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PARANORMAL BELIEF AND PERCEIVED CONTROL OVER LIFE EVENTS

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ABSTRACT

The psychodynamic functions hypothesis has been proposed as a means to explain the high levels of paranormal belief among the population. According to this view, the world appears to some to be unpredictable, uncontrollable and inherently meaningless, which gives rise to anxiety. Paranormal beliefs may develop to allay this anxiety by offering the promise of order and personal power. Although there is some evidence to support the putative association between the three variables of perceived helplessness, anxiety and paranormal belief, these have not previously been considered together in the same population. Sixty-five participants completed a battery of measures including the State-Trait Anxiety Index (Spielberger, 1983), the revised Paranormal Belief Scale (Tobacyk, 2004) as well as newly constructed Estimated Likelihood of Stressful Events and Perceived Control over Stressful Events scales. No relationship was found between perceived control over future life events and paranormal belief, but measures of state and trait anxiety correlated significantly with both perceived control and paranormal belief. Results of a path analysis suggested a model that was broadly in agreement with the psychodynamic functions hypothesis in describing a mediating role for anxiety.

Introduction

The term paranormal has been used to describe phenomena or occurrences that are physically impossible or beyond human capabilities and scientific explanation (Thalbourne, 1982). Although mainstream scientists remain highly sceptical of claims for paranormal phenomena (e.g., Shermer, 2007; Wolpert, 2006), levels of belief among the general population are typically high (e.g., Castro, Burrows & Wooffitt, 2014). One explanation that has been put forward to explain this discrepancy is that paranormal beliefs are primarily need-serving (e.g., Krippner & Winkler, 1997; Roe & Morgan, 2002; Schumaker, 1990). According to this view — termed the psychodynamic functions hypothesis by Irwin (2009) — life is seen by some as chaotic and unpredictable, and this provokes anxiety; paranormal beliefs arise as an attempt to allay this anxiety by giving the semblance of order or meaning and offering the illusion of control over potential (particularly negative) future events (Irwin, 1993, 2003, 2009).

In support of the psychodynamic functions hypothesis, McGarry and Newberry (1981) found that students who endorsed paranormal beliefs tended to perceive the world as more unpredictable, difficult or problem-

laden and unjust. They speculated that the development of occult interests may be related to the promise within such belief systems of mysterious 'magical' powers to overcome or reduce one's problems. In this vein, Keinan (1994) reported that residents living in areas under threat of military action during the Gulf War scored higher on measures of magical thinking than those in areas not under threat. Several researchers have manipulated the uncertainty inherent in a task set for participants, and have found that paranormal beliefs and superstitious behaviours are greater where the task is uncontrollable or the outcome uncertain (Matute, 1994, 1995; Padgett & Jorgenson, 1982). Dudley (1999) found that levels of superstitious belief, as measured by the Paranormal Belief Scale (PBS), increased following work on an unsolvable puzzle, but decreased after a solvable puzzle. Similarly, Greenaway, Louis and Hornsey (2013) reported that participants asked to recall a time when they felt in control scored lower on a 4-item measure of 'precognition' (which included two items on astrology) than participants asked to recall a time when they did not feel in control. Paranormal believers have also been found to be more likely to create an illusion of control when accounting for their performance at a chance-based task (Blackmore & Troscianko, 1985).

Away from the artificiality of laboratory manipulations, Rudski (2004) found among survey respondents that paranormal belief was correlated with the illusion of control (measured rather crudely from answers to questions about lucky lottery numbers). More generally, there has been a tendency for high scores on belief in the paranormal to be associated with the external pole on measures of locus of control (e.g., Allen & Lester, 1994; Dag, 1999; Groth-Marnat & Pegden, 1998; Irwin, 1986; but see also Billows & Storm, 2015; Irwin, 2000), which could be taken as a measure of perceived lack of personal efficacy.[1] However, the items that make up standard locus of control scales (such as Rotter, 1966) are still some way removed from the sense of lack of control over prospective personal events — particularly misfortunes — in response to which paranormal beliefs were originally hypothesised to arise. More direct measures are needed before support for the model can be claimed.

