# Attenuated mental symptoms in the general population: first data from the observational cross-sectional ATTENTION study in Greece

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## Abstract

**Background.** It has been reported that abnormal experiences could be common in the general "healthy" population, with the vast majority of individuals never proceeding to manifest a frank mental disorder.

**Aims.** This study aimed to quantify subthreshold psychiatric symptoms in the general population.

**Methods.** The protocol included clinicodemographic data and a mental symptoms questionnaire, and additionally, the CES-D, STAI-S, RASS, and the GloDiS to assess depression, anxiety, suicidality, and functional impairment, respectively. The data were collected online and anonymously from 1504 persons (75.66% females; 23.73% males). Descriptive statistics, risk ratios, and factor analysis were utilized.

**Results.** Clinical depression was present in approximately 10%, any somatic disorder in 20.21% (9.90% both), and a history of any mental disorder was present in 42.75%. The healthy individuals (46.94% of the study sample) were experiencing distress (8.6%) and subthreshold mental symptoms (attenuated psychotic, schizotypal distrust, emotional lability, conformity, and interpersonal and social functioning). Attenuated psychotic symptoms are present in almost 10%, and the conversion rate to any kind of psychosis was probably 0.5% per year until the age of 40, with one-third of these persons eventually converting. Beyond the age of 40, no conversion to psychosis seems to occur. All aspects of symptoms correlated weakly but significantly with aspects of functional impairment.

**Conclusions.** The results of the current study are in accord with the literature and suggest that a significant number of persons in the general population experience attenuated psychiatric symptoms and mild functional impairment without ever manifesting an overt mental disorder. There is a need for further research on this matter to confirm these findings and to explore their implications both for mental and somatic health and the provision of health care.

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## Introduction

In general medicine, prevention is essential and often it is a more important focus than treatment. Typically, preventive methods are classified into primary, secondary, and tertiary.[1] The term "primary" refers to the attempts to prevent the manifestation of overt disease and to protect healthy individuals from becoming ill. Specifically in Psychiatry, primary prevention is still an elusive goal, and for many authors, probably it is still wishful thinking. The main issues about the mental health of the general population are depressive, anxiety, and psychotic

symptoms that are subthreshold in terms either of the intensity or the frequency they are experienced, and therefore, no diagnostic label is appropriate.

Subthreshold anxiety and depression could be considered as corresponding to "distress," are widely spread,[2-8] and constitute the response to events and the environment in general. On the other hand, the subthreshold psychotic symptoms are considered to constitute an important risk factor for the future manifestation of full-blown psychosis.

Observational data suggest that the onset of schizophrenia is preceded by a prodrome period lasting from weeks to years and characterized by undifferentiated symptomatology. This symptomatology includes mood lability and change, subtle perceptual experiences, and mild cognitive decline. Changes in the social behavior sets the alarm of an imminent manifestation of a severe mental disorder.[9-16] Non-psychotic comorbidity is highly prevalent during that period.[17-19] This is often called "high-risk for psychosis or CHR-P state" or "the prodrome of schizophrenia" and the pattern of its manifestations maps fairly to the symptomatology of schizophrenia.[12,20,21] However, the biggest problem is that its predictive value is poor and only retrospectively one can decide of its true nature.

During the last few decades, several attempts were made to investigate the clinical utility of the concept of the prodrome and improve its properties and specifications.[22-27]

Of high importance was the development of instruments, like psychometric scales and structured interviews.[13,28,29] These include the Bonn Scale for the Assessment of Basic Symptoms (BSABS),[28,30] the Comprehensive Assessment of "At-Risk Mental States" (CAARMS),[13] the prodromal questionnaire (PQ), the PRIME Screening (PS), the Psychosis-Like Symptom Interview (PLSI),[13,31] and the Structured Interview for Prodromal Symptoms (SIPS).[29,32-34]

While the BSABS focuses on the assessment of subthreshold symptoms, the CAARMS and the SIPS try to identify groups at risk and classify subjects into those with brief periods of threshold psychotic symptoms (brief limited psychotic symptoms or BLIPS), individuals with recent-onset subthreshold psychotic symptoms (attenuated psychotic symptoms or APS), and those with genetic risk and deterioration (GRD) syndrome.[27,35] Depending on the orientation of each research group, the above leads to the classification of individuals as being "ultra-high risk" (UHR),[36] at "clinical high risk,"[33] manifesting the "prodrome"[37] or manifesting an "at-risk mental state,"[13] or a "psychosis-risk syndrome"[38] across different centers. There are substantial diagnostic,[39] prognostic,[35,40] clinical,[41] and therapeutic[42] differences between these 3 groups. The attenuated psychotic symptoms group seems to include 85% of CHR-P individuals.[35]

Meta-analytic studies suggest that semi-structured clinician-rated interviews have a good ability to rule out psychosis but only a modest ability to rule it in. In addition, the bias of study samples is extremely strong.[43-46] On the other hand, self-reported instruments are poorly validated.[47] The available small studies employing the PS and PQ lacked external validation and were biased toward overoptimistic estimates.[48,49] Some of these studies have been conducted in enriched samples through the previous use of semi-structured interviews.[48] An additional problem seems to be the reported lack of agreement between instruments, even when confounders were considered.[50]

Following a different path in research and the interpretation of the data, it has been reported that psychotic experiences could be common in the general "healthy" population, with a prevalence close to 7%.[51] The vast majority of these individuals never proceed to manifest a frank psychotic disorder.[45,51,52] This led to the conceptualization of the "extended psychosis phenotype"[53] that lies on a phenomenological and temporal continuum with clinical psychosis.[51] This is not new as a proposal; it was first proposed by Sir Aubrey Lewis, who argued for a continuum from anxiety to psychosis.[54] In 1963, Karl Menninger suggested that mental illness is not the exception; on the contrary, most people suffer from some kind of it and many suffer from a severe form for most of their lives.[55,56]

The most recent development was the addition of the "Attenuated Psychosis Syndrome" in the DSM-5,[47,57] in Section III under "conditions for further study." The DSM-5 task force determined that there was insufficient evidence to warrant the inclusion of APS as an official mental disorder diagnosis in Section II. Even as such, this constitutes a controversial proposal, since it proposes the diagnosis of a "quasi-mental disorder" in subjects who otherwise do not fulfill the hard requirements for a mental disorder,[38,47,58] and it is based on research in adult populations.[59] The clinical utility of such an approach is yet unknown and it could lead to inappropriate treatment.[33,60-63] On the other hand, the recognition of the need for treatment of high-risk individuals led to the reconceptualization from psychosis-risk syndrome[57] to attenuated psychosis syndrome.[47]

## Aim

The primary aim of the study is to quantify subthreshold or attenuated psychiatric symptoms in the general population with a special focus on psychotic symptomatology. The aim is to assess these symptoms in persons who do not qualify for a current or past diagnosis of any mental disorder, especially psychosis or anxiety/depression, and they are more or less both healthy and well functioning.

The secondary aims are:

- To assess the relationship between these symptoms and disability/functioning
- To assess the relationship of subthreshold general psychopathology (anxiety, depression, and suicidality) with attenuated psychotic symptoms.

The paper conforms with the STROBE statement for the reporting of observational studies and the respected checklist is included in the webappendix.[64]

## Material and methods

### Method

The data come from the international ATtenuated mental sympToms in the gENeral populaTION (ATTENTION) study, which was endorsed by the World Psychiatric Association (WPA). The protocol used included clinicodemographic data and 72 questions about aspects of the attenuated mental symptoms (C1-C72). These questions were created by the authors after inspecting relevant papers.[20,65-81] The questionnaire included both attenuated forms of symptoms as well as their rare occurrence in the general population. The original questionnaire was developed in English and was translated into Greek by 2 of the authors (KNF and MK). One did the translation and the other a back translation, and the final version was decided via consensus.

The CES-D was used for the assessment of depressive symptomatology. According to a previously developed method,[2,82,83] the cut-off score 23/24 for the Center for Epidemiological Studies-Depression (CES-D) scale and a derived algorithm were used to identify cases of probable clinical depression. This algorithm utilized the weighted scores of selected CES-D items to arrive at the diagnosis of depression and has already been validated. Cases identified by only either method were considered cases of dysphoria (false-positive cases in terms of depression), while cases identified by both the cut-off and the algorithm were considered clinical depression. The State–Trait Anxiety Inventory S version (STAI-S)[84] and the Risk Assessment for Suicidality Scale (RASS)[82] were used to assess anxiety and suicidality, respectively. The Global Disability Scale (GloDiS) was used to assess functional impairment and disability.[85] All the above scales can identify both clinical symptoms as well as attenuated forms of symptomatology, and all have been previously standardized in Greek.

The complete protocol is included in the webappendix.

The data were collected online and anonymously from April 2020 through March 2021. Announcements and advertisements were made on social media and through news sites, but no other organized effort had been undertaken. The first page included a declaration of consent which everybody accepted by continuing with the participation.

Participation in the study was achieved through self-selection and all persons that filled the online questionnaire were initially included in the study sample. The answering to all items was mandatory therefore there were no missing data in the dataset. No recording of incomplete and non-submitted efforts was done.

Approval was initially given by the Ethics Committee of the Faculty of Medicine, Aristotle University of Thessaloniki, Greece and locally concerning each participating country.

The form to be completed by participants included an information page but not a tick box for consent.

## Material

The study sample included 1504 persons, of whom 1138 were females (75.66%), 357 males (23.73%), and 9 non-binary gender (0.60%).

The study population was self-selected. The study was advertised through social media so that the population was informed and encouraged to participate.

The main analysis was performed in those persons without present diagnosis or past history of any mental disorder, that is in the "completely healthy" persons.

## Statistical analysis

The data were cross-sectional but the analysis conceptualized them as a proxy of longitudinal data by utilizing age as the longitudinal vector.

Descriptive statistics and risk ratios (RR) were calculated.

Factor analysis with varimax normalized rotation was used to identify the latent structure of the data. Factor scores were calculated and were used as variables for a second- and third-order factor analysis.

A scatterplot of the third-order factor scores versus age was created and visually inspected.

## Results

### Description of the study sample

#### Sociodemographics

- The study sample included 1504 persons, of whom 1138 were females (75.66%), 357 males (23.73%), and 9 non-binary gender (0.60%).
- Residency: 39.88% were living in the capital city, 16.75% in cities with over 100 000 population, and 18.34% were living in towns <20,000 inhabitants or villages.
- Age: More than half (N = 695, 53.79%) were below 30 years of age and 3.93% were above 60. Between the ages of 20–26, there was 41.35% of the total study sample.
- Family status: 56.38% were single, and 27.46% were married or living under an official relationship.

#### Medical and mental health history

- Any chronic somatic disorder was reported by 20.21%. In those under 30 years old, the presence of a chronic somatic disorder was reported by 13.22%, while in those above 29 years of age, it was 27.92%. Younger females had higher rates in comparison to younger males (chi-square = 7.711, df = 1, p = 0.005), while in the age group >29, the rates were comparable. The most prevalent conditions were any autoimmune disorder (5.18%), hypothyroidism (4.58%), hypertension (3.52%), asthma (3.39%), diabetes (1.59%), neurological (1.19%), rheumatoid arthritis (0.99%), cardiological (0.73%), cancer (0.53%), and any myoskeletal (0.46%).
- Any history of mental disorder was reported by 42.75%. In those under 30 years old, the history of any mental disorder was reported by 41.28%, while in those above 29 years of age, it was 44.46%. Younger females had higher rates in comparison to younger males (chi-square = 18.153, df = 1, p < 0.001), while in the age group >29, the rates were comparable. The most prevalent self-reported conditions were anxiety (33.44%), depression (18.61%), Post-Traumatic Stress Disorder (PTSD) (3.85%), substance and alcohol abuse (1.53%), psychosis (0.73%), bipolar disorder (0.93%), and other mental disorder (5.12%).
- Perfectly healthy without any somatic or mental problem were 46.94%, while 9.90% were suffering from both a somatic and a mental disorder. The rates for no comorbidity were highest for young males (66.33%) and lowest for young females (40.39%), while the rates for somatic and mental disorders comorbidity were highest for old males and females (similar and equal to 13.66 and 12.15%, respectively) and lowest for young males (2.01%). For young females, the rate of comorbidity was 7.96%.
- Concerning suicidality and self-destructing behavior, the rates were higher for young females (RR = 2.98) and similar for the 2 genders in the older age group. Older subjects reported lower rates which is peculiar and could reflect either an underreporting or a cohort effect. In a general adult population with a male-to-female ratio of 47:53 and a mean age of 40 years, the presence of at least once self-destructive behavior could be calculated to be 11.5–12% and of at least once attempted suicide at 4.25%, which roughly corresponds to 10 000 attempts per-year.

