

Close Encounters: An Examination of UFO Experiences

Nicholas P. Spanos, Patricia A. Cross, Kirby Dickson, and Susan C. DuBreuil

Ss who reported UFO experiences were divided into those whose experiences were nonintense (e.g., seeing lights and shapes in the sky) and those whose experiences were intense (e.g., seeing and communicating with aliens or missing time). On a battery of objective tests Ss in these 2 groups did not score as more psychopathological, less intelligent, or more fantasy prone and hypnotizable than a community comparison group or a student comparison group. However, Ss in the UFO groups believed more strongly in space alien visitation than did comparison Ss. The UFO experiences of Ss in the intense group were more frequently sleep-related than the experiences of Ss in the nonintense group. Among the combined UFO Ss, intensity of UFO experiences correlated significantly with inventories that assessed proneness toward fantasy and unusual sensory experiences. Implications are discussed.

Since the end of World War II, reports of seeing unidentified flying objects (UFOs) and belief that such objects are the spacecraft of extraterrestrial astronauts have increased dramatically (Sheaffer, 1986). The bulk of research on this topic has focused on attempting to confirm (or disconfirm) the extraterrestrial hypothesis, and, despite frequent sensationalist claims in the popular media, the available data fail to support this hypothesis (Klass, 1974, 1989; Sheaffer, 1986).

The failure to confirm an extraterrestrial origin for UFO sightings has sparked interest in the role of psychological variables in such sightings. Although research on the psychological characteristics of UFO reporters is almost all anecdotal, two general hypotheses have been formulated to account for such reports. The first hypothesis suggests that UFO reporters are psychologically or psychosocially disturbed and that UFO reports are symptomatic of personal frustration, unhappiness, or psychopathology (Grinspoon & Persky, 1972; Klass, 1989; Meerloo, 1968; Warren, 1970). The second hypothesis holds that UFO reporters are fantasy-prone individuals who, under conditions of strong expectation and reduced reality testing, confuse their vivid imaginings with external happenings (Baker, 1988, 1992; Lawson, 1977).

Psychopathology and UFO Reports

Critics of the extraterrestrial hypothesis have sometimes suggested that individuals who report UFO experiences are psychologically disturbed (Grinspoon & Persky, 1972; Meerloo, 1968). Nevertheless, the little empirical data available fail to support this hypothesis. Bloecher, Clamar, and Hopkins (1985) reported on 9 individuals who claimed to have been abducted by

extraterrestrials. These individuals were selected from a much larger group of reported abductees, but the criteria used for their selection were unspecified. The 9 subjects were administered a battery of objective and projective tests by a psychologist who was unaware of their abductee status. All 9 subjects scored above average in intelligence. Although the test results suggested some anxiety and mild narcissistic disturbance in some of the subjects, no evidence was found of serious psychopathology.

Parnell (1988) administered the Minnesota Multiphasic Inventory (MMPI; Hathaway & McKinley, 1967) and the Sixteen Personality Factor Questionnaire (Cattell, Eber, & Tatsuoka, 1970) to 225 UFO reporters and found no evidence of serious psychopathology. Parnell (1988) also found that UFO reporters who claimed communication with extraterrestrials endorsed more unusual thoughts and feelings and exhibited a greater tendency toward divergent thinking and remoteness from the general environment than did UFO reporters who did not claim communication.

Warren (1970) hypothesized that reports of UFO sightings were related to perceived status deprivation and subsequent feelings of frustration and alienation. Contrary to this hypothesis, Zimmer (1984) found that UFO reporters were as likely as nonreporters to be high academic achievers and failed to differ from nonreporters in alienation, distress, or maladjustment.

Imaginal Propensities and UFO Reports

Lawson (1977) administered a hypnotic induction procedure to subjects who had never had a UFO experience and asked them to imagine being abducted by aliens. These subjects frequently proffered elaborate narratives with numerous similarities to anecdotal reports in the literature from subjects who claimed to actually have been abducted. On the basis of these similarities, Lawson (1977) suggested that UFO abduction reports were the elaborate fantasy productions of imaginative individuals.

Individuals differ widely in their propensities for engaging in vivid fantasy activity (Lynn & Rhue, 1988; Tellegen & Atkinson, 1974; Wilson & Barber, 1983). Baker (1988, 1992) suggested

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that UFO reporters, particularly those who report close contact or communication with aliens, are fantasy-prone personalities. According to this hypothesis, individuals who believe in the possibility of extraterrestrial visitation are relatively likely to interpret ambiguous sensory information in terms of this belief. When such individuals are also fantasy prone, they tend to elaborate on the ambiguous information by weaving fantasies, internally generated sensations, and ambiguous external information into a UFO experience that is congruent with their expectations.

