Manchester Metropolitan University

Eyes in the back of your head? Belief in scopaesthesia and its relation to paranormal belief and cognitive-perceptual personality measures.

By Mia Bennion

Supervised by: Dr Neil Dagnall Date 11/04/2018

Eyes in the back of your head? Belief in scopaesthesia and its relation to paranormal belief and cognitive-perceptual personality measures.

ABSTRACT

The present study examined the extent to which belief in the paranormal and cognitive-perceptual personality measures relate and predict belief in scopaesthesia. Scopaesthesia is the common experience where one can detect they are being stared at by another, outside their field of vision. The phenomenon has been experimentally researched for over a hundred years, however only a small number of studies have investigated potential psychological correlates. A sample of 173 volunteers, recruited via convenience sampling, took part in the study. Participants completed a series of self-report measures; Scopaesthesia Questionnaire, Revised Paranormal Belief Scale, Reality Testing subscale of the Inventory of Personality Organization and the Schizotypal Personality Questionnaire Brief. Paranormal belief, proneness to reality testing deficits and schizotypy all showed positive correlations with belief in scopaesthesia. The measure of paranormal belief was found to be the highest correlate, whilst cognitive-perceptual measures only presented small correlations to scopaesthesia belief. Following a regression analysis, paranormal belief was the only variable which emerged as a significant predictor of belief in scopaesthesia ($F(1,118) = 15.6$ $p < .001$). Gender differences within belief in the phenomenon were also evidenced. The present findings offer a further exploratory step towards greater understanding of the phenomenon.

KEY WORDS:	SCOPAESTHESIA	PARANORMAL BELIEF	REALITY TESTING	SCHIZOTYPY	PARAPSYCHOLOGY

Contents

Introduction

Have you ever had the feeling that someone was staring at you and turned around to find this was the case? This may have been an example of scopaesthesia (Carpenter, 2005), the name given to describe the phenomena in which one can detect they are being stared at by another, not directly in their field of vision (Colwell et al., 2000). Personal experience of scopaesthesia has been shown to be highly prevalent across various populations; surveys conducted in Europe and North America evidenced between 70% and 97% of the people questioned reported they had experienced scopaesthesia in some form (Braud et al., 1990; Sheldrake, 1994; Cottrell et al., 1996). Further surveys suggest that women (81%) experience scopaesthesia more so than men (74%) and outlined scopaesthesia occurred most frequently with strangers in public places (Sheldrake, 2003). Anecdotal evidence of scopaesthesia has remained seemingly high since the existence of phenomenon was first proposed over a century ago. Naturally, this has prompted scientific enquiry.

Previous Research

The earliest investigation into scopaesthesia is believed to have been conducted by Titchener (1898), after several of his students discussed their belief in the phenomenon with him. Titchener dismissed the students' propositions, stating it as mere superstition. As he predicted, his laboratory experiments investigating scopaesthesia, provided no effect. However, Hodgson (1899) highlighted how Titchener's research displayed an evident bias, in order to confirm his own prior belief that the phenomenon was unscientific. Furthermore, the details and methodology of these experiments were never provided, meaning findings are potentially unreliable (Sheldrake, 2005).

Although heavily scrutinised, Titchener's paper was influential in providing a foundation of interest into the phenomenon (Sheldrake, 2005). As a result, a substantial number of experiments have now been conducted to further investigate scopaesthesia. These experiments, referred to as 'direct-looking' experiments, involve an experimenter sitting behind the participant, either staring directly at their backs or looking away (Baker, 2007). The participant is asked to clarify if they believe they are being stared at or not, this is repeated over a number of trials with responses recorded. Overall, statistically significant staring detection effects have been obtained across multiple studies (Braud, 2005), with several meta-analyses indicating the validity and reliability of scopaesthesia (Schlitz and Braud, 1997; Schmidt et al., 2004). The ease of conducting these types of experiments mean that similar positive findings have been replicated in tens of thousands of trials, further enhancing the statistical significance of the results (Sheldrake, 2005).

