

# Bial

## THE RELATIONSHIP BETWEEN BELIEF IN EXTRA-TERRESTRIAL LIFE, UFO-RELATED BELIEFS AND PARANORMAL BELIEF

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### ABSTRACT

The relationship between belief in extra-terrestrial life, UFO-related beliefs and paranormal belief was investigated. Data were collected via paper and pencil and online versions of the measures. Both data collection methods produced similar results and revealed that UFO-related beliefs were more highly correlated with paranormal beliefs than belief in extra-terrestrial life. Partial correlation controlling for the overlap between belief in extra-terrestrial life and UFO-related beliefs found moderate positive correlations between UFO-related beliefs and paranormal beliefs, and weak negative correlations between belief in extra-terrestrial life and paranormal beliefs. These findings clearly indicated that only the more extreme UFO-related beliefs were associated with paranormal belief.

### INTRODUCTION

A number of observers have noted that belief in the paranormal is widespread (Blackmore, 1997; Clarke, 1991; Gallup & Newport, 1991) and enduring, persisting despite major scientific advancements (Lawrence, 1995), and this has stimulated great interest in the causes and consequences of paranormal belief (Irwin, 1993; Lawrence, 1995). The majority of research in this area has assessed paranormal belief via self-report measures, with the two most widely used scales being the Revised Paranormal Belief Scale (RPBS; Tobacyk, 1988; Tobacyk & Milford, 1983) and the Australian Sheep-Goat Scale (ASGS; Thalbourne & Delin, 1993). Despite the RPBS and ASGS achieving common acceptance with mainstream psychologists and researchers of the paranormal, concerns about their content remain (Lawrence, 1995). Particularly, questions arise as to what constitutes paranormality, and which facets of paranormal belief should be included within such measures.

The RPBS (originally the Paranormal Belief Scale, PBS; Tobacyk & Milford, 1983) was constructed to measure both paranormal and religious belief and includes a range of ostensibly paranormal phenomena: Traditional Religious Belief, Psi, Witchcraft, Superstition, Spiritualism, Extraordinary Life Forms and Precognition (Tobacyk, 2004). In comparison, the ASGS assesses a restricted range of beliefs considered to be the core components of parapsychology: ESP (extrasensory perception), PK (psychokinesis) and life after death (Lange & Thalbourne, 2002). Further to this point, Lange and Thalbourne (2002) proposed a revision of the ASGS, which involved the removal of the two items assessing belief in life after death (Wiseman & Watt, 2006).

Paradoxically, the breadth of the RPBS is considered to be both a strength and a weakness: although the RPBS has been commended for depicting paranormal belief as a multidimensional construct, it has also been criticised for adopting an imprecise definition of paranormality (Lawrence, 1995a). Tobayck

(1988) based the RPBS on Broad (1978) definition of paranormality, which delineates paranormal phenomena as those that, if genuine, would violate the basic limiting principles of science. This definition is problematic because "Broad has failed to explain what, in general, a phenomenon must conflict with in order to conflict with a basic limiting principle" (Braude, 1970, p.251). In addition to this, Lawrence (1995) questions the appropriateness of Broad's definition in the context of the Extraordinary Life Form subscale, because the existence of other life forms (i.e. abominable snowman of Tibet, the Loch Ness Monster and life on other planets) is improbable rather than impossible. This fact is acknowledged by Tobacyk (1988), who accepted that the Extraordinary Life Forms factor did not strictly conform to Broad's definition.

A more specific problem with the Extraordinary Life Forms factor is the phrasing of the third item referring to other life, "There is life on other planets". As Lawrence (1995) points out, this item is difficult to refute. The question of interest should not be whether life exists on other planets but whether believers in the paranormal endorse the belief that life from other planets is visiting the Earth. In this context it is clear that the RPBS item conflates two related but different belief sets; extra-terrestrial life and UFO-related beliefs.

With these problems in mind, Lawrence (1995) suggested a more precise definition of paranormality that focused upon hypothesized processes that are in principle physically impossible or outside the realm of human capabilities, as presently conceived by conventional scientists (Irwin, 1993). Lawrence's (1995) definition accounts for belief in Witchcraft, Psi Precognition and Spiritualism, since Psi Precognition and Spiritualism represent unexplained principles of nature and Witchcraft magical energies. Whilst this is a credible attempt to redefine paranormality, its implementation would lead to the exclusion of extra-terrestrial life and UFO-related beliefs. This is unfortunate because these belief sets are commonly endorsed, relatively under-investigated and potentially of great theoretical importance.

Support for the belief that extra-terrestrial life exists has been noted within the general population (Clarke, 1991; Zullino, Verdu, Khazzaal & Borgeat, 2006). Further to this, many individuals claim to have had UFO- and alien-related experiences (cf. French, 2001; French, Santomauro, Hamilton, Fox & Thalbourne, 2008). For example, French et al. (2008) estimate that worldwide the number of people claiming to have conscious memories of alien abduction is likely to run into several thousand at least. Despite collectively receiving relatively high levels of endorsement, extra-terrestrial and UFO-related beliefs have remained principally beyond the focus of established paranormal belief measures. As a consequence, the relationship between UFO-related and paranormal beliefs has been somewhat under-researched.