The psychodynamic functions hypothesis proposes that the association between the perception of future events as uncontrollable and the development of paranormal beliefs is mediated by anxiety. Indeed, there is some support for the notion that an illusion of control or order in an uncertain situation can alleviate anxiety. For example, Sanderson, Rapee and Barlow (1989) found that participants who were given the false impression that they had control over an aversive stimulus were less likely than controls to experience panic attack symptoms. Taylor and Brown (1988) provide a review of literature suggesting that such illusions may be beneficial in terms of mental health and well being. There is also some evidence of a link between anxiety and levels of paranormal belief. Blum and Blum (1974) claimed that superstitious

[1] It should be noted, however, that McGarry and Newberry (1981) found that the effect was reversed for those participants who reported an active involvement with the paranormal (though this included merely reading relevant books). This might be interpreted as an indicator of the effectiveness of such involvement in overcoming perceived helplessness.

beliefs may reduce anxiety for the individual. Singer and Benassi (1981) also reported that the harbouring of occult and superstitious beliefs might alleviate anxiety. Although Schumaker (1987) claimed that participants who reported greater levels of belief in the paranormal scored lower on measures of psychopathology and psychological distress, Irwin (1991) has argued that the relationship has been misinterpreted and actually reflects *more* psychological distress among paranormal believers. A number of other studies have similarly reported a positive relationship between anxiety and paranormal beliefs (Okebukola, 1986; Wagner & Ratzeburg, 1987; Wolfradt, 1997; Wong, 2012), although the effect sizes are relatively modest (e.g., for Wolfradt, 1997, all correlations are 0.3 or lower) and have not always been detected (e.g., Tobacyk, 1982; see also Irwin, 2009, pp. 93–4).

We have seen, then, that there is encouraging evidence for each of the bivariate relationships outlined in the psychodynamic functions hypothesis. To date, however, the relationship between all three variables has not been considered in the same population. It was planned in this study to conduct a path analysis to see if some of the putative relationships are mediated by other variables as hypothesised. We also planned to replace more general measures of locus of control with a new measure of respondents' perceived likelihood of and control over potentially stressful future events, concentrating on occurrences that were more likely to have a significant impact upon them personally, should they occur. We predicted that respondents who reported less perceived control over future events would present as more anxious. We also predicted that those who were more anxious would tend to score higher on measures of belief in paranormal phenomena. Finally, we expected as a consequence of the above relationships to find that respondents who reported less perceived control over future events would tend to be more believing in paranormal phenomena. More speculatively, it was predicted that respondents who reported less perceived control over future events would expect negative events to be more likely to occur and positive events to be less likely.

Method

Participants

An opportunity sample of 65 undergraduates at the University of Northampton volunteered to participate. The sample consisted of 11 males and 54 females, ranging in age from 18 to 46 years (median = 20, mean = 21.8).

Materials

The survey inventory consisted of five questionnaires. The first asked for basic demographic information, such as age, sex and ethnicity. The second questionnaire included the state and trait versions of the State-Trait Anxiety Inventory for adults (Spielberger, 1983). This is a well validated and widely used measure (cf. Kline, 1999). Both scales consist of 20 items, each rated on a four-point frequency scale. The third questionnaire was the Estimated Likelihood of Stressful Events Scale (ELSE); a measure of the participant's estimated likelihood that stressful events may occur during their life. This was developed especially for this study by taking sixteen stressful events

listed in the Student Life Events Questionnaire (Bushnell & Mullin, 1987, itself derived from Holmes & Rahe's [1967] Social Readjustment Rating Scale) and adding a further sixteen items to give a total scale of 32 items. The events selected and generated for inclusion reflected stressful events that were possible but not inevitable in the respondent's future, and would significantly affect them if they were to occur (see appendix). Events were chosen that were regarded as not wholly in the control of the respondent, such as "Marital separation or separation from a live-in partner" and "Developing a cancer". To control for response set, eight of the added items reflected positive events — for example, "Finding true love" and "Gaining a major work promotion" — to give a total of 9 positive and 23 negative items. Positive items were scored separately. Participants gave their estimate of likelihood using a 7-point logarithmic scale ranging from 1/1 (indicating that the event was highly likely) to 1/1 million (indicating that the event was highly unlikely). The fourth questionnaire was the Perceived Control over Stressful Events Scale (PCSE); a measure of the amount of control participants believed they had over the occurrence of stressful future events. This was developed especially for this study by taking the items of the ELSE scale and providing participants with a 7-point Likert response scale, ranging from 1 (indicating no control over the likelihood of the event occurring) to 7 (indicating total control over the likelihood of the event occurring). Separate scores are generated for positive and negative items. The fifth questionnaire consisted of a version of Tobacyk's (2004) revised Paranormal Belief Scale (PBS). This is a 26-item scale that is concerned with a wide variety of paranormal beliefs, including traditional religious beliefs, psi, witchcraft, superstition, spiritualism, extraordinary life forms and precognition. Responses were made on a 5-point scale from *strongly agree* to *strongly disagree*, with higher scores indicating greater agreement.