The detailed results concerning somatic and mental health are shown in Table 1.

The rates for self-destructive behaviors and suicide attempts by gender and age group are given in Table 2.

**Table 1.** Rates of specific somatic and mental disorders in the study sample by sex and age group

|  | Females (N = 1138) | | | | Males (N-357) | | | |
|  | <30 years old | | >29 years old | | <30 years old | | >29 years old | |
|  | N | % | N | % | N | % | N | % |
|---|---|---|---|---|---|---|---|---|
| *Chronic somatic disorders* | | | | | | | | |
| Any somatic | 92 | 15.26 | 143 | 28.32 | 15 | 7.54 | 41 | 26.97 |
| Autoimmune | 15 | 2.49 | 54 | 10.69 | 3 | 1.51 | 2 | 1.32 |
| Thyroid | 25 | 4.15 | 35 | 6.93 | 5 | 2.51 | 1 | 0.66 |
| Hypertension | 0 | 0.00 | 32 | 6.34 | 0 | 0.00 | 18 | 11.84 |
| Asthma | 19 | 3.15 | 23 | 4.55 | 2 | 1.01 | 7 | 4.61 |
| Diabetes | 6 | 1.00 | 14 | 2.77 | 1 | 0.50 | 2 | 1.32 |
| Neurological | 7 | 1.16 | 9 | 1.78 | 0 | 0.00 | 0 | 0.00 |
| Rheumatoid arthritis | 1 | 0.17 | 14 | 2.77 | 0 | 0.00 | 0 | 0.00 |
| Cardiological | 3 | 0.50 | 2 | 0.40 | 1 | 0.50 | 5 | 3.29 |
| Cancer | 0 | 0.00 | 6 | 1.19 | 0 | 0.00 | 0 | 0.00 |
| Orthopedics | 3 | 0.50 | 3 | 0.59 | 0 | 0.00 | 1 | 0.66 |
| Other | 30 | 4.98 | 18 | 3.56 | 5 | 2.51 | 14 | 9.21 |
| *History of mental disorder* | | | | | | | | |
| Mental health problems | 273 | 45.27 | 227 | 44.95 | 56 | 28.14 | 65 | 42.76 |
| Anxiety | 227 | 37.65 | 164 | 32.48 | 45 | 22.61 | 50 | 32.89 |
| Depression | 117 | 19.40 | 101 | 20.00 | 28 | 14.07 | 26 | 17.11 |
| PTSD | 27 | 4.48 | 22 | 4.36 | 3 | 1.51 | 4 | 2.63 |
| Substance and alcohol | 14 | 2.32 | 2 | 0.40 | 1 | 0.50 | 5 | 3.29 |
| Bipolar | 6 | 1.00 | 2 | 0.40 | 2 | 1.01 | 3 | 1.97 |
| Psychosis | 4 | 0.66 | 2 | 0.40 | 4 | 2.01 | 0 | 0.00 |
| Other mental | 34 | 5.64 | 22 | 4.36 | 9 | 4.52 | 9 | 5.92 |

**Table 2.** Rates of self-destructive behaviors and suicide attempts by gender and age group RR relative risk to the average of older males and females

|  | Age group | Never | Once | 2–3 times | Many times | At least once | RR |
|---|---|---|---|---|---|---|---|
| *Self-destructive behavior* | | | | | | | |
| Females | <30 | 74.13 | 12.11 | 7.96 | 5.80 | 25.87 | 2.98 |
|  | >29 | 92.48 | 4.55 | 2.38 | 0.59 | 7.52 | 1.00 |
|  | total | 82.49 | 8.66 | 5.42 | 3.43 | 17.51 |  |
| Males | <30 | 85.43 | 6.03 | 6.03 | 2.51 | 14.57 | 1.68 |
|  | >29 | 90.13 | 3.95 | 3.29 | 2.63 | 9.87 | 1.00 |
|  | total | 87.46 | 5.13 | 4.84 | 2.56 | 12.54 |  |
| *Suicide attempts* | | | | | | | |
| Females | <30 | 92.21 | 3.81 | 3.32 | 0.66 | 7.79 | 1.56 |
|  | >29 | 94.65 | 3.96 | 1.19 | 0.20 | 5.35 | 1.00 |
|  | total | 93.32 | 3.88 | 2.35 | 0.45 | 6.68 |  |
| Males | <30 | 97.99 | 1.51 | 0.50 | 0.00 | 2.01 | 0.40 |
|  | >29 | 95.39 | 1.97 | 1.32 | 1.32 | 4.61 | 1.00 |
|  | total | 96.87 | 1.71 | 0.85 | 0.57 | 3.13 |  |

### Present mental health

The rate of clinical depression was 14.71% in females and 8.65% in males, with older males having the lowest (7.23%) and younger females the highest (16.91%). In a general adult population with a male-to-female ratio of 48:52 and a mean age of 40 years, the projected clinical depression rate could be approximately 10–10.5%. Distress was present in 12.6%. Those suffering from any somatic disorder manifested higher rates of depression (16.11% versus 10.91%, RR = 1.47) but lower distress (9.86% versus 13.00%; RR = 0.76); however, in both groups, the percentage not manifesting either distress or clinical depression was the same (74.01% versus 76.08%).

The scores in the STAI-S, the CES-D, and its subscales, and the RASS are given in Table 3.

### Representativeness of the study sample

- In terms of gender, females are greatly over-represented and this is why results are presented separately and analysis is done separately for males and females. The number of non-binary gender individuals was too low to process.
- In terms of age, younger ages were overrepresented.
- Somatic health rates are more or less in accord with the literature.[86,87]
- Mental health rates are in accord with the literature especially concerning psychosis and bipolar disorder. The rate of 42% for any history of mental disorder, 18.61 for a history of depression, and 10% for current depression seem high but they are in accord with the most recent literature.[88,89]
- Suicide attempts in Greece have been reported by previous studies of our group to be annually at the magnitude of 10,000 [82,90,91], and this is in accord with the findings of the current study concerning the history of suicidal attempts. The prevalence rate of 4.25% with such history reported here is in complete accord with previous findings in completely independent samples after appropriate stratification [82] and in accord with the international literature.[92] The finding that older subjects report lower rates in comparison to younger ones is not uncommon in the literature with the rates for younger persons being close to 7–10% [93,94], while data from older persons suggest lower rates.[92]

The conclusion is that the study sample although not representative of the general population (mainly in terms of gender and age), has good qualitative characteristics that permit its use for quasi-epidemiological analysis after the appropriate handling of age and gender.

### Analysis of healthy individuals

#### Factor analysis and domains

The factor analysis of attenuated items, only in persons without any mental or somatic disorder present or any history of mental disorder (N = 664, 44.14% of the total study sample) produced 19 factors (Table 4).

The first factor corresponds to the cognitive and motivational deficit and reflects an inability to concentrate, to fulfill tasks, and additionally, it reflects a lack of motivation. It explained 6.29% of the total variance. The second factor corresponds to emotional lability and it explained 4.49% of the total variance. The third factor corresponds to shyness and social phobia and explains 4.44% of the total variance. The fourth factor corresponds to schizotypal thinking and explains 3.90% of the total variance. The fifth factor corresponds to attenuated psychotic symptoms and explains 3.62% of the total variance. The sixth factor corresponds to psychotic loss of control and explains 3.45% of the total variance. The seventh factor corresponds to persecutory thoughts and explains 3.39% of the total variance. The eighth factor corresponds to traits of schizoid loneliness and explains 3.38% of the total variance. The ninth factor corresponds to distrust and explains 3.26% of the total variance. The tenth factor corresponds to traits of dependency and explains 3.24% of the total variance. The eleventh factor corresponds to depersonalization/derealization and explains 2.92% of the total variance. The twelth factor corresponds to the vivid experience of own thoughts and explains 2.81% of the total variance. The thirteenth factor corresponds to schizoid lack of pleasure and explains 2.58% of the total variance. The fourteenth factor corresponds to a lack of conformity and explains 2.47% of the total variance. The fifteenth factor corresponds to self-destructive tendencies and explains 2.10% of the total variance. The sixteenth factor corresponds to traits of emotional lability and explains 2.09% of the total variance. The seventeenth factor corresponds to psychopathy and explains 1.89% of the total variance. The eighteenth factor corresponds to antisocial cruelty and explains 1.75% of the total variance. The nineteenth factor corresponds to suspiciousness of cheating and explains 1.65% of the total variance.

**Table 3.** Scores in the psychometric scales by sex and age group

| Age group | Females | | | | Males | | | | All Grps | |
| | >29 years | | <30 years | | >29 years | | <30 years | | | |
| | Mean | S.D. | mean | S.D. | mean | S.D. | mean | S.D. | mean | S.D. |
|---|---|---|---|---|---|---|---|---|---|---|
| STAI-S | 38.98 | 12.77 | 44.00 | 12.76 | 39.34 | 12.42 | 40.35 | 12.64 | 41.33 | 12.92 |
| CES-D | 12.94 | 10.74 | 18.32 | 12.34 | 13.92 | 11.02 | 14.85 | 11.36 | 15.57 | 11.76 |
| CES-Positive affect | 8.21 | 2.78 | 8.40 | 2.43 | 7.81 | 2.83 | 8.61 | 2.45 | 8.29 | 2.61 |
| CES Irriabiliy/Social dysfunction | 1.78 | 1.93 | 2.51 | 2.28 | 1.96 | 2.10 | 2.01 | 2.10 | 2.13 | 2.14 |
| CES depressed affect/somatic | 7.54 | 7.68 | 12.07 | 9.17 | 7.97 | 7.85 | 9.29 | 8.19 | 9.71 | 8.64 |
| RASS Intention | 35.79 | 95.49 | 81.21 | 142.89 | 58.29 | 131.14 | 64.22 | 125.15 | 61.41 | 126.30 |
| RASS Life | 115.16 | 100.51 | 151.24 | 111.46 | 128.09 | 113.06 | 137.59 | 106.45 | 135.11 | 108.70 |
| RASS History | 59.91 | 52.86 | 78.63 | 73.84 | 52.57 | 52.82 | 52.91 | 56.03 | 66.10 | 63.63 |
| RASS total | 210.86 | 194.85 | 311.09 | 270.62 | 238.95 | 243.43 | 254.72 | 230.68 | 262.62 | 243.27 |