A number of investigators (Bear & Fedio, 1977; Geschwind, 1983; Persinger & Valliant, 1985; Rogo, 1990) have suggested that dysfunctional temporal lobe activity is associated with intense religious experiences, reports of apparitions, hallucinations, and visions, and the belief that one has had paranormal experiences. Persinger and his associates (Makarec & Persinger, 1987, 1990; Persinger & Desano, 1986; Persinger & Valliant, 1985) have expanded on these ideas by suggesting that fantasy proneness, a propensity to have unusual sensory experiences, a propensity to have experiences that are believed to be paranormal (e.g., telepathy and clairvoyance), and hypnotizability all reflect lability in temporal lobe activity. Persinger and Makarec (1987) developed a self-report questionnaire that assesses paranormal experiences as well as a wide range of sensory and imaginal experiences. One subscale of this instrument purports to assess temporal lobe lability and includes items that assess unusual physical sensations (e.g., "If I breathe quickly I feel dizzy or odd" and "Intense smells bother me more than most people") and unusual imaginal experiences (e.g., "I have had a vision").

One purpose of the present study was to examine the psychopathology and fantasy-proneness hypotheses of UFO reports by comparing subjects who believed that they had sighted or made contact (or both) with UFOs (UFO reporters) with two groups of non-UFO reporters. Subjects in one comparison group were recruited from newspaper advertisements for participation in a study on personality. Subjects in the second comparison group were introductory psychology students who volunteered to participate in a study of personality. Subjects in all groups were administered a battery of objective inventories aimed at assessing psychological well-being, intelligence, imaginal propensities, temporal lobe lability, paranormal beliefs, and hypnotizability.

Individual Differences in UFO Experiences

UFO reports include a very wide range of experiences that differ in intensity and in the degree and type of purported contact between the reporter and the UFOs (Baker, 1992; Klass, 1989; Sheaffer, 1986). Many individuals simply report seeing lights or objects in the sky that appear to be unusual or that make unusual movements and which they interpret as UFOs. Others, however, report more elaborate experiences that include seeing a spacecraft close up; visual, verbal, physical, or telepathic contact with UFO inhabitants; abduction by UFO inhabitants; and a variety of physical and psychological effects that include temporary paralysis, confusion, disorientation, and the experience of missing time (Baker, 1992; Hopkins, 1981; Jacobs, 1992).

The anecdotal literature in this area suggests that many of the more elaborate UFO experiences are associated with falling asleep, dreaming, or waking from sleep (Baker, 1992; Basterfield, 1981) and that some of these experiences may be explicable as instances of sleep paralysis (Hufford, 1982). The term *sleep paralysis* refers to an episode of total body paralysis that occurs just prior to sleep onset or upon awakening. The paralysis is accompanied by the sensation of a weight pressing on the chest and frequently is also accompanied by vivid and frightening hallucinations of a person, animal, or monster (Hufford, 1982). The contents of the hallucinations appear to vary as a function of the sleeper's beliefs and expectations, and in individuals who believe in extraterrestrial visitation the hallucinations may take the form of space aliens (Hufford, 1982).

All of the UFO reporters in the present study were administered a semistructured interview designed to obtain full descriptions of their UFO experiences. Subjects were then divided into those who reported relatively intense and elaborate experiences and those whose experiences simply involved seeing distant objects in the sky. Subjects in both of these groups were compared with those in the two comparison groups on the battery of psychological tests.

Method

Subjects

A total of 176 subjects participated in this study. Forty-nine individuals (35 men and 14 women; age in years, $M = 37.2$, $SD = 11.74$) constituted the UFO reporters group and were recruited through an advertisement placed in several local newspapers. The advertisement was worded as follows:

Carleton University researcher seeks adults who have seen UFOs.
Confidential.

These subjects received payment of \$5.00 per hour for participation. Session lengths averaged approximately 3 hr. As described later, these subjects were divided into two groups: the UFO nonintense group (15 men and 3 women; age in years, $M = 35.2$, $SD = 10.97$) and the UFO intense group (20 men and 11 women; age in years, $M = 38.5$, $SD = 12.21$). In the UFO nonintense group, 3 subjects (17%) were university students, 2 (11%) were blue-collar workers, and the remaining 13 (72%) were white-collar workers. In the UFO intense group, 4 subjects (13%) were university students, 8 (26%) were blue-collar workers, 16 (52%) were white-collar workers, and 3 (10%) failed to indicate an occupation.

The remaining subjects formed two comparison groups. Those in one group ($n = 53$) were recruited from the community through a newspaper advertisement that was worded as follows:

Carleton University researcher seeks adults for personality study.
Confidential.

These subjects (39 men and 14 women; age in years, $M = 30.20$, $SD = 8.70$) were paid \$10.00 per hour. Session length averaged approximately 2 hr. Two (3.8%) of these subjects were self-described as homemakers, 14 (27%) were unemployed, 17 (32%) were blue-collar workers, 18 (34%) were white-collar workers, and 2 (3.8%) failed to indicate an occupational status.

Subjects in the second comparison group were 74 Carleton University introductory psychology students (41 men and 33 women; age in years, $M = 19.9$, $SD = 1.93$) who received course credit for volunteering to participate in a study of personality.

