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The Australian Sheep-Goat Scale: Development and Empirical Findings

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Abstract: The phrase "the Australian Sheep-Goat Scale", or ASGS for short, refers to a questionnaire measure (or family of measures) of belief in various aspects of the paranormal, such as extrasensory perception (ESP), life after death, and psychokinesis (PK). The term "sheep" is traditionally used for "believer" in some aspect of psychic phenomena, while "goat" is used for "disbeliever". Paranormal phenomena have in common the fact that they contradict C. D. Broad's (1978) Basic Limiting Principles about the existence and operation of mind in the mathematico-physical world, and are therefore in some sense anti-scientific. This paper describes the evolution of the ASGS from a 10-item instrument to an 18-item measure. Since the beginnings of the ASGS in 1976, versions of the scale have been administered frequently, and a summary is here provided of relevant empirical findings, both parapsychological and psychological. Finally, a new and improved 26-item version of the scale is offered, based upon, and named for, attitude towards the Basic Limiting Principles.

Keywords: Australian Sheep-Goat Scale, Basic Limiting Principles, paranormal, paranormal belief, psi, sheep-goat effect.

> Further research . . . unfortunately must await the development of a psychometrically satisfactory measure of paranormal beliefs.
> (Irwin, 2009, p. 47)

> . . . strictly speaking, the term 'paranormal belief' should apply only to belief in events that in mainstream science are generally deemed to be scientifically *impossible*, that is, belief in phenomena that are widely viewed as contravening the 'basic limiting principles' of current scientific thinking. . . . In this sense paranormal beliefs pertain to the subject matter of scientific parapsychology: psi processes (ESP and PK) and ostensibly psi-dependent phenomena (e.g., divinatory arts) as well as the notion of a non-material element of human existence (viz., the spirit) and associated spiritist constructs (e.g., apparitions, reincarnation, astral projection). (Irwin, 2009, p. 109)

INTRODUCTION

Regardless of what we as scientists think of claims that paranormal, or psychic, phenomena occur, it is accepted that belief in the paranormal is widespread throughout the population (Dossey, 2009). Such belief requires a scientific explanation rather than mere rejection as "obviously" unfounded: no theory of human behaviour can be complete that does not take paranormal belief into account (Ross & Joshi, 1992).

It was the clinical psychologist Gertrude Schmeidler who borrowed from a New Testament simile the imagery of the sheep and the goat. Originally, a goat was someone who rejected the possibility that ESP could be demonstrated in the experiment in which they found themselves, while a sheep was someone who did *not* reject this possibility (Schmeidler, 1943, p. 107). Over time, the terms "sheep" and "goats" have evolved to mean, in general, believers and disbelievers, respectively, in some aspect of psychic phenomena conceived of broadly or narrowly. Two obvious questions arise from this separation: (1) do sheep and goats differ in paranormal performance when tested under impeccable laboratory conditions?; and (2) do sheep and goats differ in any *other* aspects of their psychology?

In order to answer these questions we need to have well-developed tools for categorising persons as sheep or as goats (or for placing people along a continuum of sheep-goat attitude). The psychologist is likely to use a questionnaire of some description, single-item or multi-item, allowing a participant to self-report their views on the paranormal. Unfortunately, what has been considered "paranormal" has included all manner of topics in addition to psychic phenomena, such as astrology, Ufology, cryptozoology, graphology and palmistry (Thalbourne & French, 1997), which could be said, perhaps, to concern potential *anomalies* but are not paranormal, at least not as parapsychologists would define their field.

Prior to the devising of the first version of the Australian Sheep-Goat Scale there were at least two sheep-goat scales in existence which were restricted to the paranormal as defined above and as specified in the second quote given from Irwin (2009): these were the Sentence Completion Test of ESP Belief (Van de Castle & White, 1955), and Bhadra's Attitude to ESP Scale (Bhadra, 1966). The first of these required some clinical judgment in scoring the completed sentences. The second scale was multiple-choice but was directed towards performance in a card-guessing test. Something more suitable for *any* ESP test was desired.

CONSTRUCTION OF THE AUSTRALIAN SHEEP-GOAT SCALE

The ASGS had a very modest beginning as a simple list of multiple-choice questions devised jointly by the author and his then-supervisor, Peter

S. Delin. The list covered belief in, and ostensible experiences of, ESP, as well as belief in life after death and in the possibility of contact with the deceased.[1] The questionnaire was administered to all participants prior to a free-response drawing ESP test (Thalbourne, 1976). Initially, the focus of interest was merely in tabulating and reporting the responses to each question and comparing between the experimental and control groups (emotionally close, and not emotionally close to anyone, respectively). In the following year, however, it was decided to combine the answers to these questions into a 10-item scale, which turned out to have some interesting correlates, including ESP-score in some subgroups—the so-called Sheep-Goat Effect.

At the same time, some researchers were developing an interest in the issue of whether there might exist psychological differences between believers and disbelievers in psychic (and other anomalous) phenomena, irrespective of whether such phenomena actually existed. An example is the extensive research programme initiated by Tobacyk and Milford (1983). Irwin (2009) has recently produced an excellent book reviewing what has become an extensive literature. The 10-item Australian Sheep-Goat Scale has been used in a number of examinations of such psychological differences (e.g., Richards, 1990; Roig, 1992), and we shall study these differences systematically later in this review.

By 1982, an expansion of the ASGS was contemplated, and carried out in two steps. First, the 10 items were augmented with three asking about the theoretical possibility (not just personal experience) of, specifically, precognition and active and receptive telepathy. Some research was conducted with this 13-item scale (e.g., Irwin, 1985; Thalbourne, 1985). At the same time, and for the purposes of a large-scale survey of beliefs and experiences (Thalbourne, 1994b) and a psychokinesis experiment (Thalbourne, 1996a), it became desirable to have in the scale items pertaining to psychokinetic phenomena as well. Five items explicitly about belief in and ostensible experience of PK were therefore constructed. Thus was born the 18-item Australian Sheep-Goat Scale.

This assessment instrument is available in a number of formats: (1) The forced-choice format, which presents a statement (such as "I believe in ESP") and then provides three alternative responses, "true", "uncertain", and "false";[2] responses attract 2, 1, or zero points respectively, and these are summed across the 18 items to provide a total score (Thalbourne, 1995a;

[1] For the wording of these items see either Thalbourne and Haraldsson (1980, Table 1) or Thalbourne (1981a, Appendix A).