**Table 4.** Factor analysis (varimax normalized) of the 72 items pertaining to attenuated mental symptoms in healthy individuals only

| | 1st order factor 1 | 1st order factor 2 | 1st order factor 3 | 1st order factor 4 | 1st order factor 5 | 1st order factor 6 | 1st order factor 7 | 1st order factor 8 | 1st order factor 9 | 1st order factor 10 | 1st order factor 11 | 1st order factor 12 | 1st order factor 13 | 1st order factor 14 | 1st order factor 15 | 1st order factor 16 | 1st order factor 17 | 1st order factor 18 | 1st order factor 19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C1. Do you feel guilty? | 0.14 | 0.27 | 0.17 | −0.01 | −0.10 | 0.03 | 0.08 | 0.05 | −0.25 | **0.42** | 0.05 | 0.22 | 0.07 | −0.04 | 0.15 | 0.02 | −0.08 | 0.24 | −0.08 |
| C2. Do you feel that ideas or thoughts are being broadcast out of your head? | 0.10 | 0.12 | 0.09 | 0.19 | 0.13 | 0.14 | 0.00 | −0.15 | 0.08 | 0.21 | 0.13 | **0.61** | 0.03 | 0.17 | −0.09 | −0.02 | −0.07 | 0.06 | −0.02 |
| C3. Are you generally suspicious of other people? | 0.12 | −0.07 | 0.14 | −0.01 | 0.00 | −0.04 | 0.18 | 0.17 | **0.39** | 0.08 | 0.11 | **0.43** | 0.15 | −0.03 | 0.18 | −0.06 | 0.11 | 0.24 | 0.05 |
| C4. Do you feel that your thoughts are out of your control? | **0.38** | 0.25 | 0.10 | 0.04 | 0.19 | 0.01 | 0.07 | 0.07 | −0.01 | 0.13 | −0.01 | **0.56** | −0.02 | 0.03 | 0.05 | 0.18 | −0.02 | 0.08 | 0.14 |
| C5. Do you enjoy interacting with people? | 0.01 | −0.02 | −0.20 | 0.07 | −0.06 | −0.03 | 0.03 | −0.26 | −0.25 | 0.13 | −0.09 | −0.07 | **−0.52** | 0.03 | −0.07 | 0.03 | −0.08 | 0.02 | −0.07 |
| C6. Do you feel detached or away from your surroundings, as if you are playing in some kind of a theater as if nothing really touches you? | 0.20 | 0.17 | 0.10 | 0.05 | 0.04 | −0.02 | 0.05 | 0.22 | 0.11 | 0.00 | **0.34** | 0.26 | 0.16 | **0.39** | 0.12 | 0.09 | −0.10 | 0.15 | 0.07 |
| C7. Is it difficult for you to sustain attention? | **0.73** | 0.11 | 0.07 | −0.05 | 0.04 | 0.02 | 0.03 | −0.01 | 0.03 | 0.06 | 0.10 | 0.17 | 0.03 | 0.08 | −0.05 | −0.05 | −0.06 | 0.02 | −0.08 |
| C8. Do you believe in telepathy? | −0.05 | 0.11 | −0.03 | **0.69** | −0.03 | 0.04 | 0.01 | −0.06 | 0.09 | −0.12 | −0.01 | 0.21 | −0.07 | −0.03 | −0.01 | 0.04 | −0.15 | −0.07 | 0.01 |
| C9. Is it difficult for you to feel pleasure? | **0.34** | 0.28 | 0.11 | 0.07 | −0.06 | 0.03 | 0.10 | 0.16 | −0.01 | −0.04 | 0.15 | 0.07 | **0.42** | 0.17 | 0.18 | 0.04 | 0.04 | 0.26 | −0.09 |
| C10. Do you feel that your body or a part of it is dead or unreal? | 0.18 | 0.02 | −0.02 | 0.14 | −0.01 | −0.04 | 0.09 | 0.01 | 0.06 | 0.00 | **0.52** | 0.24 | 0.18 | 0.01 | −0.01 | **0.41** | −0.08 | 0.02 | 0.14 |
| C11. Is it difficult for you to focus your mind on a specific subject? | **0.80** | 0.14 | 0.08 | 0.01 | 0.04 | 0.05 | 0.02 | 0.04 | 0.03 | 0.05 | 0.08 | 0.14 | 0.05 | 0.00 | 0.04 | 0.09 | 0.02 | −0.08 | 0.04 |
| C12. Have you ever attempted to kill yourself? | 0.00 | 0.06 | −0.03 | 0.02 | 0.05 | 0.03 | −0.02 | −0.12 | 0.12 | 0.04 | 0.01 | 0.00 | 0.00 | 0.05 | **0.76** | −0.01 | −0.01 | −0.07 | −0.01 |
| C13. Do you ever feel persecuted? | 0.21 | 0.03 | 0.05 | 0.22 | **0.34** | −0.09 | **0.35** | −0.02 | 0.13 | −0.09 | 0.17 | 0.06 | 0.02 | 0.01 | 0.04 | −0.06 | −0.04 | 0.20 | 0.15 |
| C14. Have other people told you that you speak incoherently? | 0.23 | 0.09 | −0.03 | 0.02 | **0.61** | 0.05 | 0.02 | 0.13 | 0.02 | 0.12 | 0.08 | 0.10 | 0.06 | 0.06 | 0.12 | −0.03 | 0.07 | 0.02 | 0.00 |
| C15. Do you believe that you are especially close to God or chosen by God? | 0.03 | 0.10 | 0.02 | 0.19 | −0.03 | **0.37** | 0.06 | −0.05 | 0.24 | −0.19 | −0.07 | 0.19 | 0.04 | −0.03 | −0.02 | 0.01 | **−0.43** | 0.01 | −0.29 |
| C16. Is it difficult for you to control your anger? | 0.23 | 0.20 | −0.02 | 0.15 | 0.13 | 0.15 | 0.06 | 0.21 | **0.32** | 0.05 | 0.09 | 0.07 | 0.02 | **−0.39** | 0.16 | 0.10 | −0.01 | −0.01 | −0.06 |

**Table 4.** *Continued*

| | 1st order factor 1 | 1st order factor 2 | 1st order factor 3 | 1st order factor 4 | 1st order factor 5 | 1st order factor 6 | 1st order factor 7 | 1st order factor 8 | 1st order factor 9 | 1st order factor 10 | 1st order factor 11 | 1st order factor 12 | 1st order factor 13 | 1st order factor 14 | 1st order factor 15 | 1st order factor 16 | 1st order factor 17 | 1st order factor 18 | 1st order factor 19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C17. Do you believe that there is a political conspiracy against you? | 0.06 | 0.04 | 0.01 | 0.05 | 0.06 | 0.12 | *0.81* | 0.07 | 0.14 | −0.05 | 0.07 | 0.11 | 0.06 | −0.03 | −0.01 | 0.02 | 0.03 | −0.09 | 0.02 |
| C18. Do you take potentially dangerous risks (driving while drunk, gambling, extreme sports)? | 0.07 | 0.14 | 0.00 | 0.05 | 0.23 | −0.01 | 0.07 | −0.17 | 0.15 | −0.09 | 0.05 | 0.02 | 0.05 | 0.14 | 0.03 | 0.01 | *0.54* | 0.08 | 0.08 |
| C19. Do you experience emotional changes? | 0.20 | *0.71* | 0.11 | 0.07 | 0.02 | −0.02 | 0.08 | −0.02 | 0.06 | 0.14 | 0.04 | 0.17 | 0.00 | −0.01 | 0.09 | 0.00 | −0.02 | 0.10 | 0.08 |
| C20. Do you see or smell things that other people do not? | −0.04 | 0.05 | −0.01 | *0.33* | *0.41* | 0.29 | 0.16 | −0.01 | 0.07 | −0.01 | 0.14 | 0.11 | −0.03 | 0.12 | 0.06 | 0.00 | −0.10 | 0.20 | 0.05 |
| C21. Do you believe that other people can read your mind? | 0.07 | 0.16 | −0.09 | 0.23 | 0.08 | *0.60* | 0.01 | −0.08 | 0.15 | 0.10 | 0.17 | 0.00 | −0.04 | 0.03 | 0.05 | 0.07 | −0.07 | −0.01 | 0.15 |
| C22. Do you feel a lack of motivation to accomplish a task? | *0.55* | 0.17 | 0.26 | 0.00 | 0.14 | 0.02 | 0.08 | −0.07 | −0.01 | 0.20 | 0.11 | −0.09 | 0.18 | 0.07 | 0.15 | −0.10 | 0.06 | 0.13 | 0.13 |
| C23. Do you have friends? | −0.01 | −0.03 | −0.06 | −0.04 | −0.08 | 0.03 | −0.03 | *−0.85* | −0.05 | −0.03 | −0.03 | 0.03 | −0.19 | 0.03 | 0.06 | −0.03 | 0.08 | 0.00 | −0.02 |
| C24. Do you believe that your husband or wife or significant other is cheating on you, but you do not have any proof? | 0.10 | 0.13 | 0.03 | 0.10 | −0.07 | 0.14 | 0.03 | 0.07 | 0.02 | 0.01 | 0.01 | 0.06 | 0.03 | 0.02 | −0.02 | −0.06 | 0.06 | −0.03 | *0.79* |
| C25. Do you feel that your body or parts of it change shape? | 0.01 | 0.17 | −0.04 | 0.20 | 0.12 | *0.44* | 0.13 | −0.11 | 0.14 | 0.01 | 0.23 | 0.07 | 0.15 | −0.08 | −0.10 | 0.06 | 0.07 | 0.16 | 0.12 |
| C26. Have you ever hurt yourself on purpose? | 0.00 | 0.10 | 0.06 | 0.12 | *0.46* | −0.07 | 0.24 | 0.07 | −0.10 | 0.13 | 0.06 | 0.15 | −0.06 | 0.06 | *0.35* | 0.28 | 0.13 | −0.17 | −0.03 |
| C27. Have other people told you that you make facial expressions, gestures, or body movements that are not ordinary? | 0.13 | 0.19 | 0.04 | −0.03 | *0.58* | 0.18 | 0.05 | 0.00 | 0.06 | 0.03 | −0.04 | 0.06 | 0.08 | 0.03 | 0.04 | 0.14 | 0.11 | 0.13 | −0.01 |
| C28. Do you believe that you can tell the future? | 0.05 | 0.01 | −0.09 | *0.59* | 0.15 | 0.22 | 0.20 | −0.09 | 0.04 | 0.06 | 0.10 | 0.05 | 0.22 | 0.07 | 0.03 | −0.02 | 0.23 | 0.08 | 0.01 |
| C29. Do you feel that other people can easily affect you? | 0.23 | 0.23 | 0.16 | 0.09 | 0.04 | 0.09 | −0.03 | 0.00 | 0.09 | *0.71* | 0.05 | 0.14 | −0.02 | 0.01 | 0.02 | 0.06 | −0.09 | −0.03 | 0.04 |
| C30. Do you feel that it's difficult to control your own thoughts? | *0.48* | *0.31* | 0.10 | 0.05 | 0.10 | 0.12 | 0.02 | 0.10 | 0.09 | 0.15 | −0.02 | *0.42* | −0.09 | −0.07 | 0.09 | 0.17 | 0.09 | 0.03 | 0.00 |
| C31. Do you feel that other people envy you? | −0.08 | 0.14 | −0.05 | 0.19 | 0.03 | 0.05 | 0.16 | 0.06 | *0.65* | 0.02 | 0.02 | 0.06 | 0.05 | 0.07 | −0.01 | 0.12 | −0.03 | 0.05 | −0.04 |

