

## FANTASY PRONENESS AND OTHER PSYCHOLOGICAL CORRELATES OF UFO EXPERIENCE

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**Abstract.** This study examined the psychological variables that underpin the reporting of UFO (unidentified flying objects) experiences of 198 subjects (155 controls, 19 UFO sightees, 12 UFO contactees, and 12 UFO abductees). Findings demonstrate that reporting of UFO experiences is related to heightened levels of fantasy proneness and paranormal belief and that the relationship between fantasy proneness and UFO experiences is mediated by paranormal belief. In relation to personality characteristics, it was found that UFO experiencers are higher on the “feeling” and “intuiting” dimensions of the Myers-Briggs Type Indicator (MBTI). However contrary to our expectations, beliefs in “precognition” were not found to correlate with the “feeling” dimension of the MBTI. The findings provide impetus for future research with UFO experiencers.

Reports of unidentified flying object (UFO) sightings and certainty that such objects are alien spacecraft have increased dramatically following Kenneth Arnold’s highly publicised sighting in Washington on June 24, 1947 (Bartholomew, Basterfield & Howard, 1991; Klass, 1999; Price, 1997; Spanos, Burgess & Burgess, 1994; Spanos, Cross, Dickson & DuBreuil, 1993). The first UFO reports focused solely on alleged sightings of the spacecrafts themselves; however, by the mid-1960’s, UFO abduction accounts began to appear (Spanos et al., 1994). In his review article, Appelle (1996) defines an abduction experience as being characterised by “subjectively real memories of being taken secretly and/or against one’s will by apparently nonhuman entities and subjected to complex physical and psychological procedures” (p. 29).

The mass media has given extensive coverage to such accounts (McLeod, Corbisier & Mack, 1996; Zimmer, 1984). In addition, uncritical and sensationalistic documentary-type television shows (such as those screened to coincide with the anniversary of the Roswell incident) and movies that feature alien contact have become increasingly popular (Sheaffer, 1986), for example, *The X-Files*, *Men in Black*, *Independence Day*, *Dark Skies* and *ET*. However while popular culture moves forward in assimilating the possibility of intelligent alien life into mass public opinion, there is still a lack of scientific evidence as to its presence here on earth (Sheaffer, 1986; Spanos et al., 1993). According to Westerfelhaus and Combs (1998), the success of X-files is due to the tension it portrays between skeptical western science and faith in things that western science ignores.

Because of the scientific community’s dismissal of the existence of intelligent alien life, UFO experiences have received scant serious scientific attention (McLeod et al., 1996). Regardless of whether these reports are independently verifiable, at least two percent of the population (Appelle, 1996) in the USA claim to have had a UFO experience and this fact alone makes them worthy of study. Bullard (1990, cited in Ring & Rosing, 1990) lamented that we still know too little of the psychological makeup of those who have undergone these “puzzling encounters”.

Although, at this stage, abduction reports cannot be taken seriously as objective reality (although some researchers do this; see Jacobs, 1992; Mack, 1994), it is obvious that to the

experiencer they certainly represent subjective reality. The processes and/or personal characteristics of claimants which lead them to believe in their experiences have been left largely uninvestigated by objective scientific research.

### Profile of a UFO Experiencer

Some scientists have dismissed UFO reports as evidence of a disturbed personality or some sort of mental instability (Zimmer, 1984). The profile of those who claim contact with aliens or even UFO sightings is often described as one of lunacy (Grinspoon & Persky, 1972, cited in Spanos et al., 1993; Newman & Baumeister, 1996). However such diagnoses are often based on the fantastic nature of the claims, and not on firsthand psychological evaluation (Bartholomew, Basterfield & Howard, 1991). The hypothesis that a claim of UFO abduction must be associated with psychopathology has not been supported by the research (e.g., Bloecher, Clamar & Hopkins, 1985 cited in Ring & Rosing, 1990; Parnell, 1988).

Bloecher, Clamar and Hopkins found no evidence of serious psychopathology in their sample of nine reported abductees who were administered a battery of objective and projective tests by a psychologist "blind" to their abductee status. In a study with a much larger sample size, Parnell (1988) also found no evidence of psychopathology, as measured by the Minnesota Multiphasic Personality Inventory (MMPI) and the Sixteen Personality Factor Questionnaire (16PF). Zimmer (1984) found no differences between his UFO experience group and control group on measures of cultural alienation, malevolent world view and personal well-being.

UFO experience reports cannot therefore be dismissed as delusions of the mentally ill (Banaji & Kihlstrom, 1996). However, although studies find no overall pattern of pathology, some suggest an association between schizoid tendencies and UFO experience (e.g., Parnell & Sprinkle, 1990, Schwarz, 1983, cited in Ring & Rosing, 1990). Certain subjects in Parnell and Sprinkle's sample scored higher than average on the MMPI subscale which assessed their schizophrenic tendency.

Appelle (1996) stated that the only claim that can be made with any credibility is that "as a group the experiencer population is clinically normal, but atypical in (some) ways" (p. 64). The available data is not suggestive of any psychological disorders associated with UFO experience, but may be consistent with certain personality traits (Appelle, 1996).

Ring and Rosing (1990) suggested that because of mainstream attempts to "pigeon hole" UFO experiencers in terms of the presence or absence of underlying pathology, more specific psychological characteristics, such as fantasy proneness, that may be true indicators of predisposition to such reports have been largely overlooked.

