Associations between hallucinations and personality structure in a non-clinical sample: Comparison between young and elderly samples

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Abstract

Few studies have explored the prevalence of hallucinations in the non-clinical, elderly population. Also, the association between personality structure and hallucinations remains poorly investigated. The aims of the present study were twofold. First, to explore the influence of age on the prevalence of hallucination-proneness, and second, to examine the association between personality and hallucination-proneness in young and elderly subjects. A sample of young ($n = 230$) and elderly adults ($n = 183$) completed an elaborated and validated version of the Launay–Slade Hallucinations Scale (LSHS; Larøi, Marczewski, & Van der Linden, 2004) and the Five Factor Inventory version of the NEO Personality Inventory (NEO-FFI; Costa, & McCrae, 1992). Differences were found between elderly and young subjects depending on the type of hallucination. Analyses of associations between personality domains and hallucination-proneness revealed differing associations for the young and elderly groups. For the young sample, there were significant associations between LSHS-scores and Openness to Experience and Neuroticism domains. For elderly

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subjects, only the Openness to Experience domain was significantly associated with LSHS-scores. Furthermore, in the young sample, Neuroticism was significantly associated with the presence of both auditory hallucinations and vivid daydreaming.

0. Introduction

Recent years have seen an increasing interest in hallucinations, including investigations of its prevalence in non-clinical (hallucination-prone) young adult participants. A number of studies reveal that a substantial number of participants without a psychiatric history report having typical hallucinatory experiences (Aleman, Nieuwenstein, Böcker, & de Haan, 2001; Larøi, Marczewski, & Van der Linden, 2004; Larøi & Van der Linden, 2005; Morrison, Wells, & Nothard, 2000; Ohayon, Priest, Caulet, & Guilleminault, 1996; Ohayon, 2000; Tien, 1991; Young, Bentall, Slade, & Dewey, 1986; Johns, Nazroo, Bebbington, & Kuipers, 2002). Furthermore, the multidimensionality of hallucinatory experiences has been documented in both clinical (Levitan, Ward, Catts, & Hemsley, 1996) and non-clinical samples (Aleman et al., 2001; Larøi et al., 2004; Larøi & Van der Linden, 2005). For example, Larøi and Van der Linden (2005) investigated the multidimensionality of hallucinations in non-clinical participants with principal component analysis based on an adaptation of the LSHS. This yielded five factors, characterised by the authors as representing (1) sleep-related hallucinatory experiences, (2) vivid daydreams, (3) intrusive thoughts or realness of thought, (4) auditory hallucinations and (5) visual hallucinations.

Although there is much research concerning the prevalence of hallucinations in the non-clinical young general population, few studies have examined hallucination-proneness in the elderly population. Tien (1991) reported incidence rates of visual, auditory, somatic and olfactory hallucinations across the life span (from 18 to 80+ years of age) in a large community population ($n = 18{,}572$). Overall, the data suggested general increases in hallucinations with advanced age; in particular for visual and auditory hallucinations. Some studies also show that factors such as life-events (loss of a spouse), sensory deficits and neurocognitive degeneration are associated with the presence of hallucinations in elderly subjects (Grimby, 1993, 1998; Turvey et al., 2001). For example, Turvey et al. (2001) investigated caregiver reports of hallucinations in elders aged 70 or older and found that 20% of the subjects had visual or auditory hallucinations. In addition, marital status, trouble with vision and cognitive impairment were found to be associated with hallucinations.

It is important to look at hallucinations in the elderly population for a number of reasons. First, hallucinations seem to be more prevalent in the elderly population than was previously thought. Also, by examining elderly subjects we are able to examine the roles of (largely unexplored) factors such as life-events, sensory deficits and neurocognitive degeneration in the onset and maintenance of hallucinations. Finally, it is important to investigate hallucinations in the elderly population as these subjects often report different types of hallucinations (e.g., visual and musical hallucinations) that are less commonly reported in other age-groups. This will provide researchers with unique opportunities to investigate hallucinations in modalities that have not yet been extensively investigated in the literature but which can enhance our understanding of hallucinations.