Procedure

Participants were approached towards the end of a class. CB introduced herself and the details of the study. Those willing to participate were given a copy of the questionnaire inventory, which included a cover sheet explaining the participant's rights, to omit details or items, to anonymity, and to withdraw within seven days of participation (by quoting a unique participant number). They were told only to take part if they wished to do so once they had read the details of the study. The survey took approximately twenty minutes to complete. Participants completed the inventory during the break between classes or took them home and returned them to CB at a later date.

Results and discussion

Summary statistics for the measures used in this study are given in Table 1. It can be seen that scores on all measures are reasonably normally distributed, although ratings of likelihood of both negative and positive events exhibit a small negative skew. Mean paranormal belief for this sample is below the theoretical midpoint of 78 but is somewhat higher than for previous studies (e.g., Wolfradt, 1997), though it is similar to previous

samples at Northampton (Roe & Morgan, 2002). Mean state and trait anxiety scores are very similar to the norms for college students (Spielberger, 1983). Mean estimates of perceived likelihood of future events occurring are somewhat above (less likely than) the scale midpoints for both positive and negative events (36 and 92 respectively). For perceived control over future events, the mean score is slightly higher (relatively within one's control) for positive events but slightly lower (relatively outside one's control) for negative events (theoretical means again 36 and 92 respectively).

Table 1

Mean scores and standard deviations of paranormal belief, control of life events, likelihood of life events and trait anxiety.

Measure	***M***	***SD***	***Median***	***Range***	***Kurtosis***	***Skew***
Paranormal belief	72.3	14.7	72	35–106	.152	–.219
State anxiety	36.5	8.3	36	20–60	.038	.458
Trait anxiety	41.8	9.3	40	23–72	.677	.771
Perceived likelihood of negative future events	99.3	16.9	101	47–127	.330	–.683
Perceived control over negative future events	73.8	17.7	74	36–120	.030	.021
Perceived likelihood of positive future events	46.2	7.5	47	22–57	.860	–.955
Perceived control over positive future events	47.1	6.3	48	33–62	–.477	.054

Zero order correlations for all the study measures are given in Table 2. The predicted correlations were found between paranormal belief and state and trait anxiety, indicating that those presenting as more anxious also reported greater belief in paranormal phenomena. This is consistent with most previous studies (e.g., Wolfradt, 1997; Wong, 2012; but see also Irwin, 2009, pp. 93-4).

In turn, state anxiety scores are predicted positively by scores on perceived likelihood that negative events will happen, but negatively by scores on perceived likelihood that positive events will happen. For both types of event high scorers on state anxiety tend to regard their incidence as relatively uncontrollable. A similar pattern is evident for trait anxiety, although the correlation with perceived control of negative events is smaller and non-significant. These data confirm Sanderson et al.'s (1989) finding that the increased perception of control of a stressful event is associated with reduced anxiety, and is in keeping with Taylor and Brown's (1988) suggestion that illusion of control has a beneficial effect upon mental health.

However, there is no support for a direct link between paranormal belief and perceived control over negative future events and a small but non-significant negative correlation with perceived control over positive future events. This contrasts with the findings of previous research that has utilised measures of locus of control (e.g., Allen & Lester, 1994; Dag, 1999; Groth-Marnat & Pegden, 1998; Irwin, 1986), but is consistent with Irwin (2000). One point of difference between this and previous studies is the use of a more personally relevant measure of control, which may suggest that paranormal belief is associated with an external locus in a more abstract sense but not when considering events that make a strong and personal impact.

Similarly, there is no correlation between paranormal belief and perceived likelihood of positive future events, and only a modest positive correlation with perceived likelihood of negative future events, suggesting that believers may expect more negative events to occur in their lives than do disbelievers, but this trend is non-significant. This would be in keeping with a characterisation of the paranormal believer as concerned that the future is to be feared. However, such a view stands in contrast to Irwin's (2003) finding that paranormal believers hold assumptive world views that emphasise the benevolence and meaningfulness of the world and the worthiness of the self (see also Roe & Morgan, 2002).