**Table 4.** *Continued*

| | 1st order factor 1 | 1st order factor 2 | 1st order factor 3 | 1st order factor 4 | 1st order factor 5 | 1st order factor 6 | 1st order factor 7 | 1st order factor 8 | 1st order factor 9 | 1st order factor 10 | 1st order factor 11 | 1st order factor 12 | 1st order factor 13 | 1st order factor 14 | 1st order factor 15 | 1st order factor 16 | 1st order factor 17 | 1st order factor 18 | 1st order factor 19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C32. Do you enjoy playing by teasing or even hurting animals of any kind? | −0.06 | −0.03 | −0.05 | −0.07 | 0.16 | 0.07 | −0.08 | 0.01 | 0.08 | −0.04 | −0.01 | 0.08 | −0.04 | −0.07 | −0.04 | 0.01 | 0.03 | *0.73* | −0.03 |
| C33. Do you believe that your own thoughts or actions can influence real-life events, even if you cannot explain them? | 0.10 | 0.06 | −0.08 | *0.38* | 0.16 | 0.10 | 0.18 | −0.01 | 0.15 | 0.21 | 0.01 | *0.36* | −0.10 | 0.25 | 0.01 | −0.13 | 0.05 | 0.02 | 0.09 |
| C34. Is it difficult for you to focus on a particular activity? | *0.84* | 0.08 | 0.11 | −0.01 | 0.09 | 0.08 | 0.03 | 0.04 | 0.00 | 0.13 | 0.07 | 0.06 | −0.04 | 0.01 | 0.03 | −0.01 | 0.01 | −0.04 | 0.06 |
| C35. Do you dress in a way that is not usual for other people? | 0.15 | 0.05 | 0.05 | 0.07 | 0.16 | 0.13 | 0.04 | −0.08 | 0.14 | −0.06 | 0.04 | 0.13 | 0.00 | *0.59* | 0.18 | 0.14 | 0.01 | −0.11 | 0.03 |
| C36. Do other people tell you that your mood changes rapidly? | 0.14 | *0.71* | 0.06 | 0.08 | 0.22 | 0.08 | −0.02 | −0.03 | 0.10 | 0.10 | 0.07 | 0.00 | 0.09 | 0.01 | 0.00 | 0.02 | 0.02 | −0.11 | −0.01 |
| C37. Do you believe that someone, or something, outside yourself is controlling you? | 0.04 | 0.13 | 0.17 | 0.05 | 0.25 | *0.43* | 0.26 | 0.02 | 0.13 | −0.05 | −0.06 | 0.08 | 0.07 | 0.16 | −0.02 | −0.06 | *−0.37* | 0.05 | 0.00 |
| C38. Is it difficult for you to explain what you mean to other people? | *0.40* | 0.22 | 0.23 | 0.11 | *0.31* | 0.01 | 0.04 | 0.01 | 0.26 | 0.08 | 0.15 | 0.07 | 0.07 | 0.13 | −0.01 | −0.01 | 0.11 | −0.03 | −0.11 |
| C39. Do you smile or laugh? | −0.08 | 0.03 | −0.01 | 0.02 | 0.02 | −0.05 | −0.05 | *−0.32* | −0.02 | 0.01 | 0.01 | 0.09 | *−0.60* | −0.03 | 0.04 | 0.03 | −0.06 | −0.04 | 0.10 |
| C40. Do you prefer to be alone rather than with friends or colleagues? | 0.12 | 0.05 | 0.22 | −0.12 | −0.07 | 0.07 | 0.05 | *0.48* | 0.11 | −0.13 | −0.02 | 0.04 | −0.01 | 0.24 | 0.20 | 0.04 | 0.14 | 0.12 | 0.08 |
| C41. Do you believe in clairvoyance? | 0.01 | −0.01 | 0.06 | *0.70* | 0.00 | 0.07 | −0.04 | 0.11 | 0.14 | 0.09 | 0.01 | −0.14 | −0.06 | −0.05 | 0.01 | 0.14 | −0.06 | −0.01 | 0.02 |
| C42. Are you easily affected by other people? | 0.20 | 0.12 | 0.13 | 0.01 | 0.14 | 0.02 | 0.04 | −0.02 | 0.12 | *0.74* | 0.00 | 0.06 | 0.06 | −0.02 | 0.01 | 0.05 | 0.00 | −0.13 | 0.06 |
| C43. Do you hurt yourself? (skin cutting, burning) | −0.02 | 0.04 | 0.04 | −0.01 | 0.24 | 0.08 | 0.06 | 0.00 | 0.15 | 0.05 | 0.01 | −0.01 | −0.05 | 0.07 | 0.07 | *0.75* | −0.10 | −0.02 | −0.02 |
| C44. Is it difficult for you to talk to your colleagues? | 0.21 | 0.05 | *0.41* | −0.05 | 0.19 | 0.17 | 0.12 | 0.07 | 0.16 | 0.09 | −0.02 | 0.14 | *0.33* | 0.14 | 0.12 | 0.10 | 0.03 | −0.06 | −0.07 |
| C45. Do you feel like your mind is empty? (No thoughts in your head) | 0.18 | 0.10 | 0.17 | −0.02 | 0.06 | 0.14 | −0.07 | −0.01 | 0.12 | 0.02 | *0.66* | −0.06 | 0.02 | 0.04 | 0.01 | −0.06 | 0.17 | 0.03 | −0.01 |
| C46. Do you believe that other people constantly want to take advantage of you? | 0.08 | 0.18 | 0.04 | 0.19 | 0.05 | 0.12 | 0.12 | 0.14 | *0.53* | 0.24 | 0.14 | 0.01 | 0.22 | 0.11 | 0.02 | 0.00 | −0.03 | 0.00 | 0.07 |

**Table 4.** *Continued*

| | 1st order factor 1 | 1st order factor 2 | 1st order factor 3 | 1st order factor 4 | 1st order factor 5 | 1st order factor 6 | 1st order factor 7 | 1st order factor 8 | 1st order factor 9 | 1st order factor 10 | 1st order factor 11 | 1st order factor 12 | 1st order factor 13 | 1st order factor 14 | 1st order factor 15 | 1st order factor 16 | 1st order factor 17 | 1st order factor 18 | 1st order factor 19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C47. Do you believe that you can do extraordinary things that other people cannot do? | 0.08 | 0.02 | −0.11 | 0.29 | 0.20 | 0.12 | 0.10 | −0.16 | ***0.43*** | 0.04 | 0.21 | 0.04 | 0.01 | ***0.33*** | −0.08 | −0.04 | 0.14 | 0.04 | 0.00 |
| C48. Do you hear voices or music that other people seem not to? | 0.05 | 0.00 | 0.11 | 0.13 | ***0.51*** | 0.05 | ***0.31*** | −0.04 | 0.10 | 0.01 | 0.16 | 0.01 | 0.05 | 0.10 | −0.13 | 0.08 | 0.00 | 0.07 | −0.12 |
| C49. Do you easily change your feelings toward the same person? | 0.13 | ***0.52*** | 0.05 | −0.05 | 0.12 | 0.19 | 0.01 | 0.08 | 0.30 | 0.14 | 0.15 | 0.08 | 0.03 | 0.10 | 0.03 | 0.08 | 0.15 | −0.03 | 0.07 |
| C50. Do you feel as if you were not yourself, as if you were some kind of robot? | 0.01 | 0.11 | −0.07 | 0.09 | 0.12 | 0.14 | 0.24 | 0.19 | −0.09 | 0.08 | ***0.54*** | 0.17 | 0.17 | 0.17 | 0.11 | −0.07 | −0.01 | −0.07 | −0.11 |
| C51. Do you feel shy or embarrassed when you are talking to a stranger? | 0.21 | 0.09 | ***0.81*** | −0.02 | 0.03 | −0.02 | 0.03 | 0.10 | −0.01 | 0.10 | 0.09 | 0.05 | 0.05 | 0.03 | 0.01 | 0.03 | 0.00 | 0.02 | −0.04 |
| C52. Do you feel there is some kind of a love affair between yourself and a famous person? | 0.01 | 0.03 | 0.03 | 0.12 | −0.12 | 0.29 | 0.00 | −0.02 | −0.08 | 0.07 | 0.00 | 0.03 | 0.11 | 0.05 | −0.11 | ***0.55*** | ***0.36*** | 0.09 | −0.14 |
| C53. Do you believe that you are being watched e.g. through your mobile phone, cameras, bugs, etc? | 0.09 | 0.07 | 0.16 | 0.20 | 0.17 | −0.03 | ***0.44*** | 0.02 | 0.12 | 0.07 | 0.09 | −0.09 | −0.21 | 0.09 | −0.09 | 0.14 | 0.09 | 0.19 | 0.13 |
| C54. Do you feel uncomfortable when you meet people for the first time? | 0.16 | 0.09 | ***0.85*** | −0.01 | 0.00 | −0.02 | 0.01 | 0.08 | 0.00 | 0.08 | 0.04 | 0.05 | 0.07 | 0.05 | 0.00 | 0.01 | −0.02 | −0.02 | 0.02 |
| C55. Can you hear a voice speaking your thoughts aloud? | 0.05 | 0.12 | 0.28 | 0.04 | 0.20 | 0.06 | 0.18 | 0.02 | 0.02 | −0.11 | 0.11 | ***0.35*** | −0.09 | −0.07 | −0.03 | −0.09 | ***0.39*** | −0.21 | −0.12 |
| C56. Is it difficult for you to complete a task? | ***0.68*** | 0.07 | 0.25 | −0.03 | 0.14 | 0.05 | 0.05 | −0.03 | 0.01 | 0.21 | 0.09 | −0.09 | 0.08 | 0.12 | −0.01 | 0.01 | 0.05 | −0.03 | 0.10 |
| C57. Do you feel anxious when you are with a group of unfamiliar people? | 0.16 | 0.17 | ***0.80*** | 0.01 | 0.03 | 0.00 | 0.02 | 0.07 | 0.01 | 0.16 | 0.07 | 0.05 | 0.08 | −0.03 | 0.03 | 0.02 | 0.01 | −0.02 | 0.06 |
| C58. Do you feel that you are losing your mind? | 0.25 | 0.24 | 0.10 | 0.02 | 0.24 | 0.17 | 0.22 | 0.14 | 0.01 | −0.01 | 0.21 | 0.26 | −0.01 | 0.08 | 0.08 | 0.20 | 0.03 | −0.05 | 0.16 |
| C59. Do you believe that strangers are reading your mind? | 0.11 | −0.03 | 0.03 | 0.11 | 0.02 | ***0.71*** | 0.15 | 0.11 | −0.03 | 0.09 | 0.08 | 0.01 | 0.03 | 0.07 | −0.02 | 0.10 | 0.09 | −0.01 | −0.03 |
| C60. Do you keep friends? | 0.03 | −0.04 | −0.09 | −0.05 | −0.04 | −0.01 | −0.04 | ***−0.81*** | −0.09 | −0.06 | −0.07 | −0.02 | −0.18 | 0.06 | 0.03 | 0.05 | 0.10 | 0.03 | −0.03 |

**Table 4.** *Continued*

| | 1st order factor 1 | 1st order factor 2 | 1st order factor 3 | 1st order factor 4 | 1st order factor 5 | 1st order factor 6 | 1st order factor 7 | 1st order factor 8 | 1st order factor 9 | 1st order factor 10 | 1st order factor 11 | 1st order factor 12 | 1st order factor 13 | 1st order factor 14 | 1st order factor 15 | 1st order factor 16 | 1st order factor 17 | 1st order factor 18 | 1st order factor 19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C61. Do you believe that there is a conspiracy against you? | 0.06 | 0.07 | 0.01 | 0.02 | 0.14 | 0.21 | *0.78* | 0.03 | 0.11 | 0.02 | 0.00 | 0.04 | 0.07 | 0.06 | 0.13 | 0.03 | 0.00 | −0.07 | −0.04 |
| C62. Do you have mood swings? | 0.15 | *0.79* | 0.17 | 0.05 | 0.05 | 0.05 | 0.08 | 0.07 | 0.09 | 0.14 | 0.04 | 0.06 | −0.02 | 0.04 | 0.01 | −0.01 | 0.01 | −0.04 | 0.05 |
| C63. Do you feel like other people have been talking about you or laughing at you? | 0.09 | 0.21 | 0.29 | 0.17 | 0.10 | 0.09 | 0.20 | 0.18 | *0.49* | 0.23 | 0.01 | 0.07 | −0.06 | 0.06 | 0.06 | 0.04 | 0.02 | 0.08 | 0.07 |
| C64. Do you believe that you have a sixth sense? | −0.06 | 0.04 | 0.03 | *0.69* | 0.08 | 0.11 | 0.09 | 0.06 | 0.09 | −0.02 | 0.04 | 0.08 | 0.02 | 0.15 | 0.14 | −0.05 | 0.09 | −0.07 | 0.04 |
| C65. Do you enjoy physical activities, such as walking, swimming, or sports? | −0.07 | −0.10 | −0.18 | −0.02 | −0.18 | 0.10 | −0.01 | 0.00 | 0.01 | −0.11 | −0.03 | −0.01 | *−0.53* | 0.13 | −0.02 | −0.10 | 0.19 | 0.17 | −0.21 |
| C66. Do you feel that ideas or thoughts, that are not your own, have been inserted into your head? | 0.12 | −0.03 | 0.05 | 0.00 | 0.30 | *0.47* | 0.10 | 0.06 | 0.05 | 0.23 | 0.10 | 0.17 | −0.12 | 0.22 | 0.07 | 0.10 | −0.12 | 0.05 | 0.21 |
| C67. Do you easily change your mind? | 0.19 | 0.19 | 0.12 | −0.10 | 0.04 | 0.18 | −0.14 | 0.05 | 0.21 | *0.51* | 0.04 | 0.06 | −0.16 | −0.03 | 0.06 | −0.03 | 0.13 | 0.06 | −0.10 |
| C68. Do you like doing things that usually other people do not? | 0.18 | 0.10 | 0.03 | 0.21 | 0.23 | 0.19 | 0.02 | 0.16 | 0.22 | 0.05 | 0.05 | −0.01 | −0.11 | *0.55* | −0.05 | 0.01 | 0.16 | −0.08 | −0.09 |
| C69. Do you feel lonely? | 0.19 | *0.33* | 0.22 | 0.05 | −0.04 | −0.21 | 0.13 | 0.23 | −0.05 | 0.27 | 0.20 | 0.00 | 0.12 | 0.25 | 0.07 | 0.12 | 0.01 | 0.15 | 0.05 |
| C70. Do you feel as if your mind stops working for a second or two? | 0.27 | 0.11 | 0.17 | 0.05 | 0.19 | 0.23 | 0.10 | 0.02 | 0.16 | 0.05 | *0.58* | 0.01 | −0.18 | −0.06 | 0.10 | 0.06 | −0.01 | −0.03 | 0.03 |
| C71 Have you ever had wishes to be dead? | 0.16 | 0.07 | 0.16 | 0.19 | 0.09 | −0.05 | 0.10 | 0.21 | −0.16 | 0.05 | 0.16 | 0.01 | 0.12 | 0.05 | *0.58* | 0.04 | 0.01 | 0.11 | −0.01 |
| C72. Do you feel a lack of ability to enjoy activities you normally enjoy? | *0.39* | *0.33* | 0.13 | 0.06 | −0.04 | 0.05 | 0.22 | 0.14 | −0.10 | 0.11 | 0.20 | −0.06 | 0.16 | *0.31* | 0.13 | 0.03 | 0.02 | 0.14 | 0.04 |
| **Proportion of total** | 6.29% | 4.49% | 4.44% | 3.90% | 3.62% | 3.45% | 3.39% | 3.38% | 3.26% | 3.24% | 2.92% | 2.81% | 2.58% | 2.47% | 2.10% | 2.09% | 1.89% | 1.75% | 1.65% |
| **Total proportion explained** | 59.70% | | | | | | | | | | | | | | | | | | |

The second-order factor analysis of the first-order factor scores in healthy individuals alone, returned 10 second-order factors (Table 5). Each of them explains 5.26% of the variance and together they explain 52.63%.