Methodological Issues

Some researchers however, are sceptical about the methods in which these findings have been gained. Marks and Colwell (2001), described how direct-looking experiments were poorly controlled, remarking even after twenty million trials, findings would still count for nothing; 'the quality of evidence is much more important than its quantity' (Marks and Colwell, 2001:62). Possible confounds within scopaesthesia experiments have been proposed, these include peripheral vision and sensory cues such as subtle noises and variations in infrared radiation (Sheldrake, 2005; Baker, 2007). In an attempt to eradicate these confounds, different experimental designs have been introduced. These involve blindfolding participants (Sheldrake, 2001) or separating participant and experimenter by mediums such as one-way mirrors

(Peterson, 1978) or closed-circuit television (CCTV) (Braud et al., 1993).

However, this is where scopaesthesia research has seemingly hit a dead-end. The need for control over extraneous variables means that the ecological validity of scopaesthesia experiments suffer. Baker (2005) presented a 'Continuum of remote staring detection studies' to evidence this (See Fig. 1). Direct-looking experiments provide a greater ecological validity compared to other experimental designs, as they are closest to the real world situation in which scopaesthesia could occur. However, potential confounds are not controlled for like they would be in a CCTV laboratorybased experiment. This poses the problem of how the controls used in these experiments, may restrict true investigation of the real life phenomenon.

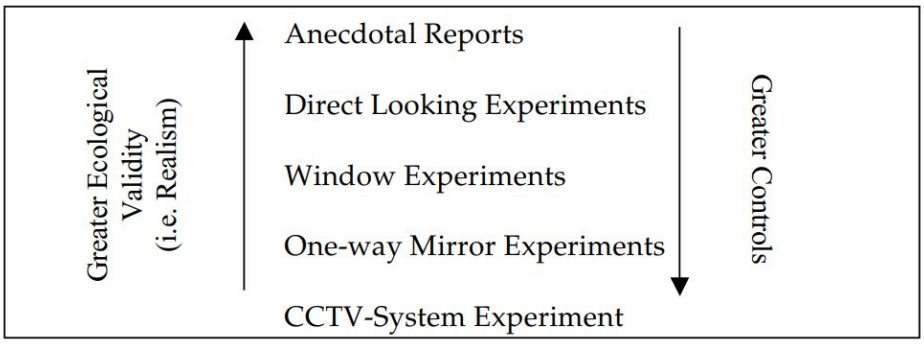

Figure 1. Continuum of remote staring detection studies (from Baker, 2005)

Additionally, the existence of scopaesthesia cannot be explained in terms of contemporary science, with current knowledge of sensory mechanisms providing no plausible explanation of how scopaesthesia could operate (Baker, 2005). As a result of this, scopaesthesia is classed as paranormal, considered experimentally as a form of extrasensory perception (ESP) (Sheldrake, 2005). This categorisation causes scopaesthesia research to be subject to the general taboo against psychic phenomena (Sheldrake, 2013), with some marginalising parapsychological research as an

illegitimate scientific undertaking (Irwin, 1993). This creates further difficulties when investigating scopaesthesia as, if authentic, the phenomenon contradicts modern-day science, meaning studies must to be subject to stringent methodology.

The present study

With these experimental difficulties in mind, the present study instead aims to gain further insight using a different approach; by focusing on the reasons why people accept and endorse scopaesthesia and view scopaesthesia experiences as authentic.

A closer focus into the relationship between belief in scopaesthesia and experience of scopaesthesia is needed, as previous studies identifying correlates of scopaesthesia may have confounded these two factors. Take this example question used in past studies (Sheldrake, 2013); 'Have you ever found that you could stare at someone from behind and make them turn around?' A participant may have experienced this but believed their stare was detected by peripheral vision, not by an ability to detect a gaze outside the range of conventional senses. The respondent may answer yes to this question, without actually endorsing scopaesthesia, giving rise to compromised findings.

The survey of anomalous experience (SAE) (Irwin, 2013) addresses this issue, as it delineates clearly between anomalous experiences and paranormal experiences. Respondents are assessed on both their proneness to anomalous experiences (PAE) and proneness to paranormal attribution (PPA). Individuals can identify an experience as anomalous, this experience then may or may not be classified as paranormal. With this is in mind, it seemed necessary firstly to assess participants' level of paranormal belief, as this may influence individuals to classify a subjective experience as scopaesthesia.