Table 2

Pearson correlations between measures with 2-tailed probabilities[2]

	State anxiety	**Trait anxiety**	**PL–**	**PC–**	**PL+**	**PC+**
Tobacyk belief score	.272*	.326**	.232	–.010	.024	–.194
State anxiety		.631**	.289*	–.255*	–.262*	–.446**
Trait anxiety			.388**	–.200	–.258*	–.520**
PL–				–.247*	.104	–.403**
PC–					–.102	.256*
PL+						.251*

The correlation between the perceived controllability and likelihood of negative events is significant and in the predicted direction, with those perceiving greater control expecting fewer bad things to befall them. A similar effect, but in the opposite direction can be seen for the relationship between the controllability and likelihood of positive events. These results suggest that respondents may tend to either see the future optimistically (i.e. 'bad things are not likely to happen to me and if they do I have control over them') or pessimistically (i.e. 'bad things are likely to happen to me and I can do nothing to prevent them'). However, we should note that the effect sizes are

[2] Key: PL– = Perceived likelihood of negative future events; PC– = Perceived control over negative future events; PL+ = Perceived likelihood of positive future events; PC+ = Perceived control over positive future events.

still only small to medium (Cohen, 1988) and in both cases account for just over 6% of the variance. Clearly, the likelihood of negative events occurring is not regarded as just a matter of personal control.

Taken together, these findings suggest that there is no direct relationship between perceived likelihood and controllability of future events and paranormal belief, but the reasonably strong correlations they share with anxiety suggest that there could be a mediated effect. To explore the suggestion that any effect of perceived likelihood and uncontrollability of stressful events upon paranormal belief might be mediated by anxiety, a path analysis was conducted. The path analysis results were obtained through successive stepwise multiple regression analyses, with paranormal belief as the initial criterion. Each significant predictor then served as the criterion for the next stage of regressions, with the remaining variables as potential predictors, until all variables were accounted for or did not significantly predict any of the criterion variables. The outcome is illustrated in Figure 1. The path coefficients represent standardized partial regression coefficients (β weights). Non-significant relationships with paranormal belief are given as dashed lines for information. It is evident from the figure that any effect of perceived likelihood of uncontrollability of stressful future events (whether positive or negative) is mediated through increases in anxiety. The only variable that was retained in stage 1 of the regression was state anxiety, with higher levels of anxiety being associated with greater levels of belief. Trait anxiety was predicted by state anxiety, but also by perceived control over positive future events, with less perceived control being associated with greater anxiety. State anxiety was predicted by perceived likelihood of negative and positive future events, being greater where positive events were perceived as more likely and negative events less likely. Perceived controllability of positive events was also predicted by perceived likelihood of both negative and positive future events, but the patterns were reversed. The remaining variable not included in the solution, perceived control of negative future events, loaded on estimated likelihood of negative future events but not on estimated likelihood of positive future events.

Conclusion

The first point to make is that, of course, we cannot necessarily infer cause and effect from results derived from correlational analyses; we cannot determine here whether paranormal belief causes high trait anxiety or high trait anxiety causes paranormal belief, or indeed whether both result from a third, hidden, variable.

However, we can comment that the findings reported here are in broad agreement with the suggestion that paranormal beliefs may develop in some people as a response to anxiety that is evoked by the perception that the world is chaotic and unpredictable, and that "bad things sometimes happen to good people" (Irwin, 2003). Ironically, the model is only testable if we presume that the evolution of paranormal beliefs is an ineffective response to the sense of anxiety evoked by encountering a fundamentally meaningless world, since otherwise we would not witness the association with anxiety that was found. The results reported here suggest that paranormal beliefs