A few studies have attempted to examine the association between hallucinations and personality in non-clinical samples. Barrett and Etheridge (1992) compared hallucinators and non-hallucinators on the MMPI and the Symptom Check List-90-R (SCL-90-R; Derogatis, 1983). Participants consisted of a group of 162 college students who completed a verbal hallucination questionnaire (Posey & Losch, 1983). Hallucinators were defined as individuals in the top 25% of the distribution on the verbal hallucinations scale, and non-hallucinators were defined as individuals in the bottom 25% of the same distribution. From this pool, 24 hallucinators and 24 non-hallucinators were randomly selected. Results revealed that the two groups did not differ on any of the standard MMPI or SCL-90-R scales. Jakes and Hemsley (1987) assessed 24 non-clinical participants with the Eysenck Personality Questionnaire (EPQ; Eysenck & Eysenck, 1975) and the Launay–Slade Hallucinations Scale (LSHS; Launay & Slade, 1981). Results revealed that LSHS scores correlated only with Neuroticism. Young et al. (1986) also reported a significant association in University students between the Neuroticism scale of the EPQ and scores on the LSHS. More recently, Barrett and Etheridge (1994) asked 128 first-year college students to complete the Verbal Hallucinations Questionnaire (Barrett & Etheridge, 1992) and the Millon Clinical Multiaxial Inventory (MCMI; Millon, 1983). Two groups were selected based on hallucination-scores. Subjects with scores in the top 15% were defined as hallucination-prone subjects ($n = 18$), whereas those subjects who reported never having experienced a verbal hallucination were considered non-hallucination-prone subjects ($n = 28$). Results revealed that hallucination-prone participants scored higher than non-hallucination-prone participants on Factor 1 of the MCMI, which has been characterised as representing Neuroticism (Millon, 1983). Finally, Rodrigo, Piñeiro, Suarez, Caro, and Giraldez (1997) administered the Barrett's Hallucination Questionnaire (Barrett & Etheridge, 1994) and the MCMI to a sample of 222 University students. Based on the scores of the hallucinations scale, two groups were formed. Subjects with scores in the top 20% were put in the hallucination-prone group ($n = 46$), whilst those with scores in the bottom 20% were put in the non-hallucination-prone group ($n = 52$). Results revealed that hallucination-prone and non-hallucination-prone subjects differed significantly in terms of 19 out of the total 22 MCMI-scales.

In sum, research on hallucination-proneness and personality has produced conflicting findings. Lack of an association has been found in a study utilising the SCL-90-R (Barrett & Etheridge, 1992). On the other hand, studies utilising the EPQ have generally reported an association between Neuroticism and hallucination-proneness (Young et al., 1986; Jakes & Hemsley, 1987) and one study found an association between neuroticism and hallucination-proneness with the MCMI (Barrett & Etheridge, 1994). Finally, one study found significant differences between hallucination and non-hallucination-prone subjects on a great number of clinical sub-scale scores (Rodrigo et al., 1997). However, these studies contain methodological limitations. For example, in one study no appropriate comparison group was included (Jakes & Hemsley, 1987). Also, some studies have only assessed hallucinations in the auditory modality (Barrett & Etheridge, 1992, 1994). Finally, studies have only included young adult samples.

The objectives of the present study were the following. First, to explore the influence of age on the prevalence of hallucination-proneness by comparing scores on the LSHS between a group of young and elderly subjects. Second, to examine associations between hallucination-proneness in young and elderly subjects and personality with the help of a personality scale that has not yet been used previously and that provides a complete examination of personality.

1. Methods

1.1. Subjects

The sample consisted of 230 young adults (range = 18–30 years) and 183 elderly adults (range = 60–75 years). The young subjects consisted of University students and the elderly subjects consisted of active, non-institutionalised subjects. An exclusion criterion for all subjects was that they were not clinically referred or had not received a psychiatric or neurological diagnosis in the past 3 years. The average age of the young subjects was 21.6 (SD = 2.7) and for the elderly subjects this was 68.6 (SD = 5.2). Average years of education for young participants was 12.3 (SD = 1.6), and 13.7 (SD = 3.8) for the elderly sample. In the young sample 46% were men, whilst 54% were women. In the elderly sample 49% were men, and 51% were women.