Procedure

Upon arrival at the laboratory, subjects in the UFO group were individually administered a semistructured interview by a female research assistant. The interview was approximately 1 hr in duration and was tape recorded and later transcribed. Subjects were asked to give as complete a description as possible of their UFO experiences. If they did not indicate the information spontaneously, subjects were asked about where and when the incident or incidents occurred, the time of each incident and its duration, and any psychological or physical effects that they attributed to the incident. Although the interviewer refrained from asking leading questions, she did probe subjects about details that were unclear or insufficiently described. After describing their UFO experiences, subjects were asked about any opinions they held concerning the meaning of UFOs and the purposes and motives of the aliens in visiting Earth. After the interview subjects were given a short break and then administered the same battery of inventories and tests administered to subjects in the two comparison groups.

Subjects in the two comparison groups were met at the laboratory by a female research assistant who reiterated that they would be administered a series of questionnaires and tests aimed at assessing personality, intelligence, and hypnotizability. After brief conversation aimed at securing cooperation and developing rapport, subjects were administered the test battery.

Interview-Derived Dependent Variables

Two judges independently rated the transcribed interviews of the UFO subjects. Each subject's description of UFO experiences was rated for the presence or absence of nine characteristics. Interrater reliabilities ranged from adequate to high for each characteristic. The interrater reliabilities of the 9 characteristics, with examples of each, are given in Table 1.

As indicated in the examples, many of these nine characteristics frequently occurred together. Scores on each of these nine characteristics were summed to yield a UFO intensity score that ranged from 0 to 9 (Cronbach's $\alpha = .78$).

In addition, each interview was also scored by two independent judges for the following dichotomous characteristics: (a) whether an experience occurred at night, $r(47) = .96$, (b) whether an experience was sleep related $r(47) = .80$, (c) whether the experience was positive, $r(47) = .76$, (d) whether the experience was negative, $r(47) = .76$, (e) whether UFO inhabitants were seen as quasi religious figures (e.g., "They created us," "They will save us," "They performed the Biblical miracles"), $r(47) = 1.00$, (f) whether UFO inhabitants were viewed as scientists (e.g., "They are observing us," "They are experimenting on us"), $r(47) = 1.00$.

Test Battery

Subjects in all three groups were administered questionnaires and tests assessing the following psychological dimensions.

UFO beliefs. The Personal Philosophy Inventory (PPI; Persinger & Makarec, 1987) contains a number of subscales. All of the items in this inventory are scored dichotomously. Within subscales, items are summed and then converted to percentages. Thus, the range of scores on each subscale is always 0% to 100%. The PPI contains the following three items that relate to belief in UFOs: "There is good evidence that life exists on other planets"; "I have been taken aboard a spaceship"; and "Alien intelligence is probably responsible for UFOs." In the present study these three items were summed and the sums converted to percentage scores to yield an index of UFO beliefs.

Esoteric beliefs. Subjects were administered two subscales from the PPI that assess esoteric beliefs. Scores on the Paranormal Experience scale assess belief that one has had paranormal experiences (e.g., "Sometimes I can read another person's thoughts"). The Liberal Be-

liefs scale contains nine items that assess exotic beliefs (e.g., "Although I am not sure there is a good possibility that I have lived in a previous time"). Two of these items assess UFO beliefs and were dropped from the scale. Thus, the modified Liberal Beliefs scale used in the present study contained seven items and assessed exotic beliefs other than UFO beliefs.

Psychological health. Subjects were administered the following 10 scales to assess various aspects of psychological health and psychopathology: (a) Rosenberg's (1979) Self-Esteem Scale (range, 0 to 40); (b) the Schizophrenia subscale from the MMPI (range, 0 to 69); (c) the Magical Ideation Scale (range, 0 to 30; Eckblad & Chapman, 1983); (d) the Perceptual Aberration Scale (range, 0 to 35; Chapman, Chapman, & Raulin, 1978); and (e) the Social Potency (range, 0 to 26), Aggression (range, 0 to 20), Stress (range, 0 to 26), Unfriendly World (range, 0 to 20), and Well-Being (range, 0 to 24) subscales from Tellegen's (1976) Differential Personality Questionnaire (DPQ).

Intelligence. Subjects were administered the Shipley Inventory of Living (Zachary, 1986) as a measure of intelligence. The scale is widely used to assess general intellectual functioning and includes a 40-item vocabulary test and a 20-item test of abstract thinking.

Temporal lobe lability. This dimension was assessed with the temporal lobe subscale from the PPI. This subscale includes 52 items.

Imaginal propensities. The following inventories were administered to assess imaginal propensities: (a) imagery vividness as measured by Shor, Orne, and O'Connell's (1966) revision of the Betts Questionnaire on Mental Imagery (range, 15 to 105), (b) the Absorption subscale from Tellegen's (1976) DPQ (range, 0 to 34), and (c) fantasy proneness as measured by Wilson and Barber's (1983) Inventory of Childhood Memories and Imaginings (range, 0 to 52).

Hypnotizability. Hypnotizability was assessed with the Carleton University Responsiveness to Suggestion Scale (CURSS; Spanos, Radtke, Hodgins, Stam, & Bertrand, 1983). This measure assesses three dimensions of hypnotizability. CURSS:O (objective) scores reflect the number of suggestions to which subjects made the appropriate behavioral response and range from 0 to 7. CURSS:S (subjective) scores reflect the extent to which subjects report having experienced the subjective effects called for by suggestions and range from 0 to 21. CURSS:OI (objective-involuntary) scores reflect the extent to which subjects reported their behavioral responses as feeling involuntary and range from 0 to 7.

