

Measurement of Delusional Ideation in the Normal Population: Introducing the PDI (Peters et al. Delusions Inventory)

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Abstract

The Peters et al. Delusions Inventory (PDI) was designed to measure delusional ideation in the normal population, using the Present State Examination as a template. The multidimensionality of delusions was incorporated by assessing measures of distress, preoccupation, and conviction. Individual items were endorsed by one in four adults on average. No sex differences were found, and an inverse relationship with age was obtained. Good internal consistency was found, and its concurrent validity was confirmed by the percentages of common variance with three scales measuring schizotypy, magical ideation, and delusions. PDI scores up to 1 year later remained consistent, establishing its test-retest reliability. Psychotic inpatients had significantly higher scores, establishing its criterion validity. The ranges of scores between the normal and deluded groups overlapped considerably, consistent with the continuity view of psychosis. The two samples were differentiated by their ratings on the distress, preoccupation, and conviction scales, confirming the necessity for a multidimensional analysis of delusional thinking. Possible avenues of research using this scale and its clinical utility are highlighted.

Key words: Delusions, schizotypy, questionnaire.
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The view that there may be a thread of continuity between normality and psychosis is by no means a recent one (e.g., Bleuler 1911; Rado 1953; Meehl 1962). Psychotic symptoms are now conceptualized as the severe expression of traits that are present in the general population and manifest themselves as psychological variations observable among individuals ranging from the perfectly well-adjusted to those who, while showing signs of psychopathology, would not be considered clinically psychotic (Claridge 1972; 1987). Thus, the distinction between signs of mental illness (i.e., *symptoms*) and the

expression of human individuality (i.e., *traits*) becomes blurred.

In the last 20 years substantial evidence has accrued in support of the dimensional view. First, multifactorial-polygenic or diathesis-stress models (Gottesman 1991; Roberts and Claridge 1991) regard the dimensionality of schizophrenia phenomena as an important feature and indeed predict the possibility of graded variation in phenotypic expression. Several studies have demonstrated the genetic basis for the schizotypal nervous system, both in the general population (e.g., Claridge and Hewitt 1987; Kendler and Hewitt 1992) and the clinical population (e.g., Grove et al. 1991). Second, there is considerable evidence that individuals with high scores on various indices of schizotypal characteristics resemble people with a diagnosis of schizophrenia on a number of experimental correlates (see Claridge 1994 for a review). Evidence from high-risk research (e.g., Hallet et al. 1990; Cannon et al. 1986) seems to point to a convergence in the two areas. First-degree relatives of schizophrenia probands are showing increased frequencies of schizotypal personality disorders (Varma and Sharma 1993) and exhibiting similar abnormalities to both individuals with schizophrenia (Grove et al. 1991) and schizotypal individuals.

The third body of experimental evidence that supports the concept of schizotypy concerns the psychometric identification of psychosis-proneness in normal individuals. The purpose of this identification is first to assist in the selection of individuals for comparison on some kind of experimental measure (as discussed above). This may be preferable to studying individuals in the throes of a psychotic breakdown, whose nonspecific impairments may obscure the central features of the disorder. The second purpose concerns the longitudinal identification of people at risk for psychotic breakdown (Chapman and

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Chapman 1988) and has potential implications for early therapeutic interventions (Birchwood and Macmillan 1993).

Two main approaches have been taken in the development of schizotypy inventories. The first involves measurement of a general psychosis-proneness using a single scale that samples a range of schizotypal characteristics (e.g., Claridge and Broks' Schizotypy Scales (STQ) 1984; Raine 1991). The second involves development of specific questionnaires intended to tap diverse symptoms of psychosis, each scale centering on a narrow definition of a symptom (e.g., the Launay-Slade Hallucinatory Scale, 1981). These two approaches reflect the different ways the notion of continuity in mental illness has been interpreted. Claridge (1994) labels the two viewpoints as "fully" and "quasi"-dimensional. The quasi-dimensional view takes the abnormal state as its reference point and construes the continuity as varying degrees of expression of the clinical signs and symptoms. This view is exemplified by the Chapman stance (e.g., Chapman and Chapman 1980), whose various self-report scales measure attenuated psychotic symptoms (e.g., the Perceptual Aberration Scale, Chapman et al. 1978). In contrast, the fully dimensional view emphasizes dimensionality at the dispositional level, conceptualizing schizotypy as a personality trait—albeit deviant—that is analogous to other individual differences, such as the extroversion-introversion dimension (Eysenck 1992). A crucial difference is that the fully dimensional model sees deviant traits as representing healthy diversity in personality, while the quasi-dimensional viewpoint conceptualizes schizotypy as attenuated psychotic symptoms.

While the number of schizotypy scales, based on both the fully and quasi-dimensional models, has been burgeoning in recent years, there are limitations in the questionnaires currently available to measure delusion proneness, or ideation. The Magical Ideation Scale (MgI; Eckblad and Chapman 1983) purports to "measure belief in forms of causation that by conventional standards in our culture are invalid . . . and has obvious face validity for identifying persons with delusional beliefs" (Chapman and Chapman 1988, p. 168). However, in practice the MgI is confined to items measuring first-rank symptoms (Schneider 1959), as well as more ordinary superstitious ideas, such as belief in horoscopes. On the one hand, first-rank symptoms are relatively uncommon and rarely endorsed in the normal population; on the other hand, mild superstition cannot be unambiguously said to represent delusional ideation.

Another available scale is the Foulds Delusions-Symptoms-State Inventory (Foulds and Bedford 1975), which is clearly less than ideal for measuring psychotic characteristics in the normal population, because it was

designed for use in clinical diagnosis and consists of items depicting florid symptoms. Furthermore, only four types of delusions are represented (delusions of grandeur, disintegration, persecution, and contrition), compared with the nine types of delusions documented in *DSM-III-R* (American Psychiatric Association 1987) and the seven categories, each with several examples, included in the Present State Examination (PSE; Wing et al. 1974). More recently, Fenigstein and Venable (1992) designed a scale to assess paranoid thought; but, although paranoia is obviously relevant to delusional thinking, it again covers only a subset of delusional themes found in psychosis.

In addition to respecting the breadth of delusions, it is also necessary to view them as phenomena that vary along a number of dimensions rather than all-or-nothing occurrences (e.g., Garety and Hemsley 1987). One area of confusion in this field, however, is the difference between delusional *experiences* and delusional *beliefs*. It is not a straightforward perception versus cognition distinction: perceptions do not exist independently of their interpretations. This is well illustrated by Chadwick and Birchwood (1994), who adopted a cognitive model of auditory hallucinations. They demonstrated that hallucinatory *experiences* were mediated by *beliefs* about the voices, such as whether they were malevolent or benevolent. Those beliefs were central to the maintenance of affective and behavioral responses to the voices, and modification of the beliefs led to fewer actual hallucinatory experiences, an unexpected finding.

