	0.278	0.974	0.440	0.965	0.255	0.982	0.769	0.961	0.154	0.961	0.196
Po	0.953	0.102	0.959	0.130	0.970	0.376	0.963	0.220	0.967	0.242	0.966	0.278
PD	0.985	0.861	0.973	0.387	0.966	0.286	0.967	0.292	0.969	0.284	0.984	0.829
ND	0.956	0.136	0.979	0.602	0.966	0.280	0.965	0.263	0.982	0.719	0.971	0.405

Note: DV = Dependent variables; S = Shapiro-Wilks coefficient; p = Probability that data fit the statistical normality; CI = Conspiracist ideation; Ez = Schizotypy; Pa = Paranoia; Pva = Anomalous Visual/Auditory Perceptions; Pt = Anomalous Tactile Perceptions; Po = Anomalous Olfactory Perceptions; Pc = Anomalous Synesthetic Perceptions; PD = Positive Dimension; ND = Negative Dimension.

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