The first factor reflects lack of conformity without antisocial/sociopathy, the second reflects emotional lability without anxiety, the third emotional lability without self-harm, the fourth reflects shyness with a cognitive and motivational deficit, the fifth reflects schizoid traits, the sixth psychotic emotional lability, the seventh reflects trust in others, the eighth lack of schizotypal thinking, the nineth antisocial behavior and the tenth reflects psychopathy.

The third-order factor analysis of the second-order factor scores in healthy individuals alone, returned 5 third-order factors (Table 6). Each of them explains 10.00% of the variance and together they explain 50.00%.

The first third-order factor corresponds to traits of attenuated psychosis, the second third-order factor reflects schizotypal distrust, the third corresponds to traits of lack of emotional lability, the fourth corresponds to an interpersonal and social deficit, and the fifth to social conformity.

## Descriptive statistics and correlations of attenuated psychosis items and scales

Distress was present in 7.05% of females (similar across age groups) and in 11.56% of males <40 but only in 2.13% of those above

39 years of age (9.28% for males). In the population, the projected rate of distress would be equal to 8.16%.

The percentages of responses to individual items of the attenuated symptoms questionnaire in healthy persons only, separately for the 2 age groups are given in Table 7.

In the healthy persons only, the plotting of third-order factor scores (x-axis) versus age suggests that the correlation of the 5 super factors with age is non-linear and that psychological function generally improves after the age of 35 (Figure 1). The correlations of the 5 third-order factors with psychometric scales in healthy individuals only are given in Table 8. All correlate weakly but significantly with aspects of the Glo.Di.S.

ANOVA with sex, age group, presence of any somatic, and presence of any mental disorder as grouping variables, and all the factors as dependent (separate ANOVAs for each class of factors) returned significant results for the first and the second class factors concerning a main effect of sex ($p < 0.001$), age group ($p < 0.001$), and mental health ($p < 0.001$) but not somatic problems ($p > 0.05$). The only significant interaction was sex by age group ($p = 0.019$). Females, younger persons, and persons with mental disorders generally manifested higher scores. For the third class of factors, a main effect of age group ($p < 0.001$) and mental health ($p < 0.001$) was observed but not of sex ($p = 0.313$) or somatic health ($p = 0.266$). No interaction was significant.

**Table 5.** Second-order factor analysis (varimax normalized) of the scores of the 19 first-order factors in healthy individuals only

| | 2nd order factor 1 | 2nd order factor 2 | 2nd order factor 3 | 2nd order factor 4 | 2nd order factor 5 | 2nd order factor 6 | 2nd order factor 7 | 2nd order factor 8 | 2nd order factor 9 | 2nd order factor 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. Cognitive and motivational deficit | −0.08 | 0.23 | 0.10 | *0.58* | −0.01 | 0.13 | −0.25 | −0.10 | −0.11 | 0.15 |
| 2. Emotional lability | 0.05 | 0.25 | 0.11 | −0.03 | 0.06 | *0.44* | 0.04 | 0.30 | −0.20 | 0.02 |
| 3. Social phobia | 0.01 | −0.16 | −0.11 | *0.73* | 0.01 | −0.11 | 0.14 | 0.02 | 0.13 | −0.13 |
| 4. Schizotypal thinking | 0.12 | 0.05 | 0.05 | 0.04 | −0.02 | 0.07 | −0.01 | *−0.79* | −0.06 | −0.01 |
| 5. Attenuated psychotic symptoms | 0.02 | −0.06 | −0.05 | −0.01 | −0.02 | *0.76* | −0.07 | −0.14 | 0.07 | −0.02 |
| 6. Psychotic loss of control | 0.00 | 0.03 | *−0.57* | −0.13 | 0.01 | −0.01 | 0.08 | −0.25 | 0.17 | 0.19 |
| 7. Persecutory thoughts | −0.12 | −0.05 | *0.51* | −0.13 | 0.01 | −0.01 | 0.01 | −0.19 | 0.04 | 0.12 |
| 8. Schizoid loneliness traits | 0.07 | −0.01 | 0.09 | 0.18 | *0.55* | 0.10 | 0.20 | 0.05 | 0.02 | 0.12 |
| 9. Distrust | 0.01 | −0.10 | 0.03 | 0.03 | 0.00 | 0.04 | *−0.80* | −0.02 | 0.04 | 0.01 |
| 10. Dependency traits | −0.03 | *−0.45* | 0.25 | −0.01 | −0.26 | −0.05 | 0.12 | −0.05 | 0.00 | 0.18 |
| 11. Depersonalization/derealization | 0.08 | *−0.72* | −0.01 | 0.01 | 0.14 | 0.01 | −0.19 | 0.07 | −0.05 | −0.06 |
| 12. Experience of own thoughts | 0.09 | −0.07 | 0.07 | −0.05 | −0.05 | 0.19 | 0.01 | 0.21 | 0.27 | *0.62* |
| 13. Schizoid lack of pleasure | 0.04 | 0.02 | 0.05 | 0.14 | *−0.75* | 0.09 | 0.13 | 0.02 | 0.01 | 0.04 |
| 14. Lack of conformity | *0.68* | −0.03 | −0.11 | −0.09 | 0.01 | 0.06 | −0.05 | −0.11 | 0.03 | −0.11 |
| 15. Self-destructive tendencies | *−0.42* | 0.06 | *−0.33* | −0.10 | −0.11 | −0.03 | −0.29 | 0.08 | −0.03 | −0.05 |
| 16. Emotional lability traits | 0.29 | *0.32* | *0.33* | −0.05 | 0.00 | −0.29 | −0.25 | 0.04 | 0.15 | −0.01 |
| 17. Psychopathy | −0.19 | 0.03 | −0.04 | 0.01 | 0.13 | −0.16 | −0.02 | −0.21 | −0.16 | *0.59* |
| 18. Antisocial cruelty | *−0.43* | −0.02 | 0.26 | −0.10 | 0.11 | 0.14 | 0.08 | −0.19 | *0.33* | *−0.32* |
| 19. Suspiciousness on cheating | 0.02 | 0.06 | −0.05 | 0.05 | 0.00 | −0.03 | −0.04 | 0.04 | *0.81* | 0.04 |
| **Proportion of total** | 5.26% | 5.26% | 5.26% | 5.26% | 5.26% | 5.26% | 5.26% | 5.26% | 5.26% | 5.26% |
| **Total proportion explained** | 52.63% | | | | | | | | | |

**Table 6.** Third-order factor analysis (varimax normalized) of the scores of the 10 second-order factors in healthy individuals only

|  | 3rd order factor 1 | 3rd order factor 2 | 3rd order factor 3 | 3rd order factor 4 | 3rd order factor 5 |
|---|---|---|---|---|---|
| 1. Lack of conformity without antisocial/sociopathy | *0.59* | −0.20 | −0.24 | −0.22 | *−0.32* |
| 2. Emotional lability without anxiety | 0.18 | 0.17 | 0.13 | 0.03 | 0.24 |
| 3. Emotional lability without self-harm | 0.00 | 0.02 | *−0.87* | 0.02 | 0.08 |
| 4. Shyness with cognitive and motivational deficit | 0.05 | 0.04 | −0.24 | *0.71* | −0.10 |
| 5. Schizoid traits | −0.01 | 0.09 | 0.12 | 0.06 | *−0.86* |
| 6. Psychotic emotional lability | *0.36* | 0.03 | −0.06 | 0.05 | 0.22 |
| 7. Trust in others | 0.10 | *−0.75* | 0.14 | −0.05 | 0.13 |
| 8. Schizotypal thinking | 0.14 | *0.58* | 0.09 | −0.12 | 0.11 |
| 9. Antisocial behavior | *0.67* | 0.11 | 0.17 | 0.12 | 0.04 |
| 10. Psychopathy | 0.03 | −0.11 | 0.20 | *0.64* | 0.08 |
| **Proportion of total** | 10.00% | 10.00% | 10.00% | 10.00% | 10.00% |
| **Total proportion explained** |  |  |  |  | 50.00% |

Females had higher scores in third-order factors 1, and 2 and lower in 5. Mental patients had higher scores in third-order factors 1, 2, 4, and 5 and lower in 3.

The visual inspection of Figure 1 suggests that attenuated psychotic traits fall linearly from an average of 7 at the age of 18 to an average of 4 at the age of 40, which corresponds to a 42.85% reduction in 22 years (approximately 2% per year), and they stabilize afterward. Similarly, schizotypal distrust falls linearly from around 4 to around 3 until the age of 38, that is 25% in 20 years (approximately 2.5% per year). Emotional lability and the interpersonal and social deficit also improve by 33.33% each, that is 1.5% per year. Social conformity remained stable by increasing the age and up to the age of 55, when it started declining.

In Table 9, the descriptive statistics of key items by sex and age group are shown.

The above should be considered with the limitation in mind that the data are cross-sectional, and this analysis constitutes a proxy of longitudinal data.

## Discussion

The current study suggests that in the general population, subthreshold and attenuated mental symptoms are common and they can be grouped into attenuated psychotic experiences, schizotypal distrust, emotional lability, conformity, and interpersonal and social dysfunctioning. These groups of symptoms could be further subdivided into cognitive style, emotional functioning, interpersonal and social skills, and relationships, as well as sense of self and self-harm tendencies.

The relationship of this symptomatology to mental ill health per se is unknown. As expected, subjects with mental disorders tend to manifest higher scores in all these dimensions toward the abnormal pole and in relationship with a generic deficit. Interestingly, the frequency of subthreshold symptoms seems to attenuate with age (Figure 1) and, even more interestingly, this attenuation is linear. Also, all aspects of subthreshold symptoms correlated with aspects of the Glo.Di.S. suggesting a weak relationship with functional impairment.

The current study also suggests that there is a drop in the prevalence of subthreshold mental symptoms in a linear way after the age of 18 and until the age of 38–40, with a rate of 1.5–2.5% per year, depending on the domain of symptomatology. This is in accord with the literature [45,51,52] and suggests that there is either a spontaneous remission, a conversion to full-blown mental disorders, or a combination of both. It also suggests that two-thirds to three-quarters of subjects experiencing subthreshold symptoms will continue to experience them throughout their lives without progressing to a full-blown mental disorder. These should be considered with the limitation in mind that the data are cross-sectional and constitute only a proxy of longitudinal data.