[2] Sometimes "yes", "unsure" and "no" (e.g., Goulding, 2004).

see also Irwin [2009, Appendix 11]); (2) The visual analogue format, in which the respondent is asked to mark a point on a horizontal line anchored at one end by complete conviction of a goat belief and at the other end by complete conviction of a sheep belief; marks are converted to scores ranging from 1-44 for increasing "sheepishness" and transformed across items to give a total score (Thalbourne & Delin, 1993); (3) A six-point[3] Likert scale ranging from "strongly disagree" to "strongly agree" (Roe, 1998, objected to the visual analogue scale and replaced it with this six-point scale. For the purposes of his [Roe, 1998] study, he also reduced the number of items from 18 to 6; see a discussion of the merits of the various approaches in Roe, 2002; and Thalbourne, 1998c; 2003b); (4) A Rasch-scaled version of the ASGS (see Lange & Thalbourne, 2002)—the visual analogue scale is presented but the 1-44 metric is collapsed into three categories, scored zero, 1 and 2 points; these scores are then summed for the ESP/PK items (the two afterlife items are a separate factor) and converted to interval-level Rasch scores, which were found to be independent of gender and age.

THE FACTOR STRUCTURE OF THE ASGS

The dimensionality of the ASGS items has been investigated on a number of occasions. Thalbourne and Haraldsson (1980) applied principal components analysis with quartimax rotation to the 10-item ASGS and obtained three factors, viz., general experience and telepathy, precognition and apparition, and otherworldliness, accounting together for 59% of the variance.

Thalbourne (1981a) performed the same analysis with an expanded dataset for the 10-item ASGS and found two factors which were approximately (1) ESP belief and experience, and (2) an afterlife factor, this solution accounting for 49% of the variance.

For the 18-item visual analogue scale, Thalbourne and Delin (1993), subjected data from 241 students first to a principal components analysis to determine how many factors could be extracted using a principal factors analysis. Using the Kaiser criterion, three components were identified. Principal axis analysis was then applied, using an oblique rotation because the factors showed high inter-correlations ranging from 0.34 to 0.63.

The three factors jointly accounted for a total of 60% of the variance. The first factor accounted for 49% of the variance. The items that loaded on

[3] Later, a 7-point Likert scale (e.g., Roe, Sherwood, Farrell, Savva, & Baker, 2007).

it consisted of all but one of those having to do with belief in and experience of ESP. The second factor, accounting for 7% of the variance, contained all of the items to do with experience of psychokinesis. And the third item, though accounting for relatively little of the variance (4%), contained the conceptually important items on life after death and in the possibility of contact with spirits.

The high correlations between these factors allow us to differentiate three traditional strands of interest to parapsychologists—ESP, PK and life after death—but at the same time to see them as essentially related and thus to be able to use the total score meaningfully as a measure of attitude towards parapsychological phenomena.[4] The results are consistent with Lange and Thalbourne's (2002) later finding that the ESP and PK findings may be considered, together, as a New Age Philosophy factor (e.g., psychic phenomena, reincarnation, astrology), and the life after death items as a Traditional Paranormal Beliefs factor (e.g., the devil, heaven and hell, witchcraft), the two of which positively correlate (Lange, Irwin & Houran, 2000). Consequently, the practice of, for example, Roe and his colleagues (e.g., Roe, Davey & Stevens, 2003) of subdividing the total ASGS score into as many as three components is unnecessary: there is either one orthogonal component or two oblique components. In what follows we shall assume the uni-componential approach (the approach that has been taken on the vast majority of occasions), but it should be pointed out that a bi-componential approach, which is arguable, might well lead to different analytic outcomes.

RELIABILITY

As regards internal reliability, Thalbourne and Delin (1993) report a high Cronbach's alpha of 0.94 for the 18-item visual analogue scale. Goulding (2005) reports an alpha of 0.91 for a Swedish version of the ASGS. Thalbourne, Silva and Razente (2006) report an alpha of 0.82 for a Portuguese version of the ASGS. Dagnall, Parker and Munley (2008) give an alpha of 0.92 for the forced-choice 18-item ASGS. A value of 0.91 was reported by Storm and Rock (2009) for the Rasch ASGS.

Related to the issue of internal reliability is the fact that the correlations among the 18 ASGS items tend to be all positive and substantial, and this is reinforced by the Kaiser-Meyer-Olkin measure of

[4] Willson (2009) performed an analysis of these data, and while remaining undogmatic as to the number of factors produced pointed out that the scree plot suggests only one factor should go into the model of paranormal belief.

sampling adequacy of 0.91 (Willson, 2009, p. 77), which is much larger than the 0.60 suggested as a minimum for performing factor analysis.

Thalbourne and Delin (1993) measured test-retest reliability for the scale over a time interval of approximately 11 months for 29 participants: the coefficient was 0.66 ($p < 0.0005$). If the forced-choice and the visual analogue versions of the ASGS may be considered in some sense parallel, then the reliability is 0.85 for 301 participants (Thalbourne, 2004a).

RESPONSE BIAS

Four investigations have looked at the possible influence on the ASGS of social desirability responding. Thalbourne (1981a) administered the Eysenck Lie Scale (Eysenck & Eysenck, 1964) in a classroom setting, and found no association with the 10-item ASGS; nor was there any association between a later Lie Scale (Eysenck & Eysenck, 1991) and the 18-item ASGS (Thalbourne, 1998a). Roig (1992) argued that a better measure of this response bias was the Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960), but nevertheless found a zero correlation (as did Thalbourne, Dunbar & Delin, 1995). He remarked that "whether some experimental situations that demand close one-to-one interactions between subject and experimenter elicit social desirability, still remains unclear and needs to be explored further" (Roig, 1992, p. 162).

VALIDITY ISSUES

Content Validity

This form of validity can be said to be established if the frequencies obtained for each item match those intuitively thought by rational people to be appropriate for that item. Thus, Thalbourne and Delin (1993) found that the most commonly endorsed item was about hunches (viz., 59% said "true"), the next most endorsed item was life after death (viz., 50%: a 2009 poll of the Australian population yielded a percentage of 53%), precognitive dreams were reported by 35%, belief that one is psychic was a low 10%, and just 3% of participants professed to have marked psychokinetic ability.

Convergent Validity

The correlation between the ASGS and other scales purporting to measure paranormal belief has been reported by a number of researchers. Table 1 lists these findings, giving the source reference, the name of the scale, the number of items in the version of the ASGS used, and the correlation obtained.