Garety and Hemsley (1994) attempt to tease out the concepts of experiences and beliefs in their model of delusions. They conceptualize delusions as *evaluations* of mental events, either internally or externally generated. The mental phenomena in themselves are not delusional, but rather it is the evaluative judgment imposed on them that represents the delusion. Thus, one person may view two people whispering to each other as a sign that they are sharing private information, while another person may become convinced that they are plotting against him or her. Similarly, the experience of having no thoughts in one's head may be interpreted by one person as a sign of tiredness or inadequacy, without really *believing* there really are no thoughts in his or her head. Another person experiencing a similar phenomenon may foster a literal interpretation and conclude that the devil has stolen his or her thoughts. The judgment or outcome of the same event is very different in each case.

The delusional inferences may be caused by a complex interaction of experience and judgment, including, for example, a lack of awareness of willed intentions (Frith 1987), or a jump-to-conclusions cognitive style

(Garety et al. 1991), or an external attribution style for negative events (Bentall et al. 1991).¹ In order to understand, or measure, aberrant beliefs, it is therefore necessary to know about both the event (i.e., the belief content) and its evaluation (i.e., the belief conviction).

Recent years have seen a refinement in the classification and measurement of delusional beliefs, and confirmation of their multidimensional status (see Chapman and Chapman 1988). For example, Harrow et al. (1988) analyzed three dimensions of delusions, concerned with belief-conviction, perspectives on how society would see delusions, and emotional commitment. Garety and Hemsley (1987) assessed deluded patients on 11 belief characteristics and found four components: distress, belief strength, obtrusiveness, and concern. Brett-Jones et al. (1987) undertook a systematic evaluation of the different aspects of delusional beliefs (conviction, preoccupation, and interference) in a series of nine single case studies over a period of 6 to 26 weeks. They found a lack of covariance and a marked desynchrony of change among these different measures over time. A similar cognitive lag phenomenon was observed by Chadwick and Lowe (1994), who measured anxiety, conviction, and preoccupation during two types of cognitive intervention. Throughout these studies the recurrent dimensions that emerge concern levels of conviction, preoccupation, and distress.

Delusions are therefore no longer conceptualized as all-or-nothing "false beliefs." Rather, the content of delusional beliefs lies on a continuum with normality, the level of conviction with which they are held waxes and wanes over time, the degree of preoccupation with them is highly variable, and the amount of distress they cause fluctuates. Whether or not an individual will suffer a psychotic breakdown in which delusions are prominent will most certainly depend on the combination of the type of experience encountered, the extent to which it is believed, how much it interferes in a person's life, and its emotional impact. Indeed, Claridge (1994) notes that there is almost certainly a core feature that is a necessary precondition for psychosis and is likely to be defined by positive schizotypy—namely, aberrant perceptions and beliefs. However, he qualifies this by adding that the expression of this unique feature will be modulated by other sources of individual variation. For example, he comments that some people—the so-called "happy schizotypes"—report strong experiences characteristic of positive schizotypy

¹ These explanations take into account the automaticity of the evaluation, and do not contend that delusions are necessarily always formed as post hoc explanations using controlled, conscious processing. This accounts for what is described by Chadwick (1992) as the "meaning feeling," and represents the often-reported phenomenon of seemingly instant delusion crystallization.

with no evidence of psychosis. Again this is consistent with Garety and Hemsley's (1994) claims that delusions are more than statements of experience, they are evaluative judgments or beliefs about experiences.

Surprisingly, those issues are not reflected in current psychometric tools. Typical questionnaires require a dichotomous answer, forcing respondents to choose between the presence or absence of certain experiences. Therefore, it is imperative to incorporate dimensions of belief strength, preoccupation, and distress in our psychometric measures, because they are likely to determine where individuals lie on the continuum from psychological health to mental illness.

The aim of the Peters et al. Delusions Inventory, (PDI) was to measure delusional ideation in the normal population. Four issues were taken into account in its design. First, the approach qualified by Claridge (1994) as quasi-dimensional was adopted, because the measure of interest was the degree of expression of a specific clinical symptom. The second issue was the need to devise a questionnaire sampling a wider range of delusions and with improved psychometric properties than currently existing scales. The third issue concerned selecting items with content validity, but sufficiently attenuated not to depict florid symptoms rarely endorsed in the normal population. The fourth issue involved incorporating the dimensions of belief strength, preoccupation, and distress.

Method

Construction of the PDI

Item selection. The psychotic state was taken as a reference point for the construction of items, and as wide a range of delusions as possible was sampled. The Present State Examination (PSE, 9th ed.; Wing et al. 1974) was used as a template on which to base the selection of items. The PSE is divided into subsections. The delusions section includes seven categories, each with several examples. The clinical basis of the PSE and its overinclusiveness were deemed ideal to the purposes of measuring attenuated psychotic symptoms and of sampling a wide range of delusional beliefs. In addition, the PSE covers the five clusters of belief content identified by Garety et al. (1988) in a sample of 55 deluded individuals, namely, positive self, negative self, positive world, negative world, and paranoid.

The face validity of the items was ensured by keeping as close as possible to the forms of questioning suggested by the PSE. However, the questions were toned down and cast into a format that was thought to capture their normal equivalents. In many cases, adding an "as if" to the question was sufficient, although in some instances it was necessary to deviate from the original slightly more. This

procedure was followed to ensure that the items did not depict florid symptomatology and were appropriate for the normal population.

The PSE was designed to measure categorical states rather than continuous traits. To capture phenomena that occurred over a lifetime rather than during a specified period of time, the words "do you ever feel," or "do you ever think" were added at the beginning of the question. Thus, the PSE example "Is anyone deliberately trying to harm you?" becomes "Do you ever feel as if someone is deliberately trying to harm you?"

Five questions were constructed for each category of delusions, giving 35 items. In addition, the category depicting experiences of disturbed thinking (a subset of Schneider's (1959) first-rank symptoms) also was included. Such experiences were considered delusional, rather than purely experiential, because they involve an evaluative judgment (Garety and Hemsley 1994). An extra five items were therefore added to capture the symptoms of thought reading, insertion, echo, and broadcast, making a total of 40 items.

The categories included were as follows: (1) delusions of control; (2) misinterpretations, misidentification, and delusions of reference; (3) delusions of persecution; (4) expansive delusions; (5) delusions concerning various types of influence and primary delusions; (6) other delusions; (7) simple delusions based on guilt, depersonalization, hypochondriasis; (8) thought reading, insertion, echo, broadcast. The PDI items can be found in the appendix.

The five questions in each category attempt to cover as many different aspects of each category as possible. The categories varied greatly in their specificity; "delusions of control" and "persecution" are the most tightly defined. Delusions of control contained enough examples of questioning in the PSE to construct five separate questions with no overlap. The PSE did not provide enough examples for delusions of persecution, so the authors used their clinical experience to generate an extra two items (items 13 and 15).

"Misinterpretations, misidentification, and delusions of reference," and "expansive delusions" comprised two and three sections, respectively. The former provided enough examples for five independent items. This section, in conjunction with delusions of persecution, covered the paranoid cluster documented by Garety et al. (1988) (e.g., item 8). For the latter, one extra item was added (item 18) so that expansive delusions would cover both the positive *self* and positive *world* delusion groupings identified by Garety et al. (1988). The proportion of four positive self items to one positive world item was considered appropriate, bearing in mind that 25.9 percent of Garety et al.'s (1988) sample reported positive self delusions compared with 1.8 percent for positive world.