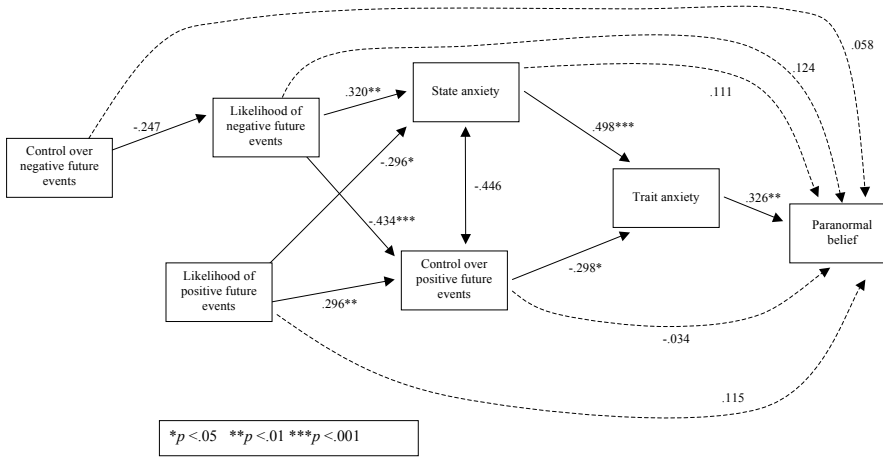

Figure 1. Path diagram illustrating the interrelationships between paranormal belief, state and trait anxiety and perceived likelihood and controllability of stressful future events.

are not beneficial in terms of creating a system or cognitive bias that may filter reality so as to reduce psychological harm, contra Taylor and Brown (1988). Irwin (2001) offers a possible reason for this when he states that although a sense of control over threatening events was enhanced by paranormal beliefs, this seemed to be context specific and could not generalise to all situations — what situations or events may benefit from paranormal beliefs remain to be determined.

We should also be wary of over-interpreting the data given that the sample size was relatively small for the analysis conducted (Dancey & Reidy, 2014, suggest a minimum of 15 participants per variable, though Howell [1992] gives minima based on the number of predictors plus 40 and plus 50, both of which this study would satisfy). Nevertheless, one or two of the reported effect sizes (particularly the correlation between estimated likelihood of negative future events and paranormal belief) if replicated in a study of greater power would have been significant. Rather than collect more data, we plan to replicate this study with a larger sample using a design that addresses some weaknesses in the present study.

The newly-coined ELSE and PCSE scales need to be evaluated psychometrically, and still cover only a limited range of events that might not be particularly representative of the worries that people have about their future. It would be interesting to solicit the views of prospective participants as to what they look forward to and what they fear in their life ahead. Similarly, the revised Paranormal Belief Scale (Tobacyk, 2004) includes questions that seem highly irrelevant to the issue of personal control over one's circumstances (e.g., 'the abominable snowman of Tibet exists'). A more personalised measure of paranormal belief and experience would be preferable.

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Estimated Likelihood of Stressful Events Scale

The following list contains descriptions of events that may occur during one's lifetime. Please read each life event and then circle on the scale to the right your estimate of how likely it is that the event will happen to you in the future. (e.g. circling '1/10' would indicate that you feel there's a one in ten chance of that event occurring to you during your life. Responding '1/1' indicates that the event is very likely to happen to you, whereas '1/1,000,000' indicates a one in a million chance and so is only remotely likely). There are no right or wrong answers, just respond with your first impression.

1. Marital separation or separation from a live-in partner	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
2. Serving a jail sentence of any length	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
3. Winning the lottery	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
4. Suffering a major personal injury or illness (requiring hospitalisation)	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
5. Suffering a heart attack	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
6. Being involved in a car crash where the car is written off	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
7. Gaining a major work promotion	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
8. Developing appendicitis	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
9. Being sacked from a permanent job	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
10. Encountering sexual difficulties	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
11. A major change in financial position for the worse	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
12. Getting married	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
13. Developing a stomach ulcer	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
14. The death of a close friend	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
15. Having a family	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
16. Being physically attacked and robbed	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000

17. Having the mortgage company foreclose (requiring repayment of the loan)	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
18. Trouble with in-laws or parents	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
19. Deterioration of local neighbourhood (e.g. increased crime rates)	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
20. Developing clinically diagnosed depression	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
21. Owning your own home	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
22. Dealing with an unwanted pregnancy	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
23. A holiday of a lifetime	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
24. Developing a cancer	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
25. An outstanding personal achievement	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
26. A house burglary	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
27. Developing schizophrenia	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
28. Miscarriage either personally or a partner	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
29. Encountering disability (e.g. Hearing/sight loss, paralysis)	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
30. Finding true love	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
31. Developing a hernia	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
32. Major change in financial position for the better	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000