Table 1
Studies of Convergent Validity for the ASGS

Source	Scale	ASGS	*r*
French et al. (2008)	Anomalous Experience Inv. Exper.	18	0.86
	Anomalous Experience Inv. Belief	18	0.88
	Anomalous Experience Inv. Able	18	0.85
Irwin (1985)	Tobacyk Paranormal Belief Scale	13	0.69
	Sheils & Berg	13	0.74
Richards (1989)	Psychic Experiences Questionnaire	10	0.69
Richards (1990)	Psychic Experiences Questionnaire	10	0.62
Roe & Morgan (2002)	Tobacyk Paranormal Belief Scale	18	0.53
Thalbourne (1981a)	Icelandic Sheep-Goat Scale	10	0.55
Thalbourne (1995a)	Tobacyk Paranormal Belief Scale	18	0.73
Thalbourne (1995b)	Icelandic Sheep-Goat Scale	13	0.67
Thalbourne (2001b)	New Age Philosophy	18	0.77
	Traditional Paranormal Beliefs	18	0.46
	Anomalous Experience Inv. Exper.	18	0.72
	Anomalous Experience Inv. Belief	18	0.66
	Anomalous Experience Inv. Able	18	0.68
Thalbourne & Delin (1993)	Paranormality Scale	18	0.72
Thalbourne, Dunbar & Delin (1995)	Tobacyk Paranormal Belief Scale	10	0.68
Thalbourne & French (1995)	Windholz/Diamant SOBEP	18	0.74
Thalbourne & Houtkooper (2002)	Honorton's belief in psi rating	17	0.70

It can be seen from Table 1 that in every case where convergent validity has been investigated it has been obtained, usually with a high degree of correlation. It can be concluded that despite the heterogeneous content of the other paranormal belief scales, they and the ASGS tend to be tapping into the same variance. This gives us confidence that results obtained with the other scales are likely to generalise to the ASGS.

Predictive Validity: the Sheep-Goat Effect

Comments Richards (1989, p. 53), "In parapsychology, the eventual concern is with predictive validity: whether subjective experiences reflect actual psi and can be used to predict performance on objective tests." Independently of the ASGS there is evidence that variables such as belief in ESP show a positive relationship to guessing-scores in well-controlled laboratory experiments (see, e.g., Palmer, 1971). Is the ASGS efficacious in empirically bringing about this effect? In this section are discussed the considerable number of studies which have utilised one or other form of the ASGS to predict performance in ESP or PK tasks. In Table 2 can be found a summary of these results, citing source, mode of psi tested, number of items in the ASGS, number of participants, direction of effect (a positive sign indicates that sheep scored higher than goats), and the statistical outcome if available.

Table 2 shows a number of facts. First of all, it shows that a significant Sheep-Goat Effect (SGE) was found in 7 out of 28 cases.[5] Very clearly, use of the ASGS does not guarantee that an SGE will be found—the effect is by no means 100% replicable, and this might be an issue if the scale measures two rather than just one components. However, despite this, the direction of the sheep-goat difference is slightly more often found in favour of sheep than of goats (22 positive differences as opposed to 19 negative differences); and when the difference is *significant*, Table 2 shows that it has been such that sheep have always had the higher scores, as indicated by the correlations in the last column—there is not a single reversal of the effect. It could be argued that significant reversals of the effect have been obtained but not published,[6] so as to maintain, in the literature, the integrity of the sheep-goat hypothesis.

[5] This total omits the two studies (Thalbourne et al., 1982, and Evans & Thalbourne, 1999) where, respectively, goats scored significantly below chance and sheep above, but where there was no significant group-difference.

[6] There are statistical tests for this.

However, parapsychologists in fact show eagerness to publish significant results whatever their direction, and a few significant reversals of the SGE have indeed been reported in the literature, involving other sheep-goat measures (e.g., Haraldsson, 1993; Moss, Paulson, Chang & Levitt, 1970; Thorisson, Skulason & Haraldsson, 1991). Selective reporting of significant positive results may therefore not be a great problem.

Looking at Table 2 there *appears* to be at least one evident pattern in the results: significant outcomes seem to be more often obtained when the test is one of telepathy than of clairvoyance, precognition, or psychokinesis (see Table 3). The data are too few to permit fine-grained analysis, but a comparison of the telepathy studies (6 significant, 8 nonsignificant) with the other three modes combined (1 significant, 14 nonsignificant) suggests an excess of significant telepathy studies (a χ^2 test would be invalid owing to small expected frequencies). In other words, when using the ASGS, the SGE is most reliably found in experiments using pairs of people attempting to transmit information to each other. Future studies might compare (let us say) a clairvoyance condition with a telepathy condition, in circumstances where the receiver subject is blind to sending condition. Analyses should relate the sender's ASGS data to the receiver's production as well as the receiver's ASGS data.

Moreover, item analyses should be conducted: belief items may show correlations different from experience items. Indeed, Thalbourne (1981, p. 225) found that the item that correlated strongest with telepathy-score was 'Have Had a Telepathic Experience', for senders: $r_s(51) = 0.59$, $p < 0.001$ (two-tailed), as one might expect if predictive validity holds.

Median splits could also be made for the ASGS total score, and this should show that goats tend not to score *at* chance but significantly below, avoiding the target information, in the phenomenon known as psi-missing. Thus goats are (probably to their surprise) like sheep in that *both* groups have ESP, but they differ in how they use it. The present reviewer has suggested that the underlying mechanism is a need to produce an apparent reality that accords with one's metaphysical paradigm or worldview in relation to the claim that telepathy exists: one does this by paranormally producing information-correspondence in the case of sheep, and lack of information-correspondence in the case of goats (Thalbourne, 1981b, 1983). The work of Storm and Thalbourne (2005) on "conversion effect" is also relevant to this hypothesis. Certainly, Table 2 stands as a testament to the reality of the SGE, weak and difficult to demonstrate though it may be.

