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Psychological Correlates of Aura Vision: Psychic Experiences, Dissociation, Absorption, and Synaesthesia-Like Experiences

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Five survey studies, three conducted from 1995 to 1997 and two more in 2007 and 2008, are reported in which we hypothesised that individuals who claimed to be "aura viewers" would report a higher frequency of other seemingly psychic, mystical and lucid dream experiences and a higher number of discrete psychic experiences than "non-aura viewers." For Studies 2 through 5, it was also hypothesised that aura viewers would obtain a similar relationship with synaesthesia-like experiences and with measures of dissociation (using the Dissociative Experiences Scale), absorption (using Tellegen's Absorption Scale), and depersonalisation (using the Cambridge Depersonalisation Scale). The studies also differed in terms of the language of administration (either Spanish or English) and study populations (from special interest groups to college students to members of the general public). In all five studies, the main hypotheses were confirmed with the exception of lucid dreams, a significant difference between the groups being found only in Studies 3 and 5. In Studies 2 through 5, the predicted relationship of aura vision to synaesthesia and personality variables was confirmed. All five studies suggest that aura vision experiences relate to an overall pattern of claims of psychic and mystical experiences. The consistency of the results was surprising, given the differences in sample selection, language of administration, and study location.

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For years, there have been accounts and discussions of the "aura vision" phenomenon, that is, lights, glimmers, or what appear to be "force fields" around the human body (for overviews, see Alvarado, 1987; Regush, 1977; Tart, 1972; Zingrone, 1995). Among these are the descriptions of the experiences of single individuals (e.g., Garrett, 1939) and ostensibly medically related observations of some aura-viewers (Karagulla, 1967). Although a large popular literature exists (e.g., Schumsky, 2005), little scientific research has been conducted. Prevalence, phenomenology, the relationship of aura vision to other phenomena, to personality, cognitive and medical variables are all under-investigated. Our own interest in personality correlates motivated this program of study.

Different investigators have reported positive relationships between self-reports of auras and such seemingly psychic experiences as apparitions, ESP, out-of-body experiences, as well as mystical experiences and lucid dreams (Alvarado & Zingrone, 1994, 2007–2008; Kohr, 1980; Palmer, 1979). We previously found (Alvarado & Zingrone, 1994) positive relationships between auras and vividness of visual imagery and fantasy proneness, suggesting that cognitive factors are important in the formation and/or expression of the aura experience. More recently, partially relying on our earlier work (Alvarado & Zingrone, 1994; Zingrone & Alvarado, 1994), Parra (2008) reported that aura experiencers obtained significantly higher scores than non-experiencers on measures of vividness of imagery, fantasy proneness, absorption, dissociation, and schizotypy.

In the five studies reported in this article, we hoped to replicate and extend these previous findings. Because our previous research was conducted with small *N* studies, and because data collection methods may have influenced results by creating expectation or other contextual effects, we decided both to use larger samples and, insofar as it was possible, to mask the purpose of the research. The latter strategy was particularly applied in Studies 2 through 5.

In all five studies reported here, we predicted that participants who claimed to see auras would also claim higher frequencies of psychic phenomena, mystical experiences and lucid dreams, as well as a greater number of discrete psychic phenomena than those who did not claim to be "aura viewers."

We argued in an earlier paper that auras may be related to cognitive factors other than those previously explored (Alvarado & Zingrone, 1994). Healy (1984) suggested that auras represented sensitivity to the permeability of ego boundaries. Consequently, we predicted that dissociation would be positively and significantly related to aura experiences (Study 2). It is assumed

that when another person is the stimulus, the production of an aura may be related to impressions of, or information obtained from, that person, and that the processing of this information (whatever its source) may depend on an ability to shift, or to make more permeable, the barriers between subconscious defence mechanisms and waking consciousness. Pekala, Kumar, and Marcano (1995) have speculated about the importance of dissociation in providing the necessary conditions for the processing of weak perceptual signals such as those presumed to underlie some seemingly psychic phenomena. They argue that "highly dissociative individuals [may be] … able to focus on one particular aspect of subjective experience such that the image/thought does not get 'diluted' or 'contaminated' by other aspects of subjective experience" (p. 327). This notion is conceptually consistent with Waller, Quinton, and Watson's (1995) study in which dissociation was found to be related to threat-related information processing.

Previous studies have found a positive relationship between auras and other seemingly psychic experiences (Alvarado & Zingrone, 1994, 2007–2008; Kohr, 1980; Palmer, 1979). Positive correlations have also been reported between dissociative experiences and general psychic experience claims (Parra & Argibay, 2006; Pekala et al., 1995; Richards, 1991; Ross & Joshi, 1992; Zingrone & Alvarado, 1994). Therefore, we postulated that aura report frequency and mean dissociation scale scores would be significantly and positively correlated in Study 2.

Absorption, as measured by Tellegen's Absorption Scale (TAS) (Tellegen & Atkinson, 1974), has been positively related to claims of psychic experiences in past research (Glicksohn, 1990; Irwin, 1985b). Absorption has also been related to altered states (Glicksohn & Barrett, 2003) and to dissociation (Frischholz et al., 1991; Norton, Ross, & Novotsky, 1990). Consequently, in Study 3 we predicted that the mean TAS scores would correlate positively with aura reports.

In our previous study (Alvarado & Zingrone, 1994), we speculated that aura vision may be related to synaesthesia, that is, to cross-modal sensory processing (on synaesthesia see: Baron-Cohen & Harrison, 1997; Robertson & Sagiv, 2005). Kenneth (1933), Amadou (1954), and Mishlove (1993) have also proposed this connection. The idea here is that acquisition of information about another person, obtained through visual and other sensory modalities and /or through everyday emotional assessments, may be transformed into a hallucination of light or an "energy" field. This experience may be, at its core, a synaesthetic process. Cytowic's (1989) descriptions of the features of several

synaesthetes' experiences provides evidence for this, in that the descriptions he recounts are, prima facie, similar to what is found in popular accounts of aura vision. One of us (Alvarado) has also obtained modest and exploratory evidence that supports a relationship between synaesthesia-like experiences and claims of general psychic experiences (Alvarado, 1994). Others have also found a positive association between out-of-body experiences (OBEs) and synaesthesia (Irwin, 1985a; McCreery & Claridge, 1995). Because auras have been related to psychic experience in general and OBEs in particular (Alvarado & Zingrone, 1994; Kohr, 1980; Palmer, 1979), we predicted a positive correlation would be obtained between aura vision and synaesthesia-like experiences in Studies 2 through 5. In Study 3, we measured this relationship using the Synaesthesia Factor of Tellegen's Absorption Scale, and in Studies 4 and 5, using two items querying the perception of colours with sounds, music and voices, and colours with numbers and letters.

In this study, depersonalisation is defined as a psychological trait that includes a number of distinct aspects, such as feeling detached from one's own body and emotions (e.g., Simeon & Abugel, 2006). Depersonalisation also involves feelings of derealisation that can extend to other people, familiar objects, activities and places, one's own stream of consciousness, and to visual, auditory, tactile and bodily sensations such as pain, hunger or thirst. Perceptual distortions of the passage of time and of the shape of one's own body are also reported (see the discussion of phenomenological features of depersonalisation in Sierra & Berrios, 2001; for overviews of the literature see Coons, 1996; Moreira-Almeida, Alvarado, & Zangari, 2006; Simeon, 2004; Simeon & Abugel, 2006; Steinberg, 2001).

The original purpose of Studies 4 and 5 was to test, using the Cambridge Depersonalisation Scale (CDS) (Sierra & Berrios, 2000), the relationship of depersonalisation to OBEs. Because we found a positive relationship between depersonalisation and OBEs in both Studies 4 and 5 (the specific results of these analyses will be reported elsewhere), and because a relationship was found between mean DES scale scores in Study 2 and TAS scale scores in Study 3 and all psychic experiences queried, and because the DES includes a depersonalisation subscale, we predicted a significant and positive relationship between mean CDS scores and aura vision experiences in Studies 4 and 5.

Finally, in all five studies we expected that the prevalence of aura experiences would be lower than the prevalence of claims of dream ESP, waking ESP, apparitions, and OBEs. Others have reported this finding (e.g., Gómez Montanelli & Parra, 2004; Kohr, 1980; Palmer, 1979; Zingrone &

Alvarado, 1994), and one of us (Alvarado, 1996, p. 16) combined some of these results in graphic form in a previous paper.