In Table 7, the descriptive statistics of key items by sex and age group are shown. C2 (thought broadcasting) was the item with the lowest rate for "never" (36.14%) with almost 13% of subjects above 40 years of age reporting that they experience this symptom "often or all the time." In accordance with the literature,[51] in our study, auditory hallucinations (C48) were experienced by 8.7% of the healthy population; 11.84% in those <40 years of age, and 8.05% in those above. This means that approximately 1.5% of these subjects per year are removed from the "auditory hallucinations" group either because of spontaneous remission or because they manifest a full-blown psychosis. This corresponds to 0.2% of the healthy population per year, and it is much higher than the combined known incidence of schizophrenia spectrum psychosis (0.02–0.05%) [95-98] and bipolar disorder (0.025%),[99,100] pointing to the hypothesis that two-thirds of persons with auditory hallucinations during younger age, manifest a spontaneous remission in late adulthood, but on the other hand, one-third of those persons at high risk will eventually proceed to manifest a full-blown major psychotic disorder. This is suggestive of a conversion rate of approximately 0.5% and a remission rate of 1% per year until the age of 40, but they both diminish afterward. These findings are in accord with the literature that reports conversion rates of 0.5–1% per year when the general population is studied.[45,48,49,63] They are also in accord with an attenuation of symptoms with age in full-blown psychosis.[101-103]

During recent decades the focus of research was on identifying those subjects at high risk of developing severe mental disorders, especially psychosis.[104-106] For this reason, lists of symptoms have been developed and scales and structured interviews have been

**Table 7.** Frequency tables of the presence of attenuated mental symptoms in healthy subjects only by age

| | Age < 30, N = 389 | | | | | Age > 29, N = 261 | | | | | Difference between age groups | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Never | Rarely | Some times | All the time/ many times | Sometimes or all the time | Never | Rarely | Some times | All the time/ many times | Sometimes or all the time | Sometimes or all the time | All the time |
| C1. Do you feel guilty? | 4.94 | 23.36 | 47.47 | 24.23 | 71.69 | 5.92 | 30.35 | 49.32 | 14.42 | 63.73 | −11.10 | −40.50 |
| C2. Do you feel that ideas or thoughts are being broadcast out of your head? | 25.71 | 13.97 | 34.12 | 26.21 | 60.32 | 40.97 | 19.88 | 28.22 | 10.93 | 39.15 | −35.10 | −58.31 |
| C3. Are you generally suspicious of other people? | 13.72 | 57.60 | 22.13 | 6.55 | 28.68 | 19.12 | 61.15 | 15.63 | 4.10 | 19.73 | −31.21 | −37.46 |
| C4. Do you feel that your thoughts are out of your control? | 23.86 | 35.60 | 30.04 | 10.51 | 40.54 | 42.64 | 35.05 | 19.12 | 3.19 | 22.31 | −44.98 | −69.67 |
| C5. Do you enjoy interacting with people? | 0.50 | 3.34 | 38.86 | 57.30 | 96.16 | 1.37 | 6.68 | 31.11 | 60.85 | 91.96 | −4.37 | 6.19 |
| C6. Do you feel detached or away from your surroundings, as if you are playing in some kind of a theater as if nothing really touches you? | 36.22 | 30.16 | 26.08 | 7.54 | 33.62 | 43.85 | 30.65 | 21.09 | 4.40 | 25.49 | −24.18 | −41.64 |
| C7. Is it difficult for you to sustain attention? | 13.12 | 33.54 | 38.74 | 14.60 | 53.34 | 19.88 | 41.27 | 32.78 | 6.07 | 38.85 | −27.17 | −58.44 |
| C8. Do you believe in telepathy? | 49.81 | 37.70 | 9.27 | 3.21 | 12.48 | 50.38 | 39.00 | 7.89 | 2.73 | 10.62 | −14.92 | −15.01 |
| C9. Is it difficult for you to feel pleasure? | 18.91 | 39.80 | 33.00 | 8.28 | 41.29 | 19.88 | 37.48 | 32.78 | 9.86 | 42.64 | 3.28 | 19.10 |
| C10. Do you feel that your body or a part of it is dead or unreal? | 80.96 | 10.26 | 6.80 | 1.98 | 8.78 | 79.21 | 12.90 | 6.37 | 1.52 | 7.89 | −10.09 | −23.27 |
| C11. Is it difficult for you to focus your mind on a specific subject? | 21.88 | 39.80 | 29.54 | 8.78 | 38.32 | 30.96 | 45.22 | 21.09 | 2.73 | 23.82 | −37.83 | −68.88 |
| C12. Have you ever attempted to kill yourself? | 91.84 | 4.70 | 2.47 | 0.99 | 3.46 | 94.08 | 3.49 | 1.67 | 0.76 | 2.43 | −29.85 | −23.27 |
| C13. Do you ever feel persecuted? | 82.94 | 11.87 | 4.70 | 0.49 | 5.19 | 91.96 | 5.61 | 2.12 | 0.30 | 2.43 | −53.23 | −38.62 |
| C14. Have other people told you that you speak incoherently? | 69.72 | 20.02 | 8.53 | 1.73 | 10.26 | 84.67 | 10.47 | 4.25 | 0.61 | 4.86 | −52.67 | −64.93 |
| C15. Do you believe that you are especially close to God or chosen by God? | 72.31 | 19.28 | 6.18 | 2.22 | 8.41 | 66.62 | 20.64 | 10.32 | 2.43 | 12.75 | 51.65 | 9.12 |
| C16. Is it difficult for you to control your anger? | 25.71 | 45.86 | 22.50 | 5.93 | 28.43 | 13.35 | 49.01 | 32.63 | 5.01 | 37.63 | 32.37 | −15.60 |
| C17. Do you believe that there is a political conspiracy against you? | 92.71 | 5.81 | 0.99 | 0.49 | 1.48 | 92.87 | 5.61 | 0.46 | 1.06 | 1.52 | 2.30 | 114.83 |
| C18. Do you take potentially dangerous risks (driving while drunk, gambling, extreme sports)? | 74.91 | 18.17 | 5.93 | 0.99 | 6.92 | 82.25 | 13.51 | 3.64 | 0.61 | 4.25 | −38.62 | −38.62 |
| C19. Do you experience emotional changes? | 7.54 | 30.04 | 41.78 | 20.64 | 62.42 | 9.56 | 41.88 | 38.85 | 9.71 | 48.56 | −22.21 | −52.95 |
| C20. Do you see or smell things that other people do not? | 79.85 | 11.99 | 6.43 | 1.73 | 8.16 | 78.91 | 11.84 | 8.04 | 1.21 | 9.26 | 13.46 | −29.85 |
| C21. Do you believe that other people can read your mind? | 75.87 | 17.20 | 6.31 | 0.62 | 6.93 | 72.23 | 21.24 | 6.07 | 0.46 | 6.53 | −5.85 | −26.43 |
| C22. Do you feel a lack of motivation to accomplish a task? | 13.97 | 31.03 | 38.07 | 16.93 | 55.01 | 22.91 | 40.52 | 31.71 | 4.86 | 36.57 | −33.52 | −71.33 |
| C23. Do you have friends? | 0.99 | 9.27 | 62.92 | 26.82 | 89.74 | 2.43 | 17.60 | 57.66 | 22.31 | 79.97 | −10.89 | −16.84 |
| C24. Do you believe that your husband or wife or significant other is cheating on you, but you do not have any proof? | 80.96 | 13.72 | 4.20 | 1.11 | 5.32 | 80.12 | 13.35 | 5.92 | 0.61 | 6.53 | 22.76 | −45.44 |
| C25. Do you feel that your body or parts of it change shape? | 76.64 | 12.48 | 9.15 | 1.73 | 10.88 | 73.44 | 12.44 | 10.47 | 3.64 | 14.11 | 29.74 | 110.45 |

**Table 7.** *Continued*

| | Age < 30, N = 389 | | | | | Age > 29, N = 261 | | | | | Difference between age groups | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Never | Rarely | Some times | All the time/ many times | Sometimes or all the time | Never | Rarely | Some times | All the time/ many times | Sometimes or all the time | Sometimes or all the time | All the time |
| C26. Have you ever hurt yourself on purpose? | 76.14 | 8.41 | 7.91 | 7.54 | 15.45 | 90.90 | 3.95 | 2.88 | 2.28 | 5.16 | −66.61 | −69.81 |
| C27. Have other people told you that you make facial expressions, gestures, or body movements that are not ordinary? | 76.76 | 14.96 | 6.92 | 1.36 | 8.28 | 86.04 | 10.47 | 2.73 | 0.76 | 3.49 | −57.86 | −44.20 |
| C28. Do you believe that you can tell the future? | 74.88 | 16.83 | 7.05 | 1.24 | 8.29 | 77.24 | 16.08 | 5.46 | 1.21 | 6.68 | −19.48 | −1.91 |
| C29. Do you feel that other people can easily affect you? | 14.73 | 40.47 | 36.26 | 8.54 | 44.80 | 15.02 | 49.92 | 31.41 | 3.64 | 35.05 | −21.76 | −57.35 |
| C30. Do you feel that it's difficult to control your own thoughts? | 24.01 | 35.52 | 29.46 | 11.01 | 40.47 | 37.94 | 40.97 | 18.66 | 2.43 | 21.09 | −47.88 | −77.96 |
| C31. Do you feel that other people envy you? | 48.45 | 45.12 | 5.19 | 1.24 | 6.43 | 43.25 | 48.71 | 6.68 | 1.37 | 8.04 | 25.12 | 10.49 |
| C32. Do you enjoy playing by teasing or even hurting animals of any kind? | 97.65 | 1.73 | 0.37 | 0.25 | 0.62 | 97.42 | 2.28 | 0.15 | 0.15 | 0.30 | −50.90 | −38.62 |
| C33. Do you believe that your own thoughts or actions can influence real-life events, even if you cannot explain them? | 40.42 | 37.70 | 15.45 | 6.43 | 21.88 | 49.17 | 37.33 | 10.32 | 3.19 | 13.51 | −38.27 | −50.42 |
| C34. Is it difficult for you to focus on a particular activity? | 17.55 | 41.78 | 31.52 | 9.15 | 40.67 | 28.38 | 52.35 | 16.24 | 3.03 | 19.27 | −52.61 | −66.82 |
| C35. Do you dress in a way that is not usual for other people? | 70.30 | 21.41 | 5.94 | 2.35 | 8.29 | 80.27 | 13.35 | 4.86 | 1.52 | 6.37 | −23.14 | −35.47 |
| C36. Do other people tell you that your mood changes rapidly? | 43.88 | 30.66 | 19.41 | 6.06 | 25.46 | 53.72 | 30.35 | 13.20 | 2.73 | 15.93 | −37.43 | −54.90 |
| C37. Do you believe that someone, or something, outside yourself is controlling you? | 83.29 | 10.52 | 4.83 | 1.36 | 6.19 | 88.77 | 6.83 | 3.79 | 0.61 | 4.40 | −28.89 | −55.41 |
| C38. Is it difficult for you to explain what you mean to other people? | 26.73 | 39.48 | 26.49 | 7.30 | 33.79 | 38.69 | 42.34 | 17.00 | 1.97 | 18.97 | −43.86 | −72.98 |
| C39. Do you smile or laugh? | 0.12 | 2.97 | 26.58 | 70.33 | 96.91 | 0.46 | 4.70 | 31.11 | 63.73 | 94.84 | −2.14 | −9.38 |
| C40. Do you prefer to be alone rather than with friends or colleagues? | 7.79 | 34.12 | 51.05 | 7.05 | 58.10 | 6.22 | 30.50 | 54.02 | 9.26 | 63.28 | 8.92 | 31.38 |
| C41. Do you believe in clairvoyance? | 74.29 | 22.37 | 2.35 | 0.99 | 3.34 | 72.38 | 23.52 | 3.03 | 1.06 | 4.10 | 22.76 | 7.42 |
| C42. Are you easily affected by other people? | 17.43 | 59.09 | 20.02 | 3.46 | 23.49 | 21.40 | 67.68 | 10.02 | 0.91 | 10.93 | −53.48 | −73.69 |
| C43. Do you hurt yourself? (skin cutting, burning) | 88.37 | 7.55 | 2.60 | 1.49 | 4.08 | 93.93 | 4.40 | 1.37 | 0.30 | 1.67 | −59.13 | −79.56 |
| C44. Is it difficult for you to talk to your colleagues? | 55.75 | 37.82 | 5.32 | 1.11 | 6.43 | 70.26 | 25.80 | 3.34 | 0.61 | 3.95 | −38.62 | −45.44 |
| C45. Do you feel like your mind is empty? (No thoughts in your head) | 62.67 | 26.45 | 9.64 | 1.24 | 10.88 | 67.68 | 25.95 | 6.07 | 0.30 | 6.37 | −41.41 | −75.45 |
| C46. Do you believe that other people constantly want to take advantage of you? | 41.58 | 39.60 | 15.35 | 3.47 | 18.81 | 33.99 | 42.64 | 20.49 | 2.88 | 23.37 | 24.22 | −16.80 |
| C47. Do you believe that you can do extraordinary things that other people cannot do? | 57.05 | 26.98 | 12.87 | 3.09 | 15.97 | 58.12 | 24.73 | 14.57 | 2.58 | 17.15 | 7.40 | −16.63 |
| C48. Do you hear voices or music that other people seem not to? | 86.90 | 8.65 | 3.09 | 1.36 | 4.45 | 94.69 | 3.79 | 0.91 | 0.61 | 1.52 | −65.90 | −55.36 |
| C49. Do you easily change your feelings toward the same person? | 30.07 | 43.81 | 22.03 | 4.08 | 26.11 | 25.95 | 55.99 | 16.39 | 1.67 | 18.06 | −30.85 | −59.13 |