Table 2
Summary of Sheep-Goat Results from Psi Studies Utilising the ASGS

Source	Psi mode	ASGS	*N*	Direction	Outcome
Evans & Thalbourne (1999)	Te	11	28	+	(Sheep sig. above chance)
Goulding (2005)	Te	18	64	+	n.r.
Palmer (1999)	Cl	?	48	?	n.r.
Parker, Grams, & Pettersson (1998)	Te	10	28	+	$r = 0.38$*
Pérez-Navarro, Lawrence & Hume (2009)	Te	18	90	?	n.r.
Roe (2003)	Cl	18	98	?	n.r.
Roe, Davey & Stevens (2003)	Cl_{true}	18	40	–	$r_s = 0.06$
	$Cl_{disguised}$	18	40	+	$r_s = –0.23$
	PK_{true}	18	40	+	$r_s = –0.10$
	$PK_{disguised}$	18	40	–	$r_s = 0.05$
Roe, Davey & Stevens (2004)	Cl_{true}	18	40	–	$r_s = 0.23$
	$Cl_{disguised}$	18	40	–	$r_s = 0.10$
	PK_{true}	18	40	–	$r_s = 0.12$
	$PK_{disguised}$	18	40	+	$r_s = –0.01$
Roe, Davey & Stevens (2005)	Cl_{true}	18	40	–	$r_s = 0.13$
	$Cl_{disguised}$	18	40	+	$r_s = –0.05$
	PK_{true}	18	40	–	$r_s = 0.06$
	$PK_{disguised}$	18	40	–	$r_s = 0.14$
Sanders, Thalbourne & Delin (2000)	Te	18	87	+	$r = 0.23$*
	Te	18	87	+	$r = 0.32$**
Storm & Barrett-Woodbridge (2007)	Cl	18	76	–	n.r.
Storm & Rock (2009)	Cl	16	55	–	$r = –0.07$
	Cl	16	53	–	$r = –0.19$
Thalbourne (1981b, 2008)	Te	11	18	+	$r = 0.11$
	Te	11	13	+	$r = 0.58$*
	Te	11	18	+	$r = 0.24$
	Te	11	13	+	$r = 0.80$***
	Te	11	30	–	$r = –0.04$
	Te	11	30	–	$r = –0.14$

Table 2 (*continued*)

Source	*Psi mode*	*ASGS*	N	*Direction*	*Outcome*
Thalbourne	Te	11	13	+	$r = 0.47$
(1981b, 2008)	Te	11	14	+	$r = 0.49$*
	Te	11	13	+	$r = 0.00$
	Te	11	14	–	$r = –0.27$
	Te	11	14	–	n.r.
	Te	11	14	+	n.r.
Thalbourne,	Pr	10	101	+	Goats sig. < MCE
Beloff &	Pr	10	86	+	$r = 0.30$**
Delanoy (1982)					
Thalbourne,	Pr	10	135	–	n.r.
Beloff, Delanoy	Pr	10	152	+	n.r.
& Jungkuntz	Pr	10	246	–	n.r.
(1983)	Pr	10	14	–	n.r.
Thalbourne &	Pr	10	144	+	n.r.
Jungkuntz (1983)	Pr	10	62	–	n.r.
Wilson &	Cl	18	61	?	n.r.
Hamlin (2007)	Cl	18	44	+	n.r.

Key: Te = telepathy; Cl = clairvoyance; Pr = precognition; PK = psychokinesis; *: $p \leq .05$; **: $p \leq .01$; ***: $p \leq .001$; n.r. = not reported

Table 3
Breakdown of Significance of Outcome by Mode of Psi Tested

	Telepathy	Precognition	Clairvoyance	Psychokinesis
Significant	6	16	0	0
Non-Significant	8	1	7	6
Not reported	4	6	5	0
Total studies	18	8	12	6

NON-PARAPSYCHOLOGICAL CORRELATES OF THE ASGS

The ASGS has sometimes been used simply to describe the average level of paranormal belief in a given sample (e.g., Roe et al., 2007; Sherwood, Roe, Holt, & Wilson, 2005; Thalbourne et al., 2006). However, in addition, there is a large database of studies examining the correlation between the ASGS

and a great variety of non-parapsychological variables. In order to render our account of these correlates somewhat more systematic, the approach adopted here for the most part was that used by Irwin (1993, 2009). He grouped his data under four main theoretical depictions of paranormal belief: the social marginality hypothesis, the worldview hypothesis, the cognitive deficits hypothesis, and the psychodynamic functions hypothesis. We define each of these in turn, and tabulate the evidence for them from studies using the ASGS.

The Social Marginality Hypothesis

According to this view "the people most susceptible to paranormal belief are members of socially marginal or disadvantaged groups, for example, the poorly educated or the unemployed who have characteristics or roles that rank low among dominant social values. . . .It is held that the privation, loss of control over life and alienation associated with marginal social status encourage such people to appeal to magical and religious beliefs, presumably because these beliefs bring some emotional compensation to their lives" (Irwin, 2009, p. 51). The primary indices of social marginality include (old) age, (female) gender, (low) socioeconomic status, (minority) ethnicity and (gay) sexual orientation.

There are a number of studies in which women have scored higher on the ASGS than have men (Irwin, 1985; Thalbourne, 1994b; Thalbourne, Dunbar & Delin, 1995; Goulding, 2004; but note an exception: Thalbourne, 1981a). As to age, Thalbourne (1994b) found no age-differences, but one recent study (Storm & Rock, 2009) found a correlation with the Rasch ASGS, $r(104) = +0.26$, $p = .008$. Note, however, that analysis using the Rasch scores of a much bigger sample (N = 1,822: Lange & Thalbourne, 2002), controlling for differential item functioning, showed only negligible age and sex differences.

As regards marital status, persons coming from "broken" relationships (in this case, separated, divorced or widowed) had a higher mean on the Sheep-Goat Scale than did those from "unbroken" situations (single or married), confirming two previous findings (Thalbourne, 1994b; see Thalbourne, 2001a).

In this study also, which was a survey of members of the Society for Psychical Research, there was a small but significant tendency for members with higher degrees to prove more sceptical according to the ASGS.

No studies have been reported looking at socioeconomic status or ethnicity and the ASGS. However, one study (Thalbourne, 1997b) compared the level of paranormal belief between heterosexual and homosexual men and found no differences.

Clearly the problem in evaluating the social marginality hypothesis from the perspective of the ASGS is that relatively few relevant data have been collected, and this leaves open a wide scope for future research, perhaps combining sociological variables, although Irwin concludes that the outlook is not promising.

The Worldview Hypothesis

According to the worldview hypothesis, "paranormal belief is simply one facet of a broader worldview, a view that is primarily characterised by a highly subjective and esoteric perspective on humanity, life and the world at large. For example, under this worldview events may be interpreted more in terms of intangible mental and metaphysical processes than in relation to observable or physical factors" (Irwin, 2009, p. 67).

Irwin (2009, p. 68) goes on to say that under this hypothesis the esoteric orientation should be reflected in behavior, such as psychic activities of various sorts. If paranormal beliefs are nothing more than abstractions there is little merit in seeking to interpret them as a component of a 'worldview' that underlies the believer's fundamental approach to the world at large.