### Fantasy Proneness and UFO Experience

The concept of fantasy proneness was first introduced by Wilson and Barber (1981, cited in Fellows & Wright, 1989) to describe the extensive and vivid imaginative experiences reported by a group of highly hypnotisable female subjects during in-depth interviews. The fantasy prone personality has been summarised in the literature as having: a deep and extensive involvement in fantasy, the ability to vividly relive past experiences, out-of-body experiences, healing abilities, the ability to achieve orgasm by fantasising, having imaginary friends in childhood and having spent much of their waking life in fantasy (Fellows & Wright, 1989; Siuta, 1990). Wilson and Barber (1983) developed the Inventory of Childhood Memories and Imaginings (ICMI) as a measure of fantasy proneness. The ICMI is used by the majority of research on fantasy proneness. It has been suggested that given the tendency of fantasy prone persons to have problems with fantasy-reality differentiation (Rauschenberger & Lynn, 1995; Rhue & Lynn, 1989) they may be especially vulnerable to fantasise UFO experience (Newman & Baumeister, 1996). Appelle (1996) states that fantasy proneness is

theoretically relevant to UFO experience, since there are similarities between abduction experiences and those of fantasiers. The nature of the fantasy prone person's imagery has been described by Wilson and Barber (1981, cited in Appelle, 1996) as feeling as if they are seeing something that really exists out there, or that they are looking into another dimension.

Attempts have been made to categorise UFO experiencers as fantasy prone. However, many researchers claiming a link between fantasy proneness and UFO experience cite fairly tenuous evidence. For example, fantasy proneness and UFO experience have both been linked to hypnotisability, and child sexual abuse. Thus it is argued that, because both phenomena share a common relationship with another variable, they may also be linked directly to each other (e.g., Newman & Baumeister, 1996). These assertions are not backed up with evidence of a direct link.

Bartholomew, Basterfield and Howard (1991) claimed to have found an association between fantasy proneness and UFO experience in their examination of 152 archival cases. The strength of this claim is weak, given the nature of their study and their failure to use a comparison group or a validated measure of fantasy proneness. Studies utilising the validated ICMI have found no significant relationship between fantasy proneness and UFO experience.

Appelle (1996) found no evidence of a direct link between fantasy proneness and UFO experience in his review of articles assessing the possible relationship. Spanos et al. (1993) found no significant difference between the control group and UFO experience groups (both sightees and more intense experiencers such as contactees and abductees) on ICMI scores. Similar results were found by Ring and Rosing (1990) using a composite measure of fantasy proneness. There is evidence to suggest that fantasy proneness relates to UFO experience in a less direct way.

This study asks if people who claim to have had a UFO experience are more fantasy prone than the normal population? Additionally, Spanos et al. (1993) suggests that fantasy proneness and paranormal beliefs interact in their relationship to UFO experience.

### Paranormal Beliefs and UFO Experience

That people who report UFO experiences tend to believe in the existence of alien life is somewhat an obvious statement. Closer examination uncovers the fact that there is evidence of a mediating relationship between fantasy proneness and paranormal beliefs, with respect to UFO experience. Spanos et al. (1993) found that, among subjects who believed in the existence of intelligent alien life, those high in fantasy proneness were more likely to report UFO experience. Spanos et al. (1994) suggest this may be explained in terms of fantasy prone persons interpreting their sensory and imaginal experiences within a framework of belief in alien visitation.

Examination of Spanos et al.'s (1993) paranormal belief measure reveals some problematic issues. One of the three questions used to assess belief in UFOs actually assesses UFO experience rather than belief ("I have been taken aboard a spaceship"). Since the scores for the three questions were summed as a measure of belief, this measure is contaminated by this confound. Reassessing this proposed mediation relationship with the use of a validated paranormal belief measure is considered to be a worthwhile research endeavour which has been taken up in this study.

There is evidence which suggests that there is an association between fantasy proneness and general paranormal beliefs. Irwin (1990) found that scores on the ICMI were correlated (.53,  $p < .01$ ) with full scale scores on the revised version of the Paranormal Belief Scale (PBS) (Tobacyk, 1988, in Irwin, 1990)), as well as all the subscales (traditional religious belief, psi belief, witchcraft, superstition, spiritualism, extraordinary life forms and precognition). Using a different paranormal belief scale, Council and Huff (1990) also found a relationship between fantasy proneness and paranormal belief with significant differences

between high, medium and low fantasiers (high = ICMI score > 35, medium = 11-35, low = < 11). It was found that high fantasiers were not only more likely to hold paranormal beliefs, but were also more likely to report paranormal experiences.

Belief in other paranormal phenomenon has been shown to be higher in UFO experiencers when compared to controls. Zimmer (1984) found that belief in the occult was related to UFO sightings, while belief in astrology was not. Spanos et al. (1993) found that UFO experiencers scored higher than controls on esoteric and exotic belief measures which assessed belief in phenomena such as mind reading and reincarnation. In addition, Ring and Rosing (1990) found that UFO experiencers were significantly higher in spiritual beliefs than controls were.

Paranormal beliefs have been found to be associated with certain personality characteristics as measured by the Myers-Briggs Type Indicator (Myers, 1962, cited in Murphy & Lester, 1976). In particular, belief in ESP (defined as telepathy, clairvoyance and precognition) was found to be significantly correlated with the “feeling”, rather than the “thinking” dimension of the Myers-Briggs Type Indicator (Murphy & Lester, 1976). This correlation suggests that there is a relationship between paranormal beliefs and certain personality characteristics.

#### Personality Characteristics and UFO Experience

Unfortunately, there is a gap in current knowledge in UFO research with respect to whether a specific personality characteristic is over-represented in the UFO experience population. Personality measures used in the literature so far have been utilised for their ability to uncover psychopathology, but not aspects of personality per se.

Given the nature of paranormal belief’s role in differentiating UFO experiencers from controls, in addition to its relationship with the feeling dimension of the Myers-Briggs, it is possible that personality characteristics may shed more light on the profile of UFO experiencers.

#### Rationale of this Study

The aim of this study is to assist in clarifying the profile of a UFO experiencer. Specifically it is hypothesised that:

1. The relationship between fantasy proneness and UFO experience will be mediated by paranormal beliefs. That is, a significant relationship between fantasy proneness and UFO experience will no longer be significant, if paranormal belief is controlled for. As necessary conditions of this mediation relationship, it is expected that:

2. High scores on a fantasy proneness measure and high scores on a paranormal belief measure will be significantly correlated.