STUDY 1[1]

Method

Participants

Participants in Study 1 were readers of a popular New Age magazine published in Madrid called *Más Allá de la Ciencia*. The magazine is distributed internationally with a circulation of over 100,000. Most of the readers were from Spain, but the magazine circulates in other countries in Europe and Latin America as well. The questionnaire focused on out-of-body experiences, although it included items on other psychic experiences. Respondents (N = 492) were self-selected volunteers. Demographic items showed that respondents were mainly female (68%, N = 492), married (43%, N = 487), and moderately religious (39%, N = 459).

Questionnaire

The questionnaire, written in Spanish, was sent to the editors of the magazine. They published it across two facing pages of an issue with some minor editorial changes. The questionnaire asked for name and address, demographic information, and items about dream recall, lucid dreams, precognitive dreams, waking ESP, apparitions, auras, mystical experiences, movement of objects (i.e., seeing objects move by themselves), and OBEs, in that order. Both the aura and OBE questions asked for descriptions. The OBE question also included sub-items querying phenomenological details.

The six-option response scale for the dream recall item ranged from "never" to "always" (every day). The rest of the experience items were three-option: (a) "yes, once"; (b) "yes, more than once' (approximately how many?); and (c) "no."

The aura question read: "Have you ever seen a light or lights, a glow or an 'energy field' around a person or parts of their body that could not be explained by physical causes or any other explanation?"

[1] We are grateful especially to Benjamin Noriega and María Pérez Molina, who made this study possible by coordinating our contact with the magazine and sending us the data at their own expense, and to José Antonio Campoy, chief editor of *Más Allá de la Ciencia*, who printed our questionnaire and collected the replies. Analyses of other aspects of this data appear in Alvarado and Zingrone (1999, 2007–2008).

The editors of the magazine introduced the survey with the title "Study of Psychic Experiences in Spain: Do You Have Paranormal Powers or Have You Had Strange Phenomena?" They presented the study as one of psychic phenomena similar to those conducted in other countries. Readers' collaboration was solicited, confidentiality was guaranteed, and respondents were directed to mail completed questionnaires to the editorial offices. One of us (Alvarado) was mentioned as the investigator.

The editors introduced two omissions and one mistake into the printed questionnaire. Age was not included and the question about marital status did not include the widow/widower option. The ESP dream question was rewritten to focus on seemingly precognitive dreams only.

Procedure

Printed in the Fall 1994 issue of the magazine, the questionnaire was distributed through the magazine's normal circulation methods. Four-hundred and fifty-three completed questionnaires were collected by the editors in the Spring of 1995. The final 39 arrived during the Fall of 1995.

Analyses

Using Statpac, analyses included chi square and Mann–Whitney *U* tests, Spearman correlations, and a logistic multiple regression. We decided not to correct for multiple analyses, choosing to rely instead on replication. We calculated the effect size (*es*) of the *z* values obtained in the Mann–Whitney analysis using the following formula: $z / \sqrt{N}$ (Rosenthal, 1991, p. 19, formula 2.18). All *p* values were two-tailed.

Results of Study 1

Descriptions of Auras

The following is a selection of experiences supplied by our respondents. We have translated them from the original Spanish.

1. I saw a zone of clarity around the head, neck, and torso of a woman who was delivering a talk; it was a tenuous light.
2. Flames came out of him, as if they were sparkling and glimmering. When his hands came close to my body … I noticed an energy, similar to when the hands are put close to the television, accompanied with an agreeable warmth.

3. When I observe the head of people, I see a white outline on the head. On other occasions there is a shadow close to them.
4. I see some sort a fog or very tenuous smoke that leaves the mouth of the person who talks to me, but only when I am not looking directly, but sideways.
5. I have seen something like a red fog behind persons at a distance and a violet colour around my brother after a strong discussion.
6. I often see a light that envelops people. The colours are very soft and variable.
7. It was with a girl who sold books; after I spent a good amount of time with her, half of her head irradiated light down to the shoulders.
8. I saw a young woman whose face transformed and radiated a reddish smoke while she was trembling. Also an old woman … had a halo formed.
9. When I look at people I clearly see sort of a shine that surrounds them, on their heads, shoulders and arms, with a width reaching 20 or 30 cm, and if I look more into the shine I start to see subtle colours … Also, when I fix my sight on objects … I see a shine around the whole object that varies in width from 1 to 2 cm, but this shine has no colour, it is white and colourless.
10. I was in my business looking at some people who were passing by, when I suddenly stopped seeing an old lady and saw a group of beams or rays of light—even the darker ones shone and fluctuated with a vibration and colour that I have not seen since. I was frightened and started looking at other people, but as soon as I focused on them, they became kind of a torch of colours with rays going everywhere except to the ground and at a distance that I calculated to be one metre … These rays contracted and expanded, they were something alive.

Prevalence and Frequency of Aura Reports

Forty-six per cent of the respondents ($N = 485$) claimed to have seen auras. Of these, 11% ($N = 54$) said they had experienced aura vision only once and 35% ($N = 170$) said they had more than one experience.

Relationship of Auras to Demographic Variables

Thirty-one per cent of the experiencers were male ($N = 68$) and 69% were female ($N = 156$), a difference that was not significant, $N = 485$, $\chi^2(1) = .77$,

p = .76, phi = .04). Aura viewers (N = 209) did not differ significantly from non-aura viewers (N = 245) in terms of religiosity, Aura M = 2.46, No Aura M = 2.33, U = 23666.50, z = 1.39, p = .16, es = .06.

Relationship of Auras to Psychic and Dream Experiences

We predicted that aura experiencers would also claim a higher number of other psychic experiences and dream experiences. As can be seen on Table 1, there were significant differences between the aura viewers and non-aura viewers on the psychic experiences, but not on lucid dreaming. Dream recall frequency, however, was significantly higher in the aura group (N = 220, M = 4.70) than in the non-aura group (N = 255, M = 4.53), U = 25516.00, z = 1.70, p = .09, es = .08.

Table 1: Parapsychological and Dream Experiences in Relation to Auras (Study 1)

Experience	Aura	*N*	No Aura	*N*	$\chi^2(1)$	*p*	phi
Precognitive dreams	85%	223	71%	259	12.24	.0005	.16
Waking ESP	84%	223	64%	258	23.33	.00001	.22
Apparitions	92%	222	76%	261	22.08	.00001	.21
Out-of-body experiences	87%	221	78%	259	5.91	.02	.11
Movement of objects	43%	222	30%	260	9.67	.002	.14
Mystical experiences	80%	222	63%	261	18.16	.00002	.19
Lucid dreams	90%	222	89%	257	.11	.75	.01

An index of psychic experiences (IPE) was calculated by counting the number of specific experiences other than aura (precognitive dreams, waking ESP, apparitions, OBEs, movement of objects). It was found that aura experiencers obtained a higher mean index (N = 224, M = 3.88) than did the non-Aura group (N = 261, M = 3.18). This difference was significant, U = 19217.00, z = 6.51, p < .00001, es = .39). The IPE was also significantly correlated to aura frequency experience, r_s (367) = .45, p < .0002.

As we predicted, the prevalence of aura claims was lower than all of the other experiences claimed, with the exception of movement of objects: apparitions (83%), OBEs (82%), precognitive dreams (78%), waking ESP (73%), aura (46%), and movement of objects (36%).

Logistic Multiple Regression

To further explore the predictors of aura vision, we performed a logistic multiple regression. The dependent variable was aura group membership. The independent variables were lucid dreams, dream recall, precognitive dreams, waking ESP, apparitions, mystical experiences, movement of objects, and OBEs. The regression was significant, $\chi^2(8) = 75.17$, $p < .0001$; Log of Likelihood Function = -276.450188. The only variables that significantly predicted group membership (aura yes vs aura no) were apparitions (Coefficient = .55, *SE* = .15, *T*-Ratio = 3.66, $p < .0001$), mystical experiences (Coefficient = .41, *SE* = .13, *T*-Ratio = 3.31, $p = .001$) and waking ESP (Coefficient = .41, *SE* = .13, *T*-Ratio = 3.157, $p = .002$). The cases that were predicted correctly (66.4%) represented a 12% improvement over the percentage that was predicted by chance.