This is surprising, because UFO-related and paranormal beliefs share many important features. These can best be illustrated by considering contemporary definitions of what constitutes paranormal activity. Irwin (1999) defines anomalous experiences as involving processes that are in principle outside the realm of human capabilities as presently conceived by orthodox scientists. Goode (2002) expands on this, delineating paranormalism as belief in any power or force which the overwhelming majority of scientists argue violates a basic scientific rule, principle, or law. With reference to these definitions, UFO-

related beliefs run contrary to prevailing scientific wisdom (Chequers, Joseph & Diduca, 1997), with more extreme beliefs (such as abduction, examination and implantation) being based upon inadequate, dubious evidence. Indeed, the observation that UFO believers endorse the existence of extra-terrestrial beings without authentic physical evidence led Diaz-Vilela and Alvarez-Gonzalez (2004) to argue that such beliefs should be considered as paranormal.

As stated previously, the potential commonality between extra-terrestrial and paranormal beliefs is acknowledged within the RPBS (Lange, Irwin & Houran, 2000; Tobacyk, 1988; Tobacyk & Milford, 1983). The RPBS contains one item (20: "There is life on other planets") which makes reference to alien life. Whilst this item usefully recognises the link between extra-terrestrial and paranormal beliefs its value is questionable. The item is too general and lacks discriminatory power; it is impossible to disprove the assertion that life, in some form, exists on other planets. This may explain why Lawrence (1995) found that both believers and non-believers in the paranormal were equally likely to endorse the item.

In the context of the RPBS the relationship between extra-terrestrial and paranormal beliefs was further studied by Diaz-Vilela and Alvarez-Gonzalez (2004). They added two items to their Spanish adaptation of the RPBS; one item concerned extra-terrestrials visiting Earth and the second the existence of real UFOs. When Principal Components Analysis was employed this resulted in the emergence of an additional eighth factor, 'Extra-Terrestrial Life and Actual Visits'. This finding suggests that extra-terrestrial beliefs can be legitimately considered alongside more widely accepted paranormal beliefs (witchcraft, precognition, religion, etc.).

These attempts to measure extra-terrestrial beliefs have been limited by the paucity of items used and the failure to distinguish between credible (i.e. life on other planets) and less credible, implausible beliefs (e.g. alien abduction). This is an important dichotomy to consider, because alien-related beliefs are multifarious and informed by a multitude of sources: science (e.g. the possibility of life on other planets), mystery (e.g. Tunguska event, Oberg, 2004; Area 51, Sheaffer, 1996); pseudoscientific documentaries (Sheaffer, 2008); science fiction films (Sparks, Sparks & Gray, 1995); and possible hoaxes (e.g. alien autopsy film, Nickell, 1995). The consequence of this is that science fact and fiction can become blurred, giving rise to a range of beliefs, which vary in credibility and acceptability. For example, the notion that there is some form of life on other planets is more reasonable, rational and credible than the belief that aliens are currently abducting and experimenting upon individuals (Chequers et al., 1997). This point can be further illustrated by reference to Carl Sagan (renowned astronomer and astrochemist), who promoted the search for extra-terrestrial intelligence (SETI) but was highly sceptical of UFO and alien abduction claims (Chequers et al., 1997).

These examples demonstrate that extra-terrestrial beliefs are not all-inclusive and that the distinction between belief in extra-terrestrial life and UFO-related beliefs needs to be explored more fully, particularly when evaluating whether such beliefs are related to general paranormal belief. One notable previous attempt is that of Chequers et al. (1997), who considered the dichotomy between belief in extra-terrestrial life and UFO-related beliefs in

the context of schizotypy. They used ~~two~~ <sup>two</sup> items to measure belief in extra-terrestrial life (e.g. "Do you think there is good evidence that life exists on other planets?") and UFO-related beliefs (e.g. "Do you believe that you have been taken on board a spaceship?").

Consideration of Chequers et al.'s (1997) items revealed an interesting pattern of responses. Endorsement rates were lower for items related to UFO-related beliefs (1% agreed that they had been taken on board a spaceship; 32% agreed that the government refuses to tell the truth about flying saucers; 36% agreed that alien intelligence is probably responsible for UFOs; 40% agreed that beings on other planets may be influencing what happens on Earth) than items related to belief in extra-terrestrial life (85% agreed that there is good evidence that life exists on other planets; and 64% disagreed that Earth was the only planet to support life). Interestingly, despite these clear differences some overlap between UFO-related beliefs and extra-terrestrial was apparent (54% agreed that aliens are abducting human beings; and 96% of respondents disagreed that people who say they have been abducted by aliens are mentally ill). Chequers et al. (1997) noted the contradiction between claiming that aliens were abducting human beings and denying that alien intelligence is probably responsible for UFOs, suggesting that it may have arisen because of the use of fixed-choice questions; respondents when completing this item may be indicating the belief that not all UFOs were of alien origin.