Evidence pertinent to this theme comes from at least two studies. In the first (Thalbourne, 1998-1999b), attendees at an adult education course on psychic experiences had ASGS scores that were extremely high compared with those of a group of university students. In a second study, participants were required to read accounts of coincidences and rate them for degree of perceived paranormality. The ASGS was a good predictor of level of paranormality-rating awarded to the coincidences (Thalbourne, Moore & Storm, 2007). In other studies, sheep were more inclined to read about paranormal or psychic phenomena (Irwin, 1985; Thalbourne et al., 2006). There is also fairly abundant evidence that high scorers on the ASGS report other psychic beliefs and experiences (Thalbourne, 1994b; Thalbourne & Delin, 1993; Thalbourne & French, 1997) or mystical experiences (Thalbourne, 1994b; Thalbourne, 1998a; Thalbourne, 1998-1999b; Thalbourne & Fox, 1999). Thus, the ASGS measures something that evidently has some influence on behaviour. Does it impact upon *other* domains of behaviour?

We first consider religious beliefs and practices. Using the Haraldsson (1981) 8-item non-sectarian Religiosity Scale with the ASGS, significantly positive correlations have been observed in a variety of studies (Thalbourne, 1994b; Thalbourne, 1995b; Thalbourne, 1998a; Thalbourne & Hensley, 2001; Thalbourne & Houtkooper, 2002; Thalbourne & O'Brien, 1999). Irwin (1985) achieved a significant positive correlation of 0.20

between the 13-item ASGS and a single religiosity item. Thalbourne (1994c, 1995b) found a significant correlation between this ASGS and religion-puritanism (Wilson, 1975). A study by Thalbourne (2003a) showed sheep were more inclined to be theists. Sheep tend to read about religion, to pray, to self-report being religious, and to read the Bible in some studies but not in others (Thalbourne, 1994b; Thalbourne et al., 2006). The present database thus shows a clear trend in favour of sheep being more likely to be religious in a general sense. Further research might examine whether this is indeed true for a variety of faiths, and perhaps denominations. However, religious affiliation "appears to have only weak links with the intensity of paranormal belief" (Irwin, 2009, p. 71; see Thalbourne, et al., 1995, p. 222). Even so, the evidence canvassed here suggests some support for the worldview hypothesis. We may note in addition that sheep are more likely to report a vivid religious or spiritual experience, and to read about Eastern religions or theosophy (Thalbourne, 1994b; Thalbourne, 1995b; Thalbourne, 1998a).

Further support for this hypothesis comes from studies where the ASGS has been correlated with belief in a dualist (mind/body) philosophy of human nature (Stanovich, 1989; Thalbourne, 1999). The belief of sheep in an extra-corporeal component of human existence is reflected in their beliefs about their fate following death: ASGS scores are significantly higher in persons who believe in reincarnation (Thalbourne, 1996b; 1998-1999a; Thalbourne et al., 2006), who believe in Heaven and in reunion with loved ones after death (Thalbourne, 1995a), who believe in the Resurrection of the dead (Thalbourne et al., 2006), who report past lives (Thalbourne, 1994b; Thalbourne et al., 2006), and who believe in survival of death generally (Irwin, 1985). The subjectivity of the sheep's stance on life is further evidenced by greater dream recall and particularly by a tendency to engage in dream interpretation (Irwin, 1985; Thalbourne, 1994b; Thalbourne, 1995b; Thalbourne, 1998a; Thalbourne & Delin, 1999), though exactly what aspects are examined in such scrutiny deserves further research.

Another relevant domain may be the belief in a just word, "the fanciful notion that good people will tend to fare well in life and bad people one day will inevitably get their just desserts" (Irwin, 2009, p. 73). The present reviewer was unable to obtain evidence confirming a relationship with the sheep-goat scale (Thalbourne, 1995a).

As a last word in this section, it may be mentioned that sheep have demonstrated an external locus of personal control (Thalbourne et al., 1995), implying that believers in parapsychological phenomena think that their fate tends to be determined by forces outside their own control.

The Cognitive Deficits Hypothesis

According to Irwin (2009, p. 77), under this view "the believer in the paranormal is held variously to be illogical, irrational, credulous, uncritical and foolish".

Thalbourne and Nofi (1997) administered the Raven's Progressive Matrices (Raven, 1965) to university students, along with a measure of superstition and the ASGS. Lack of intelligence was correlated with a specially devised measure of superstitiousness, but not with the sheep-goat scale. However, it should be mentioned that there is a low to moderate correlation between the ASGS and superstition (Thalbourne, 1997a).

In a large-*N* sample, tolerance of ambiguity was positively but not significantly correlated with the 10-item ASGS (Thalbourne et al., 1995).

Thalbourne (2005a) provides a narrative meta-analysis of five out of six studies in all of which the ASGS has positively and significantly correlated with a measure of creative personality (Thalbourne & Delin, 1994; Thalbourne & Delin, 1995; Thalbourne, Bartemucci, Delin, Fox & Nofi, 1997; Thalbourne, 1998a; Thalbourne, Keogh, & Crawley, 1999), omitting a further positive confirmation (Thalbourne, 2000a). One normally assumes that creativity is a positive trait rather than one that detracts. Comments Irwin (2009, p. 89): ". . . this finding [therefore] does not sit well with the cognitive deficits hypothesis, although the implacable sceptic might seek to interpret it in terms of suggested associations between creativity and psychopathology."

Do sheep tend to have a richer imagination? Thalbourne (1995a) devised a "Conceivability Scale", consisting of 26 items that were preceded by the following instructions:

> Listed below are a number of unusual notions. These notions may be quite unlikely or perhaps even impossible. Your task is not to say whether they are possible or impossible, likely or unlikely. You simply have to say how easily you, personally, can imagine them being true.

Three illustrative items are: (4) Lunar influence on human emotions; (5) The complete elimination of war; and (7) Discovery of the Loch Ness Monster. Sheep scored significantly higher on this Conceivability Scale, suggesting that goats suffer from a lack of imagination.

Finally we consider the construct of fantasy proneness, measured by the Inventory of Childhood Memories and Imaginings (Myers, 1983). Three studies have looked at this measure in relation to the ASGS, and all have found significant positive correlations (French, Santomauro, Hamilton, Fox and Thalbourne, 2008; Thalbourne, 1998a; Thalbourne et al., 1997). A

related variable, absorption, correlates moderately with the ASGS (French et al., 2008; Thalbourne, 1998a; Thalbourne et al., 1997).

The Psychodynamic Functions Hypothesis

Irwin (2009, p. 91) states that:

> The general view that paranormal beliefs are need-serving will be termed the *psychodynamic functions hypothesis*. Sceptics usually take this hypothesis to mean that paranormal believers are in some respects psychologically deviant or dysfunctional[7] and although this is not a necessary implication of the hypothesis, the personality correlates of paranormal belief clearly are data to be taken into account in this regard.