1.2. Measures

To assess hallucination-proneness, subjects were asked to complete the Launay and Slade Hallucinations Scale (LSHS; Launay & Slade, 1981). The LSHS consists of 12 items where subjects are required to answer according to a five point scale: 0 = "certainly does not apply to me", 1 = "possibly does not apply to me", 2 = "unsure", 3 = "possibly applies to me" and 4 = "certainly applies to me". Participants were explicitly asked not to report experiences when they were under the influence of alcohol or a psychotropic substance. In the present study, a newly modified and elaborated version of the LSHS was utilised. These modifications are discussed in more detail in Larøi et al. (2004). In general, they consisted of incorporating items tapping into hallucinatory experiences not included in previous versions of the scale, and removing and/or modifying items that have posed problems in previous research. The modified and elaborated version of the LSHS utilised in the present study contains 16 items. Principal components analysis of this version of the LSHS has revealed five factors (Larøi & Van der Linden, 2005), characterised as representing items concerning (1) sleep-related hallucinatory experiences, (2) vivid daydreams, (3) intrusive or vivid thoughts, (4) auditory hallucinations and (5) visual hallucinations. The first factor (sleep-related hallucinations) included items tapping into hypnagogic and hypnopompic experiences (i.e., vivid perceptual experiences occurring at sleep onset and awakening). The second factor (vivid daydreams) included items such as "The sounds that I hear in my daydreams are usually clear and distinct" and "In my daydreams, I can hear the sound of a tune almost as clearly as if I were actually listening to it". The third factor (intrusive or vivid thoughts) contained items such as "No matter how hard I concentrate, unrelated thoughts creep into my mind" and "Sometimes a passing thought seems so real to me that it frightens me". The fourth factor (auditory hallucinations) consisted of items "I have been troubled by hearing voices in my head" and "I often hear a voice speaking my thoughts aloud". Finally, the fifth factor (visual hallucinations) contained the items "On certain occasions, I have seen the face of a person in front of me, but that there was no one" and "Sometimes I have seen things or animals when nothing was in fact there". Other studies utilising comparable versions of the LSHS have reported highly similar factor structures in non-clinical (Aleman et al., 2001; Morrison et al., 2000) and clinical samples (Levitan et al., 1996). In addition, studies reveal that the LSHS has good test-retest reliability (Aleman, Nieuwen-

stein, Böcker, & de Haan, 1999). Furthermore, we have pilot data looking at the temporal stability of the same version of the LSHS used in the present study. A large group of non-clinical subjects ($n = 250$) completed the LSHS two times (with an interval of 2 months). Correlations between the LSHS total score for T_1 and T_2 were very high ($r = 0.77$) suggesting good temporal stability. Finally, the possibility of any gender differences on the LSHS in the present study was examined by comparing mean scores (independent t-tests) on the LSHS for male and female participants, separately for both the young and elderly samples. These analyses did not result in any significant differences for both the young and the elderly samples.

In order to make a distinction between experiences with and without distress in the correlational analyses with personality, a distinction was made between the auditory hallucination factor (high distress) and the vivid daydream factor (low distress). The auditory hallucination-factor includes items 4, 8 and 9 of the LSHS. An auditory hallucinations-factor has been observed in a number of studies (Larøi et al., 2004; Larøi & Van der Linden, 2005; Levitan et al., 1996; Morrison et al., 2000). This factor was chosen to represent high distress as items in this factor have been shown to have a high negative emotional charge and low degree of control in non-clinical subjects (Larøi & Van der Linden, 2005). Indeed, for 33% of subjects, auditory hallucinatory experiences provoked a high negative emotional charge. The vivid daydream-factor includes items 5, 6 and 7 of the LSHS. A vivid daydream-factor has been observed in several studies (Larøi et al., 2004; Larøi & Van der Linden, 2005; Levitan et al., 1996; Aleman et al., 2001). This factor was chosen to represent low distress as it has been shown to have a very low negative affect charge and relatively high degree of control in non-clinical subjects (Larøi & Van der Linden, 2005). For instance, only 7% of subjects considered vivid daydreams as eliciting a negative affective reaction and as many as 53% perceived them as being positive experiences.

The Five Factor Inventory version of the NEO Personality Inventory (NEO-FFI; Costa & McCrae, 1992) was used to assess personality structure, which is a shorter version of the Revised version of the NEO Personality Inventory (Costa & McCrae, 1992). The NEO-FFI consists of 5 higher-order factors called domains (Neuroticism, Extraversion, Openness, Agreeableness, Conscientiousness), including 12 statements to assess each domain, resulting in 60 items in total. However, since an important issue in the following study was to examine associations between hallucination-proneness and Openness to Experience, all six facets for this domain were included, making a total of 96 items. The six facets of the Openness domain include: Openness to Fantasy, Aesthetics, Feelings, Actions, Ideas and Values. Rolland, Parker, and Stumpf (1998) report adequate internal reliability values for the French version of the NEO-FFI, which furthermore were similar to the values reported in the U.S. normative sample (Costa & McCrae, 1992). Also, the factor structure of the NEO-FFI at the item level yielded high congruence coefficients, demonstrating good construct validity.