The categories called "delusions concerning various types of influence and primary delusions," "other delusions," "simple delusions based on guilt, depersonalization, hypochondriasis," and "thought reading, insertion, echo, and broadcast" each contain five subgroupings. The most representative example of each grouping was used as a template for wording the item. An exception was made for the first category, as the fifth section ("primary delusions") concerned the manner in which the delusion was formed rather than its content, and was therefore inappropriate. Instead, two questions were constructed for the grouping "religious delusions" (items 21 and 25). Garety et al.'s (1988) groupings of negative self (e.g., item 31) and negative world (item 35) were felt to be adequately covered. Again, the proportion of negative self to negative world items reflected Garety et al.'s (1988) findings of 31.5 percent of the sample for the former, 5.5 percent for the latter.

Some deviations were deemed necessary for "other delusions." Delusions of pregnancy were considered to be too specific and had an obvious gender bias. In addition, it was difficult to obtain an attenuated version of the wording suggested. This question was replaced by a distortion of body changes, which was conceptually similar (item 29). The other problematic subsection, which consisted of fantastic delusions, appeared too vague and would have necessitated too much elaboration (i.e., "Have you had any unusual experiences or adventures recently?"). This subgrouping was replaced by "delusion that subject smells" (item 28), which was classified under "Other Hallucinations" (section 14C of the PSE).

Multidimensionality of delusional ideation. The fourth aim of the PDI was to incorporate the dimensions of belief strength, preoccupation, and distress. It was argued that a dichotomous "Yes or No," or "True or False" answer did not reflect accurately the complexity of belief expression. Furthermore, those factors may be more illuminating in placing an individual on the continuum from normality to florid psychopathology than belief content alone. Accordingly, a scale was created on the right-hand side of the inventory to measure the level of distress, preoccupation, and conviction associated with each statement. Respondents were instructed to fill in the flanking scales only for the statements that they endorsed. A "No" response to an item meant that they went straight to the next question, without filling in the distress, preoccupation, and conviction scales.

Each dimension was represented by a five-point Likert scale (from "Not at all distressing" to "Very distressing" for distress; from "Hardly ever think about it" to "Think about it all the time" for preoccupation; and from "Don't believe it's true" to "Believe it is absolutely true" for conviction; see the appendix). One disadvantage of

this approach was the need to key the wording of all items to a "Yes" answer, because only endorsed items were rated on the three dimensions. This made the scale vulnerable to an acquiescence bias. Nevertheless, the advantages obtained in the more thorough analysis of delusion proneness were judged to be of greater benefit and so the three dimensions were retained.

Subjects and procedure. A total of 320 individuals filled out the PDI, the schizotypal personality scale (STA; Claridge and Broks 1984) and Magical Ideation Scale (MgI; Eckblad and Chapman 1983); 82 subjects failed to report their age and 73 failed to report their gender, but they were nevertheless included in the main analyses. Excluded were 48 individuals who did not answer all the items on the PDI. Therefore the main analyses involving the PDI items are based on 272 respondents. The 48 individuals who did not return complete versions of the PDI did not differ from the rest of the sample in distribution of gender ($\chi^2 = 0.9$, $df = 1$, $p = 0.34$) or in age ($t = 1.03$, $df = 236$, $p = 0.31$; two-tailed).

The 272 complete cases ranged in age from 19 to 75 (mean = 36.5, standard deviation (SD) = 10.2, $n = 204$ [68 subjects failed to report their age]), and comprised 82 males and 129 females (61 respondents failing to report their gender).

The 156 respondents who volunteered their name and address on the PDI were contacted by mail 6 months to 1 year later and asked to fill in a new PDI and the Delusions Symptom-State Inventory (DSSI; Foulds and Bedford 1975). Of the 110 individuals who returned their questionnaires, 102 had complete data on the DSSI (34 males, 67 females, 1 unknown gender) and 83 had complete data on the PDI on both their original inventory and follow-up (55 females, 28 males). The mean age for those who submitted complete data on either questionnaire was 37 (range 19–63).

Approximately two-thirds of the sample (the 272 complete cases) were recruited from mature students attending the Open University Summer School. Individuals with a professional background in mental health, or with a psychiatric history, were asked to not participate. The Open University is an adult education institution run by correspondence tuition. It has an open admission policy and can be joined without enrolling for a degree. As a result, its students are an extremely diverse group that straddles all socioeconomic classes, includes a large variety of ethnic backgrounds, and encompasses a wide range of intellectual abilities. The other third had been approached through acquaintances, colleagues, and secretarial staff. Each person was given two questionnaires to pass on to members of their family or friends, with the stipulation that they should not be given to any-

one with a professional mental health background or with a psychiatric history. This recruitment method was an attempt to reach as wide a range of respondents as possible, to ensure that the final sample represented the general population. Unfortunately it was not possible to determine the percentage of subjects who returned their PDIs, and no information is available about the response rate.

In addition to the sample described above, 35 psychotic inpatients on two acute admission wards at the Maudsley Hospital participated in this study. Only patients who were described by the responsible clinician as having psychotic features with no history of neurological impairment or alcohol abuse were selected, irrespective of diagnosis. This information was confirmed by case note review. The selected patients were then rated on the Manchester Scale (Krawiecka et al. 1977) by the psychiatrist responsible for their care. This was done after the testing procedures were completed to keep the experimenter relatively blind to symptom type and severity. Only individuals who scored 2 or more on the delusion rating of the Manchester Scale were included; a score of 2 represents a "moderate" rating: the symptom is judged to be present to a degree just sufficient to be regarded as pathological.

Of the 35 patients, 3 refused to participate or failed to complete the task; 6 did not meet the delusion score criteria; and Manchester Scales for 6 patients were not received. This left a sample of 20 patients—6 women and 14 men—with an age range from 18 to 54 years (mean = 35, SD = 10). Their mean Manchester Scale affective symptom score (anxiety + depression) was 2.8 of 8 (SD = 2.3), mean positive symptom score (hallucinations + delusions + incoherence and irrelevance of speech) 6.7 of 12 (SD = 2.8), and negative symptom score (flattened incongruous affect + poverty of speech + psychomotor retardation) 2.9 of 12 (SD = 2.3). Clinical diagnoses varied: seven patients were diagnosed with schizophrenia, five with paranoid schizophrenia, three with mania, two with manic depressive psychosis, two with psychotic disorder, and one with paraphrenia. All patients were on a medication regime at the time of testing. The experimenter sat with all patients while they filled out the PDI, reading the questions aloud if necessary to ensure correct completion of the questionnaire.

Results

40-item PDI

Healthy sample ($n = 272$). Four separate scores are obtained from the PDI: a PDI total, a distress score, a pre-occupation score, and a conviction score. The PDI totals were obtained by assigning a 1 to each "Yes" answer, a 0 to each "No" answer, and adding up the 40 items.

Therefore the possible range of scores was 0 to 40. The distress, preoccupation, and conviction ratings ranged from 0 to 5 for each item. A "No" answer on the actual PDI item automatically scored 0 on each of the three dimensions. A rating between 1 and 5 was obtained if the item had been answered "Yes." Total scores on each dimension were obtained by adding up the ratings on that dimension for all 40 items. The possible range of scores for each dimension was 0 to 200.