Interestingly, only UFO-related beliefs were found to correlate positively with scores on the multidimensional schizotypal traits questionnaire (Rawlings & MacFarlane, 1994). Belief in extra-terrestrial life was not found to be associated with scores on the schizotypy measure. The authors suggest that these results may be explained by the fact that extra-terrestrial life beliefs are more plausible than UFO-related beliefs. Unfortunately, the conclusions of Chequers et al. (1997) are limited by their use of only two items to measure belief in extra-terrestrial life.

Chequers et al.'s (1997) distinction between belief in extra-terrestrial life and UFO-related beliefs is a useful theoretical dichotomy that requires further elucidation. Consequently, the aim of the work described in the current paper was to examine the relationship between belief in extra-terrestrial life, UFO-related beliefs and paranormal belief (RPBS and ASGS). In order to control for overlap in content between the extraterrestrial items and the RPBS, the extraordinary life form items were omitted from the latter. Comparisons were restricted to six of the seven original RPBS subscales; Traditional Religious Belief, Psi, Witchcraft, Superstition, Spiritualism and Precognition, and the two factors identified by Lange et al. (2000), *Traditional Paranormal Belief* (TBR) and *New Age Philosophy* (NAP) (see also Houran, Irwin & Lange, 2001).

On the basis of the findings of Chequers et al. (1997), it was hypothesized that less plausible UFO-related beliefs would correlate more strongly with general paranormal belief than belief in extra-terrestrial life. Finally, because UFO-related beliefs presuppose the existence of extra-terrestrial life, it was predicted that the two measures would correlate positively.

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## Methods

### Respondents

A sample of 1481 respondents participated in the study (75.1% female, 24.2% male). Ages ranged from 14–70 years with a mean age of 27.44 ( $SD = 11.00$ ). 548 respondents<sup>1</sup> (37%) completed the questionnaire in a paper-pencil form and 933 (63%) completed it on-line. The ages for the paper-pencil group ranged from 14–60 years with a mean age of 22.73 ( $SD = 8.57$ ); 80% of this group were female and 20% male. The ages for the online group ranged from 18–70 years with a mean age of 30.20 ( $SD = 11.33$ ); 72% of this group were female and 28% male. Paper-pencil respondents were recruited via undergraduate psychology classes and through contacts at local colleges. Online respondents were generated through advertisement of the study (e-mails to staff and students at the university and posters placed around the university campus).

### Sampling Method

The current study made use of traditional pen and paper and electronic (online versions) of the measures. The use of internet-mediated research (IMR) has previously been criticised (Schmidt, 1997). Concerns have centred on sampling bias and the validity of data collected (Whitehead, 2007). However, IMR samples have been demonstrated to be as representative as those associated with more traditional research paradigms (Hewson, 2003; Wiseman & Watt, 2004).

IMR was used in the current study because it enabled us to test a large pool of respondents and it facilitated access to respondents who normally would not be able to participate in this type of research. Whitehead (2007) points out that IMR has the additional potential advantage of reducing social barriers (Walshis & Sword, 2005) and enhancing disclosure (Joinson, 2002; Weisband & Kiesler, 1996).

Anticipating potential criticisms and concerns about IMR, the data in this paper are presented as *pen and paper*, *IMR* (online) and *combined* (Wiseman & Watt, 2004).

### Materials

Participants were asked to complete two established measures of paranormal belief: the Revised Paranormal Belief Scale (RPBS; Tobacyk, 1988; Tobacyk & Milford, 1983; Lange et al., 2000) and the Australian Sheep-Goat Scale (ASGS; Thalbourne & Delin, 1993) together with a set of items measuring belief in extra-terrestrial life and UFO-related phenomena.

The RPBS is a 26-item self-report questionnaire. Participants are presented with statements such as "There is a devil" and "Witches do exist", and respond on a scale ranging from 1 (strongly disagree) to 5 (strongly agree). The scale produces a general measure of paranormal belief and subscale scores for Traditional Religious Belief, Psi, Witchcraft, Superstition, Spiritualism and Recognition. The extraordinary life form subscale was omitted because item 20 ("There is life on other planets") makes specific reference to extra-terrestrial

<sup>1</sup> 28 respondents failed to complete fully the paper version of the questionnaire.

life. Concerns about differential item functioning and top-down purification of the RPBS led Lange et al. (2000) to propose an alternative two-factor solution: Traditional Paranormal Belief (TPB) and New Age Philosophy (NAP) (Houran et al., 2001); this was also considered in the current study. Overall, the RPBS has demonstrated adequate validity (Tobacyk, 1995a, 1995b, 2004) and is considered to be a conceptually and psychometrically satisfactory measure of paranormal belief (Tobacyk, 2004).

The ASGS (Thalbourne & Delin, 1993) measures belief in, and alleged experience of, the paranormal. It consists of 18 items that relate to three core concepts of parapsychology: life after death, psychokinesis and extrasensory perception. The response options are: 'False' (scored as zero), '?' (Don't know: scored as 1 point) and 'True' (scored as 2 points). The ASGS has established reliability and validity (Thalbourne, 1995a; Thalbourne & Delin, 1993). The ASGS has also been subjected to Rasch scaling (Lange & Thalbourne, 2002).