Discussion of Study 1

As predicted, the aura experience was positively associated with claims of a variety of experiences. Comparison of the number of reports of auras with those of other experiences showed that auras were less common than other claims (with the exception of movement of objects) but that, if aura vision was reported, the experiencer was likely to report more of the other psychic experiences than non-experiencers. In addition, a logistic regression singled out apparitions, mystical experiences, and waking ESP as the best predictors of aura group membership.

STUDY 2[2]

Method

Participants

The participants of Study 2 were students at a U.S. community college in Illinois. The 308 respondents were mostly female (60%), single (79%), around 23 years old (Range = 17 to 59, *N* = 167, *M* = 23.2), and slightly religious (48%, *N* = 305).

[2] We wish to thank Susan Zingrone for introducing us to faculty and staff at the college, Emily C. Wadsworth (Dean of Humanities and Communication), Terence Lenio (Coordinator of Social Sciences), the faculty members who gave us access to their courses, and most especially we thank the participating students for making this study possible.

Questionnaire

We created a questionnaire called the Questionnaire of Mental Experiences comprised of two sections, one of demographic variables and one of additional questions. In the second section, the response scale ranged from 0 to 100 in increments of 10. Instructions emphasised that questions should be answered in terms of the percentage of time that the person had the experience described, limiting their responses only to those experiences that occurred without the use of drugs or alcohol.

Twenty-eight of the items in the second section consisted of the revised version of the Dissociative Experiences Scale (DES) (reproduced in Carlson & Putnam, 1993). There is evidence that this scale is as valid and reliable as the original scale (Ellason, Ross, Mayran, & Sainton, 1994; Offen, Waller, & Thomas, 2003; Waller et al., 1995). Our assessment of the internal cohesion of the scale in the data obtained a Cronbach alpha of .92. In addition, we obtained a significant negative correlation with age, $r_s(308) = .19$, $p = .03$.

We had intended to include the seven-item Synaesthesia Factor of Tellegen's Absorption Scale, one of six factor-analytically derived factors (Tellegen, 1992) that has been correlated with scores on laboratory synaesthesia tasks (Rader & Tellegen, 1981). One item was inadvertently omitted and an item from a different factor substituted, reducing our synaesthesia subscale to six items.

We also included questions about mystical experience, dreams (recall, lucidity and vividness), dream ESP, waking ESP, apparitions, OBEs, and auras. The aura question read: "Some people have seen a light or lights or energy fields around any part of a person's body which, as far as they could tell, were not due to normal or natural causes."

The DES response scale was used for all the items. This standardisation was used to maintain consistency with the revised form of the DES and to camouflage the DES items, thus reducing the likelihood that the purpose of the study would be intuited by the participants. In addition, all the items were randomised, so as to further minimise the transparency of the DES and therefore the potential influence of contextual effects.

Procedure

We approached the Dean of Humanities and Communications and the Coordinator of Social Sciences, who put us in contact with several professors willing to allow us to administer our questionnaire in their courses. Two of us (CSA and NLZ) visited participating classes, presenting the study as one

designed to investigate normal phenomena of daily life in general, and of memory, imagination and dreams in particular. We told the students that our interest was in prevalence and individual differences, never mentioning that our real interest was in psychic phenomena, dissociation and synaesthesia. Students were told that they were under no obligation to participate in the study and that they should not complete or return the questionnaire to us, if they did not wish to do so. Consent forms were included in the survey packets, some of which were completed and returned to us in class, some of which were completed and returned to instructors after we left, and others which were returned to us by the post. Some students were awarded credit by their instructors for completing the questionnaire and others were not.

Analyses

Statistical analyses—chi square and Mann–Whitney *U* tests, Spearman correlations and logistic multiple regression—were conducted using StatPac. To compute the basic prevalence of psychic, mystical and dream experiences using the 0–100 scale, we counted as "yes" any response with a rating over 0. As in our previous studies, we decided not to correct for the number of analyses and instead to rely on common patterns across studies and on future replications. We used the same effect size (*es*) formula as noted in Study 1. All *p* values are two-tailed.

Results of Study 2

Collection Method and Academic Credit

We analysed the data to determine if administration/collection methods or academic credit influenced the results. No evidence was found to suggest that these variables either affected scores on the DES (Zingrone & Alvarado, 2001–2002), or the frequency of lucid and vivid dreams or dream recall (Alvarado & Zingrone, 1997). Further analyses of the frequency of auras in relation to the collection and credit variables revealed no significant differences. Consequently, all questionnaires received were pooled for subsequent analyses.[3]

Prevalence of Aura Reports

Although our questionnaire was constructed to ask for specific frequencies of experiences, it was possible to assess the basic aura claim by counting as one

[3] For details of the analyses, please contact the authors.

experience any reply over zero. Sixteen per cent of our respondents ($N = 48$) claimed to have experienced auras.

Relationship of Auras to Demographic Variables

Sixty-seven per cent of those reporting auras were female, as compared to 33% males ($N = 308$, $\chi^2[1] = 1.03$, $p = .62$, *phi* = .06). Neither age (Aura $N = 23$, $M = 25.13$, No Aura $N = 144$, $M = 22.88$, $U = 1813.50$, $z = .73$, $p = .47$, *es* = .06), nor religiosity (Aura $N = 47$, $M = 3.38$, No Aura $N = 258$, $M = 3.04$, $U = 5138.00$, $z = 1.66$, $p = .10$, *es* = .10) were significantly different.

Relationship of Auras to Psychic and Dream Experiences

We predicted that aura experiencers would have a higher number of claims of other parapsychological experiences and of dream experiences than non-experiencers. As can be seen in Table 2, the aura group and the non-aura group produced significantly different levels of psychic experience claims (dream ESP, waking ESP, apparitions, OBEs), but two dream variables (lucid dreams and vivid dreams) were not significantly different. Dream recall frequency, however, was significantly higher in the aura group ($N = 48$, $M = 66.04$) than in the non aura group, $N = 260$, $M = 55.46$), $U = 4929.00$, $z = 2.31$, $p = .02$, *es* = .13.

Table 2: Parapsychological and Dream Experiences in Relation to Auras (Study 2)

Experience	Aura	*N*	No Aura	*N*	$\chi^2(1)$	*p*	phi
ESP dreams	96%	47	72%	257	11.89	.0006	.20
Waking ESP	92%	47	68%	257	11.00	.0009	.19
Apparitions	73%	48	33%	260	27.57	.000001	.30
Out-of-body experiences	58%	48	25%	257	22.10	.000001	.27
Mystical experiences	88%	48	67%	260	8.19	.004	.16
Vivid dreams	100%	48	96%	260	2.11	.15	.08
Lucid dreams	85%	48	83%	257	.24	.62	.03

Just as we did in the previous study, an index of psychic experiences (IPE) was calculated for each respondent. The mean index for the aura group was significantly higher ($N = 48$, $M = 3.15$) than that of the non-aura group ($N = 260$, $M = 1.95$), $U = 2997.00$, $z = 5.72$, $p < .00001$, *es* = .33. It was also

found that the index was significantly positively correlated to the frequency of aura experience, $r_s(308) = .39$, $p < .0001$.

As we predicted, the prevalence of aura claims was lower than that of the other psychic experiences: dream ESP (76%), waking ESP (71%), apparitions (39%), OBEs (30%), and aura (16%).

Relationship of Auras to Dissociative Experiences

The overall mean DES score for the whole sample ($N = 308$) was 21.70 ($SD = 12.89$, Md = 19, Range = 1 to 65; for more psychometric details see Zingrone & Alvarado, 2001-2002). As predicted, aura experiences were positively correlated to DES scores ($r_s[308] = .49$, $p < .0001$). In addition, the aura group obtained a significantly higher mean score on the DES ($N = 48$, $M = 29.75$) than the non-aura group ($N = 260$, $M = 20.22$), $U = 3393.50$, $z = 5.02$, $p < .00001$, $es = .29$. Our factor analysis of the DES found a single solution (Zingrone & Alvarado, 2001-2002), a departure from previously reported factors (e.g., Ross, Joshi, & Currie, 1991).

Waller, Putnam, and Carlson (1996) selected eight items of the DES using taxometric methods that they claim identify a "type of individual who experiences pathological dissociation" (p. 311). This short form of the DES (called the DES-T) is comprised of amnesia, depersonalisation and derealisation items. Absorption items generally considered to be markers of non-pathological everyday dissociative experiences are not included. These authors found that patients with dissociative disorders obtained higher scores on these items than patients with other psychiatric conditions, in which dissociation was not considered important, and also higher than normal controls. In exploratory non-predicted analyses we correlated the DES-T and the rest of the DES with the aura question. Both the DES-T ($r_s[308] = .48$, $p < .002$) and the rest of the DES ($r_s[308] = .48$, $p < .0002$) correlated positively and significantly with aura experiences.