3. Subjects who identify as UFO experiencers will score higher on a paranormal belief measure than control subjects.

4. Consistent with Murphy and Lester’s (1976) findings, high scores on the feeling dimension of the Myers-Briggs Type Indicator will correlate with high scores on the precognition subscale (which includes belief in ESP) of the paranormal beliefs measure.

In addition, an exploration of the relationship between personality dimensions and UFO experience, fantasy proneness and paranormal beliefs will be undertaken.

## Method

### Design

This study was conducted as a between-subjects design. Subjects were assigned to groups on the basis of their categorisation as either a UFO sightee, contactee, abductee or non-experiencer (control). Subjects were assessed on the six dependent variables of fantasy proneness, paranormal beliefs and personality characteristics.

### Subjects

The researchers door-knocked in the suburbs of a capital city of Australia (selected on the basis of their representativeness from statistics from the Australian Bureau of Statistics). In addition, questionnaires were sent to subjects contacted through an Australia-wide UFO organisation.

Out of 450 questionnaires distributed, 198 people completed the questionnaire. Of these, 119 were female (Age distribution: 18-20 = 4%, 21-30 = 39%, 31-40 = 20%, 41-50 = 15%, 51-60 = 12%, over 60 = 10%) and 79 were male (Age distribution: 18-20 = 13%, 21-30 = 29%, 31-40 = 23%, 41-50 = 16%, 51-60 = 9%, over 60 = 10). Education levels were distributed fairly evenly (Education distribution: high school = 40%, TAFE = 4%, university = 34%, post-graduate study = 16%, advanced degree = 6%). A wide range of employment status was also found (Occupation distribution: unemployed = 13%, manual workers = 5%, service workers = 20%, professionals = 29%, housewives = 10%, students = 21%, part-time workers = 15%, self-employed = 1%). Religious upbringing and affiliation were also fairly representative (Religious upbringing: atheist = 9%, no organised religion = 10%, Christian = 79%, Jewish = 0.8%, Muslim = 1%, Buddhist = 0.2%; Current religious affiliation: atheist = 16%, no organised religion = 49%, Christian = 32%, Muslim = 1%, Buddhist = 2%).

In total, 155 subjects identified themselves as having had no UFO experience (63 males, 92 females), 19 identified themselves as sightees (6 males, 13 females), 12 identified themselves as contactees (5 males, 7 females) and 12 identified themselves as abductees (5 males, 7 females).

### Materials

A booklet comprising a biodata questionnaire, the Inventory of Childhood Memory and Imaginings (ICMI), the Paranormal Belief Scale (PBS) and the Myers-Briggs Type Indicator (Form G), and three questions to ascertain UFO experiences was compiled by the research team. Information pertaining to age, gender, education level, occupation, religious upbringing and current religious beliefs were obtained via the biodata questionnaire.

Inventory of Childhood Memories and Imaginings (ICMI). The ICMI, developed by Wilson and Barber (1983), is a 52-item true-false measure used to assess fantasy proneness. It has been found to have a reliability of .89 and significant correlations with other scales measuring imaginative ability attest to its validity (Silva & Kirsch, 1992).

Paranormal Belief Scale (PBS). Tobacyk and Milford's (1983) PBS was used to assess subjects' belief in the paranormal. The PBS is a 25-item 5-point likert scale measure (with scores ranging from 5 = strongly agree to 1 = strongly disagree). Questions 21 and 23 are negatively worded and thus need recoding. Its seven subscales are Traditional Religious Belief, Psi Belief, Witchcraft, Superstition, Spiritualism, Extraordinary Life Forms, and Precognition. Scores for the subscales are derived from the mean of responses to items within the subscale. A total paranormal belief score is obtained by summing responses for all

25 items. Test-retest reliability for this scale was found to be .89 (Tobacyk & Milford, 1983). Construct validity was determined by correlations with seven related scales and was found to be at an acceptable level (Tobacyk & Milford, 1983).

Myers-Briggs. The Myers-Briggs Type Indicator (Myers, 1962) is a measure of personality style based on Jung's theory of personality. In this study, Form G was used. The four continuums are Introversion-Extroversion, Intuiting-Sensing, Thinking-Feeling and Perceiving-Judging. Subjects rate 32 dichotomous items proportionally out of an allocation of ten. A total score for each of the four dimensions is derived with scores for opposing dimensions summing to eighty. In a review article summarising the use of the Myers-Briggs to 1990, Murray (1990), found that the Myers-Briggs was adequately reliable and valid.

UFO Experience. Three questions ascertaining the presence of UFO experiences were derived from Basterfield (1997) and Spanos et al. (1993). These questions required subjects to respond if they classified themselves as having had a UFO sighting, or contact, or had been abducted. Basterfield's (1997, unpublished manuscript) definitions of "abduction" and "contact" were used and the definition of "sighting" was derived from Spanos et al. (1993).

### Procedure

The questionnaire booklets used in this study were arranged in a latin square design in an attempt to counteract sequencing confounds.

Over a four week period, householders in the aforementioned suburbs were approached by two members of the research team on varying days and times. The researchers explained that they were conducting research in the area and inquired if there were any occupants over 18 who would agree to participate. Once willingness to participate was established, the householder was handed the number of questionnaire booklets indicated, as well as consent forms.

If questionnaires were unavailable for collection on the collection date - a week later - a note requesting the questionnaire be left out for collection the next day was left in the household mail delivery box. Subjects in the UFO organisation were approached as to their willingness to participate. Once consent was obtained, the questionnaire and consent form were mailed to the subject.

## Results

### Establishing conditions for the mediation relationship

The first analyses were conducted in order to assess the necessary conditions for the hypothesised mediation effect between fantasy proneness and paranormal beliefs on UFO experience.