Finally, a French version (Pariente, Challita, Mesbah, & Guelfi, 1992) of the 12-item General Health Questionnaire (GHQ-12; Goldberg & Williams, 1988) was administered. The GHQ-12 is predominantly used as a screening test for psychiatric disorders in the general population. Studies have shown it to be highly associated with neurotic aspects such as anxiety and depression in non-clinical subjects (Cook, Young, Taylor, & Bedford, 1996; Hotopf, Sharp, & Lewis, 1998).

Data analyses utilised in the present study included Pearson's correlations and t-tests for independent samples. The chosen alpha was 0.05, resulting in 95% confidence intervals. All analyses were carried out with the Statistica software package.

2. Results

A substantial percentage of young participants responded affirmatively (i.e., "possibly applies" or "certainly applies") to typical hallucination-items. For example, 25% of participants responded affirmatively to the item: "In the past, I have had the experience of hearing a person's voice and then found that no one was there" and 17% responded affirmatively to the item: "I often hear a voice speaking my thoughts aloud".

We compared mean scores on the LSHS for the young and elderly subjects. An independent t-test did not reveal a significant difference between these groups ($t = 1.2, p = 0.128$). We then re-grouped the LSHS-items into previously validated factors, based on Larøi and Van der Linden (2005). These analyses are illustrated in Table 1. Significant differences were observed between the two groups, depending on the LSHS-factor. Young subjects reported significantly more items relating to vivid daydreams, and intrusive or vivid thoughts, compared to elderly subjects. In contrast, elderly subjects reported significantly more auditory, visual and sleep-related hallucinations.

GHQ-12-scores were significantly correlated (Pearson's correlations) with LSHS-scores for the whole population ($r = 0.20$; $p < 0.001$). This significant association remained when only the young adult sample was examined ($r = 0.24$; $p < 0.01$), but was not apparent in the sample of elderly subjects ($r = 0.11$; $p = 0.241$).

Mean scores for the total population of young and elderly subjects in terms of the five NEO-FFI domains are presented in Table 2. Significant differences were observed between young and

Table 1
Mean scores (and SD) for the young and elderly hallucination-prone participants on LSHS-factors

	Young ($n = 230$)	Elderly ($n = 183$)	t
Sleep-related hallucinations	0.55 (0.59)	0.86 (0.61)	−3.3[**]
Vivid daydreams	2 (1.1)	1.4 (1.2)	3.5[**]
Intrusive/vivid thoughts	2.3 (0.88)	1.8 (1.1)	4.2[**]
Auditory hallucinations	0.7 (0.96)	1.2 (0.94)	−2.9[**]
Visual hallucinations	0.60 (0.92)	0.79 (1.0)	−1.9[*]
Total score	25.26 (9.24)	22.64 (7.87)	1.2

[*] $p < 0.05$.
[**] $p < 0.01$.

Table 2
Mean scores (and SD) for young and elderly subjects in terms of NEO-FFI domain-scores

	Young ($n = 230$)	Elderly ($n = 183$)	t
Neuroticism	36.4 (8.6)	31.9 (6.7)	4.5[***]
Openness	26.8 (3.2)	24.5 (2.8)	5.8[***]
Extraversion	40.6 (5.5)	39.4 (5.2)	1.8
Agreeableness	41 (5.7)	43.4 (5.9)	−3.3[**]
Conscientiousness	42.2 (6.3)	46.2 (6.2)	−5[***]

[**] $p < 0.01$.
[***] $p < 0.001$.

Table 3
Correlations between LSHS total score and NEO-FFI domain-scores for the young adult sample

	LSHS
Openness	0.34[***]
Neuroticism	0.45[***]
Extraversion	0.02
Agreeableness	0.08
Conscientiousness	−0.15

[***] $p < 0.001$.

Table 4
Correlations between LSHS total score and NEO-FFI domain-scores for the elderly sample

	LSHS
Openness	0.26[**]
Neuroticism	0.15
Extraversion	−0.14
Agreeableness	−0.01
Conscientiousness	0.12

[**] $p < 0.01$.

elderly subjects on all domains, except for the Extraversion domain. In particular, young subjects had significantly higher scores on the Openness and Neuroticism domains compared to elderly subjects. In contrast, elderly subjects had significantly higher scores on the Conscientiousness and Agreeableness domains, compared to young subjects.