Work with the ASGS has contributed to understanding the social dimension of personality: there has been a consistent tendency for sheep to be more extraverted than goats (Thalbourne & Haraldsson, 1980; Thalbourne, 1981a; Thalbourne, 1998a; Thalbourne, Beloff & Delanoy, 1982; Thalbourne, Beloff, Delanoy, & Jungkuntz, 1983; Thalbourne & Jungkuntz, 1983; but note a non-significant difference in Thalbourne, Dunbar & Delin, 1995). On the whole this seems to confirm the statement made by Eysenck (1967) to the effect that ". . . introverts tend to be characterized by scientific, cautious and doubting tendencies which would seem to predispose them to become 'goats', while extraverts are more characterized by artistic tendencies and to be less resistant to such group pressures as often exist (or may be imagined to exist) in ESP experimental circles" (p. 63).

The evidence for a link with neuroticism is much more tenuous, a significant positive correlation being found by Thalbourne et al. (1995) but not by Thalbourne (1981a, 1998a). (The literature *not* using the ASGS is similarly quite mixed: see, for example, Irwin, 2009, p. 93, and Francis, Williams & Robbins, 2009, p. 341).

On at least two occasions the ASGS has been administered together with Antonovsky's (1993) measure of well-being the Sense of Coherence Scale (Goulding, 2005; Holt, Simmonds-Moore & Moore, 2008). Re-analyses of each study yielded non-significant correlations.

We now move on more clearly to the topic of psychopathology. The ASGS has been used in a large number of studies of this kind. For example,

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7 Since creativity is found amongst the "deviant and/or dysfunctional" (e.g., bipolar disorder amongst poets) there would therefore be some overlap between this Hypothesis and the Cognitive Deficits Hypothesis.

the 18-item ASGS correlates significantly with history of manic experience and with history of depressive experience (Thalbourne & Delin, 1994; Thalbourne & Delin, 1995; Thalbourne et al., 1997; Thalbourne, 1998a; Thalbourne & French, 1995; Thalbourne, Keogh, & Crawley, 1999). Narrative meta-analyses for each variable can be found in Thalbourne (2004b, 2005b).

There is also evidence that sheep are more likely to report hallucinatory predisposition (Thalbourne, 2006; French, et al. 2008), dissociation (replicated by Dagnall et al., 2008; French et al. 2008), schizotypal personality (the STA scale),[8] and psychoticism (Thalbourne, 1998a). Goulding (2004) found that ASGS scores were higher in participants who were high on the Unusual Experiences scale of the Oxford-Liverpool Inventory of Feelings and Experiences—a multi-dimensional measure of schizotypy.

Turning back in time, to the early 1980s, Thalbourne (1985) was interested in the Magical Ideation Scale (MIS) of Eckblad and Chapman (1983), because about a third of its items had a direct link to parapsychological themes. Yet it was claimed that the scale could be used to indicate proneness to psychosis. So were sheep more likely to become psychotic? Thalbourne (1985) administered the 13-item ASGS and the MIS to 99 students, and obtained a positive correlation of 0.62. Thinking the high correlation might be due to the inclusion in the MIS of paranormal items these were removed and the correlation re-performed. Still there was a significant positive correlation between the ASGS and the "purified" MIS, $r(97) = 0.40$, suggesting that sheep may indeed be more prone to psychosis. This correlation has been replicated in a large number of samples (Thalbourne, 1994a, 1998a; Thalbourne et al., 1995; Thalbourne et al., 1997; Thalbourne & Delin, 1994; Thalbourne & French, 1995.) So are believers simply deranged?

Irwin argues that with a typical correlation of 0.60 the majority of the variance is still to be accounted for. The author argues that this is not so. If the correlation were as high as 0.71, the amount of variance in common between the two measures would be 50%, and this would traditionally be taken as *evidence* of the identity of the two variables. Thus, while 36% of the variance is accounted for by magical ideation, just 14% more is needed to effectively explain it all.[9] So there seems to be a major connection between paranormal belief and psychological disturbance.

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[8] However, it should be pointed out that there are paranormal belief items in the STA scale of schizotypy (Claridge & Broks, 1984, p. 648).

[9] One reviewer rejected utterly this reasoning, arguing that 100% of the variance needed to be in common before identity of variables could be posited. Further debate seems to be required in

Irwin speaks strongly against the psychopathological interpretation but neglects to encourage researchers to use better measures of psychopathology. Goretzki, Thalbourne and Storm (2009) have recently published a study in which, amongst other things, they correlated what is essentially a sheep-goat scale (called the Psychic Opening Subscale) with a validated measure of experience of psychotic symptoms, obtaining a significant positive result, $r(107) = 0.67$, $p < .001$. Since even higher correlations have been found in later studies, it is difficult to avoid the suggestion that sheep are indeed prone to experiencing psychotic symptoms.[10] These findings are currently being followed up using a newly constructed 26-item version of the ASGS,[11] which is philosophically founded on the basic limiting principles of Broad (1978), utilises a Likert scale and alternate positive and negative wording to avoid acquiescence response bias, improves the wording of the old items, and has 9 additional items—4 on mind-body dualism, 3 on paranormal healing, and 2 on clairvoyance (see Appendix A). This new instrument—tentatively named the Basic Limiting Principles Questionnaire (BLPQ)—has not been psychometrically tested as yet.[12] The author additionally proposes an updated version of Goretzki's (Goretzki et al., 2009) Experience of Psychotic Symptoms Scale (EPSS; see Appendix B), likewise not yet psychometrically tested. Together the two instruments might prove to be the most incisive method yet of testing for a genuine positive relationship between paranormal belief and psychosis.

SPECIAL GROUPS OF PARTICIPANTS

Thalbourne (1998b) compared the ASGS scores of participants with manic-depression or schizophrenia with those from a sample drawn from the wider community, and found the two clinical groups to be significantly higher. A group of persons suffering from panic attacks scored similarly to the two psychiatric groups.

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order to resolve the differences of opinion. Perhaps both sides could agree that at least 30-40% of the variance is in common, and that this is a substantial amount.

[10] There are of course further questions that need to be asked, such as (1) are traditionally psychotic traits totally without redeeming qualities (McCreery & Claridge, 1995)?, and (2) even if paranormal believers are more psychotic in a truly pathological sense does this imply anything about their psi abilities (Greyson, 1977; Rogo, 1975)?