### ICMI and UFO Category

The first step in establishing the mediation relationship between fantasy proneness and paranormal beliefs was to show that fantasy proneness differs significantly across the three UFO categories and the controls. To assess this, a one-way ANOVA was conducted. It was found that this condition was met ( $F(3, 197) = 8.53, p < .001$ ). Post-hoc Student-Newman-Keuls analysis revealed that all UFO experience groups (sightees ( $M = 26.89$ ), contactees ( $M = 30.50$ ), and abductees ( $M = 30$ ) were significantly higher on ICMI scores than controls ( $M = 21.90$ ).

### PBS and ICMI

Next it was necessary to establish a relationship between fantasy proneness and paranormal beliefs. Correlations between scores on the ICMI and the PBS total scale score and subscale scores were as follows; total paranormal belief score ( $r(198) = .44, p < .001$ ), traditional religious belief ( $r(198) = -.01$ , not significant), psi belief ( $r(198) = .40, p < .001$ ), witchcraft ( $r(198) = .34, p < .001$ ), superstition ( $r(198) = .15, p < .05$ ), spiritualism ( $r(198) = .47, p < .001$ ), extraordinary lifeforms ( $r(198) = .28, p < .001$ ), and precognition ( $r(198) = .41, p < .001$ ).

Table 1

#### Means and Standard Deviations of PBS Scores (total and subscales)

Variable	UFO Experience Category			
	Controls	Sightees	Contactees	Abductees
PBSTRB	3.35 (0.98)	3.66 (0.86)	3.81 (0.74)	3.75 (0.50)
PBSPSI*	3.12 (0.93)	3.67 (0.94)	3.25 (1.01)	4.02 (0.78)
PBSWIT**	2.97 (0.86)	3.33 (0.92)	3.08 (0.82)	4.06 (0.51)
PBSSUP	1.84 (0.75)	2.12 (0.71)	1.86 (0.90)	2.41 (1.17)
PBSSPI**	3.07 (1.01)	3.78 (0.79)	3.63 (1.12)	4.56 (0.53)
PBSELF*	2.47 (0.80)	2.81 (1.03)	2.47 (0.69)	3.36 (0.63)
PBSPRE*	3.61 (0.91)	3.89 (0.81)	4.22 (0.48)	4.39 (0.62)
TOTPBS*	73.81 (14.61)	84.21 (14.42)	80.75 (12.12)	96.08 (10.45)

**Note.** PBSTRB = Traditional Religious Belief, PBSPSI = Psi Belief, PBSWIT = Witchcraft, PBSSUP = Superstition, PBSSPI = Spiritualism, PBSELF = Extraordinary Lifeforms, PBSPRE = Precognition, TOTPBS = Total Paranormal Belief.

\* $p < .01$ , \*\* $p < .001$ .

### PBS and UFO Experience

The next step was to establish a relationship between UFO experience and paranormal beliefs was the next step. The means and standard deviations of the three UFO experience categories' (and control group's) scores on the PBS including total scores and subscales are presented in Table 1. Eight one-way ANOVAs were conducted to ascertain if there were any significant differences between the groups on paranormal beliefs. Significant differences are marked in Table 1.

There was a significant difference between the groups on total paranormal belief ( $F(3, 197) = 5.12, p < .01$ ). Post-hoc Student-Newman-Keuls analysis revealed that, on overall paranormal belief, sightees and abductees were significantly higher than controls, and abductees were significantly higher than sightees and contactees. Traditional religious belief was not significant. Psi belief was significantly higher in sightees and abductees than in controls ( $F(3, 197) = 5.09, p < .01$ ). Witchcraft belief was significantly higher in abductees than controls, sightees and contactees ( $F(6.85, p < .001)$ ). Superstition was not significant. Spiritualism was higher in sightees compared to controls, and higher in abductees compared to controls and sightees ( $F(3, 197) = 11.45, p < .001$ ). Belief in extraordinary lifeforms was higher in abductees than controls and contactees ( $F(3, 197) = 5.12, p < .01$ ). Precognition belief was higher in abductees compared to controls ( $F(3, 197) = 4.84, p < .01$ ).

### PBS and ICMI - A mediated relationship?

To assess the hypothesis that the effect of fantasy proneness was mediated by paranormal belief, it was necessary to prove the conditions of a mediated relationship: firstly, that fantasy proneness and UFO experience are related, as has been shown; secondly, that fantasy proneness and total paranormal belief are related, as shown in the reported correlations; and thirdly, that total paranormal beliefs differ significantly over UFO categories, as shown in the one-way ANOVAs reported above.

The final step was to show that once paranormal beliefs are controlled for, the previously significant relationship between fantasy proneness and UFO experience would no longer be significant. The results of an ANCOVA conducted to assess this condition are presented in Table 2.

Table 2

### Results of ANCOVA for Fantasy Proneness and UFO Experience with Total Paranormal Beliefs as the Covariate

Source of Variation	df	MS	F
Covariate			
TOTPBS	1	13.77	21.85*
Main Effects			
FPLOMEHI	2	0.95	1.51
Explained	3	7.06	11.218
Residual	194	0.63	
Total	197	0.73	

Note. TOTPBS = Total Paranormal Belief score, FPLOMEHI = ICMI scores separated into low (<11), medium (11-35), and high (36 and over). \* $p < .001$ .



As can be seen, once paranormal belief was controlled for, fantasy proneness was no longer significant. Thus, as hypothesised, paranormal belief mediates the relationship between fantasy proneness and UFO experience.