Table 1 illustrates the descriptive statistical data for the four scales on the "healthy" sample. This includes means, standard deviations, ranges, medians, modes, indices of kurtosis and skewness, sex differences, and correlations with age. The numbers of males and females for each scale do not add up to the total sample, because 61 respondents did not reveal their gender on the PDI, 56 on the STA, 53 on the Mgl, and 1 on the DSSI. There were no significant differences between these respondents and the remainder of the subjects on any of the four scales.

No differences were found between males and females on the mean PDI scores, even when age was covaried out. Therefore, all further analyses were carried out on the total sample. There was, however, a significant inverse correlation with age, as has been found with other

psychosis-proneness scales (Claridge et al. 1996). The distribution of scores was slightly skewed (see figure 1). Nevertheless, both the levels of kurtosis and skewness were within acceptable limits ($< \pm 1$). The average endorsement frequency for the 40 items was 25.2 percent. Gender differences were not found on the distress, preoccupation, or belief ratings either. There was a significant inverse relationship between age and the distress and preoccupation ratings, and a trend between age and the conviction rating. All three ratings had a skewed distribution.

In contrast, women scored significantly higher than men on both the STA and the Mgl, but not on the DSSI. Only the STA was significantly and inversely associated with age. The STA was normally distributed, while the DSSI had the highest skewness of the four scales.

Reliability. The Cronbach alpha coefficient was found to be 0.88, indicating that the internal consistency of the scale is more than adequate. The range of item-whole correlations for the 272 complete cases was from 0.21 to 0.53. (Similar results were obtained when the items were ranked to give a nonparametric analysis.)

As to test-retest reliability, the 83 respondents who had complete data on both the original PDI and follow up did not differ significantly from the rest of the sample on

Table 1. Descriptive statistical data for the PDI, STA, Mgl, and DSSI in the healthy sample

Scale (Total n)	PDI (272)	D (240)	P (241)	C (223)	STA (270)	Mgl (267)	DSSI (102)
Male n/Female n	82/129	74/114	76/114	70/107	82/132	81/133	34/67
Males, mean (SD)	10.3 (6.9)	21.4 (18.1)	21.3 (18.3)	29.4 (22.2)	12.0 (6.6)	10.7 (3.4)	2.3 (3.4)
Females, mean (SD)	9.9 (7.0)	23.0 (20.0)	22.2 (18.5)	31.1 (24.9)	14.6 (7.3)	12.0 (3.8)	2.1 (3.0)
Total, mean (SD)	9.7 (6.7)	21.6 (18.5)	21.3 (18.1)	29.8 (22.9)	13.4 (7.1)	11.5 (3.6)	2.2 (3.1)
Range	0-31	0-99	0-106	0-111	0-34	5-25	0-15
Median	8	17.5	16	25	13	11	1
Mode	7	6	15	0	15	9	0
Kurtosis	0.1	1.8	1.9	1.2	-0.3	0.5	3.9
Skewness	0.8	1.3	1.2	1.1	0.50	0.9	2.0
Gender, z^1	-0.34	-0.35	-0.09	-0.22	-2.7 ²	-2.6 ²	-0.2
Age, r^2 (n)	-0.22 ⁴ (204)	-0.23 ⁴ (182)	-0.16 ³ (183)	-0.14 (170)	-0.16 ³ (206)	-0.08 (207)	-0.12 (102)

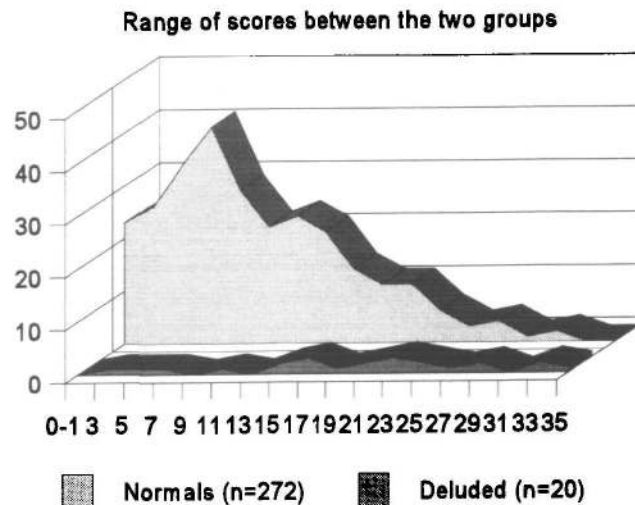
Note.—PDI = Peters et al. Delusions Inventory; D = Distress rating scale; P = Preoccupation rating scale; C = Conviction rating scale; STA = Schizotypal Personality Scale (Claridge and Broks 1984); Mgl = Magical Ideation Scale (Eckblad and Chapman 1983); DSSI = Delusions Symptom-State Inventory (Foulds and Bedford 1975).

¹ Mann-Whitney tests (2-tailed).

² Spearman's correlation (2-tailed).

³ $p < 0.05$.

⁴ $p < 0.01$.

Figure 1. Range of PDI scores in healthy and deluded groups

Note.—front line = healthy subjects ($n = 272$); back line = deluded patient sample ($n = 20$).

sex distribution, age, PDI, MGI, or STA scores. The correlation between PDI scores at the two time points was highly significant ($r = 0.82, p < 0.001$).

Validity. The concurrent validity was established by looking at the relationship between the PDI and the STA, MGI, and DSSI. The STA was chosen because it reflects a general measure of schizotypy, the MGI purports to measure aberrant beliefs, and the DSSI is a delusion inventory designed for diagnostic purposes. The percentages of common variance between the scales, shown in table 2, confirm the concurrent validity of the PDI.

Criterion validity was investigated by administering the PDI to a group of 20 deluded, psychotic individuals. The descriptive statistical data for both the deluded and

Table 2. Common variance between the PDI, STA, MGI, and DSSI for the healthy sample

	STA	MGI	DSSI ¹
PDI	58%	52%	54%
(n)	(236)	(234)	(90)
STA		52%	34%
(n)		(246)	(89)
MGI			33%
(n)			(88)

Note.—PDI = Peters et al. Delusions Inventory; STA = Schizotypal Personality Scale (Claridge and Broks 1984); MGI = Magical Ideation Scale (Eckblad and Chapman 1983); DSSI = Delusions Symptom-State Inventory (Foulds and Bedford 1975)

¹ Percentage of common variance between the DSSI and the PDI is for the PDI scores collected at followup. The MGI and STA were not administered at followup, and therefore these variances are for scores obtained at two different time points.

the healthy samples are given in table 3: means, standard deviations, ranges, medians, and any significant differences between the two groups. The average endorsement frequency for the 40 items was found to be 51.6 percent. All scales and ratings were significantly higher in the deluded group, although less so for the STA and MGI. No sex differences were found on any of the scales and ratings, and no relationships were obtained with age, unlike the healthy sample.

Of the 40 items, 28 were endorsed significantly more frequently in the deluded group, and there was a trend for 3 additional items (see table 4). For the distress ratings, 27 items were rated significantly higher, with a trend for 2 more; the same was true for 30 items on both the preoccupation and conviction ratings, with a trend for 5 additional items on both scales. (Note: The Mann-Whitney analyses between the two groups are based only on the ratings obtained for endorsed items.) However, the ranges of PDI scores between the normal and deluded samples overlapped considerably (see figure 1).