Belief in extra-terrestrial life and UFO-related phenomena was assessed using a set of items developed by Dagnall, Munley, Parker and Drinkwater (2009). The items were based on Chequers et al. (1997), who produced eight items assessing beliefs that: life exists elsewhere in the universe, alien life forms are influencing what happens on Earth, and human beings are being abducted by aliens. The original Chequers et al. (1997) scale demonstrated acceptable internal reliability ( $\alpha = .75$ ). The measure was adapted because it contains only two items measuring extra-terrestrial life, and a specific item concerning being taken aboard a spaceship. Noting these problems Dagnall et al. (2009) generated a pool of additional items. These were produced by exploring reports of common alien-related experiences (e.g. Holden & French, 2002), and were subjected to Principal Component Analysis as part of a larger study exploring common factors in paranormal belief (Dagnall et al., 2009). Consistent with Chequers et al. (1997), two factors related to extra-terrestrial life (e.g. "There is life on other planets") and UFO-related beliefs (e.g. "People have been taken on board alien spaceships") emerged. Both factors were theoretically coherent and demonstrated excellent internal reliability (Dagnall et al., 2009). The factor assessing belief in the existence of life on other planets contained six items and the factor assessing belief in extra-terrestrial visitations to Earth eight items (see Appendix). In the current study items were presented as statements and responded to on a five-point scale ranging from 1 'strongly disagree' to 5 'strongly agree'.

### *Procedure*

All respondents were told that the questionnaire was concerned with belief in paranormal phenomena. Respondents were informed that there was no time limit for completing the questionnaire and were instructed to answer all items.

## RESULTS

### *Reliability*

Cronbach's alpha ( $\alpha$ ) for the overall data was found to be excellent (George & Mallery, 2003) (belief in extra-terrestrial life,  $\alpha = 0.91$ ; UFO-related beliefs scales,  $\alpha = 0.95$ ). Similar alpha values were found for both the paper form (belief in extra-terrestrial life,  $\alpha = 0.90$ ; UFO-related beliefs scales,  $\alpha = 0.93$ )

and electronic version (belief in <sup>Bial</sup>extra-terrestrial life,  $\alpha = 0.92$ ; UFO-related beliefs scales,  $\alpha = 0.95$ ) of the extra-terrestrial/UFO-related measures (see Table 1 for descriptive data; Table 2 contains item endorsement rate and corrected item-total correlations).

Table 1  
*Belief in Extra-Terrestrial Life and UFO-Related Beliefs Descriptives*

	Mean	SD
<i>Paper (n = 538)</i>		
Extra-Terrestrial Life	3.51	0.82
UFO-Related Beliefs	2.27	0.81
<i>Online (n = 933)</i>		
Extra-Terrestrial Life	3.65	0.79
UFO-Related Beliefs	2.19	0.84
<i>Overall (n = 1471)</i>		
Extra-Terrestrial Life	3.60	0.81
UFO-Related Beliefs	2.22	0.83

Table 2  
*Item Endorsement and Corrected Item-Total Correlations (IC) as a Function of Subscale and Questionnaire*

	Item Endorsement								
	Overall			Online			Paper		
	M	SD	IC	M	SD	IC	M	SD	IC
<i>Belief in ET Life</i>									
Item 1	3.83	0.91	0.79	3.88	0.87	0.80	3.74	0.97	0.78
Item 2	3.66	0.99	0.78	3.72	0.96	0.79	3.57	1.02	0.77
Item 3	3.51	0.97	0.79	3.56	0.95	0.81	3.43	1.01	0.76
Item 4	3.52	0.97	0.76	3.54	0.95	0.78	3.48	1.00	0.73
Item 5	3.43	1.00	0.71	3.50	0.97	0.72	3.32	1.03	0.68
Item 6	3.64	0.97	0.69	3.69	0.97	0.68	3.55	0.98	0.69
<i>UFO-Related Beliefs</i>									
Item 1	1.99	0.90	0.82	1.99	0.91	0.86	1.98	0.89	0.76
Item 2	1.87	0.89	0.78	1.88	0.90	0.81	1.87	0.89	0.73
Item 3	1.90	0.88	0.79	1.87	0.86	0.81	1.96	0.90	0.75
Item 4	2.07	0.99	0.82	2.04	0.97	0.85	2.12	1.02	0.77
Item 5	2.27	0.99	0.83	2.26	0.96	0.85	2.29	1.03	0.80
Item 6	2.40	1.02	0.80	2.32	1.00	0.82	2.52	1.03	0.77
Item 7	2.56	1.05	0.83	2.52	1.04	0.84	2.62	1.05	0.81
Item 8	2.69	1.07	0.77	2.64	1.07	0.80	2.77	1.07	0.71

A series of related t-tests were ~~performed~~ <sup>conducted</sup> to establish whether endorsement of belief in extra-terrestrial life was higher than that for UFO-related beliefs. On the paper version respondents scored higher on belief in extra-terrestrial life ( $M = 3.51$ ) than UFO-related beliefs ( $M = 2.27$ ),  $t(537) = 35.79$ ,  $p < 0.001$ , Cohen's  $d = 1.52$ . Similarly, on the online version respondents scored higher on belief in extra-terrestrial life ( $M = 3.65$ ) than UFO-related beliefs ( $M = 2.19$ ),  $t(932) = 52.17$ ,  $p < 0.001$ , Cohen's  $d = 1.78$ . Overall, belief in extra-terrestrial life ( $M = 3.60$ ) was more highly endorsed than UFO-related beliefs ( $M = 2.22$ ),  $t(1470) = 62.80$ ,  $p < 0.001$ , Cohen's  $d = 1.68$ .