[11] Note that the item on hunches has been dropped partly due to the difficulty of translating the word into other languages (e.g., German: Thalbourne & Houtkooper, 2002).

[12] A high priority would be to correlate the 18-item ASGS and the BLPQ to see whether they may be regarded as yielding approximately the same z-scores.

Next, there exists a minority of individuals who report that they have never, in their lifetimes, formed an extremely close personal and emotional relationship with another human being. Research indicates that, compared with persons who report that they *have* at some time entered into such a relationship, these "non-close-relaters" tend to be more shy, more lacking in trust, more introverted and more lacking in social skills (e.g., Thalbourne, 1976). In addition, non-close-relaters score lower on the 10-item ASGS: the difference between the scores of close-relaters was significant in four out of five samples (Thalbourne, 2001c). This difference could be explained in a variety of ways, psychological or parapsychological: for example, being closely associated with another person may give rise to a greater possibility of experiencing coincidences of thought, and these coincidences are erroneously interpreted as paranormal communication; or a close relationship may in fact facilitate the occurrence of telepathic experiences with one's partner.

Basterfield and Thalbourne (2002) administered the 18-item ASGS to 21 self-selected ostensible UFO abductees and compared their responses with those of a control group—301 students. Abductees scored significantly higher on the sheep-goat scale. This finding was confirmed by French et al. (2008) using a less strict criterion for abduction status (only observation of UFO craft was required, not abduction), and gave the highest effect size of a number of psychological variables.

MISCELLANEOUS CORRELATES

Hypnotisability

Richards (1990) administered the 10-item ASGS along with the Harvard Group Scale of Hypnotic Susceptibility and obtained a low positive but non-significant correlation.

The Feeling of Being Stared At

Thalbourne and Evans (1992) presented to 59 students a simple 10-item survey to explore attitudes and beliefs about, and reactions to, phenomena having to do with staring and being stared at: significantly higher scores on the 13-item ASGS were obtained by respondents who (1) reported that they liked being stared at intensely by people they knew; (2) said that they liked being stared at intensely by strangers; (3) said they would not be suspicious of someone staring for no apparent reason; (4) believed that gaze could inflict harm or bring about bad luck; (5) believed that some people possess a 'magnetic gaze'; (6) believed that "Sometimes *I*

can make someone turn towards me just by looking at them"; and finally (7) reported sensing that they were being stared at "by someone even though they were situated a considerable distance behind me" (p. 382). In short, sheep take a positive attitude towards the phenomena of staring and detection of the unseen gaze.

Type 'A' Behaviour Pattern

McBeath and Thalbourne (1993) investigated whether the ASGS was related to various aspects of the coronary-prone Type A Behavior Pattern (Friedman & Rosenman, 1974): in all of 5 studies, goats were no more likely than sheep to display hurried impatience (as measured by the Jenkins Activity Survey of Krantz, Glass, and Snyder, 1974) or suspiciousness (as measured by Factor L of the Cattell Sixteen Factor Questionnaire of Cattell, Eber, and Tatsuoka, 1970).

Hypersensitivity to Sensory Stimulation

Sheep obtain higher scores than do goats on measures of hyperaesthesia, that is, reported hypersensitivity to sensory stimulation (Thalbourne, 1998a; Thalbourne & Delin, 1994; Thalbourne et al., 1997).

Other Correlates

Thalbourne (1995b) found no significant correlation with the ASGS and non-religious conservatism (Wilson, 1975), nor with having a religion in one's upbringing or now (cf., Thalbourne, 1995a), or with the Mosher Sex-Guilt Scale (Mosher, 1966). However, there was a significant positive correlation with the Ås Experience Inventory (Ås, O'Hara & Munger, 1962), suggesting that sheep reported more experiences presumably related to hypnotic susceptibility.

Thalbourne, et al. (1995) found non-significant correlations between the ASGS and interpersonal locus of control and socio-political locus of control, dogmatism, and independence of judgment.

The reviewer has earlier contended that the term "paranormal" should be used as a synonym for "parapsychological". Nevertheless, sheep show statistically significant tendencies to endorse not only non-ASGS paranormal items (such as out-of-body experiences: see Thalbourne, 1994b;

Thalbourne & Delin, 1993; Thalbourne & French, 1997),[13] but also items to do with astrology and UFOs (Thalbourne & French, 1997).

Kundalini is the Sanskrit term for a hypothetical yogic energy that is said to travel up the spine and throughout the body (Krishna, 1970). Thalbourne and Fox (1999) constructed a 32-item scale to measure manifestations of this energy, and found that it correlated 0.36 with the visual analogue ASGS. The researchers also found that persons who suffered from panic attacks scored significantly higher on the ASGS than did control participants.

Wilson and French (2006) found that 36% of respondents falsely claimed to have seen footage of the Bali bombings. Participants reporting false memories of this kind scored higher on the ASGS. Dagnall et al. (2008) sought to determine whether this effect was moderated by news-item order, some of the items having actual footage of them, others not. Level of paranormal belief had no effect on clarity rating when the Princess Diana car crash question was presented first (that is, in the same experiment as other questions), but sheep gave significantly higher clarity ratings when the question was posed fifth. Thus, in some instances, sheep reported more vivid false recollections of non-existent footage. Do they have a more liberal criterion of "clarity"? Further analyses indicated

> a significant positive correlation between false memory and belief in the paranormal . . . when the false memory item is not preceded by events for which footage exists. However, no relationship was found between false memory and belief in the paranormal . . . when the false memory item was presented after events for which there was known footage. (Dagnall et al., 2008, p. 183)

The findings of Rogers, Davis and Fisk (2008) suggested that moderate believers in the paranormal are more susceptible to the conjunction fallacy, i.e., they are especially prone to misperceiving the co-occurrence of two independent events as being more likely than either constituent event alone. Surprisingly, believers' susceptibility to this fallacy was *less* pronounced when one constituent was portrayed as an ostensible paranormal event.

Roe and Morgan (2002) had their participants complete the Narcissistic Personality Inventory along with the ASGS and found a

[13] A reviewer commented that "the reference to 'non-ASGS paranormal items' surely raises questions about the breadth of items comprising the ASGS and the dimensionality of paranormal belief had such items been included." This is one reason why the author believes it urgent to expand the number of items from 18 to 26.

significant correlation due apparently to ESP and PK belief rather than belief in an afterlife. Thalbourne et al. (2007) administered the Rasch-scaled ASGS along with the Selfism Scale of Phares and Erskine (1984) to measure narcissism or egocentricity. The correlation was very low and non-significant. Thus, the findings here are inconclusive.