We performed correlational analyses (Pearson's) between LSHS total scores and NEO-FFI domain-scores for the young adult sample (Table 3). This revealed significant correlations between total score on the LSHS and scores on both the Openness and Neuroticism domains, but not for the other domains. Furthermore, LSHS total score correlated significantly with a number of Openness facets, including Openness to Fantasy ($r = 0.30, p < 0.001$), Aesthetics ($r = 0.27, p < 0.001$), Feelings ($r = 0.36, p < 0.001$), and Ideas ($r = 0.19, p < 0.05$).

We performed correlational analyses (Pearson's) between LSHS total scores and NEO-FFI domain-scores for the elderly sample (Table 4). This revealed a significant association between total score on the LSHS and the Openness domain of the NEO-FFI, but not for the other domains. Furthermore, the LSHS total score correlated significantly with a number of the Openness facets, including Openness to Fantasy ($r = 0.29, p < 0.01$), Aesthetics ($r = 0.26, p < 0.01$), and Feelings ($r = 0.24, p < 0.01$).

In order to explore whether Neuroticism scores were particularly related to the presence of distressful hallucinations compared to hallucinations without distress in the young sample, we performed correlational (Pearson's) analyses between Neuroticism scores and the reporting of auditory hallucinations compared to the reporting of vivid daydreams. Auditory hallucinatory experiences consisted of scores on the auditory hallucinations-factor (AH) of the LSHS, and vivid daydreams consisted of scores on the vivid daydream-factor (DD) of the LSHS. Results showed

that, in the hallucination-prone group, both the DD and AH factors were significantly associated with the Neuroticism domain ($p < 0.001$ for both AH and DD factors).

3. Discussion

Regarding hallucination-prevalence in the young adult sample, a substantial percentage of participants responded affirmatively to typical hallucination-items (i.e., ''In the past, I have had the experience of hearing a person's voice and then found that no one was there'' and ''I often hear a voice speaking my thoughts aloud''). These results are globally comparable to Larøi et al. (2004) who found that 28% and 13% of participants responded affirmatively to the two respective items. Also, this is similar to Larøi and Van der Linden (2005) who found that 34% and 19% of subjects responded affirmatively to the two respective items. Finally, Aleman et al. (2001) found that 31% and 11% of participants responded affirmatively to the two respective items.

In terms of differences in prevalence-values between the young adult and elderly samples, we found differences between these two groups in terms of the types of hallucinatory experiences. In particular, young subjects reported more hallucinatory experiences related to vivid daydreams, and vivid and intrusive thoughts. In contrast, elderly subjects reported more sleep-related hallucinations, and auditory and visual hallucinations. These findings may be related to the literature regarding age effects on hallucination-prevalence in non-clinical samples. Observed differences between groups in terms of the Vivid daydream-factor (higher in younger subjects) can be related to studies reporting a decrease in daydream frequency and intensity with age (Giambra, 2000). The difference between groups concerning auditory hallucinations (higher in elderly subjects) is in line with a study reporting an increase in frequency of auditory hallucinations with age (Tien, 1991). Also, studies report that auditory hallucinations are a common hallucination-modality in elderly subjects (Grimby, 1993, 1998). The difference between young and elderly subjects in terms of visual hallucination-prevalence (higher in elderly subjects) is in accordance with studies reporting the presence of visual hallucinations (Tien, 1991; Grimby, 1993, 1998; Turvey et al., 2001) and perceptual disturbances (Livingston, Kitchen, Katona, & Copeland, 2001) in the elderly population.

Concerning differences between the two age-groups in terms of personality traits, we found that young subjects had higher mean scores on the Openness and Neuroticism domains, whereas elderly subjects had higher scores on the Conscientiousness and Agreeableness domains. This corresponds with McCrae et al. (1999) and McCrae et al. (2000) who have reported the same findings, albeit with the addition of a significant difference between elderly and young subjects on the Extraversion domain (higher in young subjects). Important to note, however, is that there was a statistical tendency towards a significant group difference regarding the Extraversion domain in the present study ($p = 0.072$).

The present study provides evidence of an association between hallucination-proneness and specific personality characteristics. This is in agreement with studies revealing an association between personality and psychosis (Berenbaum & Fujita, 1994; Gurrera, Nestor, & O'Donnell, 2000; Lysaker, Bell, Kaplan, Greig, & Bryson, 1999). In particular, two personality domains (Openness and Neuroticism) were found to be associated with hallucinations. Hallucination-proneness was associated with Openness to Experience in both the elderly and young sample. This provides evidence of suggestions by McCrae and Costa (1997) that high scorers on measures of Openness to Experi-

ence are characterised by unusual cognitive and perceptual experiences. This is also in accordance with Ross, Lutz, and Bailley (2002) where the presence of positive schizotypy symptoms (including hallucinatory experiences) in non-clinical subjects was associated with the Openness domain.