Correlations were calculated between belief in extra-terrestrial life and UFO-related beliefs and each of the paranormal measures: the RPBS (all six subscales, excluding the extraordinary life forms subscale), the two clusters of the RPBS identified using Rasch scaling procedures (New Age Philosophy, NAP; and Traditional Paranormal Belief, TPB) and the ASGS (separate tables are presented for the paper version, see Table 3; the online version, see Table 4; and the versions combined, see Table 5).

Table 3

*Paper Version: Correlations between Belief in Extra-Terrestrial Life, UFO-Related Beliefs and Paranormal Belief (R-PBS and AGS)*

		Extra- Terrestrial Life	UFOs	Z	Sig.
1.	TBR	-0.05	0.12**	-2.79	$\leq 0.001$
2.	Psi	0.24**	0.53**	-5.65	$\leq 0.001$
3.	Witchcraft	0.18**	0.39**	-3.76	$\leq 0.001$
4.	Superstition	-0.06	0.20**	-4.30	$\leq 0.001$
5.	Spiritualism	0.21**	0.46**	-4.65	$\leq 0.001$
6.	Precognition	0.13**	0.41**	-4.99	$\leq 0.001$
7.	NAP	0.22**	0.53**	-5.99	$\leq 0.001$
8.	TPB	0.09*	0.35**	-4.50	$\leq 0.001$
9.	ASGS	0.22**	0.49*	-5.03	$\leq 0.001$
10.	Extra-Terrestrial Life		0.51**		
11.	UFO	0.51**			

\*\*  $p \leq 0.01$  \*  $p \leq 0.05$

It is clear from the observed correlations that the pattern of results was consistent across the paper and online versions of the questionnaire. Stronger positive correlations were observed between the UFO-related beliefs and measures of paranormal belief than between belief in extra-terrestrial life and paranormal belief. For this reason subsequent analysis was restricted to the overall respondent scores.

The overall correlations between belief in extra-terrestrial life and UFO-related beliefs and paranormal belief were examined using first-order partial correlation. Interestingly, the relationship between belief in extra-terrestrial

and paranormal belief, controlling for UFO-related beliefs, revealed a series of weak negative correlations, reinforcing the earlier findings that belief in extra-terrestrial life is not associated with general paranormal belief. The relationship between UFO-related beliefs controlling for belief in extra-terrestrial life, revealed a series of moderate positive correlations (see Table 6).

Table 4

Online Version: *Correlations Between Belief in Extra-Terrestrial Life, UFO-Related Beliefs and Paranormal Belief (R-PBS and AGS)*

		Extra-Terrestrial Life	UFOs	Z	Sig.
1	TBR	-0.01	0.31**	-7.13	≤ 0.001
2	Psi	0.20**	0.57**	-9.65	≤ 0.001
3	Witchcraft	0.16**	0.47**	-7.52	≤ 0.001
4	Superstition	-0.03	0.29**	-7.09	≤ 0.001
5	Spiritualism	0.22**	0.57**	-9.14	≤ 0.001
6	Precognition	0.15**	0.54**	-9.77	≤ 0.001
7	NAP	0.22**	0.62**	-10.81	≤ 0.001
8	TPB	0.08*	0.48**	-9.55	≤ 0.001
9	ASGS	0.21**	0.58**	-9.69	≤ 0.001
10	Extra-Terrestrial Life		0.46**		
11	UFO	0.46**			

\*\*  $p \leq 0.01$  \*  $p \leq 0.05$

Table 5

Online Version: *Correlations between Belief in Extra-Terrestrial Life, UFO-Related Beliefs and Paranormal Belief (R-PBS and AGS)*

		Extra-Terrestrial Life	UFOs	Z	Sig.
12	TBR	-0.03	0.25**	-7.76	≤ 0.001
13	Psi	0.21**	0.55**	-10.98	≤ 0.001
14	Witchcraft	0.16**	0.44**	-8.43	≤ 0.001
15	Superstition	-0.06*	0.26**	-8.85	≤ 0.001
16	Spiritualism	0.21**	0.53**	-10.30	≤ 0.001
17	Precognition	0.13**	0.50**	-11.35	≤ 0.001
18	NAP	0.21**	0.59**	-12.58	≤ 0.001
19	TPB	0.07**	0.44**	-10.89	≤ 0.001
20	ASGS	0.20**	0.55**	-11.21	≤ 0.001
21	Extra-Terrestrial Life		0.47**		
22	UFO	0.47**			