#### Feeling Dimension of the Myers-Briggs and Precognition

Following on from the findings of Murphy and Lester (1976), a correlation between the feeling dimension of the Myers-Briggs Type Indicator and the precognition subscale of the PBS was calculated. A Pearson product-moment correlation of  $r(198) = .20$  ( $p < .05$ ) was found, however, when UFO experiencers were removed from the analysis, the correlation was no longer significant ( $r(155) = .09$ , not significant). Feeling and precognition correlated at  $r(43) = .44$  ( $p < .01$ ) for the UFO experience categories combined.

#### Myers-Briggs Type Indicator

All the dimensions of the Myers-Briggs were analysed next. The means and standard deviations of each of the groups on the eight dimensions of the Myers-Briggs are presented in Table 3.

Table 3

#### Means and Standard Deviations on the dimensions of the Myers-Briggs Type Indicator

Dimension	UFO Experience Category			
	Controls	Sightees	Contactees	Abductees
Introversion	43.23 (9.06)	41.32 (8.89)	44.42 (6.05)	46.08 (8.45)
Extroversion	36.76 (9.06)	36.68 (8.89)	35.58 (6.05)	33.92 (8.45)
Intuiting*	39.66 (10.08)	44.05 (9.22)	47.08 (9.90)	41.83 (10.54)
Sensing*	40.27 (10.19)	35.95 (9.22)	32.92 (9.90)	38.17 (10.54)
Thinking*	37.27 (9.68)	32.68 (11.15)	34.25 (11.64)	26.92 (7.48)
Feeling*	42.66 (9.68)	47.32 (11.15)	45.75 (11.64)	53.08 (7.48)
Perceiving	38.32 (10.09)	38.84 (6.09)	43.42 (10.20)	42.50 (11.54)
Judging	41.68 (10.09)	41.16 (6.09)	36.58 (10.20)	37.50 (11.54)

\* $p < .05$ .

Eight one-way ANOVAs were conducted to see if the groups differed significantly on any of these personality dimensions. Significant differences are marked in Table 3. Introversion-Extroversion, and Perception-Judgement did not significantly differentiate the groups.

A significant omnibus F was found for feeling ( $E(3, 197) = 5.21, p < .05$ ) and thus also thinking ( $E(3, 197) = 5.11, p < .05$ ). Post hoc Student-Newman-Keuls analysis revealed that abductees were significantly higher than controls on the feeling dimension and thus by default significantly lower on the thinking dimension.

A significant omnibus F was also found for intuiting ( $E(3, 197) = 2.93, p < .05$ ) and also sensing ( $E(3, 197) = 2.81, p < .05$ ) with no significant post-hoc Student-Newman-Keuls results.

However when the analysis was conducted again with all the UFO experiencers grouped together (sightees, contactees and abductees), it was found that experiencers ( $M = 44.28$ ) were significantly higher than controls ( $M = 39.66$ ) on intuiting ( $E(1, 197) = 7.15, p < .05$ ) and thus also lower ( $M = 35.72$ ) than controls ( $M = 40.27$ ) on sensing ( $E(1, 197) = 6.83, p < .05$ ).

The relationships between the dimensions of the Myers Briggs and scores on the ICMI and PBS were assessed next. High correlations between any of the dimensions and the ICMI and the PBS and its subscales were picked out for assessment of possible interaction effects. The results of these exploratory analyses are presented next.

#### Myers-Briggs, PBS and ICMI

A correlation matrix between the Myers-Briggs dimensions and fantasy proneness and paranormal beliefs is presented in Table 4.

Table 4

Correlations between Myers-Briggs Dimensions and ICMI and PBS (total and subscales)

Scale	ICMI	TOT	TRB	PSI	WIT	SUP	SPI	ELF	PRE
Intuiting	.45***	.27***	-.05	.24**	.27***	.12	.31***	.09	.22**
Sensing	-.45***	-.27***	.05	-.24**	-.27***	-.12	-.31***	-.09	-.22**
Thinking	-.26***	-.24**	-.10	-.17*	-.25***	-.09	-.23**	-.05	-.19**
Feeling	.26***	.24**	.10	.17*	.25***	.09	.23**	.05	.19**
Perceiving	.16*	.07	-.07	-.01	.09	.13	.16*	-.08	.11
Judging	-.16*	-.07	.07	.01	-.09	-.13	-.16*	.08	-.11
Introversion	-.03	-.10	-.04	-.08	-.10	.02	-.08	.04	-.12
Extroversion	.03	.10	.04	.08	.10	.02	.08	-.04	.12

**Note.** TOT = Total Paranormal Belief, TRB = Traditional Religious Belief, PSI = Psi Belief, WIT = Witchcraft, SUP = Superstition, SPI = Spiritualism, ELF = Extraordinary Lifeforms, PRE = Precognition.

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

The Intuiting-Sensing and Thinking-Feeling dimensions significantly correlated with the ICMI score, and with the total paranormal belief score, as well as with the subscales of psi belief, witchcraft, spiritualism, extraordinary lifeforms and precognition.

#### Interaction between Intuition and ICMI

After examination of the above correlation matrix, it was decided to conduct several factorial ANOVAs in an exploratory attempt to check for interaction effects between these dimensions and the ICMI. The Intuiting-Sensing and Thinking-Feeling dimensions were chosen as they were highly significant in their correlations with the ICMI. For analyses of interactions with the ICMI, subjects classified as low were removed, as they contributed three empty cells to the design. This resulted in the removal of 10 control subjects. A weak, but just significant interaction effect between ICMI and UFO experience on intuition ( $E(3, 188) = 2.40, p < .1 (.069)$ ) and thus also sensing ( $E(3, 188) = 2.35, p < .1 (.074)$ ) was found. Figure 1 represents this interaction graphically.