In a psychophysiological study, Voracek (2009) correlated a German version of the ASGS ($\alpha = 0.94$) with the 2D:4D digit ratio, which putatively measures pre-natal androgen levels. A higher (feminised) 2D:4D correlated with stronger beliefs in men, even when controlling for age, education, adult height and weight, and birth length and weight. Shorter birth length (in men and in women) and lighter body were was associated with stronger beliefs. This evidence may be informative for narrowing down possible developmental pathways of paranormal belief. Says Voracek: "Propensities contributing to sex and individual differences in these beliefs probably arise in utero. . ." (p. 105). Note that it is the women who had the higher beliefs, confirming much previous research. Note also that Voracek replicated Willson's (2009) single-factor solution for the ASGS. However, note finally that the observed associations with physiology were very low (< .15).

TRANSLIMINALITY

Transliminality is defined as the hypothesised tendency for psychological material to cross the threshold into consciousness (Thalbourne, 2010). It is relevant to the present review because paranormal belief as measured by the ASGS is one of the nine variables that load on the transliminality factor (the others include mystical experience, creative personality, manic experience, magical ideation, absorption, fantasy proneness, hyperaesthesia, and attitude to dream interpretation—Thalbourne, 1998a; Wiseman & Watt, 2006). Indeed, it has been shown that transliminality is an index of the sheep-goat variable, to such an extent that correlates of one tend to be correlates of the other (Thalbourne & Houran, 2003), and this is not an artefact produced by the fact that there are items on paranormal belief in the Revised Transliminality Scale (Lange, Thalbourne, Houran, & Storm, 2000). The implication for this review is that whatever is the mechanism underlying the threshold-crossing tendency, this mechanism may account for the sheep-goat variable as well. Moreover, research on the ASGS could be extended in scope by examining reported correlates of transliminality, such as openness to experience (Thalbourne, 2000b), sensation-seeking (Thalbourne & Cochrane, 2002), and thin boundaries (Thalbourne & Maltby, 2008). These variables have already to some extent been researched using non-ASGS measures. Likewise, research on

transliminality could be informed by work on the sheep-goat variable, e.g., with regard to hypnotisability (Thalbourne, 2009).

CONCLUSION

In this review we have followed the development of the ASGS from a 10-item scale to an 18-item scale (and looked ahead to a possible 26-item scale, which, it is proposed, be called the BLPQ). We have examined the evidence for the reliability and validity of the ASGS, and have reported the multitude of uses of the scale in work such as frequency and especially correlational studies, both in parapsychology and orthodox psychology. The sheer quantity of findings and the widespread use of the test instrument should encourage researchers who are looking for a measure of belief in the paranormal to consider strongly an appropriate version of the Australian Sheep-Goat Scale.

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APPENDIX A

The Basic Limiting Principles Questionnaire

Note: the responses are on a 5-point Likert scale ranging from "strongly disagree" to "strongly agree"

1. I do not believe in the *existence* of ESP (extrasensory perception, such as telepathy, clairvoyance, or precognition).
2. I believe I have had *personal experience* of ESP.
3. I do not believe *I am psychic.*
4. I believe it is possible *to obtain knowledge of hidden situations* such as the location of underground water or of deceased persons.
5. I do not believe that I have ever *obtained knowledge of hidden situations* such as the location of underground water or of deceased persons.
6. I believe it is possible to *predict the future* in ways that do not depend upon reason or the normal sense organs.
7. I have had not had any *premonitions* about the future that came true and which (I believe) were not just a coincidence.
8. I have had at least one *dream* that came true and which (I believe) was not just a coincidence.
9. I have not had any *visions* that were not hallucinations and from which I received information that I could not have otherwise gained at that time and place.
10. I believe that what we call *"mind" is different from the brain.*
11. I do not believe that *the minds of some people can leave their bodies*, travel around, and return.
12. I believe that on at least one occasion *my own mind has left my body*, travelled around, and returned.
13. I do not believe in *life after death.*
14. I believe that *some people can contact spirits of the dead.*
15. I believe *I have never myself contacted the spirit of a dead person.*
16. I believe that it is possible to *gain information about* the thoughts, feelings or circumstances of another person in a way that does not depend on reason or normal sense organs.
17. I do not believe that it is possible to *send a "mental message"* to another person, or in some way influence them at a distance, by means other than the normal channels of communication.
18. I believe I have had at least one experience of *telepathy* between myself and another person.

19. I do not believe in the existence of psychokinesis ("PK", or mind-over-matter), that is, *the direct influence of mind on a physical system*, without the mediation of any known physical energy (e.g., psychically bending metal).
20. I believe I have *personally exerted PK* on at least one occasion (e.g., willed dice to come up a given face).
21. I do not believe that *I have marked psychokinetic ability*.
22. I believe that, on at least one occasion, an inexplicable (but *one-off*) physical event of an apparently psychokinetic origin (such as someone bending metal) has occurred in my presence.
23. I believe that *persistent inexplicable physical disturbances*, of an apparently psychokinetic origin (as, for example, a poltergeist) have *never* occurred in my presence.
24. I believe that *psychic healing* occurs.
25. I believe that I have *never exercised* psychic healing myself.
26. I believe that *I have benefited* from psychic healing.

APPENDIX B

The Experience of Psychotic Symptoms Scale—Revised

Note: the responses are on a 5-point Likert scale ranging from "strongly disagree" to "strongly agree"

1. I have sometimes found that the familiar boundaries between people, events, time and space were blurred or not as accessible as they once were.
2. I have never experienced distressing voices inside my head that didn't seem to belong to me.
3. I have experienced a period of time when my sentences were unclear or didn't make sense.
4. I have never felt strange and cut off from the world with everything moving in slow motion.
5. I have sometimes been really convinced of something being real even though no one else shared the same belief.
6. I have never found myself desperately trying to make sense of an unfamiliar environment.
7. I have sometimes experienced someone outside of myself controlling my body or actions.
8. I have never heard voices as distinct from my own coming from inside my head.
9. I have sometimes experienced significant difficulties in keeping up with social and/or occupational obligations.
10. I have never believed that my thoughts were being interfered with in some way.
11. I have sometimes felt that my internal world was being played out in the external communication of those around me.
12. I have never found my everyday thoughts becoming confused or not joining up properly.
13. I have sometimes experienced seeing, hearing, feeling, smelling or tasting something that no one else could.
14. I have never experienced enormous difficulty in organising my thoughts.
15. I have sometimes found myself laughing inappropriately or becoming angry or upset without a reason.
16. I have never believed for a while that I was someone who in fact I was not.