In the young sample, neuroticism was also significantly associated with hallucination-proneness. This is in agreement with studies revealing an association between hallucinations and neuroticism in non-clinical samples (Young et al., 1986; Jakes & Hemsley, 1987; Barrett & Etheridge, 1994). In contrast, an association between hallucination-proneness and neuroticism was not found in the elderly sample. This finding indicates that the presence of a neurotic component in hallucinations does not play an important role for elderly subjects. In more general terms, this suggests that personality traits may play a less important role in hallucinations in elderly subjects. In contrast, other factors such as sensory loss and cognitive deficits may play a relatively more important role in the onset and maintenance of hallucinations in the elderly population. Furthermore, this finding provides indirect support for the view that neuroticism and aspects related to neuroticism such as levels of anxiety, increase the risk for the onset of psychotic symptoms (van Os, Jones, Sham, Bebbington, & Murray, 1998; van Os & Jones, 2001; Krabbendam et al., 2002; Delespaul, deVries, & van Os, 2002). In other words, whilst neuroticism may play an important role in the development of hallucinations in young adults, it may be less pertinent for the development and/or maintenance of hallucinations in later life. Thus, aetiology of hallucinations in young compared to elderly samples may be different. It is important to note, however, that the association between (aspects of) personality and hallucinations may be due to age-related changes in personality. Longitudinal studies would help address this important issue. In addition, the absence of an association between hallucination-proneness and neuroticism in the elderly sample may be caused by range restriction for neuroticism. Indeed, the standard deviation of the Neuroticism total score for the elderly sample was much lower (6.7) than the standard deviation for the young sample (8.6).

Finally, the association between hallucinations and neuroticism in young subjects remained when we distinguished between the reporting of distressful experiences (auditory hallucinations) and the reporting of non-distressful experiences (vivid daydreams). This suggests that a neuroticism component does not contribute to a greater extent to the onset of more distressful, compared to less distressful hallucinatory experiences. Rather, neuroticism seems to play an equally important part in the onset of both distressful and non-distressful hallucinatory experiences.

The findings from the present study suggest that Openness to Experience may operate as a *predisposing* factor for hallucinatory experience, in both young and elderly subjects. However, whereas Neuroticism (stress/anxiety) seems to be operating as a *precipitating* factor in young subjects, sensory loss and/or cognitive deficit may be the main precipitating factor for these experiences in elderly subjects. Further research is needed in order to examine these assumptions.

Acknowledgements

Appendix A

Frequencies of positive responses (i.e., percentage of participants who answered 'possibly applies to me' or 'most certainly applies to me') for each LSHS item, for both young and elderly samples

Item	Young (%)	Elderly (%)
1. Sometimes a passing thought will seem so real that it frightens me	61	54
2. Sometimes my thoughts seem as real as actual events in my life	62	49
3. No matter how hard I try to concentrate on my work unrelated thoughts always creep into my mind	68	48
4. In the past, I have had the experience of hearing a person's voice and then found that no one was there	24	46
5. The sounds I hear in my daydreams are generally clear and distinct	52	32
6. The people in my daydreams seem so true to life that I sometimes think that they are	64	35
7. In my daydreams I can hear the sound of a tune almost as clearly as if I were actually listening to it	56	36
8. I often hear a voice speaking my thoughts aloud	14	31
9. I have been troubled by hearing voices in my head	21	34
10. On certain occasions, I have seen the face of a person in front of me, but that there was no one	26	45
11. Sometimes, immediately prior to falling asleep or upon awakening, I have had the experience of having seen or elt or heard something or someone that wasn't there or the feeling of being touched even though no one was there	49	61
12. Sometimes, immediately prior to falling asleep or upon awakening, I have had a sensation of floating or falling or that I left my body temporarily	58	71
13. On certain occasions I have had the feeling of the presence of someone close who has deceased	17	38
14. In the past, I have had smelt a particular odour when there was nothing there	16	14
15. I have had the feeling of touching something or being touched and then found that nothing or no one was there	14	12
16. Sometimes I have seen things or animals when nothing was in fact there	19	22

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