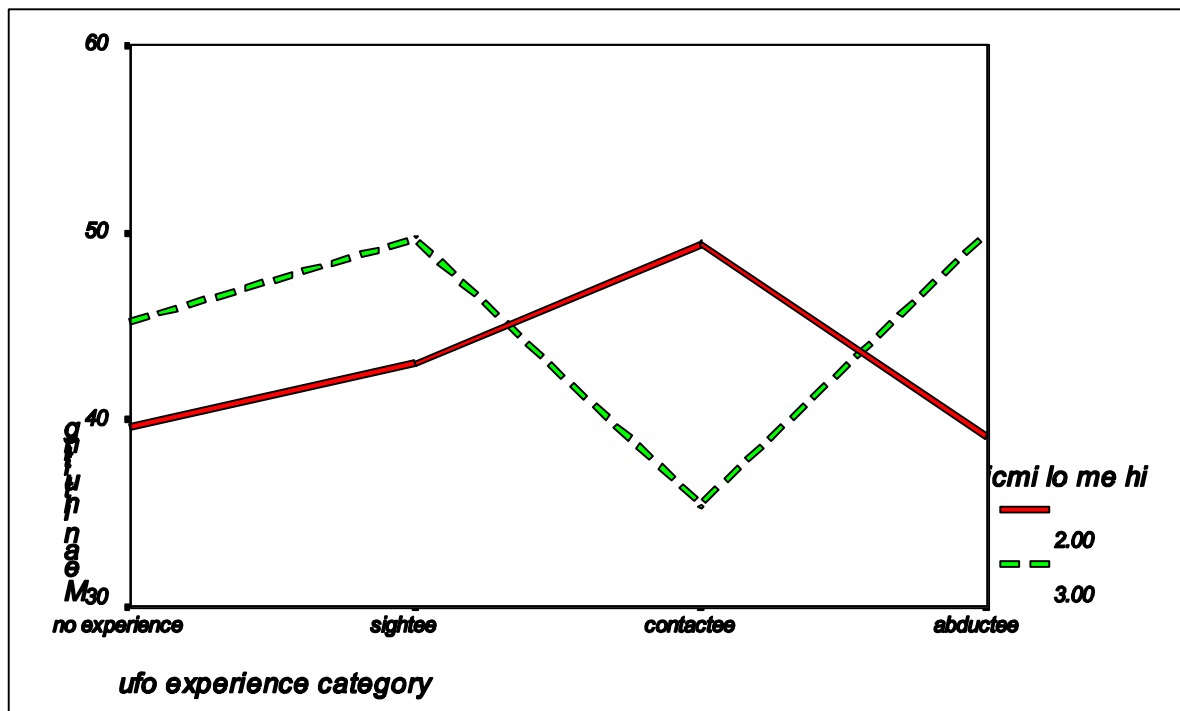


Figure 1. Interaction between UFO Experience and ICMI (2 = medium, 3 = high) on the Intuition dimension of the Myers-Briggs.

The UFO experience groups were combined for ease of interpretation of this interaction effect. Figure 2 represents this interaction with the groups combined. As can be seen, the effect of UFO experience was greater when accompanied by medium ICMI scores, as opposed to high ICMI scores.