Factor structure. Before investigating the factor structure of the PDI, all items that had an endorsement rate below 10 percent, or above 90 percent in the healthy sample were eliminated. Four items were removed from all further analyses: item 3 (7.0%), item 28 (8.8%), item 29 (6.6%), and item 39 (8.5%). No item had an endorsement rate over 90 percent.

Principal components analysis. The PDI scores (for 36 items only) for all 272 cases were subjected to a principal components analysis (PCA) with varimax rotation. A PCA rather than factor analysis was used because the goal was to extract relatively independent indices for classification purposes, with no prior assumption about the structure of the data (Maxwell 1977). The varimax rotation was used to maximize the independence of the components. This gave a total of 11 components, using the Kaiser criterion of eigen value >1 to determine the number of factors. The Kaiser-Meyer-Olkin measure of sampling adequacy (Kaiser 1958) was 0.8185, and the Bartlett test for sphericity was highly significant, indicating that the data were suitable for PCA. Overall the 11 components accounted for 59.1 percent of the variance. The eigen values and percentage of variance accounted for by each component are given in table 4, as are the loadings of each item on the 11 components and their labels.

Discussion

The aim of this study was to design a psychometric instrument capable of measuring delusional ideation in the normal population. A quasi-dimensional view was adopted, and the clinical, deluded state was chosen as a reference

Table 3. Comparisons between the healthy and deluded groups on the PDI, STA, and Mgl

	Mean (SD)		Median (n)		Range	
	Healthy	Deluded	Healthy	Deluded	Healthy	Deluded
PDI	9.7 (6.7)	20.7 ² (9.0)	8.0 (272)	20.5 (20)	0–31	2–35
D	21.6 (18.5)	74.5 ² (39.2)	17.5 (240)	72 (18)	0–99	2–159
P	21.3 (18.1)	74.7 ² (44.2)	16 (241)	70.5 (20)	0–106	2–149
C	29.8 (22.9)	88.7 ² (41.2)	25 (223)	85.5 (20)	0–111	6–150
STA	13.4 (7.1)	17.0 ¹ (7.5)	13 (270)	19 (19)	0–34	2–28
Mgl	11.5 (3.6)	13.7 ¹ (5.6)	11 (267)	13 (19)	5–25	5–25

Note.—PDI = Peters et al. Delusions Inventory; D = Distress rating scale; P = Preoccupation rating scale; C = Conviction rating scale; STA = Schizotypal Personality Scale (Claridge and Broks 1984); Mgl = Magical Ideation Scale (Eckblad and Chapman 1983).

¹ $p < 0.05$.

² $p < 0.001$ (Mann-Whitney tests between deluded and healthy samples; 2-tailed).

point. The study attempted to sample as wide a range of delusions as possible, with items sufficiently attenuated to capture their normal equivalents. In addition, a simplistic, dichotomous response to items was determined not to be a realistic measure of delusional thinking, so the dimensions of distress, preoccupation, and conviction were incorporated into the inventory.

The results confirmed that it was possible to measure and identify delusion-proneness in a sample of normal individuals using the PDI. The internal consistency of the scale was more than adequate. In addition, all the item-whole correlations were positive, further confirming that a common underlying characteristic influenced responses to all the items. The test-retest reliability was demonstrated by similar scores up to 1 year later. The concurrent validity was also established by looking at the percentage of common variance with the STA, the Mgl, and the DSSI. This confirmed that individuals with elevated scores on the PDI also showed a higher level of psychosis-proneness on a measure designed to measure more general schizotypal traits (the STA). The overlaps in variance with the Mgl and DSSI were also encouraging, because those scales also attempt to measure delusional ideation. The data confirmed that the PDI is a more appropriate instrument for the measurement of delusions in population-based samples, because the distribution of the DSSI was extremely skewed in the normal population, and the items on the Mgl were endorsed only just significantly more often by floridly deluded individuals. In contrast, the difference between the psychotic and healthy groups was markedly significant for the PDI, establishing its criterion validity.

Women scored higher on the STA and Mgl, replicating previous findings (Claridge and Broks 1984; Raine 1992). However, no sex differences were found on the PDI, even when age was controlled for; the finding parallels the absence of a female excess for psychotic illnesses, a fact that sets it apart from other diagnoses of mental ill health. Again, this suggests that the PDI may be a purer measure of delusional ideation than the Mgl, which is

likely to owe its gender bias to its close relationship with neurosis.

In contrast, an inverse relationship was found with age, consistent with other psychosis-proneness scales (Claridge et al. 1996). Because most of these questionnaires are relatively recent, it is unclear whether this finding represents a cohort effect (for example, whether it is currently fashionable to hold certain views, such as believing in the paranormal), or whether there is something about aging that decreases one's proneness to schizotypal characteristics, such as a natural tendency to become more conventional with increased maturity.

Individual items of the PDI were endorsed by one in four adults on average, giving it a slightly skewed distribution. Nevertheless, the skewness and kurtosis were still found to be within acceptable limits and were better than those for the DSSI and Mgl. A slight skewness was to be expected, considering the rather pathological tone of the questionnaire. Unfortunately, it is difficult to disguise the content of the items if they are to retain their ecological validity. Although the preface to the scale (see the appendix) was intended to allay fears of appearing too eccentric, at least four items were endorsed by fewer than 10 percent of the respondents.

Nevertheless, endorsement rates were still relatively high for an acceptable proportion of the questions, especially those dealing with paranormal beliefs and grandiosity. For example, 44 percent of the healthy sample believed in the power of witchcraft, voodoo, or the occult, and 61 percent believed in telepathy. Some 43 percent felt they were very special or unusual people, and 37 percent felt there was a special purpose or mission to their life. Items relating to suspiciousness were the most frequently endorsed: nearly 75 percent of respondents had felt that some people are not what they seem to be, nearly 57 percent had felt that people seem to drop hints about the respondent or say things with a double meaning, and nearly 32 percent had felt that everyone was gossiping about them.

Table 4. Eigen values, percentage of variance, items loading > 0.4 on the 11 components (healthy sample only), and significant differences between the healthy and deluded samples

PDI questions ^{1,2}	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11
Eigen	6.7	2.5	2.0	1.6	1.6	1.3	1.2	1.2	1.1	1.1	1.1
% of variance	18.6	6.8	5.5	4.5	4.4	3.7	3.4	3.1	3.1	3.0	2.9
***Q1	.44										
***Q2+								.73			
(*)Q4						.57					
***Q5					.47		.52				
Q6+						.59					
***Q7+								.41		.53	
***Q8		.45							.47		
Q9+						.76					
(*)Q10							.49				
***Q11		.50									
***Q12+		.78									
***Q13+		.71									
***Q14		.68									
***Q15											
Q16			.56								
***Q17	.48		.53								
***Q18	.65										
*Q19+			.67								
Q20+			.68								
***Q21+	.83										
*Q22+				.79							
***Q23+										.69	
(*)Q24				.42	.49						
***Q25+	.80										
Q26+				.73							
*Q27+									.56		
Q30			.43								
***Q31+								.54			
**Q32+									.63		
Q33+											.80
***Q34									.47		
***Q35+							.70				
Q36+					.61						
**Q37+							.53				
***Q38+					.65						
Q40				.60							

Note.—PDI = Peters et al. Delusions Inventory; C1 = religiosity; C2 = persecution; C3 = grandiosity; C4 = paranormal beliefs; C5 = thought disturbances; C6 = suspiciousness; C7 = catastrophic ideation and thought broadcast; C8 = negative self; C9 = paranoid ideation; C10 = ideation of reference and influence; C11 = depersonalization.