Paranormal Belief

Research into psychological correlates of scopaesthesia is very limited, but belief in the paranormal is one that has been investigated more so than others (Baker, 2007). Findings however, have been inconclusive. Williams (1983) assessed participant's level of paranormal belief using the 10-item sheep-goat scale. From this assessment, he chose a sample of half believers and half non-believers; evidence outlined a positive correlation between scopaesthesia detection and paranormal belief. This correlation would be expected as ESP experiences, which includes scopaesthesia, have been found to be influenced by a generalised belief in paranormal phenomena (Rattet and Bursik, 2001). However, self-selected samples such as the one used by Williams, pose concerns about the ability to derive general inferences from (Wainer, 2013). In light of William's sample not being completely random, validity of the findings come into question. Moreover, the direct-looking experiments conducted by Coover (1913) included only believers in the paranormal as participants, but reported largely insignificant results. Additionally, a study conducted by Wiseman et al (1995) demonstrated a significant negative correlation between a measure of psi-belief and a scopaesthesia measure. With mixed results regarding correlations between paranormal belief and scopaesthesia, further research on the relationship is needed.

Cognitive-perceptual factors

As the present study sought to investigate the processes through which belief in scopaesthesia can be formed, testing cognitive-perceptual factors as potential correlates was deemed appropriate.

In accordance with Langdon and Coltheart's (2000) account of generation and evaluation of beliefs, explanations of sensory experiences are devised according to a

person's individual idiosyncrasies and universal human dispositions (Kahneman and Tversky, 1972; Weiner, 1986). This evaluative process is termed 'reality testing' (Reber, 1995). Sometimes, individuals may possess proneness to reality testing deficits, whereby information about the environment is not subject to rational thought processes (Irwin, 2004). Alternatively, an intuitive-experiential thinking style is adopted (Dagnall et al., 2017), experiences do not undergo rigorous critical evaluation and instead causal attributions are produced using self-generated hypotheses (Drinkwater et al., 2012). Links between the general endorsement of anomalous beliefs and intuitive-experiential thinking have been shown previously (Dagnall et al., 2010, Irwin, 2003). Additionally, Pennycook et al (2012) found participants who demonstrated higher levels of analytic reasoning were less likely to validate supernatural beliefs. Therefore, it can be postulated that belief in scopaesthesia may occur from a lack of rational testing of subjective experiences. Belief in scopaesthesia may be maintained over time as individuals repeatedly fail to test their own interpretations of anomalous events (Goode, 2000).

A second cognitive-perceptual factor chosen, was a measure of schizotypy.

Schizotypy is a complex, multidimensional psychological construct (Lenzenweger, 2015), comprising of cognitive-perceptual, interpersonal and disorganised dimensions (Dembinska-Krajewska and Rybakowski, 2014). Several models of schizotypy exist due to its application within various psychology sub-disciplines, for example; individual differences (Eysenck, 1960) and clinical settings (Rado, 1953; Meehl, 1962). The present study adopted the fully dimensional model proposed by Claridge (1997), which views schizotypy as a personality dimension. This ideology places individuals on a continuum between relative psychological health and psychosis (Barrantes-Vidal et al., 2015). Those reporting higher levels of schizotypy display, to a milder degree,

tendencies for schizophrenia-like characteristics. Previous studies investigating schizotypy as a correlate to anomalous belief, also employed the personality perspective, therefore this model was deemed the most suitable (Dagnall et al., 2016, 2017; Denovan et al., 2018).

Numerous studies note respondents scoring high on the cognitive-perceptual function within schizotypy, show a stronger belief in anomalous phenomena (Hergovich et al., 2008; Simmonds-Moore, 2010). In addition, although cognitive-perceptual factors have largely been untested as predictors of scopaesthesia, Sheldrake (2005), mentions an unpublished thesis (Jones, 1996) which investigated automatic detection of scopaesthesia and schizotypal personality correlates. Findings outlined a higher level of arousal in participants with higher scores of schizotypy when they were being stared at from behind, compared to when they were not being stared at. Low scorers on the Schizotypal Personality Questionnaire did not differ in arousal levels.

It must be noted that the validity and reliability of these findings should be interpreted with caution, as the study was not peer-reviewed and no replications have been found. This said, further conclusions from this study have been drawn by Atkinson (2005). He suggested people with schizotypal tendencies manifest an amplified reasoning bias which could affect scopaesthesia belief. Evidence of biased attention and memory of experiences associated with personal threat is present in persecutory delusions, experienced by individuals diagnosed with schizophrenia (Bentall et al., 1995; Kaney et al., 1997). According to personality models of schizotypy, this bias would still be present in non-clinical populations. In this context, those possessing higher levels of schizotypy are more likely to remember occasions in which they detected another person's stare, but forget times where they believed they were being stared at but

turned around to find this was not the case. This biased memory can endorse a greater belief in scopaesthesia.