**Table 7.** *Continued*

| | Age < 30, N = 389 | | | | | Age > 29, N = 261 | | | | | Difference between age groups | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Never | Rarely | Some times | All the time/ many times | Sometimes or all the time | Never | Rarely | Some times | All the time/ many times | Sometimes or all the time | Sometimes or all the time | All the time |
| C50. Do you feel as if you were not yourself, as if you were some kind of robot? | 78.12 | 13.35 | 6.67 | 1.85 | 8.53 | 80.42 | 12.44 | 6.68 | 0.46 | 7.13 | −16.38 | −75.45 |
| C51. Do you feel shy or embarrassed when you are talking to a stranger? | 10.64 | 30.57 | 39.23 | 19.55 | 58.79 | 23.67 | 40.97 | 26.40 | 8.95 | 35.36 | −39.86 | −54.22 |
| C52. Do you feel there is some kind of a love affair between yourself and a famous person? | 96.79 | 1.85 | 0.99 | 0.37 | 1.36 | 96.81 | 2.43 | 0.61 | 0.15 | 0.76 | −44.20 | −59.08 |
| C53. Do you believe that you are being watched e.g. through your mobile phone, cameras, bugs, etc? | 66.50 | 20.02 | 10.14 | 3.34 | 13.47 | 80.73 | 12.59 | 5.92 | 0.76 | 6.68 | −50.44 | −77.27 |
| C54. Do you feel uncomfortable when you meet people for the first time? | 12.11 | 39.56 | 34.12 | 14.22 | 48.33 | 25.80 | 42.64 | 25.34 | 6.22 | 31.56 | −34.69 | −56.23 |
| C55. Can you hear a voice speaking your thoughts aloud? | 81.68 | 8.04 | 6.93 | 3.34 | 10.27 | 92.87 | 5.01 | 1.67 | 0.46 | 2.12 | −79.32 | −86.38 |
| C56. Is it difficult for you to complete a task? | 21.16 | 41.46 | 28.71 | 8.66 | 37.38 | 31.56 | 49.77 | 16.54 | 2.12 | 18.66 | −50.06 | −75.48 |
| C57. Do you feel anxious when you are with a group of unfamiliar people? | 12.25 | 33.29 | 33.04 | 21.41 | 54.46 | 21.24 | 42.79 | 27.77 | 8.19 | 35.96 | −33.96 | −61.73 |
| C58. Do you feel that you are losing your mind? | 60.69 | 23.49 | 11.50 | 4.33 | 15.82 | 71.02 | 21.09 | 7.44 | 0.46 | 7.89 | −50.13 | −89.48 |
| C59. Do you believe that strangers are reading your mind? | 91.84 | 5.81 | 1.61 | 0.74 | 2.35 | 91.05 | 7.44 | 1.52 | 0.00 | 1.52 | −35.39 | −100.00 |
| C60. Do you keep friends? | 1.24 | 12.24 | 66.13 | 20.40 | 86.53 | 2.58 | 18.66 | 60.55 | 18.21 | 78.76 | −8.98 | −10.72 |
| C61. Do you believe that there is a conspiracy against you? | 91.58 | 6.81 | 1.11 | 0.50 | 1.61 | 92.72 | 4.55 | 2.28 | 0.46 | 2.73 | 69.77 | −8.04 |
| C62. Do you have mood swings? | 13.23 | 37.33 | 37.21 | 12.24 | 49.44 | 15.02 | 48.56 | 30.50 | 5.92 | 36.42 | −26.34 | −51.64 |
| C63. Do you feel like other people have been talking about you or laughing at you? | 13.23 | 33.87 | 41.16 | 11.74 | 52.90 | 16.08 | 43.55 | 37.63 | 2.73 | 40.36 | −23.70 | −76.74 |
| C64. Do you believe that you have a sixth sense? | 72.19 | 16.81 | 7.91 | 3.09 | 11.00 | 66.01 | 20.33 | 10.93 | 2.73 | 13.66 | 24.14 | −11.61 |
| C65. Do you enjoy physical activities, such as walking, swimming, or sports? | 2.48 | 14.48 | 33.66 | 49.38 | 83.04 | 2.28 | 14.26 | 37.33 | 46.13 | 83.46 | 0.50 | −6.58 |
| C66. Do you feel that ideas or thoughts, that are not your own, have been inserted into your head? | 72.77 | 16.21 | 9.28 | 1.73 | 11.01 | 86.34 | 9.56 | 3.49 | 0.61 | 4.10 | −62.80 | −64.97 |
| C67. Do you easily change your mind? | 6.44 | 44.06 | 40.47 | 9.03 | 49.50 | 5.77 | 56.45 | 33.84 | 3.95 | 37.78 | −23.68 | −56.33 |
| C68. Do you like doing things that usually other people do not? | 24.38 | 39.36 | 29.46 | 6.81 | 36.26 | 24.28 | 45.98 | 27.01 | 2.73 | 29.74 | −17.98 | −59.87 |
| C69. Do you feel lonely? | 8.66 | 33.42 | 42.20 | 15.72 | 57.92 | 16.24 | 38.24 | 35.96 | 9.56 | 45.52 | −21.40 | −39.18 |
| C70. Do you feel as if your mind stops working for a second or two? | 46.23 | 27.07 | 20.27 | 6.43 | 26.70 | 52.96 | 30.35 | 15.17 | 1.52 | 16.69 | −37.48 | −76.39 |
| C71 Have you ever had wishes to be dead? | 61.56 | 12.36 | 12.48 | 13.60 | 26.08 | 69.04 | 10.17 | 12.29 | 8.50 | 20.79 | −20.29 | −37.50 |
| C72. Do you feel a lack of ability to enjoy activities you normally enjoy? | 28.80 | 35.60 | 25.83 | 9.77 | 35.60 | 35.36 | 35.66 | 24.13 | 4.86 | 28.98 | −18.59 | −50.27 |
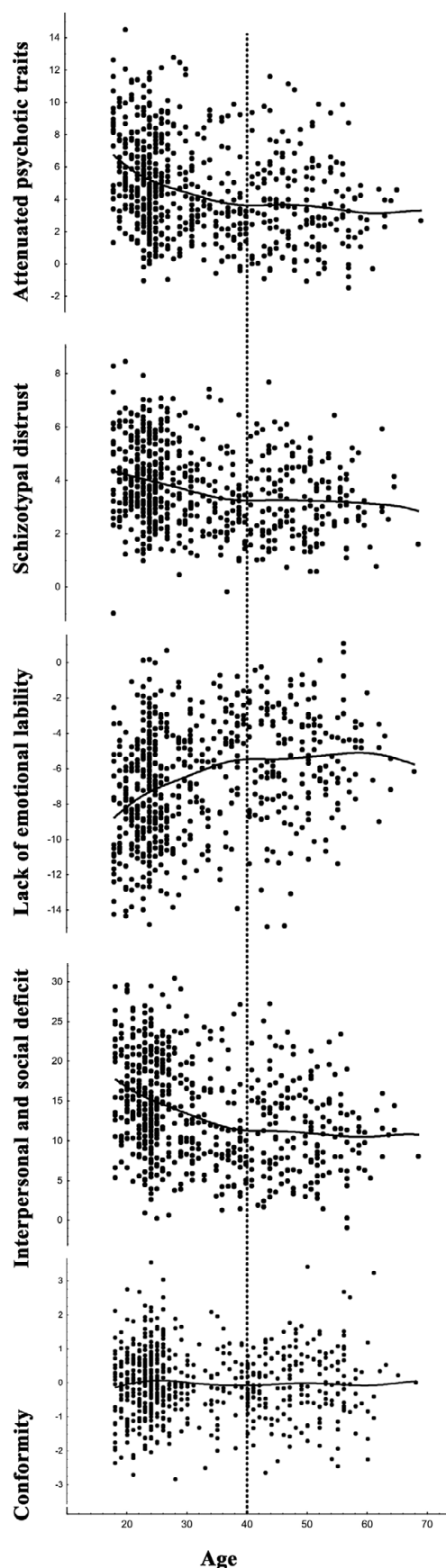
**Figure 1.** Scatterplots of the third-order factors versus age in the healthy population.

created. The best-studied condition concerning the presence of subthreshold symptoms in the general population is the psychosis-risk syndrome and most of the efforts concerned the identification of high-risk groups to manifest psychosis. The main focus of these studies was to reduce or even eliminate the duration of untreated psychosis to improve the overall treatment outcome. Studies in the general population have shown that psychotic experiences are common with a prevalence of up to 7%,[51] most are transitory but many individuals might progress to overt psychosis with an annual transition rate below 1%.[45,51,52] Attenuated psychotic symptoms are reported to be experienced by 13–33% of adolescents [62,107-110] with 7.2% being the most probable estimation.[51]

On this basis, the concept of the "extended psychosis phenotype" has been proposed in a continuum from health to clinical psychosis in the frame of phenomenological as well as temporal continuity.[51,53]

Schizophrenia is often preceded by subthreshold mild symptoms, some kind of mild impairment or dysfunction, low quality of life, and often but not always, help-seeking behavior [14-16,27,111] but also by comorbid non-psychotic symptoms particularly anxiety, depression, and disruptive behavior disorders.[17-19,77,112-118]

Several concepts have been developed, including the clinical high risk for psychosis (CHR-P) state, the brief limited and intermittent psychotic symptoms (BLIPS), and the genetic risk and deterioration (GRD) syndrome.[13,27,35,39-42] Recently, there was a shift in the conceptualization with the change of the label from "psychosis-risk" [57] to "attenuated psychosis" syndrome [47,59], suggesting that there is a specific clinical entity rather than a premorbid syndrome. This raised concerns concerning over-diagnosis and over-treatment of otherwise non-mentally ill persons. Probably, the risk for conversion to psychosis is higher in the BLIPS group (38%), followed by the attenuated psychotic group (24%) and the GRD group (8%) at follow-up of more than 4 years.[35] The SIPS and CAARMS criteria are reported to be able to identify individuals at ultra-high risk of developing a psychotic disorder over the next 1–2 years,[32,33,37] but ultimately the false-positive predictive rate is also extremely high,[22,23,36,119,120] and only a small minority go on to develop schizophrenia.[33,121] A recent meta-analysis found conversion rates from the high-risk syndrome to the psychosis of 22% at 1 year, 29% at 2 years, and 36% at 3 years.[122] Also, the search for specific biological prognostic markers has so far been without reliable results.[123,124] Many environmental and cultural determinants have been proposed but without a sufficient base of evidence, including ethnicity, urbanicity, stressful events, especially childhood adversity, and cannabis use.[125]

The use of the BSABS criteria concept [28,121] returned a conversion rate of up to 70% over a 10-year period,[13] but the data were not always consistent.[126]

An important limitation in the literature is that all the above studies included help-seeking samples. These samples probably reflect a more severely at-risk or ill subgroup of individuals, already manifesting subjective distress and/or impairment [127-129] and are in clinical need of some kind of intervention or treatment.[130,131]

As conducting semi-structured clinical interviews, such as Structured Interview for Psychosis-Risk Syndromes (SIPS),[29,34] or the Comprehensive Assessment of At-Risk Mental State (CAARMS) [13] are highly demanding, the researchers have developed several structured self-reported screening tools that are aimed at quick identification of the attenuated psychosis syndrome. The most frequently used self-report tools are the PRIME Screening (PS), the Prodromal Questionnaire (PQ), and the Psychosis-Like Symptom Interview (PLSI).[13,31]