¹ Questions 3, 28, 29, and 39 were significantly different between the healthy and deluded groups but are not listed in the table because they were not entered into the factor analysis.

² + = Items with the two highest loadings on each component; Mann-Whitney tests between the deluded and healthy samples on each item: (*) = $p < 0.1$ (trend), * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

It is important to emphasize that the *ranges* of PDI scores were practically identical between the healthy and the deluded groups. Thus, nearly 10 percent of the healthy sample scored above the mean of the deluded group. This is noteworthy because the deluded individuals were all floridly psychotic inpatients in an inner city, acute psychiatric unit. Similar findings were observed on the STA and

the MgI, despite the fact that the deluded group overall scored significantly higher on all three scales. Thus, this finding cannot be explained by the psychotic sample scoring lower than expected, due to defensiveness on their part, for example (see Claridge 1981). Indeed, most of the patients were unusually open in their willingness to discuss their experiences and beliefs in detail. Neither can it

be readily attributed to lack of concentration or motivation because the experimenter sat with these patients in an attempt to ensure correct completion of the questionnaires.

These overlapping distributions between clinical and healthy groups is interesting on two fronts. First, it is consistent with the notion of continuity between mental health and ill health and further strengthens the concept of psychosis-proneness. Second, it echoes recent developments in the delusion literature that emphasizes the multidimensional aspect of delusional beliefs (e.g., Garety and Hemsley 1987). There are obviously *some* differences between the 1 in 10 healthy individuals with higher PDI scores than the psychotic mean and the deluded patients, differences that enable the former to function adequately in society, while the latter suffered a severe breakdown and required hospitalization. Thus, what determines whether a person will become overtly deluded rests on more than just having had some kind of experience or mental event (i.e., the endorsement of an item), but also will partly depend on the strength of the interpretation, its emotional impact, and how much one thinks about it.

Indeed, the deluded subjects had significantly higher scores on the three dimensions of distress, preoccupation, and conviction. Rated significantly higher on the distress rating were 27 individual items (with a trend for 3 items), and 30 items on both the preoccupation and conviction ratings (with a trend for another 5 items on both scales). For example, item 9 ("Do you ever feel as if some people are not what they seem to be?") was actually endorsed more often in the healthy population (although not significantly). However, deluded patients who answered Yes to item 9 were significantly more distressed about it, spent more of their time thinking about it, and were more convinced of its veracity. In a similar vein, a comparable percentage of deluded and healthy individuals felt that they were very special or unusual people. Although neither group was particularly distressed by this idea, the delusional group was significantly more preoccupied with it, and had a significantly higher conviction in this belief.

This, therefore, confirms the utility of adopting a multidimensional approach to measuring delusional beliefs. Although the incorporation of the distress, preoccupation, and conviction dimensions adds to the difficulty and length of the inventory, the present data substantiated the claim that their analysis may in fact be more revealing than the content of belief alone for placing an individual on the continuum from health to psychopathology. This also fits in with the conceptualization of delusions proposed by Garety and Hemsley (1994), who suggest that delusional beliefs are more than statements of experience, but rather *evaluations* of mental events.

The factor structure of the PDI was investigated using a principal components analysis (PCA). Four items

with endorsement frequencies of less than 10 percent were removed before conducting this analysis. These items were concerned with more idiosyncratic beliefs (items 28 and 29) or more overtly psychotic symptomatology (items 3 and 39). No item had an endorsement rate greater than 90 percent.

A total of 11 components were extracted from a PCA with varimax rotation. A scree plot (Cattell 1966) would have suggested a three- or five-component solution. However, the purpose of the PDI was not to measure a limited number of well-defined subscales with high internal reliability, but rather to sample as wide a variety of delusions as possible. Therefore, the 11 components were retained, rather than forcing a three- or five-component solution, despite the fact that some of the components were not easily interpretable.

The 11 components obtained were closely linked to the original PSE groupings, although they were by no means exact replicas. Paranoia seemed to be a central issue, with three of the components converging on this theme. Thus, Component 2 was labeled "persecution," Component 6 "suspiciousness," and Component 9 "paranoid ideation." The religiosity factor accounted for the highest proportion of the variance (Component 1). A grandiosity component (Component 3), a paranormal beliefs component (Component 4), and a thoughts disturbances component (Component 5) also were identified.

The theme of the other four components was not so easily grasped, and the interpretations given are only tentative. Component 8 was hypothesized to represent a form of negative self, a grouping previously identified by Garety et al. (1988) with items representing ideas of guilt and lack of self-control. Only one question had a loading > 0.4 on Component 11, which consisted of the depersonalization item, and this name was therefore retained. For Components 7 and 10, it seemed impossible to decide on an unitary descriptive label, as the items within the groupings reflected markedly different phenomena. The labels eventually chosen respected the dual meaning of the components and consisted of "catastrophic ideation and thought broadcast," and "ideation of reference and influence." That these factors were not particularly clear-cut was felt to be of no major concern, however, because the aim was to measure as wide a spectrum of delusional beliefs as possible, regardless of whether they were readily understandable at this stage. This inclusive approach parallels that taken by the PSE, which includes categories, such as "other delusions," with no central focus but which nevertheless cover all aspects of delusional beliefs. The construction of an inventory with three or five meaningful, internally consistent subscales would have produced an attenuated version of Foulds and Bedford's DSSI,

which was criticized for being too narrow in its range of delusions.

Early in this article it was proposed that the purpose of designing schizotypal scales is twofold. The first is to assist in the identification of individuals who possess psychotic traits, without exhibiting full-blown pathology, for comparison on various kinds of experimental correlates. Thus, one possible use of the PDI may be as a selection instrument for subjects carrying out various experimental tasks. The second purpose in the design of psychosis-proneness inventories concerns the longitudinal identification of individuals at risk for psychotic breakdown. The PDI would be a measure of interest in such longitudinal studies and may further elucidate the role of the distress, preoccupation, and conviction dimensions in the precipitation of a psychotic breakdown.

A final possible use of the PDI, especially its rating scales, is as a measure of therapeutic change in clinical

settings. Recent studies have emphasized the desynchrony of change and the lack of covariance between different aspects of delusional beliefs during therapy (e.g., Brett-Jones et al. 1987; Chadwick and Lowe 1994). Both these studies employed a revised version of Shapiro's Personal Questionnaire (Shapiro 1961) to measure the dimensions of preoccupation and conviction, and additional self-report measures of anxiety and depression were also administered. The PDI would simplify this procedure considerably; it is both less time consuming and more user-friendly for the patients. There has been a recent trend in the investigation of the benefits of cognitive-behavioral therapy for psychosis (e.g., Garety et al. 1997; Kuipers et al. 1997, 1998), and it is anticipated that the PDI may prove useful in future research of this kind and eventually in everyday clinical practice.