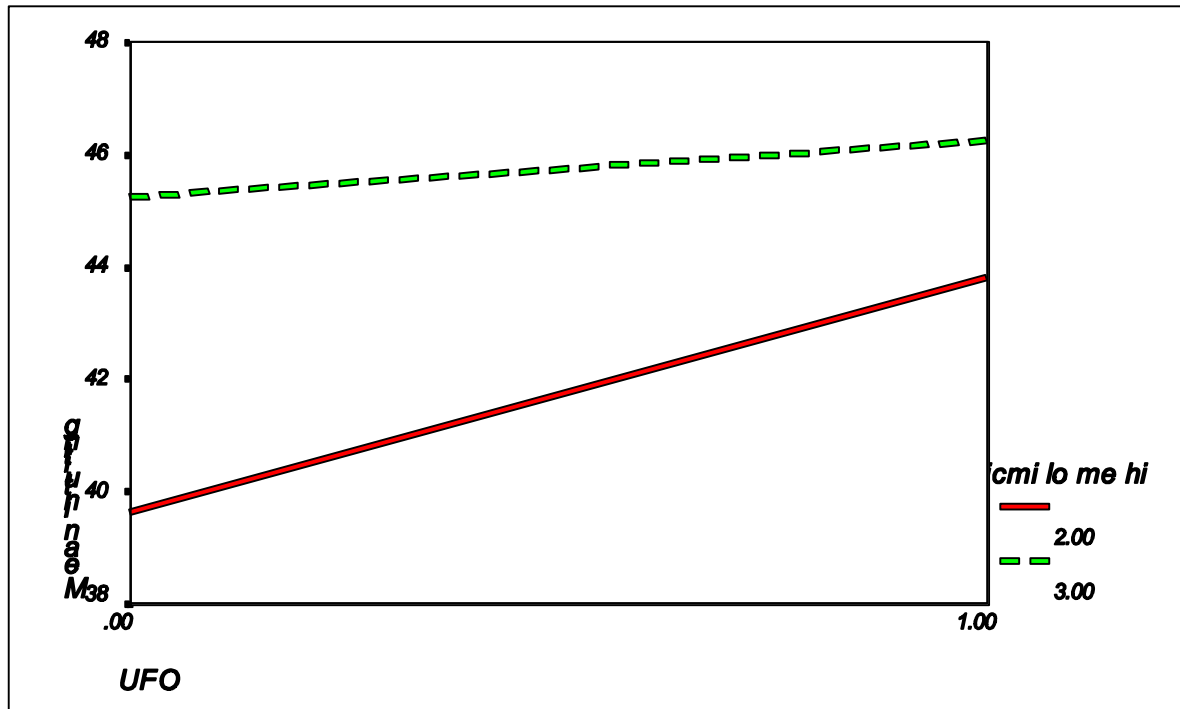


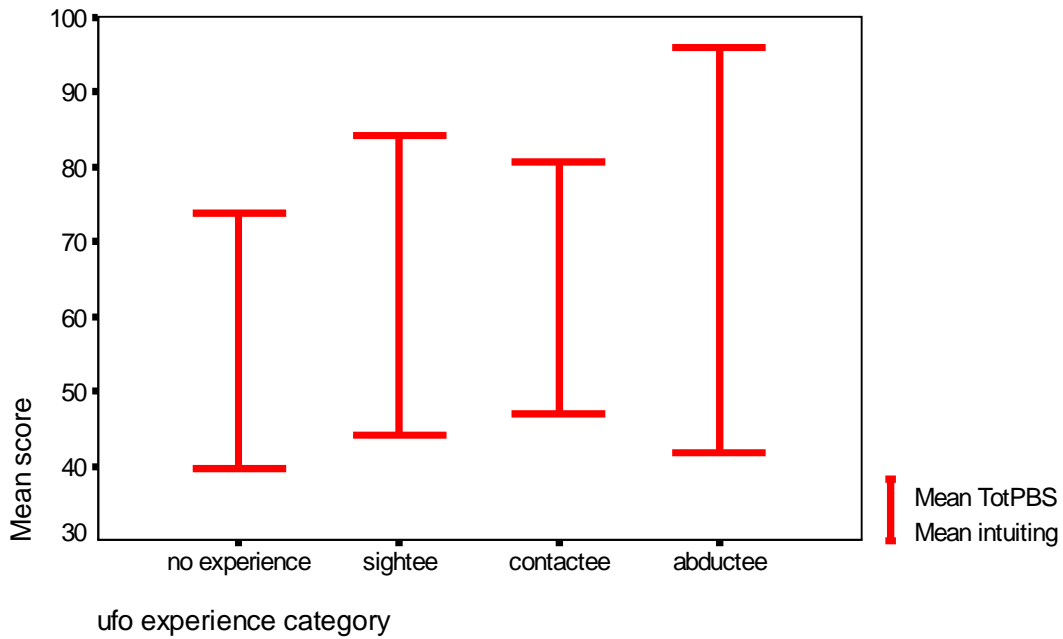
Figure 2. Interaction between UFO Experience (with experiencers grouped together) and ICMI (2 = medium, 3 = high) on the Intuition dimension of the Myers-Briggs.

Post hoc Student-Newman-Keuls analysis revealed that UFO experiencers scoring medium or high on the ICMI were significantly higher on the intuition dimension than controls with medium ICMI scores. There was no significant interaction between ICMI and UFO experience for the Thinking-Feeling continuum.

#### Interaction between Intuition and Total Paranormal Belief Scores.

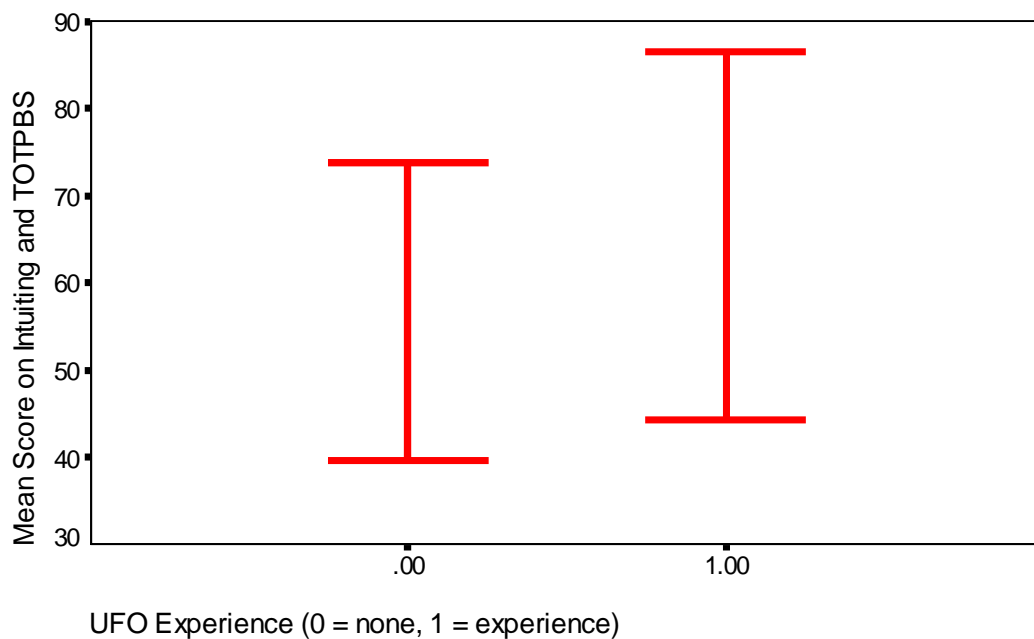
A one-way MANOVA was conducted to assess the possible interaction effect of the Intuition-Sensing and total paranormal beliefs score given the highly significant correlation between the two variables (shown in Table 4) and their independent effects as found by one-way ANOVAs. Using the Wilk's criterion, the interaction effect was found to be significant ( $E(6, 386) = 6.57, p < .001$ ) with an effect size of  $\eta^2 = .09$  (Wilk's lambda). This interaction is presented graphically in Figure 3.

Once again for ease of interpretation, the UFO experiencers were grouped together. Figure 4 illustrates this interaction with controls compared to experiencers. As can be seen, the strength of the interaction between paranormal beliefs and intuiting is different across UFO experience category.



**Figure 3.** Interaction between Intuition and Total Paranormal Belief Score on UFO Experience.

Note: The bottom row of points represents the main effect of intuition across UFO category. The top row of points represents the main effect of total paranormal beliefs on UFO category. The interaction is represented by the fact that the difference between means on intuiting and belief differs across UFO categories (as represented by the different lengths of the joining lines).



**Figure 4.** Interaction between Intuition and Total Paranormal Belief Score on UFO Experience (with experiencers grouped together).