Relationship of Auras to Synaesthesia-Like Experiences

As predicted, an analysis of the mean of six items taken from the Synaesthesia Factor of Tellegen's Absorption Scale found that the mean for the aura group ($N = 48$, $M = 36.21$) was significantly higher than that of the non-aura group ($N = 260$, $M = 25.23$), $U = 3946.00$, $z = 4.05$, $p = .0001$, $es = .23$. Aura frequency also significantly and positively correlated with the synaesthesia score, $r_s = .45$, $p < .0001$.

Logistic Multiple Regression

For this analysis, the dependent variable was aura group membership (i.e., aura yes, aura no). Independent variables were dream recall, vivid dreams, lucid dreams, DES score, synaesthesia score, ESP dream, waking ESP, apparitions, mystical experience, and OBEs. Although the overall regression achieved significance ($\chi^2[10] = 44.43$, $p < .00001$; Log of Likelihood Function = -111.062498), only one—mystical experiences—emerged as a significant predictor of aura group members (Coefficient = 0.14, *SE* = 0.01, *T*-Ratio = 2.02, $p = 0.04$). One hundred per cent of the cases were correctly predicted, but with an improvement of only 1% over what would have been predicted by chance.

Discussion of Study 2

The results of Study 2 replicated both those of our previous study on auras (Alvarado & Zingrone, 1994) and Study 1; that is, aura experience was positively associated with reports of psychic experiences. Comparison of the frequency of auras with the frequency of other experiences showed that auras were less common than other claims, but that if an aura was reported, the experiencer was likely to report other experiences such as dream ESP, waking ESP, apparitions, mystical experiences and OBEs. In addition, aura frequency was positively related to DES and DES-T scores, as well as to the six items from the Synaesthesia Factor of the TAS. While a logistic regression singled out mystical experiences as a significant predictor of aura group membership, overall the regression did not improve significantly on chance prediction.

STUDY 3[4]

Method

Participants

The participants in Study 3 were selected by graduate students who received credit for their participation in a parapsychology course at a small private university in San Juan, Puerto Rico. Respondents were recruited mainly from the friends, workmates, classmates, family members and acquaintances of the students. Most of the respondents ($N = 119$) were born (87%) and/or raised

[4] We wish to thank the following students who collected the data for this study: Luis Acevedo, Carmen Capella, María Isabel Cruz, Aida Cruz, Dimary González, Luz Irizarry, Emma Lizardi, Maybelle Mercado, Yadira Pizarro, Mayra Sanabria, Jesús Soto, and Marcos Vega.

(*N* = 118, 93%) in Puerto Rico. At the deadline for data completion, 120 questionnaires had been returned. Respondents were mainly female (*N* = 118, 71%), single (*N* = 119, 52%), with a mean age of 31 (*N* = 83, Range = 18 to 40, *SD* = 9.21).

Questionnaire

The Spanish-language questionnaire, titled Questionnaire of Mental Experiences in Daily Life, was composed of demographic questions, Tellegen's Absorption Scale (TAS), and questions about psychic experiences including auras and dreams. Data on other experiences were gathered but are not being reported here. With the exception of the demographic questions, the items were presented in random order. All the questions were formatted to match the true and false response options of the original TAS. The aura question read: "I have seen a light, lights, or energy fields around parts of a person's body which, as far as I could determine, were not accounted for by 'normal' or 'natural' causes."

Procedure

Student administrators were doctoral students, mainly in the final stages of a clinical psychology program. One of us (Alvarado) translated the TAS into Spanish. The translation and other items were modified after a critical assessment was made by the students, as to the clarity of the questions and the appropriateness of the translation to the Puerto Rican context. In addition to being asked to avoid targeting individuals known to be psychic experiencers, the students were also instructed to present the questionnaire as part of a psychological, rather than a parapsychological, course project. They were warned not to mention absorption or psychic experiences when they approached potential respondents. We also asked them to avoid recruiting clinical patients. Student administrators reviewed questionnaires for completeness and to attempt to collect descriptions of OBEs and auras where relevant. Unfortunately, very few descriptions were obtained due to the respondents' unwillingness to provide them, among other reasons.

Analyses

Statpac was used to conduct chi square and Mann–Whitney *U* tests and the logistic multiple regression. As in our previous studies, we decided not to

correct for the number of analyses, but to rely instead on common patterns across studies and on future replications. We used the same effect size (*es*) formula as noted in Studies 1 and 2. All *p* values are two-tailed.

Results of Study 3

Descriptions of Auras

Unfortunately, only three descriptions of auras were collected. We translated these from Spanish.

1. When I am in a room or in a house with walls painted with pale colours and there is a person standing in front of the wall, and if I stare at the person, I can see an energy field around the body.[5]
2. I have seen a transparent light in some people, as if they were inside a frame of that light.
3. I do not know how to explain what I see, but it is neither strong nor bright. It is a light and I have only seen it on two occasions with children.

Prevalence of Auras

Out of 118 questionnaires with information about aura prevalence, 15% (N = 18) claimed to have had the experience.

Relationship of Auras to Demographic Variables

Eighty-three per cent of the 18 aura viewers were female and 17% (N = 117) were male, $\chi^2(1) = 1.40$, $p = .47$, phi = .11. The aura viewers were slightly older (N = 15, M = 33.20) than the non-aura viewers (N = 69, M = 30.32), but not significantly so, $U = 366.50$, $z = 1.76$, $p = .08$, $es = .19$. There was no significant difference between aura viewers (N = 18, M = 2.28), and those who had not had the experience (N = 96, M = 2.73) on religiosity, U = 1054.00, $z = 1.48$, $p = .14$, $es = .14$.

Relationship of Auras to Psychic and Dream Experiences

Table 3 shows the consistently higher frequency of psychic and dream experiences in the aura group than in the non-aura group, which confirms our predictions.

[5] These conditions of observation suggest the possibility that this report may be explained by contrast effects.

Table 3: Parapsychological and Dream Experiences in Relation to Auras (Study 3)

Experience	Aura	*N*	No Aura	*N*	$\chi^2(1)$	*p*	phi
ESP dreams	78%	18	56%	97	3.07	.08	.16
Waking ESP	83%	18	47%	100	8.08	.004	.2
Apparitions	94%	17	38%	99	18.11	.00002	.40
Out-of-body experiences	67%	18	28%	100	10.18	.001	.29
Vivid dreams	100%	18	77%	99	5.21	.02	.21
Lucid dreams	83%	18	60%	99	3.69	.05	.18

Then IPE was calculated for each respondent by counting reports of ESP dreams, waking ESP, apparitions, and OBEs. The IPE was significantly higher in the aura viewer group ($N = 100$, $M = 3.17$) than in the non-aura ($N = 100$, $M = 1.67$), $U = 368.50$, $z = 3.98$, $p = .0001$, $es = .37$.

As predicted, auras were the least common of the experiences: ESP dream (59%), waking ESP (53%), apparitions (46%), OBEs (35%), auras (15%).

Relationship of Auras to Absorption Experiences

The overall mean TAS score for the whole sample was 16.93 ($N = 120$, $SD = 8.14$, Md = 18, Range = 0 to 34) and had a Cronbach alpha of .91. As predicted, the aura group ($N = 18$) had significantly higher mean absorption scores than the non-aura group ($N = 100$, Aura $M = 23.00$ vs No Aura $M = 15.94$, $U = 455.00$, $z = 3.41$, $p = .0007$, $es = .31$). As can be seen on Table 4, as predicted, the Synaesthesia Factor score was also significantly higher for the aura group than for the non-aura group. The other factors of the scale also differentiated the two groups in question.

Logistic Multiple Regression

In this analysis, the dependent variable was aura group membership (i.e., aura yes, aura no). The independent variables were lucid dreams, vivid dreams, dream ESP, waking ESP, OBEs, apparitions, and absorption scores. The overall regression was significant, $\chi^2(7) = 28.96$, $p < .0001$; Log of Likelihood Function = -33.208147. However, the only significant predictor of aura group membership was apparitions (Coefficient = -2.66, $SE = 1.16$, *T*-Ratio = -2.31, $p = 0.02$). Although 83% of the cases were correctly predicted, this result was 1.8% less than the percent predicted by chance.