Appendix. Peters et al. Delusions Inventory

This questionnaire is designed to measure beliefs and vivid mental experiences. We believe that they are much more common than has previously been supposed, and that most people have had some such experiences during their lives. Please answer the following questions as honestly as you can. There are no right or wrong answers, and there are no trick questions. **Please note that we are NOT interested in experiences people may have had when under the influence of drugs.**

IT IS IMPORTANT THAT YOU ANSWER ALL QUESTIONS.

For the questions you answer YES to, we are interested in: (a) how distressing these beliefs or experiences are; (b) how often you think about them; and (c) how true you believe them to be. On the right hand side of the page we would like you to circle the number which corresponds most closely to how distressing this belief is, how often you think about it, and how much you believe that it is true.

SEX	ETHNIC BACKGROUND	AGE
RELIGION	PROFESSION	DATE

Examples:					
Do you ever feel as if people are reading your mind? (please circle) No Yes —————>	Not at all distressing 1	2	3	4	Very distressing 5 Think about it all the time 5 Believe it is absolutely true 5
Do you ever feel as if you can read other people's minds? (please circle) No Yes —————>	Not at all distressing 1	2	3	<u>4</u>	Very distressing 5 Think about it all the time 5 Believe it is absolutely true 5
	Hardly ever think about it 1	2	3	4	
	Don't believe it's true 1	2	3	4	
	Hardly ever think about it 1	<u>2</u>	3	4	
	Don't believe it's true 1	2	<u>3</u>	4	

Please circle if answered YES

(1) Do you ever feel as if you are under the control of some force or power other than yourself? (please circle)	Not at all distressing	1	2	3	4	Very distressing
	Hardly ever think about it	1	2	3	4	Think about it all the time
	Don't believe it's true	1	2	3	4	Believe it is absolutely true
No Yes →						
(2) Do you ever feel as if you are a robot or zombie without a will of your own? (please circle)	Not at all distressing	1	2	3	4	Very distressing
	Hardly ever think about it	1	2	3	4	Think about it all the time
	Don't believe it's true	1	2	3	4	Believe it is absolutely true
No Yes →						
(3) Do you ever feel as if you are possessed by someone or something else? (please circle)	Not at all distressing	1	2	3	4	Very distressing
	Hardly ever think about it	1	2	3	4	Think about it all the time
	Don't believe it's true	1	2	3	4	Believe it is absolutely true
No Yes →						
(4) Do you ever feel as if your feelings or actions are not under your control? (please circle)	Not at all distressing	1	2	3	4	Very distressing
	Hardly ever think about it	1	2	3	4	Think about it all the time
	Don't believe it's true	1	2	3	4	Believe it is absolutely true
No Yes →						

Please circle if answered YES

(5) Do you ever feel as if someone or something is playing games with your mind? (please circle)	Not at all distressing					Very distressing
	1	2	3	4	5	
	Hardly ever think about it					Think about it all the time
No Yes \longrightarrow	1	2	3	4	5	
	Don't believe it's true					Believe it is absolutely true
	1	2	3	4	5	
<hr/>						
(6) Do you ever feel as if people seem to drop hints about you or say things with a double meaning? (please circle)	Not at all distressing					Very distressing
	1	2	3	4	5	
	Hardly ever think about it					Think about it all the time
No Yes \longrightarrow	1	2	3	4	5	
	Don't believe it's true					Believe it is absolutely true
	1	2	3	4	5	
<hr/>						
(7) Do you ever feel as if things in magazines or on TV were written especially for you? (please circle)	Not at all distressing					Very distressing
	1	2	3	4	5	
	Hardly ever think about it					Think about it all the time
No Yes \longrightarrow	1	2	3	4	5	
	Don't believe it's true					Believe it is absolutely true
	1	2	3	4	5	
<hr/>						
(8) Do you ever think that everyone is gossiping about you? (please circle)	Not at all distressing					Very distressing
	1	2	3	4	5	
	Hardly ever think about it					Think about it all the time
No Yes \longrightarrow	1	2	3	4	5	
	Don't believe it's true					Believe it is absolutely true
	1	2	3	4	5	

Please circle if answered YES

(9) Do you ever feel as if some people are not what they seem to be? (please circle)	Not at all distressing					Very distressing
	1	2	3	4	5	
No Yes —————>	Hardly ever think about it					Think about it all the time
	1	2	3	4	5	
	Don't believe it's true					Believe it is absolutely true
	1	2	3	4	5	
<hr/>						
(10) Do things around you ever feel unreal, as though it was all part of an experiment? (please circle)	Not at all distressing					Very distressing
	1	2	3	4	5	
No Yes —————>	Hardly ever think about it					Think about it all the time
	1	2	3	4	5	
	Don't believe it's true					Believe it is absolutely true
	1	2	3	4	5	
<hr/>						
(11) Do you ever feel as if someone is deliberately trying to harm you? (please circle)	Not at all distressing					Very distressing
	1	2	3	4	5	
No Yes —————>	Hardly ever think about it					Think about it all the time
	1	2	3	4	5	
	Don't believe it's true					Believe it is absolutely true
	1	2	3	4	5	
<hr/>						
(12) Do you ever feel as if you are being persecuted in some way? (please circle)	Not at all distressing					Very distressing
	1	2	3	4	5	
No Yes —————>	Hardly ever think about it					Think about it all the time
	1	2	3	4	5	
	Don't believe it's true					Believe it is absolutely true
	1	2	3	4	5	

Please circle if answered YES

(13) Do you ever feel as if there is a conspiracy against you?	Not at all distressing	1	2	3	4	Very distressing
(please circle)	Hardly ever think about it	1	2	3	4	Think about it all the time
No Yes →	Don't believe it's true	1	2	3	4	Believe it is absolutely true
<hr/>						
(14) Do you ever feel as if some organization or institution has it in for you?	Not at all distressing	1	2	3	4	Very distressing
(please circle)	Hardly ever think about it	1	2	3	4	Think about it all the time
No Yes →	Don't believe it's true	1	2	3	4	Believe it is absolutely true
<hr/>						
(15) Do you ever feel as if someone or something is watching you?	Not at all distressing	1	2	3	4	Very distressing
(please circle)	Hardly ever think about it	1	2	3	4	Think about it all the time
No Yes →	Don't believe it's true	1	2	3	4	Believe it is absolutely true
<hr/>						
(16) Do you ever feel as if you have special abilities or powers?	Not at all distressing	1	2	3	4	Very distressing
(please circle)	Hardly ever think about it	1	2	3	4	Think about it all the time
No Yes →	Don't believe it's true	1	2	3	4	Believe it is absolutely true