\*\*  $p \leq 0.01$  \*  $p \leq 0.05$

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Table 6

*Partial Correlations between Belief in Extra-Terrestrial Life and UFO-Related Beliefs and the Subscales of the Revised Paranormal Belief Scale (R-PBS)*

		Extra-Terrestrial Life	UFOs
1.	TBR	-0.18**	0.30**
2.	Psi	-0.07**	0.53**
3.	Witchcraft	-0.06**	0.42**
4.	Superstition	-0.21**	0.33**
5.	Spiritualism	-0.05*	0.50**
6.	Precognition	-0.13**	0.50**
7.	NAP	-0.09**	0.57**
8.	TPB	-0.17**	0.46**
9.	R-PBS <sup>2</sup>	-0.17**	0.56**
10.	ASGS	-0.08*	0.53**

\*\*  $p \leq 0.01$  \*  $p \leq 0.05$

## DISCUSSION

The current study found that UFO-related beliefs were more strongly correlated with paranormal belief(s) than belief in extra-terrestrial life. As predicted, UFO-related beliefs were found to be moderately correlated with belief in extra-terrestrial life; this relationship was expected because belief in extra-terrestrial life is a necessary condition of UFO-related beliefs. Controlling for the overlap between the two measures produced interesting results. When the influence of UFO-related beliefs was controlled, belief in extra-terrestrial life correlated negatively (weakly) with paranormal belief measures. On the other hand, controlling for belief in extra-terrestrial life had only a negligible effect on the observed positive correlations between UFO-related beliefs and measures of paranormal belief.

This difference may be explained by the contrasting content of the two belief types. UFO-related beliefs (e.g. abduction, experimentation, implantation) are generally less plausible and are endorsed without widely accepted physical evidence (Diaz-Vilela & Alvarez-Gonzalez, 2004). Conversely, beliefs about the existence of extra-terrestrial life are generally informed by the current limits of scientific knowledge, and consequently tend to be more rational. For this reason, beliefs about extra-terrestrial life are difficult to refute (e.g. life on other planets). Indeed, Lawrence (1995) observed that the RPBS item measuring belief in extra-terrestrial life (item 20: "There is life on other planets") was endorsed by both paranormal believers and non-believers.

Similarly, in the current study belief in extra-terrestrial life received higher endorsement ratings than UFO-related beliefs. Respondents were much more willing to accept the existence of extra-terrestrial life (ratings were skewed

<sup>2</sup> The summated R-PBS figure does not include the extraordinary life form subscale, which was omitted from the analysis.

from the scale mid-point towards ~~disagree~~ than UFO-related beliefs (ratings were skewed from the scale mid-point towards disagree). Consistent with Lawrence (1995), the findings of the current study suggest that questions exploring belief in extra-terrestrial life are unlikely to discriminate between paranormal believers and non-believers. The critical distinction appears to be between the acceptance of possible other life (in any form) and beliefs which centre on the notion of alien activity (e.g. whether people believe extra-terrestrial life to be sentient, visiting the planet in space craft and experimenting on humans). It is only the latter more radical UFO-related beliefs that appear to be associated with general paranormal belief. Consistent with these findings, Chequers et al. (1997) observed that whilst UFO-related beliefs correlated positively with scores on the multidimensional schizotypal traits questionnaire (Rawlings & MacFarlane, 1994) belief in extra-terrestrial life did not.

This raises the question of whether the results of Chequers et al. (1997) and the current study can be explained by the same underlying processes. One potential explanatory process is *reality testing* (Irwin, 2004). Irwin defines reality testing as the inclination to test critically the logical plausibility of beliefs. Langdon and Coltheart (2000) argue that pathological beliefs or delusions arise in part from the failure to subject hypothetical explanations of sensory experience to critical testing (Irwin, 2004). This notion has been used to explain paranormal belief: those who accept paranormal explanations as valid may do so because such explanations or beliefs are not subjected to rigorous and critical evaluation (Goode, 2000; Irwin, 2004; Zusne & Jones, 1982). Thus, it may be that the information-processing style of believers in the paranormal predisposes them to accept less credible UFO-related beliefs as plausible. The tendency to form conclusions on the basis of limited information and the failure to assess hypotheses critically are features likely to foster the development and adherence of extreme UFO-related beliefs (abduction, visitation, experimentation, etc.).

Future research could test the relationship between UFO-related beliefs, paranormal belief and reality testing more fully. Clearly, it would be predicted that participants who are poor at reality testing would be more likely to adopt and maintain paranormal and UFO-related beliefs.

Subsequent studies could also examine whether UFO-related beliefs are associated with delusion-proneness. This could be done using the Peters et al. Delusions Inventory (PDI; Peters, Day & Garety, 1996). Delusional beliefs are based on incorrect inferences about external reality (American Psychiatric Association, 1995, p.783; McKay, Langdon & Coltheart, 2006). This would allow consequent research to explore whether UFO-related beliefs are associated with reasoning biases, such as jumping-to-conclusions (Garety & Freeman, 1999). Jumping-to-conclusions bias involves forming unwarranted conclusions on the basis of scant evidence and plays a role in the formation and maintenance of delusional beliefs (Garety, 1991).