Note: The bottom row of points represents the main effect of intuition across UFO category. The top row of points represents the main effect of total paranormal beliefs on UFO category. The interaction is represented by the fact that the difference between means on intuiting and belief differs across UFO categories (as represented by the different lengths of the joining lines).

### Hypotheses

The first set of hypotheses assessed in this study related to fantasy proneness and paranormal belief and their relationship to UFO experience. Firstly, it was found that all UFO experience groups scored significantly higher on the ICMI than did controls. This is contrary to the research of Spanos et al. (1993) who found no significant difference between controls and UFO experiencers on the ICMI.

The relationship between fantasy proneness (as measured by the ICMI, Wilson & Barber, 1983) and paranormal beliefs was explored next in relation to the hypothesised mediation relationship between the two variables. Fantasy proneness and paranormal beliefs were correlated at .44 supporting the hypothesis that the two would be related. This was in keeping with Council and Huff's (1990) findings of a relationship between these two variables. However, contrary to Irwin's (1990) finding, that all the subscales of the PBS correlated with ICMI scores, the traditional religious belief subscale did not correlate with ICMI scores in this sample.

In addition, it was hypothesised that UFO experiencers would have higher paranormal belief scores than controls. This hypothesis was also supported. In addition, all of the subscales of the PBS (Tobacyk & Milford, 1983), apart from traditional religious belief and superstition, significantly differentiated between the groups. The witchcraft and spiritualism subscales were the best discriminators overall, including total paranormal beliefs. This was in keeping with the findings of Spanos et al. (1993), Ring and Rosing (1990) and Zimmer (1984) who reported higher scores on belief in the occult, mind reading, reincarnation and general spiritual beliefs in their UFO experience samples.

Thus the three conditions necessary to establish a mediation relationship, namely that fantasy proneness and paranormal beliefs both significantly differentiate UFO experience independently, and that fantasy proneness and paranormal beliefs are related to each other, were all supported.

An analysis of covariance conducted with paranormal beliefs as the covariate found that the relationship between fantasy proneness and UFO experience was no longer significant once paranormal beliefs are controlled for. Thus support was found for Spanos et al.'s (1993) claim of a mediation relationship, between fantasy proneness and paranormal beliefs, utilising a validated measure of paranormal belief (Tobacyk & Milford, 1983). Among subjects high in paranormal beliefs, those high in fantasy proneness were more likely to report UFO experience (Spanos et al., 1993).

The relationships between the Myers-Briggs Type Indicator continuums (Myers, 1962) and fantasy proneness, and paranormal beliefs, were explored next. The effect of personality on UFO experience, both direct and interactional was then investigated. A correlation between the feeling dimension and the precognition subscale (a validated measure of belief in ESP) of the PBS (Tobacyk & Milford, 1983), as found by Murphy and Lester (1976), was replicated. However, when the analysis was conducted without the UFO experiencers, the correlation between the two variables was no longer significant.

This effect may be explained (at least in part) by the finding that scores on the feeling dimension were significantly higher in the UFO experience groups than in controls. Thus

since UFO experiencers tended to have higher scores on the feeling dimension than expected in the population, the analysis of the relationship between feeling and precognition (also significantly higher in UFO experiencers) may have been unduly influenced by other effects.

Exploration of group differences on the Myers-Briggs (Myers, 1962) dimensions revealed some interesting patterns. It was found that subjects who identified as abductees were significantly higher on the feeling dimension (and thus lower on the thinking dimension) than the control group. This finding cements this relationship hinted at by the relationships between feeling and belief and belief and experience.

The Intuiting-Sensing continuum also differed across the controls and UFO experience groups. It was found that UFO experiencers were significantly higher on the intuition dimension (and thus lower on the sensing dimension) than controls. However, the most interesting finding regarding this personality dimension was the indication that this personality dimension interacts with both fantasy proneness and paranormal beliefs in differentiating controls from UFO experiencers.

The finding that certain personality dimensions (as measured by the Myers-Briggs Type Indicator, Myers, 1962) were related to UFO experience was in direct contrast to Butler (1993) who claimed that this population was characterised by no personality style. However, Butler's claims were apparently merely observational in nature. These findings suggest that personality dimensions are worthy of study in the development of a UFO experiencer profile.

#### Profile of a UFO Experiencer

This study has added further to the understanding of a possible profile of a UFO experiencer. It seems that, in addition to high paranormal beliefs and fantasy proneness, these experiencers are higher on personality dimensions related to the intuition and feeling dimensions of the Myers Briggs Type Indicator (Myers, 1962). Further research could perhaps incorporate additional psychological variables to enable the formulation of a more complete profile of UFO experiencers. However, caution is advocated when researching psychological characteristics of UFO experiencers. There is a hint of an underlying response bias in this data obtained from UFO experiencers (abductees in particular), showing a tendency to score highly on most variables they are measured on. Future research could perhaps take this into account by means of a measure of response bias, thus monitoring this effect.

#### Conclusion and Methodological Issues

There were two methodological issues in this study which may have detrimentally affected the reliability of some of the findings. Firstly, the definitions of UFO contact and abduction could have been (and were, by a few subjects) interpreted as referring to near death experiences or communication with the dead. Thus some subjects who were classified as having had UFO sighting or contact experience may have, in fact, been misclassified as UFO experiencers. A tighter definition of contact and abduction may yield more accurate findings.

The second methodological shortcoming is in relation to sample size. The UFO experience sample in this study was fairly small. The subjects in the sample may not have been representative of UFO experiencers in the population. A larger sample size would allow more confident inferences regarding the hypotheses of this study.

Overall however, this study found support for Spanos et al.'s (1993) suggestion that the relationship between fantasy proneness and UFO experience is mediated by paranormal beliefs. The discovery of the interactions between personality characteristics, fantasy proneness and paranormal beliefs, in differentiating UFO experiencers from controls, may provide some basis for future research explorations into a possible UFO experiencer profile.

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