Results

Differences Between Groups

UFO reporters were divided into those who simply saw lights or shapes in the sky that they interpreted as UFOs (i.e., those who scored 0 on the UFO intensity dimension) and those who reported more complex experiences (i.e., those who scored 1 or higher on the intensity dimension). Thus, four groups of subjects were compared: UFO intense subjects ($n = 31$), UFO non-intense subjects ($n = 18$), community comparison subjects ($n = 53$), and student comparison subjects ($n = 74$). Differences between these four groups on each variable in the test battery were analyzed with a series of one-way analyses of variance (ANOVAs).¹ A multivariate analysis of variance (MANOVA) was not used because a number of subjects in each group had missing data on at least one variable. The MANOVA procedure

¹ Preliminary analyses indicated that gender neither influenced responses to any of the measures in the test battery nor interacted with condition to influence responses to these measures.

Table 1
Dependent Variables Derived From Interviews With UFO Reporters

Variable	<i>r</i> (47) ^a	Example
A craft seen close up	.87	I saw a funny light coming across the fields. It hovered above the trees and telephone poles. It was 20 feet or so above the telephone pole. I figured it was a helicopter having trouble. As I got closer I slowed down [my car] to have a look. It was too bright for a helicopter and had red and blue and white flashing lights going around. It was shaped like an egg. Not flat, though the bottom was flattish. Close up I could make out windows.
Sighting of an alien being or beings	.89	I went to bed and lay down and felt a tickling up my side. I had a flash, a vision of the following scene. I was standing in the kitchen and I opened the door, and there he stood. A tall alien in a blue and black wet suit. He was skinny, bald, with a narrow head, big eyes, and light skin. He scared me profoundly.
Physical contact with aliens	1.00	[While lying in bed] I sometimes hear footsteps walking around my bedroom. At times I hear a female voice beside me. At these times I am paralyzed, and she touches my cheek. I have mentally held her hand. I have smelled them [alien beings]. They smell rubbery. They have physically attacked me—bit me, strangled me—but they left no marks.
Verbal contact with aliens	.88	I woke up to feel a presence in the room. I never before had so strong a sense of a presence. My strongest emotion was fear. It started by hearing a noise in my living room, down the hall from the bedroom. I heard shuffling footsteps. I felt a tremendous weight on top of me, all over. My eyes were open. A white light emanated from down the hall. As soon as the light went on my eyes were forced half shut. I felt paralyzed. After a few seconds, I heard a voice at normal volume, coming from the hallway. It was distinct, clear, but it wasn't a human voice, and it wasn't speaking any earthly language. This [the voice] lasted 10 or 15 seconds.
Telepathic contact with aliens	.96	I was lying in bed facing the wall, and suddenly my heart started to race. I could feel the presence of three entities standing beside me. I was unable to move my body but could move my eyes. One of the entities, a male, was laughing at me, not verbally but with his mind. He made me feel stupid. He told me telepathically, "Don't you know by now that you can't do anything unless we let you?"
Total body paralysis	.92	I was lying on my stomach in bed and dozed off. The next thing I felt was some presence that was trying to get inside my brain. I couldn't open my eyes or move. I was terribly afraid. Everything seemed super bright, even inside my head. I wanted to escape. I started to pray and mentally said to the presence, "Stay away." I couldn't open my mouth to scream. I'm sure I was wide awake, but I was entirely paralyzed.
Missing time	.88	I was at home folding diapers. I heard the front door open, looked at my watch which read 7:10 and figured it was my husband coming home from work. I heard footsteps coming up the stairs and as they reached the top of the stairs I could see two figures walking in unison so that the footsteps sounded like one set of feet. They were about 5'4", slight, with something over their heads. The next thing I knew I was in the middle of folding a diaper and it was 9:30. I had lost 2 1/2 hr.
Being taken up in a spaceship	1.00	[This subject reported that he had ingested large quantities of marijuana and amphetamine and that he had been sleep deprived at the time of the occurrence.] My cousin was talking about how she used to stand when she was doing the dishes at home. Suddenly a voice said, "Touch your knees to the wall." She did. A big chunk of the wall blew out. Two beings appeared there, dressed in white robes, human looking but glowing a bluish color. Just as I got to my brother he expanded in size. I hit him and bounced back and my feet flew up. I didn't hit the floor but realized both me and my brother were hanging in the air by our feet. We were rushing up a tunnel toward a gold center. I could see the apartment receding below us. We were moving up very fast. I blacked out. The next thing I remember I'm in a control room with my brother. Beings were explaining something about a machine.
Physical or psychological effects other than paralysis	.88	I'm now afraid of being alone and of driving at night.

^a Interrater reliability.

excludes all subjects with missing data on any variable, and its use would have substantially reduced the number of subjects in the UFO groups. A chi-square analysis indicated no significant differences between the groups in the number of subjects with missing data.