Table 4: Mean Scores of Factors of the Absorption Scale in Relation to Auras (Study 3)

Factor	Aura $N = 18$	No Aura $N = 100$	Mann–Whitney U	p	*es*
Responsiveness to engaging stimuli	4.89	3.60	2.56	.01	.64
Synaesthesia	4.50	3.03	2.90	.002(1t)	.76
Enhanced cognition	5.06	3.19	3.19	.0003	.95
Oblivious/ dissociative involvement	4.00	3.01	2.12	.04	.53
Visual reminiscence	2.39	1.69	2.71	.01	.65
Enhanced awareness	2.17	1.43	2.33	.05	.50

Discussion of Study 3

The results of Study 3 replicated both those of our previous study on auras (Alvarado & Zingrone, 1994) and Studies 1 and 2. That is, aura experience was positively associated with reports of psychic experiences. Comparison of the frequency of auras with the frequency of other experiences showed that auras were less common than other claims, but that if an aura was reported, the experiencer was likely to report more of the other psychic experiences, as well as more mystical experiences. In addition, aura viewers obtained significantly higher absorption scores overall, as well as significantly higher scores on the factors of the TAS. While a logistic regression singled out apparitions as a significant predictor of aura group membership, overall the regression predicted group membership at 1.8% less than that predicted by chance.

STUDY 4

Method

Participants

Two-hundred and fifty-six individuals returned usable questionnaires that had been distributed in 2007, from a stratified random sample of the residents of a Central Virginia city. Respondents were mostly female (63%, $N = 256$), Catholic (68%, $N = 228$), married (52%, $N = 255$), and moderately religious (35%, $N = 253$).

Questionnaire

A four-page questionnaire was prepared that included demographic questions, the Cambridge Depersonalisation Scale (CDS) (Sierra & Berrios, 2000), the Satisfaction With Life Scale) (SWLS) (Diener, Emmons, Larsen, & Griffin, 1985), and items surveying the frequency of a variety of experiences (SWLS and other data, related specifically to depersonalisation experiences, are beyond the scope of this article and will be reported elsewhere). The experiences relevant to this study were dream recall, lucid and disturbing dreams, psychic experiences (waking ESP, dream ESP, apparitions, out-of-body experiences, and auras), sense of oneness with nature (referred to as mystical experience here), déjà vu, and synaesthesia-like experience, both of seeing colours while hearing sounds, music or voices, and while seeing, hearing or thinking about letters or numbers.

The aura question read: "Have you ever seen a light or lights around or about a person's head, shoulders, hands, or body which, as far as you could tell, were not due to 'normal' or 'natural' causes?" The response scale had five options: "never," "rarely," "occasionally," "frequently," and "most of the time."

Because the purpose of this study was to test the relationship of the psychological variables to a variety of dream, synaesthesia-like, as well as seemingly psychic experiences with a special emphasis on OBEs, respondents who claimed to have experienced aura vision were not asked for a description of their experiences.

Procedure

A stratified random sample was drawn from the total population of a small Central Virginia city. Addresses were selected from each of the six postal zip codes that made up the city's postal area so as to conform to the proportion of population resident in each zip code. Stratification was used because differing concentrations of the various socioeconomic strata are distributed across these regions. The questionnaire, called The Study of Human Experiences Project, was presented in either Form A or Form B (the position of the Cambridge Depersonalisation Scale and related items was alternated from a point in the questionnaire after the demographics and the SWLS but before the dream, synaesthesia-like and psychic experience questions in Form A, to a point after all these other questions in Form B). Two-hundred and fifty-six completed and usable questionnaires were received.

Analyses

Analyses, conducted using Statpac, included chi square and Mann–Whitney *U* tests, Spearman correlations, and logistic regression. For chi square tests, item responses were recoded so that endorsements of "never" became "no," and endorsements of "rarely" through "most of the time" became "yes." As in our previous studies, we decided not to correct for the number of analyses and instead to rely on common patterns across studies and on future replications. We used the same effect size (*es*) formula as noted in Studies 1 through 3. All *p* values were two-tailed.

Results of Study 4

Order Effects

Because our questionnaire was administered in two different forms, we compared the results obtained with Form A to those obtained with Form B, so as to determine whether the data could be pooled. In the analysis, OBE claims were significantly more frequent on Form B than on Form A (OBE Form A: $N = 125$, $M = .36$, $SD = .84$; OBE Form B: $N = 127$, $M = .58$, $SD = .71$, $U = 9315.00$, $z = 2.38$, $p = .02$, $es = .15$), and Lucid Dream Frequency was significantly lower on Form B than it was on Form A (Lucid Dreams Form A: $N = 126$, $M = 1.28$, $SD = .94$, Lucid Dreams Form B: $N = 127$, $M = 1.03$, $SD = .93$, $U = 6767.00$, $z = 2.12$, $p = .03$, $es = .13$). However, because neither the aura (Aura Form A: $N = 125$, $M = .16$, $SD = .48$, Aura Form B: $N = 127$, $M = .13$, $SD = .42$, $U = 7790.50$, $z = .25$, $p = .79$, $es = .02$) nor the other comparisons were significantly different, we decided to pool the data from Forms A and B for the rest of the analyses.

Prevalence and Frequency of Aura Reports

Eleven per cent ($N = 27$) of the respondents claimed to have seen auras. Of these, 6% said they had "rarely" had the experience and 4% said they "occasionally" had the experience. No individuals endorsed "frequently" or "most of the time."

Relationship of Auras to Demographic Variables

Thirty-three per cent of the aura experiencers were male ($N = 9$) and 67% were female ($N = 18$), $\chi^2(1) = .23$, $p = .63$, $es = .03$. Aura viewers ($N = 27$) did not differ significantly from non-aura viewers ($N = 224$) in age (Aura $M = 45.89$, No Aura $M = 49.5$, $U = 2741.00$, $z = .79$, $p = .43$, $es = .05$) or

in religiosity (Aura $N = 27$, $M = 1.52$, No Aura $N = 223$, $M = 1.47$, $U = 3092.50$, $z = .23$, $p = .82$, $es = .02$).

Relationship of Auras to Psychic, Dream, Mystical, Déjà vu, and Synaesthesia-Like Experiences

We predicted that aura experiencers would have a higher prevalence of claims of other psychic experiences, and of mystical, dream and synaesthesia-like experiences. As can be seen in Table 5, there were significant differences between the aura viewers and those who did not claim auras on the parapsychological, déjà vu, mystical, and synaesthesia-like experiences, but not on the experience of lucid or disturbing dreams. Consistent with the findings of Studies 1 through 3, dream recall frequency was significantly higher in the aura group ($N = 27$, $M = 2.63$) than in the non-aura group ($N = 226$, $M = 2.17$), $U = 3700.50$, $z = 1.81$, $p = .07$, $es = .01$.

Table 5: Parapsychological and Dream Experiences in Relation to Auras (Study 4)

Experience	Aura	*N*	No Aura	*N*	$\chi^2(1)$	*p* (1T)	*phi*
ESP dreams	74%	27	46%	224	7.61	.006	.17
Waking ESP	81%	27	46%	225	11.99	.001	.22
Apparitions	78%	27	29%	226	25.83	<.0001	.32
Out-of-body experiences	67%	27	34%	225	11.15	.001	.21
Lucid dreams	85%	27	69%	226	3.04	.08	.11
Disturbing dreams	100%	27	92%	224		.28★	
Mystical experiences	78%	27	56%	225	4.53	.03	.13
Déjà vu	89%	27	82%	224	.	34★	
Synaesthesia: colours with sounds/music	48%	27	19%	226	11.87	.001	.22
Synaesthesia: colours with letters/numbers	33%	27	12%	224		.0084★	

★ These variables were tested using Fisher's Exact Probability due to one or more cells with *N*s less than 10.

The IPE was calculated by counting reports of ESP dream, waking ESP, apparitions, and OBEs. The overall IPE ($N = 256$) had a mean of 1.69, with a range of 0 to 4. Those who claimed to have reported aura vision had a significantly higher mean IPE ($N = 27$, $M = 3.00$) than did the group who did not claim auras ($N = 226$, $M = 1.54$), U= 4799.00, $z = 4.86$, $p = < .0001$, $es = .31$. A correlation of aura frequency was also significantly related to the IPE, $r_s(253) = .55$, $p = .0001$.