Please circle if answered YES

(17) Do you ever feel as if there is a special purpose or mission to your life? (please circle) No Yes —————>	Not at all distressing				Very distressing
	1	2	3	4	5
	Hardly ever think about it				Think about it all the time
	1	2	3	4	5
	Don't believe it's true				Believe it is absolutely true
	1	2	3	4	5
<hr/>					
(18) Do you ever feel as if there is a mysterious power working for the good of the world? (please circle) No Yes —————>	Not at all distressing				Very distressing
	1	2	3	4	5
	Hardly ever think about it				Think about it all the time
	1	2	3	4	5
	Don't believe it's true				Believe it is absolutely true
	1	2	3	4	5
<hr/>					
(19) Do you ever feel as if you are or destined to be someone very important? (please circle) No Yes —————>	Not at all distressing				Very distressing
	1	2	3	4	5
	Hardly ever think about it				Think about it all the time
	1	2	3	4	5
	Don't believe it's true				Believe it is absolutely true
	1	2	3	4	5
<hr/>					
(20) Do you ever feel that you are a very special or unusual person? (please circle) No Yes —————>	Not at all distressing				Very distressing
	1	2	3	4	5
	Hardly ever think about it				Think about it all the time
	1	2	3	4	5
	Don't believe it's true				Believe it is absolutely true
	1	2	3	4	5

Please circle if answered YES

(21) Do you ever feel that you are especially close to God? (please circle)	Not at all distressing					Very distressing
	1	2	3	4	5	Think about it all the time
No Yes —————>	Hardly ever think about it					5
	1	2	3	4	5	Believe it is absolutely true
	Don't believe it's true					5
	1	2	3	4	5	
<hr/>						
(22) Do you ever think that people can communicate telepathically? (please circle)	Not at all distressing					Very distressing
	1	2	3	4	5	Think about it all the time
No Yes —————>	Hardly ever think about it					5
	1	2	3	4	5	Believe it is absolutely true
	Don't believe it's true					5
	1	2	3	4	5	
<hr/>						
(23) Do you ever feel as if electrical devices such as computers can influence the way you think? (please circle)	Not at all distressing					Very distressing
	1	2	3	4	5	Think about it all the time
No Yes —————>	Hardly ever think about it					5
	1	2	3	4	5	Believe it is absolutely true
	Don't believe it's true					5
	1	2	3	4	5	
<hr/>						
(24) Do you ever feel as if there are forces around you which affect you in strange ways? (please circle)	Not at all distressing					Very distressing
	1	2	3	4	5	Think about it all the time
No Yes —————>	Hardly ever think about it					5
	1	2	3	4	5	Believe it is absolutely true
	Don't believe it's true					5
	1	2	3	4	5	
<hr/>						

Please circle if answered YES

(25) Do you ever feel as if you have been chosen by God in some way? (please circle)	Not at all distressing					Very distressing
	1	2	3	4	5	Think about it all the time
	Hardly ever think about it					5
No Yes —————>	Don't believe it's true					Believe it is absolutely true
	1	2	3	4	5	
<hr/>						
(26) Do you believe in the power of witchcraft, voodoo, or the occult? (please circle)	Not at all distressing					Very distressing
	1	2	3	4	5	Think about it all the time
	Hardly ever think about it					5
No Yes —————>	Don't believe it's true					Believe it is absolutely true
	1	2	3	4	5	
<hr/>						
(27) Are you often worried that your partner may be unfaithful? (please circle)	Not at all distressing					Very distressing
	1	2	3	4	5	Think about it all the time
	Hardly ever think about it					5
No Yes —————>	Don't believe it's true					Believe it is absolutely true
	1	2	3	4	5	
<hr/>						
(28) Do you ever think that you smell very unusual to other people? (please circle)	Not at all distressing					Very distressing
	1	2	3	4	5	Think about it all the time
	Hardly ever think about it					5
No Yes —————>	Don't believe it's true					Believe it is absolutely true
	1	2	3	4	5	

Please circle if answered YES

(29) Do you ever feel as if your body is changing in a peculiar way?	Not at all distressing	1	2	3	4	5	Very distressing
(please circle)	Hardly ever think about it	1	2	3	4	5	Think about it all the time
No Yes <input type="checkbox"/> <input type="checkbox"/> →	Don't believe it's true	1	2	3	4	5	Believe it is absolutely true
<hr/>							
(30) Do you ever think that strangers want to have sex with you?	Not at all distressing	1	2	3	4	5	Very distressing
(please circle)	Hardly ever think about it	1	2	3	4	5	Think about it all the time
No Yes <input type="checkbox"/> <input type="checkbox"/> →	Don't believe it's true	1	2	3	4	5	Believe it is absolutely true
<hr/>							
(31) Do you ever feel that you have sinned more than the average person?	Not at all distressing	1	2	3	4	5	Very distressing
(please circle)	Hardly ever think about it	1	2	3	4	5	Think about it all the time
No Yes <input type="checkbox"/> <input type="checkbox"/> →	Don't believe it's true	1	2	3	4	5	Believe it is absolutely true
<hr/>							
(32) Do you ever feel that people look at you oddly because of your appearance?	Not at all distressing	1	2	3	4	5	Very distressing
(please circle)	Hardly ever think about it	1	2	3	4	5	Think about it all the time
No Yes <input type="checkbox"/> <input type="checkbox"/> →	Don't believe it's true	1	2	3	4	5	Believe it is absolutely true
<hr/>							

Please circle if answered YES

(33) Do you ever feel as if you had no thoughts in your head at all? (please circle)	Not at all distressing					Very distressing
	1	2	3	4	5	Think about it all the time
No Yes —————>	Hardly ever think about it					5
	1	2	3	4	5	Believe it is absolutely true
(34) Do you ever feel as if your insides might be rotting? (please circle)	Not at all distressing					Very distressing
	1	2	3	4	5	Think about it all the time
No Yes —————>	Hardly ever think about it					5
	1	2	3	4	5	Believe it is absolutely true
(35) Do you ever feel as if the world is about to end? (please circle)	Not at all distressing					Very distressing
	1	2	3	4	5	Think about it all the time
No Yes —————>	Hardly ever think about it					5
	1	2	3	4	5	Believe it is absolutely true
(36) Do your thoughts ever feel alien to you in some way? (please circle)	Not at all distressing					Very distressing
	1	2	3	4	5	Think about it all the time
No Yes —————>	Hardly ever think about it					5
	1	2	3	4	5	Believe it is absolutely true

Please circle if answered YES

(37) Have your thoughts ever been so vivid that you were worried other people would hear them? (please circle)	Not at all distressing					Very distressing
	1	2	3	4	5	Think about it all the time
	Hardly ever think about it					5
No Yes —————>	Don't believe it's true					Believe it is absolutely true
	1	2	3	4	5	
(38) Do you ever feel as if your own thoughts were being echoed back to you? (please circle)	Not at all distressing					Very distressing
	1	2	3	4	5	Think about it all the time
	Hardly ever think about it					5
No Yes —————>	Don't believe it's true					Believe it is absolutely true
	1	2	3	4	5	
(39) Do you ever feel as if your thoughts were blocked by someone or something else? (please circle)	Not at all distressing					Very distressing
	1	2	3	4	5	Think about it all the time
	Hardly ever think about it					5
No Yes —————>	Don't believe it's true					Believe it is absolutely true
	1	2	3	4	5	
(40) Do you ever feel as if other people can read your mind? (please circle)	Not at all distressing					Very distressing
	1	2	3	4	5	Think about it all the time
	Hardly ever think about it					5
No Yes —————>	Don't believe it's true					Believe it is absolutely true
	1	2	3	4	5	

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