**Table 8.** Correlation of the 5 third-order factors with psychometric scale scores in healthy individuals only

| Scale | Attenuated psychotic traits | Schizotypal distrust | Lack of emotional lability traits | Interpersonal and social deficit | Conformity |
|---|---|---|---|---|---|
| **STAI-S** | *0.55* | *0.47* | *−0.65* | *0.63* | *0.13* |
| **CES-D** | | | | | |
| Positive affect | *−0.23* | *−0.22* | *0.31* | *−0.30* | *−0.13* |
| Irritability/Social dysfunction | *0.44* | *0.29* | *−0.47* | *0.44* | 0.03 |
| Depressed affect and somatic | *0.57* | *0.44* | *−0.64* | *0.62* | *0.09* |
| Total | *0.58* | *0.45* | *−0.66* | *0.63* | *0.11* |
| **RASS** | | | | | |
| Intention | *0.34* | *0.26* | *−0.40* | *0.39* | 0.06 |
| Life | *0.42* | *0.33* | *−0.51* | *0.50* | 0.08 |
| History | *0.28* | *0.17* | *−0.30* | *0.29* | 0.04 |
| Total | *0.48* | *0.36* | *−0.57* | *0.56* | *0.08* |
| **GLODIS** | | | | | |
| Everyday functioning | −0.05 | −0.05 | *0.10* | *−0.09* | 0.02 |
| Social and interpersonal | *−0.10* | *−0.08* | *0.15* | *−0.13* | 0.07 |
| Severity | *−0.09* | *−0.08* | *0.15* | *−0.13* | −0.01 |
| Mental disability | *−0.11* | *−0.10* | *0.16* | *−0.15* | 0.02 |
| Total | *−0.08* | −0.07 | *0.14* | *−0.12* | 0.03 |

The clinical reliability and validity of semi-structured clinician-rated interviews are good,[46] however, the respected properties of the majority of self-report tools are unknown.[47] Clinician-rated interviews utilize more severe clinical samples (risk enriched) and suggest that up to 29% of subjects with attenuated symptoms go on to develop psychosis over the following 2 years,[43,44,104,132] while on the contrary much lower conversion rates (as low as 0.5–5%) are reported with self-report tools that utilize more diverse samples from the general population,[45,48,49,63] while the false-positive rate is too high for self-report instruments.[52,133] This is at least partially because the self-rated tools grossly overestimate the prevalence of psychotic symptoms in comparison to clinician ratings, but the question of which approach is more valid remains unknown since clinicians often tend to apply interpretation and understanding instead of simply describing symptoms.[50] Risk enrichment because of attributed qualities and filtering of samples seems to be the main reason for the high rates of conversion with clinician-rated tools.[30,43,44,134]

The literature on the relationship between subthreshold psychotic experiences and comorbid general psychopathology is unclear. Persons with anxiety and depression are probably at a higher risk of having psychotic experiences, and this comorbidity is related to higher impairment and disability as well as to poorer outcomes.[116] This is in accord with the findings of the current study. The nature of the relationship is unknown, but some authors suggest that there is a dose–response relationship between affective instability, behavioral disorder, and psychotism, and this implies a causal relationship.[113,135-139] In this frame, the presence of any neurocognitive alterations, especially concerning mental speed and working memory, are reported to be found more often in individuals with mental symptoms, and especially in those with psychotic experiences and contribute to functional impairment.[140-144] On the other hand, an unexpectedly high rate of soft neurological signs can be found in otherwise healthy individuals.[145]

On the opposite side, there seems to be no specific correlation between any subclinical experience of mental symptoms and a specific mental disorder, not even a specific psychotic disorder. There seems to be a transdiagnostic psychosis phenotype that underlies in a continuum under both the schizophrenic as well as the bipolar spectrum without any clear-cut points of separation.[139,146-153] Age could constitute a decisive factor both because of maturation but also because of emerging degeneration in late life.[154]

As mentioned in the introduction, the "Attenuated Psychosis Syndrome" was added in Section III under "conditions for further study," in the DSM-5.[47,57] Even as such, this constitutes a controversial proposal, since it proposes the diagnosis of a "quasi-mental disorder" in subjects who otherwise do not fulfill the hard requirements for a mental disorder,[38,47,58] and eventually, it raises concerns about overdiagnosis and potential overtreatment. The study reflects this controversy, suggesting the need for careful consideration in clinical practice.

## Conclusion

The present study reports that a significant part of the general healthy population experiences subthreshold mental problems. Attenuated psychotic symptoms are present in almost 10% of the population, and the conversion rate to any kind of psychosis is probably 0.5% per year until the age of 40, with one-third of these persons eventually converting. Interestingly, beyond the age of 40, no conversion seems to occur.

Our data are in accord with previous studies in the general population and differ significantly from studies in clinical samples. While data on the treatment of overt psychopathological states are strong,[155-160] the usefulness of available treatment options in subthreshold and attenuated states is not solidly proven.

**Table 9.** Descriptive statistics of key items of the questionnaire, by sex and age group

| | sex | age group | never | rarely | sometimes | often/all the time |
|---|---|---|---|---|---|---|
| C2. Do you feel that ideas or thoughts are being broadcast out of your head? | Females | <40 | 30.16 | 18.36 | 35.08 | 16.39 |
| | | >39 | 37.58 | 21.48 | 30.87 | 10.07 |
| | | total | 32.60 | 19.38 | 33.70 | 14.32 |
| | Males | <40 | 31.29 | 15.65 | 34.01 | 19.05 |
| | | >39 | 65.96 | 14.89 | 10.64 | 8.51 |
| | | total | 39.69 | 15.46 | 28.35 | 16.49 |
| | Both sexes | <40 | 33.72 | 16.53 | 32.52 | 17.23 |
| | | >39 | 49.84 | 15.71 | 21.58 | 12.87 |
| | | total | 36.14 | 17.42 | 31.03 | 15.41 |
| C12. Have you ever attempted to kill yourself? | Females | <40 | 98.03 | 1.64 | 0.33 | 0.00 |
| | | >39 | 98.66 | 1.34 | 0.00 | 0.00 |
| | | total | 98.24 | 1.54 | 0.22 | 0.00 |
| | Males | <40 | 97.96 | 1.36 | 0.68 | 0.00 |
| | | >39 | 100.00 | 0.00 | 0.00 | 0.00 |
| | | total | 98.45 | 1.03 | 0.52 | 0.00 |
| | Both sexes | <40 | 98.15 | 1.32 | 0.52 | 0.00 |
| | | >39 | 99.08 | 0.66 | 0.26 | 0.00 |
| | | total | 98.35 | 1.29 | 0.37 | 0.00 |
| C20. Do you see or smell things that other people do not? | Females | <40 | 84.59 | 10.82 | 4.59 | 0.00 |
| | | >39 | 77.85 | 13.42 | 8.05 | 0.67 |
| | | total | 82.38 | 11.67 | 5.73 | 0.22 |
| | Males | <40 | 78.23 | 10.20 | 8.84 | 2.72 |
| | | >39 | 82.98 | 12.77 | 4.26 | 0.00 |
| | | total | 79.38 | 10.82 | 7.73 | 2.06 |
| | Both sexes | <40 | 79.56 | 10.73 | 7.79 | 1.93 |
| | | >39 | 81.27 | 11.75 | 6.02 | 0.97 |
| | | total | 80.88 | 11.25 | 6.73 | 1.14 |
| C32. Do you enjoy playing by teasing or even hurting animals of any kind? | Females | <40 | 99.67 | 0.33 | 0.00 | 0.00 |
| | | >39 | 98.66 | 1.34 | 0.00 | 0.00 |
| | | total | 99.34 | 0.66 | 0.00 | 0.00 |
| | Males | <40 | 94.56 | 4.76 | 0.68 | 0.00 |
| | | >39 | 93.62 | 4.26 | 2.13 | 0.00 |
| | | total | 94.33 | 4.64 | 1.03 | 0.00 |
| | Both sexes | <40 | 95.70 | 3.71 | 0.60 | 0.00 |
| | | >39 | 94.66 | 3.98 | 1.36 | 0.00 |
| | | total | 96.83 | 2.65 | 0.52 | 0.00 |
| C37. Do you believe that someone, or something, outside yourself is controlling you? | Females | <40 | 88.85 | 7.87 | 2.30 | 0.98 |
| | | >39 | 89.93 | 4.70 | 4.70 | 0.67 |
| | | total | 89.21 | 6.83 | 3.08 | 0.88 |
| | Males | <40 | 86.39 | 8.16 | 2.72 | 2.72 |
| | | >39 | 93.62 | 6.38 | 0.00 | 0.00 |
| | | total | 88.14 | 7.73 | 2.06 | 2.06 |
| | Both sexes | <40 | 87.54 | 7.72 | 2.65 | 2.10 |
| | | >39 | 90.58 | 7.05 | 1.32 | 1.05 |
| | | total | 88.68 | 7.28 | 2.57 | 1.47 |

**Table 9.** *Continued*

| | sex | age group | never | rarely | sometimes | often/all the time |
|---|---|---|---|---|---|---|
| C48. Do you hear voices or music that other people seem not to? | Females | <40 | 94.10 | 3.61 | 1.31 | 0.98 |
| | | >39 | 96.64 | 3.36 | 0.00 | 0.00 |
| | | total | 94.93 | 3.52 | 0.88 | 0.66 |
| | Males | <40 | 85.03 | 8.16 | 4.08 | 2.72 |
| | | >39 | 95.74 | 4.26 | 0.00 | 0.00 |
| | | total | 87.63 | 7.22 | 3.09 | 2.06 |
| | Both sexes | <40 | 88.16 | 6.77 | 3.03 | 2.04 |
| | | >39 | 91.95 | 5.51 | 1.52 | 1.02 |
| | | total | 91.28 | 5.37 | 1.99 | 1.36 |
| C53. Do you believe that you are being watched e.g. through your mobile phone, cameras, bugs, etc? | Females | <40 | 72.46 | 17.05 | 9.18 | 1.31 |
| | | >39 | 83.89 | 10.07 | 6.04 | 0.00 |
| | | total | 76.21 | 14.76 | 8.15 | 0.88 |
| | Males | <40 | 66.67 | 17.69 | 11.56 | 4.08 |
| | | >39 | 80.85 | 14.89 | 4.26 | 0.00 |
| | | total | 70.10 | 17.01 | 9.79 | 3.09 |
| | Both sexes | <40 | 69.91 | 16.79 | 10.27 | 3.03 |
| | | >39 | 75.38 | 15.84 | 7.26 | 1.52 |
| | | total | 73.16 | 15.88 | 8.97 | 1.99 |
| C59. Do you believe that strangers are reading your mind? | Females | <40 | 97.05 | 2.30 | 0.66 | 0.00 |
| | | >39 | 90.60 | 7.38 | 2.01 | 0.00 |
| | | total | 94.93 | 3.96 | 1.10 | 0.00 |
| | Males | <40 | 89.80 | 8.84 | 1.36 | 0.00 |
| | | >39 | 97.87 | 2.13 | 0.00 | 0.00 |
| | | total | 91.75 | 7.22 | 1.03 | 0.00 |
| | Both sexes | <40 | 91.57 | 7.22 | 1.21 | 0.00 |
| | | >39 | 94.72 | 4.67 | 0.61 | 0.00 |
| | | total | 93.34 | 5.59 | 1.07 | 0.00 |

The current study suggests that attenuated mental symptoms are widespread in the general population, but clinicians should be very cautious in attributing them a diagnostic label.

### Strengths and limitations

The strengths of the current study include the detailed and carefully structured protocol that covered not only the attenuated psychosis domain but also other areas of subthreshold psychopathology, the careful selection of healthy subjects from the population that participated in the study, and the quasi-representativeness of the study sample.

The limitations include the use of a self-report questionnaire as well as self-report scales in a self-selected sample online in a cross-sectional design that was used as a proxy for a longitudinal design. Unfortunately, the questionnaire was not standardized, and probably it is not possible to standardize it in a formal way for use anonymously online. This design has led to several distortions in the study sample, which might have affected the findings. Individuals experiencing mental distress might be more likely to participate, skewing the results. Most important is the overwhelming participation of females versus males and younger people versus those over 60 years old. Especially, the latter makes problematic any assumptions concerning the use of the findings as quasi-longitudinal. The use of cross-sectional data limits the ability to draw causal inferences. Although the analysis uses age as a proxy for longitudinal data, actual longitudinal studies are needed to confirm these findings.

Another limitation is that the COVID pandemic might affect the data since much of the population could be under stress at the time of data gathering, and therefore, the results should be interpreted with caution.

Overall, the characteristics of the study sample make necessary the consideration of the study findings and their interpretation with caution.

the authors participated in the interpretation of the data and the development of subsequent versions of the manuscript.

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