As we predicted, the prevalence of aura claims (11%) was lower than all of the other psychic experiences claimed: apparitions (78%), waking ESP (50%), ESP dreams (49%), and OBEs (38%).

Logistic Multiple Regression

To further explore the predictors of aura experiences, we performed a logistic regression. The dependent variable was aura group membership. The independent variables were dream recall, disturbing dreams, lucid dreams, ESP dreams, waking ESP, apparitions, OBEs, mystical, déjà vu, the two forms of synaesthesia-like experiences, and depersonalisation scores. The overall regression was significant, $\chi^2(12) = 43.49$, $p < .0001$; Log of Likelihood Function = -64.172441. The only variables that significantly predicted aura group membership were apparitions (Coefficient = .81, *SE* = .34, *T*-Ratio = 2.37, $p = .018$) and mystical experiences (Coefficient = .47, *SE* = .24, *T*-Ratio = 1.97, $p = .048$). Ninety two per cent of the cases were predicted correctly, a 2% improvement over chance.

Relationship of Depersonalisation to Aura Experiences

The overall mean CDS score for the whole sample was 20.13 ($N = 256$, $SD = 19.40$, Range = 0 to 93). Male respondents ($N = 96$) did not differ significantly from females ($N = 160$) on their mean depersonalisation scores: Male $M = 22.43$, Female $M = 18.75$, $U = 8337.50$, $z = 1.15$, $p = .252$, $es = .07$. An inter-item correlation yielded a Cronbach alpha of .88. A factor analysis uncovered five factors comparable to those found by previous investigators (e.g., Sierra & Berrios, 2001; a paper reporting the complete psychometric details of this scale is in preparation).

As predicted, the frequency of aura vision experiences was positively correlated to depersonalisation scores, $r_s(253) = .44$, $p < .0001$. In addition, the aura group ($N = 27$) obtained a significantly higher mean depersonalisation score ($M = 30.19$) than the non-aura group ($N = 226$, $M = 18.87$), $U = 3904.00$, $z = 2.37$, $p = .02$, $es = .15$.

Discussion of Study 4

As predicted, the aura experience was positively associated with claims of a variety of experiences. Comparison of the number of reports of auras with that of other experiences showed that auras were less common than all other

claims, but that if an experience was reported, aura viewers were more likely to report other psychic experiences than non-aura viewers. A logistic regression singled out apparitions and mystical experiences as the best predictors of aura group membership, although the prediction improvement over chance was minimal. These results were consistent with those of Studies 1 through 3. Finally, as predicted, aura vision claimants exhibited significantly higher levels of depersonalisation than those who did not claim aura vision, and the frequency of their aura vision experiences significantly correlated with CDS scores.

STUDY 5

Method

Participants

Participants in Study 5 were self-selected volunteers who responded to online study announcements. Of the questionnaires downloaded, when the study was closed at midnight on 2 June 2008, 597 were deemed usable. Respondents were mostly female (65%, $N = 589$), married (44%, $N = 585$), and slightly or moderately religious (29% each, $N = 583$).

Questionnaire

The web-based questionnaire was identical to that used in Study 4 and was presented online in two forms identical to the two forms in the random survey. As in Study 4, because the purpose of the study was to test the relationship of the psychological variables with a variety of dream, synaesthesia-like, mystical, déjà vu and psychic experiences but with a special emphasis on OBEs, respondents who claimed to have experienced aura vision were not asked for a description of their experiences.

Procedure

In January of 2008, a recruitment announcement was sent to two psychology- and parapsychology-related email newsletter lists with a combined subscriber base of approximately 11,300 individuals. The same announcement was also featured on various psychology- and parapsychology-related blogs, chat lists, social networking and other websites from January through June. It is therefore impossible to estimate how many people actually saw the announcement.

Individuals who wished to participate followed a link to an introductory website, www.studyofhumanexperiences.org, where they chose either Form A or Form B of the questionnaire according to whether their birth year was an even or an odd number. Once participants completed the questionnaire, their data was immediately uploaded to an encrypted archive on the hosting site. Data from individuals who navigated away from www.surveymonkey.com without completing the questionnaire was automatically uploaded into the encrypted archive as well. Once downloaded, the data was analysed for duplicates by searching on IP address, name, and on postal and email addresses when available. Duplicate questionnaires were purged from the dataset, as were questionnaires on which the only response was an endorsement of the consent form.

Analyses

Analyses included chi square and Mann–Whitney *U* tests, Spearman correlations, and logistic regression. As in Study 4, the five-item response scale on the experience questions were recoded for the chi square analyses such that endorsements of "never" became "no," and endorsements of "rarely" through "most of the time" became "yes." As in our previous studies, we decided not to correct for the number of analyses and instead to rely instead on common patterns across studies and on future replications. The formula used in Studies 1 through 4 to calculate effect sizes (*es*) was also used in this study. All *p* values were two-tailed.

Results of Study 5

Order Effects

Our questionnaire was uploaded to the website in two different forms, as mentioned earlier (Form A positioned CDS scale items and depersonalisation experience questions after demographic and SWLS items but before the psychic and other experiences; Form B position moved the CDS and its collateral experience items to the end of the questionnaire). Mann–Whitney *U* tests were performed on mean CDS scores, and on all the items that queried the frequency of experiences. Déjà vu mean scores were significantly higher on Form B than they were on Form A (Déjà Vu Form A $N = 257$, $M = 1.94$, $SD = .96$, Déjà vu Form B $N = 263$, $M = 2.18$, $SD = .86$), $U = 38513.50$, $z = 2.75$, $p = .006$, $es = .11$. Because neither aura (Form A = 262, $M = 1.09$, $SD =$

1.23, Form B $N = 265$, $M = 1.09$, $SD = 1.23$, $U = 34755.00$, $z = .02$, $p = .98$, $es = .001$) nor any of the other comparisons were significantly different, it was decided to pool the data from Forms A and B for the rest of the analyses.

Prevalence and Frequency of Aura Reports

Forty-six per cent said they had never had the experience, but 54% ($N = 285$) of the 527 respondents who answered the aura vision question claimed to have had the experience. Of the latter group, 19% responded "rarely," 20% claimed to have experienced aura vision "occasionally," 10% "frequently," and 5% "most of the time."

Relationship of Auras to Demographic Variables

Twenty-nine per cent ($N = 82$) of the aura vision experiencers were male, and 71% were female, while 42% ($N = 202$) of those who did not claim the experience were male ($N = 100$) and 58% female ($N = 136$)—a significant difference ($N = 521$, $\chi^2[1] = 10.09$, $p = .001$, $phi = .14$). Aura viewers ($N = 285$, $M = 45.48$) did not differ significantly from non-aura viewers ($N = 236$, 44.79) in age ($N = 521$, $U = 34560.00$, $z = .54$, $p = .59$, $es = .02$), nor in terms of religiosity, Aura $N = 240$, $M = 1.27$, No Aura $N = 278$, $M = 1.23$, $U = 34159.50$, $z = .47$, $p = .64$, $es = .02$.

Relationship of Auras to Psychic and Dream Experiences

We predicted that aura experiencers would have a higher prevalence of claims of other psychic experiences. As can be seen in Table 6, there were significant differences between the aura viewers and those who did not claim auras, on all of the psychic experiences and on all other experiences, with the single exception of disturbing dreams. Consistent with the results of Studies 1 through 4, dream recall frequency was significantly higher in the aura group ($N = 285$, $M = 2.88$) than in the non-aura group ($N = 242$, $M = 2.54$), $N = 527$, $U = 40876.00$, $z = 3.67$, $p = <.0001$, $es = .16$.