UFO beliefs and esoteric beliefs. Table 2 shows the means for each group on each dependent variable. The groups differed significantly on the UFO belief index, $F(3, 164) = 12.16, p < .001$. Post hoc comparisons (Newman-Keuls) indicated that the two UFO groups failed to differ on this index. However, both UFO groups scored higher on this index than either of the

comparison groups. The two comparison groups failed to differ from one another.

The four groups did not differ significantly on the Paranormal Experience subscale of the PPI but did differ significantly on the Liberal Beliefs subscale, $F(3, 164) = 10.19, p < .001$. Post hoc comparisons indicated that subjects in both UFO groups held significantly more exotic beliefs than subjects in the student comparison group. In addition, the UFO intense subjects held significantly more exotic beliefs than those in the community comparison group.

Psychological health. The four groups differed significantly

Table 2

Test Battery Means for Subjects in UFO Intense, UFO Nonintense, Community, and Student Groups

Variable or scale	UFO intense				UFO nonintense				Community				Student			
	M	SD	Range	n	M	SD	Range	n	M	SD	Range	n	M	SD	Range	n
UFO beliefs	1.7 _a	0.6	0-2	26	1.5 _a	0.6	0-2	16	1.0 _b	0.8	0-2	52	0.8 _b	0.8	0-2	70
Paranormal Experience	42.2	29.7	0-100	26	34.4	28.7	0-75	16	40.9	33.2	0-100	52	40.0	33.2	0-100	74
Liberal Beliefs	77.0 _{bc}	19.4	44-100	26	67.4 _{bc}	22.5	33-100	16	61.5 _{cd}	24.8	0-100	52	50.2 _a	22.1	0-100	74
Self-esteem	33.9 _d	3.5	28-40	29	35.9 _a	3.2	29-40	18	29.7 _{bc}	6.3	16-40	51	30.8 _{cb}	5.6	11-41	74
MMPI Schizophrenia	12.1 _a	8.0	2-34	29	9.2 _a	7.2	1-33	18	19.3 _b	11.6	1-55	52	19.6 _b	8.6	5-44	74
Perceptual Aberration	5.6 _b	5.1	0-21	29	3.0 _a	2.5	0-9	18	7.6 _b	6.8	0-27	52	6.3 _b	6.1	0-29	74
Magical Ideation	9.0	6.2	0-22	29	8.3	5.4	1-19	18	10.9	6.6	1-25	52	8.7	5.4	0-27	74
Unfriendly World	3.9 _b	3.9	0-14	24	3.6 _{ab}	4.1	0-16	16	6.7 _a	5.2	0-19	51	6.0 _a	4.7	0-18	74
Well-Being	20.3 _a	4.5	7-24	24	19.9 _a	3.7	10-24	16	15.8 _b	6.7	0-24	51	17.1 _b	6.1	1-24	74
Stress	9.4 _a	5.1	0-19	24	9.8 _a	4.2	3-18	16	13.8 _b	7.0	3-26	51	14.8 _b	5.9	1-26	74
Social Potency	12.1 _{ab}	6.0	3-23	24	16.0 _a	5.7	5-25	16	11.5 _b	6.3	1-25	51	13.0 _{ab}	5.0	2-24	74
Aggression	5.6 _b	4.2	0-18	24	7.2 _{ab}	4.5	2-15	16	7.8 _{ab}	5.1	1-19	51	8.9 _a	4.9	0-20	74
IQ	101.6 _{bc}	8.9	83-116	25	109.1 _a	6.6	96-120	16	100.6 _c	12.3	69-119	53	105.4 _b	7.3	87-120	74
Temporal lobe lability	32.8	13.7	8-63	26	34.2	13.8	10-56	16	37.3	13.6	8-60	52	38.6	13.3	3-81	74
Betts Questionnaire on Mental Imagery	74.2	21.4	19-101	23	73.9	17.6	24-103	17	67.3	17.5	16-94	50	68.4	12.2	39-92	60
Absorption	18.7	8.2	1-31	24	20.4	7.6	7-32	16	19.2	7.9	2-31	51	20.3	6.1	5-31	74
Fantasy proneness	22.4	7.1	7-41	29	21.6	6.8	8-32	18	25.3	8.0	9-41	53	23.6	6.8	7-40	74
CURSS:O	3.1	2.1	0-7	22	3.2	2.0	0-7	17	2.7	2.0	0-7	50	2.5	1.8	0-7	61
CURSS:S	13.0	8.9	0-29	22	14.2	9.7	0-29	17	12.5	9.1	0-32	50	11.3	7.8	0-28	61
CURSS:OI	1.5	1.6	0-5	22	1.5	1.5	0-4	17	1.1	1.5	0-6	50	1.2	1.5	0-5	61

Note. Within rows, means sharing the same subscript fail to differ, significance at $\alpha = .05$. CURSS = Carleton University Responsiveness to Suggestion Scale; O = objective score; S = subjective score; OI = objective-involuntary score.