Colbert and Peters (2002) have suggested that this bias arises from the desire for a definite answer or conclusion, described as the need for closure. Although the empirical relationship between the jumping-to-conclusions bias and need for closure has yet to be established, these reasoning styles could be considered in the context of UFO-related beliefs. These biases may provide

potential explanations as to why UFO-related beliefs are widely endorsed. Indeed, both biases have been found to be present in high PDI, as compared with low PDI, individuals drawn from the general population (Colbert & Peters, 2002; McKay et al., 2006).

Overall, this study suggests that UFO-related beliefs could legitimately be included in measures of paranormal belief, whilst beliefs about extra-terrestrial life should be excluded because they are likely to be endorsed by both believers and non-believers in the paranormal (Lawrence, 1995).

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#### REFERENCES

- American Psychiatric Association (1995) *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, International Version (DSM-IV)*. Washington: APA.
- Blackmore, S. J. (1997) Probability misjudgement and belief in the paranormal: a newspaper survey. *British Journal of Psychology* 88, 683–689.
- Braude, S. E. (1979) *ESP and Psychokinesis: A Philosophical Examination*. Philadelphia: Temple University Press.
- Broad, C. D. (1978) The relevance of psychical research to philosophy. In Ludwig, J. (ed.) *Philosophy and Parapsychology*, 43–64. Buffalo: Prometheus. [Original work published in 1949]
- Chequers, J., Joseph, S. and Diduca, D. (1997) Belief in Extra-terrestrial life, UFO-related beliefs, and schizotypal personality. *Personality and Individual Differences* 23, 519–521.
- Clarke, D. (1991) Belief in the Paranormal: a New Zealand Survey. *JSPR* 57, 412–425.
- Colbert, S. M. and Peters, E. R. (2002) Need for closure and jumping-to-conclusions in delusion-prone individuals. *Journal of Nervous and Mental Disease* 190, 27–31.
- Dagnall, N., Munley, G., Parker, A. and Drinkwater, K. (2009) Common Paranormal Belief Dimensions. Manuscript submitted for publication.
- Diaz-Vilela, L. and Alvarez-Gonzalez, C. (2004) Differences in paranormal beliefs across fields of study from a Spanish adaptation of Tobacyk's RPBS. *JP* 68, 405–421.
- French, C. C. (2001) Alien abductions. In Roberts, R. and Groome, D. (eds.) *Parapsychology: The Science of Unusual Experience*, 102–116. London: Arnold.
- French, C. C., Santomauro, J., Hamilton, V., Fox, R. and Thalbourne, M. A. (2008) Psychological aspects of the alien contact experience. *Cortex* 44, 1387–1395.
- Gallup, G. H. and Newport, F. (1991) Belief in paranormal phenomena among adult Americans. *Skeptical Inquirer* 15, 137–146.
- Garety, P. A. (1991) Reasoning and delusions. *British Journal of Psychiatry* 159, 15–19.
- Garety, P. A. and Freeman, D. (1999) Cognitive approaches to delusions: a critical review of theories and evidence. *British Journal of Clinical Psychology* 38, 113–154.
- George, D. and Mallery, P. (2003) *SPSS for Windows Step by Step: A Simple Guide and Reference. 11.0 Update*. Allyn & Bacon, Boston, MA.