Contrastingly, Jone's (1996) findings could be interpreted in a different manner; people who reported high levels of schizotypy may be more sensitive to the gaze of the starer through the unknown way in which it is transmitted. It has been suggested that the ability to detect remote stares may be present across the population in varying degrees (Sheldrake, 1994; Braud, 2005) and studies have shown that high levels of positive schizotypy are linked with enhanced cognitive experiences (Mohr and Claridge, 2015). A study conducted by Rock et al (2008), demonstrated those scoring higher on positive schizotypy reported more intense levels of perceptual experiences, suggesting a possible greater ability to detect scopaesthesia.

Research rationale

Most previous scopaesthesia research has focused on providing experimental proof for the validity of the phenomenon. For reasons mentioned previously, this approach appears to be proving unproductive. These studies, however, have obtained numerous positive effects, sufficient to warrant further research into the topic. The present study will instead explore the nature of scopaesthesia, investigating factors which could potentially influence personal belief in the phenomenon. The aim is to build on the small evidence base of psychological correlates for scopaesthesia, as investigating previously overlooked and unexplored personality factors is crucial for a deeper understanding of the phenomenon. In a wider context, understanding how psychological factors relate to scopaesthesia may be useful in a clinical setting, potentially helping those with paranoid or self-conscious thoughts.

Research Question

To examine the extent to which belief in the paranormal and cognitive-perceptual personality measures relate to belief in scopaesthesia.

Research Hypotheses

H1-H3

Paranormal belief, proneness to reality testing deficits and schizotypy will correlate positively with belief in scopaesthesia.

H4

On the survey of anomalous experience, belief in scopaesthesia will correlate positively with only proneness to anomalous experiences scores (proneness to paranormal attribution scores will not significantly correlate with belief in scopaesthesia).

H5

Belief in scopaesthesia will correlate positively with experience of scopaesthesia.

H6

Women will present a greater level of belief in scopaesthesia than men.

Method

Design

This study employed a correlation survey design. Relationships between the dependent variable - belief in scopaesthesia, and independent variables – paranormal

belief, proneness to reality testing deficits and schizotypy were presented. The extent to which independent variables predicted the dependent variable was also calculated.

Participants

In total, 173 respondents recruited through convenience sampling, participated in the study[1]. Mean overall age was 29.73 years (*SD* = 13.02), with a range of 18–69 years; male (N = 40, 23%) *M* = 34.52, range 18–69 years *SD* = 17.10, female (N = 133, 77%) *M* = 28.30, range 18–66 years *SD* = 11.20. Exclusion criteria indicated participants were required to be over the age of 18. Questionnaires were completed either via physical paper hand-out or through an online link published on the Manchester Metropolitan Participation Pool or a private Facebook group containing students and staff at Manchester Metropolitan University.

Materials

Previous studies investigating psychological correlates of scopaesthesia outlined the use of questionnaires in data collection (Williams, 1983; Fenigstein and Vanable, 1992; Braud et al., 1993). Thus questionnaires were considered an appropriate methodology for this study. All participants were asked to complete the same questionnaire booklet containing 97 items across all variables (see appendix 2). The scopaesthesia measure used in the questionnaire was devised especially for the purposes of the present study. All other items within the questionnaire were previously established measures. Questionnaire booklets also contained demographic information including age and gender. To control for order effects, questionnaire order was counter balanced.

[1] In accordance with the calculation provided by Green (1991), the minimum number of participants required for the present study was 107; minimum number of participants required is 104 + k (where k is the number of predictor variables).

Scopaesthesia Questionnaire (SQ)

Containing nine items overall, this self-report measure assessed belief in scopaesthesia (5 items) and experience of scopaesthesia (4 items). Within the belief in scopaesthesia sub-section, respondents were given statements such as “I believe in the existence of scopaesthesia” and answered using a 7-point Likert scale ranging from 1 - “strongly disagree” to 7 - “strongly agree”. Total scores could range from 6 to 42, higher scores suggested a greater belief in scopaesthesia. Items 3 and 5 in this section are negatively-keyed items, questions were worded in this way in order to prevent response bias by participants (Paulhus, 1991). The belief in scopaesthesia sub-section showed a good internal consistency (.76) when tested in the present study. The experience of scopaesthesia sub-scale aimed to investigate if participants had experienced scopaesthesia and if so where, who and how frequently. This section was useful in order to provide descriptive information concerning scopaesthesia experiences.