on Rosenberg's (1979) Self-Esteem Scale, $F(3, 168) = 8.22, p < .001$; the Schizophrenia subscale of the MMPI, $F(3, 169) = 9.61, p < .001$; and the Perceptual Aberration Scale, $F(3, 169) = 2.82, p < .05$. The groups failed to differ significantly on the Magical Ideation Scale. In addition, the four groups differed significantly on the five subscales from the DPQ: Unfriendly World, $F(3, 161) = 3.15, p < .05$; Well-Being, $F(3, 161) = 4.10, p < .01$; Stress, $F(3, 161) = 6.92, p < .001$; Social Potency, $F(3, 161) = 2.70, p < .05$; and Aggression, $F(3, 161) = 2.96, p < .05$. The specific pattern of differences found for each psychological health variable are shown in Table 2. The most important findings indicate that neither of the UFO groups scored lower on any measures of psychological health than either of the comparison groups. Moreover, both UFO groups attained higher psychological health scores than either one or both of the comparison groups on five of the psychological health variables. In short, these findings provide no support whatsoever for the hypothesis that UFO reporters are psychologically disturbed.

Intelligence. The four groups differed significantly on the Shipley Inventory of Living, $F(3, 164) = 4.98, p < .01$. Post hoc comparisons indicated that the nonintense UFO group scored significantly higher than the remaining three groups. In addition, the student comparison group scored significantly higher than the community comparison group. No other differences were significant.

Temporal lobe lability, imagery, and hypnotizability. As indicated in Table 2, the four groups failed to differ significantly on the temporal lobe lability scale, on the three imaginal propensity measures (the modified Betts Questionnaire on Mental Imagery, the DPQ Absorption subscale, and fantasy proneness) and on the three indexes of hypnotizability.

Experiential Differences Among UFO Reporters

As indicated previously, the intensity index included nine interview-derived items. As shown in Figure 1, scores on this index were distributed in a reverse J shape, with the majority of subjects scoring between 0 and 2. Table 3 lists the nine types of UFO experiences and shows the number and proportion of subjects who endorsed each experience.

The 18 subjects who scored 0 on this index reported simply seeing lights or shapes in the sky that they interpreted as UFOs. These subjects constituted the nonintense UFO group, whereas

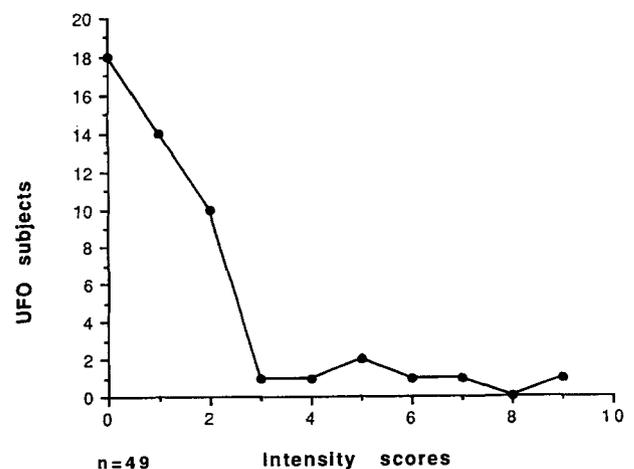


Figure 1. Frequency of intensity scores among UFO subjects.

those who scored 1 or higher on this index constituted the intense UFO group. Table 4 shows the number of UFO subjects in each group who described their experiences as occurring at night, being sleep related, positive, or negative. This table also shows the number of subjects in each group who saw space aliens as quasi religious figures, scientific figures, or both.

Subjects in the two UFO groups failed to differ with respect to whether their experiences occurred at night. Subjects in both UFO groups reported that over 80% of their experiences occurred at night. On the other hand, UFO intense subjects reported that their experiences were sleep related significantly more often than did nonintense subjects, $\chi^2(1, N = 18) = 7.38, p < .01$. More specifically, only one subject in the nonintense group reported that his UFO experiences occurred while he was either falling asleep, dreaming, or waking up, whereas 58% of the intense subjects described their experience as sleep related. Subjects in the two groups failed to differ in the frequency with which they considered their UFO experiences as positive. However, subjects in the UFO intense group characterized their experiences as negative significantly more often than did those in the nonintense group, $\chi^2(1, N = 31) = 12.55, p < .01$. Subjects in the two groups failed to differ in the frequency with which they viewed UFO inhabitants as quasi religious figures or as objective scientific figures. Religious and scientific views of UFO inhabitants were not mutually exclusive, and the large majority of UFO reporters in both groups viewed UFO inhabitants in one or both of these ways.

Correlations

Subjects in the two UFO groups were combined, and Pearson correlation coefficients were computed between the UFO intensity index and the predictor variables given in Table 2. The UFO intensity index correlated significantly with Magical Ideation scores, $r(47) = .32, p < .05$; Perceptual Aberrations scores, $r(47) = .44, p < .01$; the Schizophrenia subscale of the MMPI, $r(47) = .28, p < .05$; Temporal lobe lability, $r(42) = .33, p < .05$; the Paranormal Experience subscale of the PPI, $r(42) = .35, p < .05$; and fantasy proneness, $r(47) = .34, p < .01$. All of the predictors that correlated significantly with the UFO intensity index also intercorrelated significantly with one another (r values ranging from .47 to .74).