- Goode, E. (2002) Education, scientific literacy and belief in the paranormal. *Skeptical Inquirer* 26 (1), 24.
- Hewson, C. (2003) Conducting research on the internet. *The Psychologist* 16, 290-293.
- Holden, K. J. and French, C. C. (2002) Alien abduction experiences: some clues from neuropsychology and neuropsychiatry. *Cognitive Neuropsychiatry* 7, 163-178.
- Houran, J., Irwin, H. J. and Lange, R. (2001) Clinical relevance of the two-factor Rasch version of the Revised Paranormal Belief Scale. *Personality and Individual Differences* 31, 371-382.
- Irwin, H. J. (1993) Belief in the paranormal: a review of the empirical literature. *JASPR* 37, 1-39.
- Irwin, H. J. (1999) *An Introduction to Parapsychology (3rd edition)*. Jefferson, North Carolina: McFarland & Co.
- Irwin, H. J. (2004) Reality testing and the formation of paranormal beliefs: a constructive replication. *JSPR* 68, 143-152.
- Johnson, A. (2002) *Understanding the Psychology of Internet Behaviour: Virtual Worlds, Real Lives*. Basingstoke: Palgrave Macmillan.
- Langdon, R. and Coltheart, M. (2000) The cognitive neuropsychology of delusions. *Mind Language* 15, 183-216.
- Lange, R., Irwin, H. J. and Houran, J. (2000) Top-down purification of Tobacyk's Revised Paranormal Belief Scale. *Personality and Individual Differences* 29, 131-156.
- Lange, R. and Thalbourne, M. A. (2002) Rasch scaling paranormal belief and experience: structure and semantics of Thalbourne's Australian Sheep-Goat Scale. *Psychological Reports* 91, 1065-1073.
- Lawrence, T. R. (1995) How many factors of paranormal belief are there? A critique of the Paranormal Belief Scale. *JP* 58, 3-25.
- McKay, R., Langdon, R. and Coltheart, M. (2006) Need for closure, jumping to conclusions, and decisiveness in delusion-prone individuals. *Journal of Nervous and Mental Disease* 194, 422-426.
- Nickell, J. (1995) 'Alien Autopsy' hoax. *Skeptical Inquirer* 19 (6), 17.
- Oberg, J. (2004) Russian reports add new twist to old Tunguska UFO myth. *Skeptical Inquirer* 28 (6), 5.
- Peters, E. R., Day, S. and Garety, P. A. (1996) The Peters et al. Delusions Inventory (PDI): new norms for the 21-item version. *Schizophrenia Research* 18, 118.
- Rawlings, D. and MacFarlane, E. (1994) A multidimensional schizotypal traits questionnaire for young adolescents. *Personality and Individual Differences* 17, 489-496.
- Sheaffer, R. (1996) Travels on the extra-terrestrial highway. *Skeptical Inquirer* 20 (5), 17.
- Sheaffer, R. (2008) Alien ghosts at Roswell. (Psychic vibrations) (Roswell: The Nazi connection) (Shoot them down: The flying saucer air wars of 1952). *Skeptical Inquirer* 32 (2), 26.
- Schmidt, W. C. (1997) World Wide Web survey research: benefits, potential problems and solutions. *Behavior Research Methods, Instruments and Computers* 29, 270-273.
- Sparks, G. S., Sparks, C. W. and Gray, K. (1995) Media impact on fright reactions and belief in UFOs: the potential role of mental imagery. *Communication Research* 22, 3-23.
- Thalbourne, M. A. (1995) Further studies of the measurement and correlates of belief in the paranormal. *JASPR* 89, 233-247.
- Thalbourne, M. A. and Delin, P. S. (1993) A new instrument for measuring the sheep-goat variable: its psychometric properties and factor structure. *JSPR* 59, 172-186.
- Tobacyk, J. (1988) *A Revised Paranormal Belief Scale*. Unpublished manuscript, Ruston, LA: Louisiana Tech University.
- Tobacyk, J. (1995a) What is the correct dimensionality of paranormal beliefs? A reply to Lawrence's critique of the Paranormal Belief Scale. *JP* 59, 27-46.

- Tobacyk, J. (1995b) Final thoughts on ~~issues~~ **Bial** in the measurement of paranormal beliefs. *JP* 59, 141-145.
- Tobacyk, J. (2004) A revised paranormal belief scale. *International Journal of Transpersonal Studies* 23, 94-98.
- Tobacyk, J. and Milford, G. (1983) Belief in paranormal phenomena: assessment instrument development and implications for personality functioning. *Journal of Personality and Social Psychology* 44, 1029-1037.
- Valaitis, R. K. and Sword, W. A. (2005) Online discussions with pregnant and parenting adolescents: perspectives and possibilities. *Health Promotion Practice* 6, 464-471.
- Weisband, S. and Kiesler, S. (1996) Self disclosure on computer forms: meta-analysis and implications. *Paper presented at the Conference on Human Factors in Computing Systems (CHI96), Vancouver, BC.*
- Whitehead, L. C. (2007) Methodological and ethical issues in internet-mediated research in the field of health: an integrated review of the literature. *Social Science & Medicine* 65, 782-791.
- Wiseman, R. and Watt, C. (2004) Measuring superstitious belief: why lucky charms matter. *Personality and Individual Differences* 37, 1533-1541.
- Wiseman, R. and Watt, C. (2006) Belief in psychic ability and the misattribution hypothesis: a qualitative review. *British Journal of Psychology* 97, 323-338.
- Zullino, D. F., Verdu, B., Khazaal, Y. and Borgeat, F. (2006) Delusional ideas of alien control induced by the visit of an attraction park. *German Journal of Psychiatry* 9, 57-59.
- Zusne, L. and Jones, W. H. (1982) *Anomalistic Psychology: A Study of Extraordinary Phenomena of Behavior and Experience*. Hillsdale, NJ: Lawrence Erlbaum.

## APPENDIX

### Items Assessing Belief in Extra-Terrestrial life and UFO-related Beliefs

#### Belief in Extra-Terrestrial Life

- Somewhere in the universe there are other forms of life
- The earth is the only planet in the universe that supports life
- The only intelligent life exists on earth
- There is life on other planets
- Intelligent life exists beyond our universe
- There is no such thing as extra-terrestrial life

#### UFO-Related Beliefs

- Aliens are abducting human beings
- People have been taken on board alien spaceships
- Alien spaceships regularly visit earth
- Alien spaceships have crash landed on earth
- Aliens have implanted objects into people
- Alien intelligence is responsible for some UFO sightings
- Extra-terrestrials have visited earth throughout history
- Unidentified Flying Objects (UFOs) suggest that some kind of extra-terrestrial life form has approached the surface of the Earth