The Revised Paranormal Belief Scale (R-PBS)

The R-PBS (Tobacyk, 1988) is a revision of the original Paranormal Belief Scale developed by Tobacyk and Milford (1983). It is a 26-item self-report measure assessing seven facets of paranormal belief; traditional religious belief, psi, witchcraft, superstition, spiritualism, extraordinary life forms, and precognition (Tobacyk, 2004). Items are presented as statements such as “There is life on other planets”. Respondents answer using a 7-point Likert scale ranging from 1 - “strongly disagree” to 7 - “strongly agree”. The R-PBS calculates an overall paranormal belief via summated item totals, scores can range from 26 to 170, with higher scores outlining

greater paranormal belief. Note that, item 23, “Mind reading is not possible” is reversed scored.

Although dimensions of the sub-scales within the PBS have been disputed (Wiseman and Watt, 2006), previous research has established the R-PBS as psychometrically and conceptually satisfactory (Tobacyk, 2004). Test–retest reliability of the scale across a four week period was shown to be .89, with test-retest reliability of the seven subscales ranging from .60 to .87. Subscale reliability coefficients have been found to range from .60 (precognition) to .84 (psi) (Tobacyk & Milford, 1983). The R-PBS is the most prevalently used self-report measure of paranormal belief (Irwin, 2004) so was deemed suitable for the present study.

The Inventory of Personality Organization Reality Testing Subscale (IPO-RT)

Proneness to RT deficits was measured using the 20-item reality testing subscale of the Inventory of Personality Organization (IPO–RT; Lenzenweger et al., 2001). This one-dimensional self-report measure is designed to index “the capacity to differentiate self from non-self, intrapsychic from external stimuli, and to maintain empathy with ordinary social criteria of reality” (Kernberg, 1996:120). This view is consistent with the theory of belief generation proposed by Langdon and Coltheart (2000), who focused on information-processing style rather than psychotic symptomatology. Example items are statements such as “I have seen things which do not exist in reality”, which are responded to using a 5-point Likert scale; 1 = ‘never true’, to 5 = ‘always true’. A total score is calculated as the sum of responses over all items, which may range from 20 to 100, with higher scores suggesting greater proneness to RT deficits. The psychometric characteristics of the scale are well-established, showing good internal consistently, good construct validity and sufficient retest reliability score of r = .73

(Lenzenweger et al., 2001). The IPO-RT has been found to be temporally stable with nonclinical populations and although IPO-RT items have not been tested for differential item functioning, it has been evidenced that scores do not vary across gender (Lenzenweger et al., 2001).

Schizotypal Personality Questionnaire Brief (SPQ-B)

The SPQ-B (Raine and Benishay, 1995) is a shortened version of the original 74-item SPQ (Raine, 1991), which was developed to screen for schizotypal personality disorder in non-clinical samples (APA, 1994). Partially modelled after three components of schizophrenia, SPQ dimensions include: cognitive-perceptual deficits (Ideas of Reference, Magical Thinking, Unusual Perceptual Experiences, and Paranoid Ideation), interpersonal deficits (Social Anxiety, No Close Friends, Blunted Affect, Paranoid Ideation), and disorganisation (Odd Behaviour, Odd Speech). The SPQ-B still includes these three subscales, but is comprised of 22 items only; eight items assessing cognitive-perceptual, eight items assessing interpersonal and six items assessing disorganised. The SPQ-B contains statements such as “I am an odd, unusual person” responded to with “yes” or “no” answers. Yes-responses are totalled, producing an overall score ranging from 0 to 22, higher scores specify higher levels of self-reported schizotypy. Favoured over the SPQ for its brevity, the SPQ-B features prominently within published research (Bailey and Swallow, 2004). The SPQ-B, demonstrates psychometric integrity; specifically, criterion validity, good internal consistency (subscales range from 0.74 to 0.76) and test–retest reliability (Raine and Benishay, 1995; Axelrod et al., 2001).