Table 3
Frequency of Endorsement by UFO Subjects
of Experiences on Intensity Index

Experience	<i>N</i>	%
A craft seen close up	10	20.4
Sighting of an alien being or beings	10	20.4
Verbal contact with aliens	7	14.3
Physical contact with aliens	3	6.1
Telepathic contact with aliens	8	16.3
Total body paralysis	7	14.3
Missing time	8	16.3
Being taken up in a spaceship	2	4.1
Physical or psychological effects other than paralysis	18	36.7

Discussion

The subjects in the two UFO groups were solid representatives of the North American middle class. All but 3 were employed, and the majority in both UFO groups were employed in white-collar occupations. Subjects in the UFO nonintense group scored higher in intelligence than those in the other three groups, and those in the intense UFO group did not differ in intelligence from subjects in the two comparison groups. In short, reporting UFO experiences was not associated with either social or intellectual marginality. The findings of previous surveys (reviewed by Westrum, 1979) have also indicated that UFO reporters tend to be white-collar, relatively well-educated representatives of the middle class.

The present findings fail to confirm either the psychopathology or fantasy-proneness hypotheses of UFO reports. Contrary to the psychopathology hypothesis, subjects in both UFO groups either failed to differ from or scored lower on indexes of psychopathology than subjects in the two comparison groups. Obviously, these findings do not rule out the possibility that UFO subjects might score higher than controls on measures of psychopathology that we failed to assess. At this point, however, the onus is on those who favor the psychopathology hypothesis to provide support for it.

Perhaps UFO subjects are relatively more content and anxiety free than others because their UFO beliefs provide them with meaning and a sense of security (Curran, 1985; Festinger, Riechen, & Schachter, 1956). Consistent with these ideas were our findings that the majority of UFO subjects believed that space aliens were concerned with and even guiding the destiny of humankind. Such beliefs may provide these subjects with a sense of being cared about by omnipotent beings and a feeling that their UFO experiences made them participants in humankind's unfolding destiny.

Alternatively, the relatively low psychopathology scores in the UFO groups may have resulted from self-presentation concerns. The UFO subjects knew that they were being interviewed because of their UFO beliefs and were undoubtedly aware that UFO reports are typically regarded with some derision. These individuals may have presented themselves as well adjusted on questionnaires to counter the implication that their UFO reports meant that they were "flaky" or unbalanced. Whatever the reason for these findings, they are consistent with previous work that indicated low levels of psychopathology in UFO reporters (Bloecher et al., 1985; Parnell, 1988; Zimmer, 1984).

Subjects in the two UFO groups failed to differ from subjects in the comparison groups on any of the imaginal propensity measures, the temporal lobe lability index, the paranormal experiences index, or the hypnotizability measures. These findings clearly contradict the hypothesis that UFO reports—even intense UFO reports characterized by such seemingly bizarre experiences as missing time and communication with aliens—occur primarily in individuals who are highly fantasy prone, given to paranormal beliefs, or unusually suggestible.

The finding that most clearly differentiated the UFO groups from the comparison groups was belief in UFOs and in the existence of alien life forms. The interpretation of this correlational finding is, however, ambiguous. On the one hand, it

Table 4
Comparisons of Transcript Codings for the Two UFO Groups

Variable	UFO nonintense			UFO intense			χ^2	<i>p</i>
	Yes	No	<i>n</i>	Yes	No	<i>n</i>		
Occurred at night	15	3	18	25	6	31	0.05	<i>ns</i>
Sleep related	1	17	18	18	13	31	7.38	<.01
Positive experience	3	15	18	9	22	31	0.94	<i>ns</i>
Negative experience	0	18	18	15	16	31	12.55	<.005
Religious perspective	6	12	18	13	18	31	0.66	<i>ns</i>
Science perspective	12	6	18	17	14	31	0.66	<i>ns</i>
Both science and religious perspectives	2	16	18	8	23	31	1.07	<i>ns</i>

might mean that strong beliefs in alien life primed subjects to interpret ambiguous external stimuli or to generate imaginings in terms of these beliefs. Alternatively, these findings might indicate that experiences such as hallucinating a space alien while paralyzed in bed are likely to strengthen belief in alien life. Of course, these hypotheses are not mutually exclusive. For instance, the UFO subjects, particularly those in the intense group, were more likely than comparison subjects to subscribe to a wide range of exotic beliefs. Thus, strong belief in UFOs appears at least in part to reflect a general tendency to endorse such New Age beliefs as reincarnation, astrology, and channeling. These findings suggest that many of the UFO subjects may have been drawn to beliefs about alien life before having UFO experiences. However, the occurrence of a UFO experience most likely served to strengthen any preexisting UFO beliefs.

The large majority of UFO experiences occurred at night, and almost 60% of the intense UFO reports were associated with sleep. These findings suggest that UFO reports are likely to occur under conditions when (a) external events are ambiguous or unfamiliar (i.e., seeing moving lights in the sky that are not given a mundane classification), (b) accurate reality testing is interfered with by external events (i.e., darkness) or internal events (i.e., disorientation and hypnogogic imagery associated with falling asleep), and (c) subjects hold a belief system that makes the UFO hypothesis salient.