The IPE was calculated by counting the number of specific experiences other than aura claim; that is, dream ESP, waking ESP, apparitions, and OBEs. The overall mean IPE ($N = 597$) was 2.76 with a range of 0 to 4. Aura viewers obtained a significantly higher mean IPE ($N = 285$, $M = 3.54$) than did non-aura viewers ($N = 242$, $M = 2.63$), $U = 50108.50$, $z = 8.97$, $p < .0001$,

Table 6: Parapsychological and Dream Experiences in Relation to Auras (Study 5)

Experience	Aura	*N*	No Aura	*N*	$\chi^2(1)$	*p* (1T)	*phi*
ESP dreams	90%	284	73%	240	26.43	<.0001	.22
Waking ESP	93%	282	74%	240	34.39	<.0001	.26
Apparitions	93%	282	66%	242	57.64	<.0001	.33
Out-of-body experiences	83%	280	49%	240	66.50	<.0001	.36
Mystical experiences	97%	284	83%	241	30.22	<.0001	.24
Lucid dreams	96%	285	81%	241	30.12	<.0001	.24
Disturbing dreams	98%	285	98%	242		.4804★	
Déjà vu	99%	277	90%	239	20.77	<.0001	.20
Synaesthesia: colours With sounds/music	64%	280	25%	240	77.46	<.0001	.39
Synaesthesia: colours with letters/numbers	48%	283	17%	240	54.53	<.0001	.32

★ This variable was tested using Fisher's Exact Probability due to a cell with an N less than 10.

es = .39. For the persons who estimated the frequency of their aura experiences (N = 527), the index was significantly correlated to those estimates, r_s = .53, $p < .0001$).

As we predicted, the prevalence of aura claims (54%) was lower than all other psychic experiences: waking ESP (84%), ESP dreams (82%), apparition experiences (80%), and OBEs (67%).

Logistic Multiple Regression

To further explore the predictors of aura experiences, we performed a logistic regression. The dependent variable was aura group membership. The independent variables were dream recall, disturbing dreams, lucid dreams, ESP dreams, waking ESP, apparitions, OBEs, mystical experiences, déjà vu, both synaesthesia-like experiences and CDS scores. The overall regression was significant, $\chi^2(12) = 189.24$, $p < .0001$; Log of Likelihood Function = -268.91 The variables that significantly predicted group membership (aura yes, aura no) were apparitions (Coefficient = .47, *SE* = .14, *T*-Ratio = 3.44, p = .0001), waking ESP (Coefficient = .30, *SE* = .13, *T*-Ratio = 2.42, p = .015), mystical experiences (Coefficient = .25, *SE* = .11, *T*-Ratio = 2.28, p = .022) and synaesthesia-like experience of colours with sounds (Coefficient = .47, *SE* = .13, *T*-Ratio = 3.51, $p < .0001$) as positive predictors, and disturbing

dreams (Coefficient = -.33, *SE* = .15, *T*-Ratio = -2.19, p = .028) as a negative predictor. While only 75% of the cases were predicted correctly, this still represented a 21% improvement over chance.

Relationship of Depersonalisation to Aura Experiences

The overall mean CDS score for the whole sample was 37.18 (N = 591, SD = 14.15, Range = 0 to 279). As predicted, the frequency of aura vision experiences was positively correlated to depersonalisation scores (r_s[527]= .36, $p < .0001$). In addition, the aura group (N = 285) obtained a significantly higher mean depersonalisation score (M = 50.00) than the non-aura group (N = 242, M = 30.12), U = 45485.50, z = 6.32, p = < .0001, *es* = 28.

Discussion of Study 5

As predicted, the aura experience was positively associated with claims of a variety of experiences. Consistent with the results of Studies 1 through 4, reports of aura experiences were less frequent than reports of all other psychic experiences, but aura viewers were nonetheless more likely to report more discrete psychic experiences than non-aura viewers. A logistic regression singled out synaesthesia-like experiences of colours with sound, apparitions, ESP waking experiences and mystical experiences as positive predictors, and disturbing dreams as a negative predictor of aura group membership. Unlike the results obtained in Studies 1 through 4, the regression predicted fewer cases correctly but the improvement over chance was considerable. Finally, as predicted, aura vision claimants exhibited significantly higher levels of depersonalisation than those who did not claim aura vision, and the frequency of their aura vision experiences correlated significantly with CDS scores.

SUMMARY OF THE RESULTS OF ALL FIVE STUDIES

Overall, the results of the five studies were exceedingly consistent with one another, even though: three studies were conducted in the mid-1990s and two ten years later; two were conducted in Spanish and three in English; four used convenience samples and one a stratified random sample; and study populations differed widely, being readers of a popular magazine published in Spain, community college students in the midwestern United States, "townspeople" and students on a Spanish-speaking Caribbean island, residents of a small city in Central Virginia, and an international group of English-reading

internet users.

In none of the five studies were demographic variables significantly different for aura viewers and non-aura viewers. In all five studies, aura vision experiences were reported less frequently than all other psychic experiences, but when claimed, aura experiencers also reported significantly more discrete psychic experiences than those who did not claim aura vision. Aura viewers claimed significantly more lucid dreams than non-experiencers in Studies 3 and 5, as well as significantly more mystical experiences in Studies 1, 2, 4, and 5, significantly more vivid dreams in Study 3, significantly more déjà vu experiences in Study 5, and significantly more synaesthesia experiences as measured by six of the seven items of the Synaesthesia Factor of Tellegen's Absorption Scale in Study 2, by the complete Synaesthesia Factor in Study 3, and by the two synaesthesia-like experience items in Studies 4 and 5. As can be seen in Table 7, in all five studies, aura viewers reported a higher frequency of all experiences queried with the single exception of disturbing dreams in Study 5.

Table 7: Other Experiences in Relation to Auras

Experiences	S1	S2	S3	S4	S5
Study population	Readers of *Más Allá*	Community College, U.S.	Puerto Rican graduate students	General public (random) U.S.	International internet users
Date conducted	1995	1996	1997	2007	2008
# of participants	492	308	120	253	527
ESP dream					
Aura yes	85%	96%	78%	74%	90%
Aura no	71%	92%	56%	46%	73%
Waking ESP					
Aura yes	84%	92%	83%	81%	93%
Aura no	64%	68%	47%	46%	74%
Apparitions					
Aura yes	92%	73%	94%	78%	93%
Aura no	76%	33%	38%	29%	66%
OBEs					
Aura yes	87%	58%	67%	67%	83%
Aura no	78%	25%	28%	34%	49%
Movement of objects					
Aura yes	43%	–	–	–	–
Aura no	30%	–	–	–	–

Table 7: Other Experiences in Relation to Auras (cont.)

Experiences	S1	S2	S3	S4	S5
Study population	Readers of *Más Allá*	Community College, U.S.	Puerto Rican graduate students	General public (random) U.S.	International internet users
Date conducted	1995	1996	1997	2007	2008
# of participants	492	308	120	253	527
Vivid dreams					
Aura yes	–	100%	100%	–	–
Aura no	–	96%	77%	–	–
Lucid dreams					
Aura yes	90%	85%	83%	85%	96%
Aura no	89%	83%	60%	69%	81%
Disturbing dreams					
Aura yes	–	–	–	100%	98%
Aura no	–	–	–	92%	98%
Mystical					
Aura yes	80%	88%	–	78%	97%
Aura no	63%	67%	–	56%	83%
Déjà vu					
Aura yes	–	–	–	89%	99%
Aura no	–	–	–	82%	90%
Synaesthesia: colour with sounds					
Aura yes	–	–	–	48%	64%
Aura no	–	–	–	19%	25%
Synaesthesias: colour with numbers/letters					
Aura yes	–	–	–	33%	48%
Aura no	–	–	–	12%	17%

In Study 1 (see Table 1), the differences between aura viewers' claims of other experiences were significant in all comparisons with the single exception of lucid dreams. In Study 2 (see Table 2), all comparisons were significant except vivid and lucid dreams. In Study 3 (see Table 3), only the comparison of ESP dreams reported by aura viewers and non-aura viewers was nonsignificant. In Study 4, only the analyses of lucid dreams and déjà vu experiences were not significantly different between the two groups, and in Study 5 only disturbing dreams was nonsignificant.

As for the psychological correlates, as predicted aura viewers obtained significantly higher dissociation and DES-T mean scores (Study 2), significantly higher mean absorption scores (Study 3), and significantly higher mean depersonalisation scores (Studies 4 and 5). Similarly, in Studies 2 through 5 aura experience frequency was significantly and positively correlated to psychological scale scores.

In Studies 2 through 5, all logistic regressions run to determine which experience variables predicted aura group membership, were significant. However, in Studies 2 through 4, while 83%–100% of the cases were predicted, the range of the improvement over chance prediction was only 1%–2%. In Study 1, the results were more robust, in that while only 64% of the cases were correctly predicted, the improvement over chance was 12%. Study 5 obtained similar results with only 75% of the cases correctly predicted, but with an improvement over chance of 21%. In Studies 2, 4 and 5 mystical experience was a significant positive predictor of aura group membership. In Studies 3, 4, and 5, claims of apparition experiences were a significant predictor, and in Study 5 synaesthesia-like experiences of colour when hearing sound, music or voices was a significant positive predictor of aura group membership, while claims of disturbing dreams was a negative predictor. Although the regression results in Studies 2 through 4 were not robust, there was some consistency across Studies 2 through 5 in predictors.

As can be seen on Table 8, Studies 1 and 5, that had more robust prediction of correct cases, surveyed individuals with higher levels of experiences than the respondents of Studies 2 through 4 in which prediction of correct cases was minimal or less than chance.

Table 8: Comparison of Endorsement of Psychic Experiences for all Studies

	ESP dream	Waking ESP	Apparitions	OBEs	Aura
Study 1	78%	73%	83%	82%	46%
Study 2	75%	71%	39%	30%	16%
Study 3	59%	53%	46%	38%	15%
Study 4	49%	50%	78%	38%	11%
Study 5	84%	82%	80%	67%	54%

CONCLUSION

The results of these five studies allow us to address empirically a variety of questions about aura vision. The first is the differential prevalence of the

experience (although we cannot claim representativeness for any study but Study 4). The high prevalence of aura claims in Study 1 (46%) is not surprising because the participants were readers of a popular magazine on New Age topics who also showed a higher prevalence on all the psychic experiences. Similarly, the high prevalence in Study 5 is not unexpected, given that respondents to the online questionnaire were self-selected individuals with sufficient personal interest in psychic phenomena to be either subscribers to special email newsletters or chat lists, readers of blogs or frequenters of websites devoted to the topic. Similar percentages of aura experiences have been obtained in past studies in which participants were individuals with a high interest in and/or involvement with psychic phenomena and beliefs (Gómez Montanelli & Parra, 2005, 52%; Kohr, 1980, 47%; Richards, 1988, 44%).

Studies 2, 3 and 4 obtained a prevalence of aura claims of 16%, 15% and 11%, respectively. Although much lower than the prevalence reported in Studies 1 and 5, these percentages are still high, as compared to studies with representative samples in which prevalence ranged from 0% to 6% (Haraldsson, Gudmundsdottir, Ragnarsson, & Jonsson, 1977; Murray, 1983; Palmer, 1979), and as compared to studies with non-random samples with students and other groups (e.g., Neppe, 1981, 9%; Pekala, Kumar, & Cummings, 1992, 7%; Pekala, Kumar, & Marcano, 1995, 7%). Some studies based on non-random samples have more comparable percentages to those of Studies 2 through 4. These are values of 11% (Gómez Montanelli & Parra, 2005, students), and 13% (Alvarado, 1994, students of a parapsychology course; Gómez Montanelli & Parra, 2004, persons who have been in contact with a parapsychology institute; Thalbourne, 1994, members of the Society for Psychical Research). However, other studies have obtained higher prevalences. In addition to the studies with special groups mentioned above, prevalence estimates have ranged from 23% (Clarke, 1995, students in a university correspondence course) to 28% (Murray, 1983, members of Isneg tribe in the Phillipines) to 48% (Tart, 1971, marijuana smokers).

All of our five studies present evidence that supports the predictions of positive relationships between auras and claims of other psychic experiences, the analyses with the indexes of psychic experiences being an example. The aura group obtained significantly higher index scores than did the non-aura group in all five studies with effect sizes that ranged from .31 to .39.

Our studies also showed consistently that auras are reported less often than other experiences. A similar pattern was observed with studies using comparable questionnaires (Kohr, 1980; Palmer, 1979, two samples; Zingrone & Alvarado, 1994). Additional data, consistent with this pattern, has been

reported by Gómez Montanelli and Parra (2004, 2005) and by Thalbourne (1994). Although auras are less frequent, they are significantly and positively associated with other experiences, as seen on Tables 1, 2, 3, 5 and 6. Because these results show that while not everyone sees auras, a great proportion of those who do see auras also experience other phenomena, we may be dealing here with a particular type of experience which, while associated with other phenomena, happens to very few individuals in general, or to a particular subset of the individuals who are already experiencing an above average rate of spontaneous experiences.

As mentioned in the summary section above, demographic variables we reported here were not significantly related to aura claims. This lack of relationship with demographics is consistent with the results of previous studies (e.g., Kohr, 1980; Palmer, 1979).

In Studies 2 and 3, we found significant positive correlations between aura vision and synaesthesia-like items of Tellegen's Absorption Scale, and in Studies 4 and 5 with items that queried two types of synaesthesia-like experiences. This provides some support for the idea that the visual experience of an aura may be related to the transformation of information from a particular sensory modality, or from vague emotional impressions into perceptions of lights or luminous fields. Of course, and as argued before (Alvarado, 1994), we need to refine our measurement of a potential synaesthetic process. The use of items from Tellegen's Absorption Scale probably is not the best way to measure such a hypothetical propensity for cross-modal processing that some believe underlies the aura experience. Laboratory performance tasks (Mattingley, Rich, Yelland, & Bradshaw, 2001; Rader & Tellegen, 1987) or directed questions aimed at fleshing out the phenomenology of spontaneous synaesthetic experiences (Domino, 1989; Eagleman, Kagan, Nelson, Sagaram, & Sarma, 2007) may be better ways to test for synaesthesia. Another way to explore the subject is to assess how common aura reports are among high-functioning synaesthetes, as compared to non-synaesthetes.

We should keep in mind that in Study 3, we had enough information to compare the different factors of the Absorption Scale for those in the aura and non-aura groups. In these analyses, the synaesthesia factor was the second highest factor to correlate to aura claims. This suggests that other dimensions of absorption may be more important in the processes underlying aura vision. The strongest effect was found with the factor that Tellegen (1992) calls Enhanced Cognition. This factor contains items that cover augmented or unusual forms of perception. The second strongest effect size was connected to the Synaesthesia

Factor, also associated with unusual perceptual experiences. The comparison that yielded the lowest effect size was the factor that involves dissociative phenomena involving an apparent narrowing or separation of perception. These findings suggest that the aura experience is mainly associated with the perceptual aspects of absorption; that is, a predisposition towards the processing of unusual perceptual input or of imagery may be more important to aura claims than a dissociative process that involves losing awareness of surroundings. All of this should be evaluated keeping in mind that later studies have found different factors (e.g., Jamieson, 2005).

The hypotheses regarding dissociation (Study 2), absorption (Study 3), and depersonalisation (Studies 4 and 5) were also confirmed. This suggests to us that cognitive processes or abilities related to alterations in consciousness in the focusing of attention, the presence of permeable barriers to the subconscious, or the detachment from, or distortion of, perceptual processes may also be important in the genesis of aura vision experiences. Future research may profitably include measures of boundary thinness (Hartmann, Harrison, & Zborowski, 2001) and transliminality (Lange, Thalbourne, & Houran, 2000).

Regarding dissociation and depersonalisation, scale scores obtained by our participants were rarely above the established cut-off points for pathology and thus cannot be seen to indicate a relationship between psychopathology and aura vision. In fact, recent discussions of the meaning of the scores derived from such scales as the DES question their diagnostic value in nonclinical populations (e.g., for the DES, see Merritt & You, 2008; Modestin & Erni, 2004).

We feel strongly that the consistency of the results of all five studies reported here, both between studies and with previous findings, argue that aura viewers are a unique group of individuals with whom future work should be carried out. It is possible that some of these individuals are experiencing perceptual anomalies that may be linked to neurological disorders, but instead of treating them as symptoms and seeking medical help, the experiences have been conceptualised as positive or even healthy. If this is so, further studies of aura viewers, with this in mind, may provide insight into the impact of context on the interpretation of seeming perceptual experiences. Similarly, because aura viewers appear to report so many other relevant experiences, they constitute a group of individuals with whom a wide variety of experiences can be studied as one. Phenomenological, developmental, cognitive and experiential variables might be more readily explored in this population.

Unfortunately, the psychological study of auras has been generally neglected by students of rare and/or anomalous phenomena. It seems to us that a great

potential for increased knowledge about sensory and perceptual processes in general, and seemingly psychic experiences in particular, lies with this unique group of experiencers. Future research would do no less than provide useful information not only to serve these goals, but also to add to finer-grained clinical distinctions between benign and pathological experiences.

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