The reports of subjects in the nonintense UFO group seem readily explicable along these lines. Typically, these subjects simply saw lights or shapes in the night sky that seemed inexplicable in terms of such mundane possibilities as airplane lights, comets, and so forth and which they interpreted in terms of their UFO beliefs. On the basis of their interview testimony it was impossible in most cases to determine the nature of the external stimuli that led our subjects to conclude that they had seen a UFO. Nevertheless, the literature on this topic contains reports of many such sightings that turned out to have mundane explanations that the initial observers were either unaware of or failed to consider (e.g., apparent motion of the planet Venus when viewed from a moving vehicle, reflection of light off weather balloons, and ball lightning; Klass, 1974; Sheaffer, 1986).

To understand the elaborate and sometimes bizarre reports of those in the intense UFO group, it is worth noting once again

that the majority of these reports were sleep related. Some of these experiences were simply night dreams that involved UFOs and aliens. Those sleep-related UFO experiences that involved paralysis were also usually accompanied by visual or auditory hallucinations (or both) and sometimes by the sense of a presence that was somehow felt but not seen. Experiences of this kind occurred in almost a quarter of the intense UFO group and are most probably explicable in terms of sleep paralysis.

Sleep paralysis is typically associated with extreme fear and a feeling of suffocation as well as with auditory and visual hallucinations and the sense of a presence (Hufford, 1982). The fear generated by such experiences probably explains why the UFO intense group characterized their UFO experiences as more negative than did the UFO nonintense group. Some UFO reporters purportedly exhibit symptoms of posttraumatic stress disorder (Laibow, 1990). It would be of interest to examine the frequency with which the UFO experiences of these traumatized individuals involve the symptoms of sleep paralysis and the extent to which the fear inherent in sleep paralysis is exacerbated into full-blown trauma by beliefs that foster notions of extraterrestrial attack.

Studies concerning the prevalence of sleep paralysis have obtained widely different results, with rates ranging from a low of 4.7% in one study (Goode, 1962) to highs of approximately 40% in two independent studies (Bell et al., 1984; Fukuda, Miyasita, Inugami, & Ishihara, 1987). In most studies, approximately 15% to 25% of the subjects reported having experienced at least one episode of sleep paralysis (Bell et al., 1984; Fukuda et al., 1987). Thus, the rate of reported paralysis found in our intense UFO group is consistent with generally reported rates of sleep paralysis.

Not all elaborate and intense UFO experiences were sleep related. Furthermore, the intensity of UFO experiences was positively correlated with those variables that assessed propensities toward experiencing unusual body sensations and becoming absorbed in fantasy (i.e., the fantasy-proneness measure, the Magical Ideation scale, the Perceptual Aberrations scale, the temporal lobe lability index, and the MMPI Schizophrenia subscale). The latter findings do not mean that intense UFO experiences were associated with extreme scores on these variables, because very few subjects in either UFO group attained extreme scores on any of these variables. Nevertheless, these

findings indicate that UFO believers who were relatively fantasy prone and relatively likely to experience unusual physical sensations tended to report more elaborate UFO experiences. These results appear to be consistent with Parnell's (1988) findings that UFO reporters who claimed communication with aliens exhibited higher levels of divergent thinking and creativity and a stronger tendency to endorse unusual feelings and thoughts than UFO reporters who did not claim communication. These findings are also consistent with those of Bloecher et al. (1985), whose UFO abductees were described as having a rich inner life and sensitivity to affect and fantasy.

In summary, our findings suggest that intense UFO experiences are more likely to occur in individuals who are predisposed toward esoteric beliefs in general and alien beliefs in particular and who interpret unusual sensory and imaginal experiences in terms of the alien hypothesis. Among UFO believers, those with stronger propensities toward fantasy production were particularly likely to generate such experiences. Moreover, such experiences were likely to be generated and interpreted as real events rather than as imaginings when they were associated with restricted sensory environments that contributed to confusion between internally produced images and sensations and external events (e.g., experiences that occurred at night and in association with sleep).

Despite their importance, a relatively rich fantasy life, restricted sensory environments, and sleep-related imagery of unusual beings are in and of themselves probably unlikely to produce believed-in UFO experiences. Also likely to be required is a belief system that assigns at least some initial credibility to the extraterrestrial hypothesis. For example, in a study that dealt with another type of exotic belief, Spanos, Menary, Gabora, DuBreuil, and Dewhirst (1991) gave hypnotic subjects the suggestion that they had lived in previous incarnations. Subjects with relatively strong imaginal propensities were more likely to generate past-life experiences. Nevertheless, among subjects with past-life experiences, imaginal propensities failed to predict the extent to which those experiences were treated as credible, as real events rather than as fantasies. Instead, the credibility assigned to past-life experiences was predicted by subjects' prior beliefs about reincarnation. Those who construed reincarnation as a real possibility and who expected to experience an actual past life were much more likely to assign credibility to their past-life experiences than those who viewed reincarnation as impossible or unlikely. With respect to UFO experiences, these ideas suggest that beliefs in alien visitation and flying saucers serve as templates against which people shape ambiguous external information, diffuse physical sensations, and vivid imaginings into alien encounters that are experienced as real events.

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