The Survey of Anomalous Experiences (SAE)

The SAE was constructed by Irwin et al (2013) and comprises of 20 items evaluating anomalous experiences. This self-report measure aims to evidence the difference between an anomalous experience and parapsychological experience. Limitations of previous measurements of parapsychological experience such as the Anomalous Experiences Inventory (Kumar & Pekala, 2001) (one of the most currently widely used inventories for surveying parapsychological experiences (Goulding & Parker, 2001), are that some items refer to anomalous experiences explicitly implicating paranormal phenomena. For example; “I have seen a ghost or apparition”. This means respondents are forced to attribute an anomalous experience to one that is paranormal, even if this is not the case. This may cause respondents to identify as non-experients, answering “no” as they deny ever having any paranormal affiliated experiences, yet an independent observer may construe some of the respondents’ experiences as parapsychological. This may create compromised findings.

In the SAE, participants who acknowledge having had an anomalous experience are asked to further clarify their position by stating whether they attributed their experience to a specified paranormal process or to a specified non-paranormal process, like coincidence or misperception. Each item outlines an anomalous experience, presented without any explicit reference to paranormal underpinnings. Statements such as “I have inherent abilities that neither of my (biological) parents possessed” are introduced to participants, responded to in three ways; Option 1 “yes, I interpreted it as a (specified) paranormal experience”, Option 2 “yes, but I interpreted it as due to (specified) normal processes”, or Option 3 “no.”. Option 1 and 2 show a proneness to anomalous experiences (PAE) whereas a selection of option 3 suggests no such proneness. Proneness to paranormal attribution (PPA) is shown by participant

selection of option 1. The SAE yields two scores for each participant; firstly, a PAE score is computed as the percentage of “yes” responses (i.e., selection of option 1 or 2 in any item). Secondly, each participant’s PPA score is defined by the percentage of

“yes, paranormal” (Option 1) responses. Both scores can range from 0% to 100%. Validity of the SAE proved sufficient in a study conducted by Irwin (2015), additionally, considering the experiences surveyed within the items vary widely in frequency, internal consistency of the scale is satisfactory (0.83) (Irwin et al., 2013).

Procedure and Ethical Considerations

Ethical approval was gained before any data was collected (see appendix 1). This adheres to the ethical guidelines outlined by the British Psychological Society (BPS) as well as complying with Manchester Metropolitan University’s Academic Ethical Framework and the University’s Guidelines for Good Research Practice.

Potential respondents were first presented with the participant information sheet, this included study background information, participant requirements and participant confidentially. All participants were made aware of the true aims of the study before beginning the questionnaire and no deception occurred during any point of the study. Participants were requested to create a unique five number identification code, in order to enable them the right to withdraw at any point during the research process. Participants were only made identifiable by this unique code, gender and age of participants was asked, however no personal information was requested during any stage of the study. Full consent was explained and gained via the consent form. Respondents then continued on into the questionnaire booklet comprised of the several self-report measures. Following completion of the questionnaire booklet, participants were debriefed. In this, their right to withdraw was explained and although

the study does not at any point, place participants in potentially harmful or stressful situations, services were listed if any distress was encountered as a result of the study (see appendix 2 for participant information sheet, consent form and debrief).

Results

Participant's responses from paper questionnaires were inputted into Excel and online responses were exported from Qualtrics. Both were added into SPSS for further analysis.

Data Preparation

Prior to analysis, all scales were prepared from raw data on SPSS. The following items were reversed;

Scopaesthesia – Belief in Scopaesthesia: Q3 and Q5.

Paranormal Belief – Revised Paranormal Belief Scale: Q23

Reliability Analysis and Descriptive Statistics

Following internal consistency analysis, measures for Scopaesthesia, Paranormal belief, Reality testing, Schizotypy and both components of the Survey of Anomalous Experience were deemed reliable, showing Cronbach's alpha's above .7. Means and standard deviations for each of the measures was also calculated (see Table 1).

Table 1

Scale descriptive statistics and reliabilities

	Mean	SD	Min	Max	Number of items	Cronbach's alpha
Scopaesthesia						
Belief	22.70	5.48	5.00	35.00	*5*	*.76*
Experience	5.11	1.98	1.00	7.00	*4*	
Paranormal Belief	86.36	34.62	26.00	170.00	*26*	*.95*
CognitivePerceptual						
Reality Testing						
	43.42	13.85	20.00	81.00	20	*.93*
Schizotypy	9.19	5.07	0.00	22.00	22	*.84*
SAE					20	*.88*
PAE	44.31	20.44	0.00	100.00		
PPA	23.97	29.73	0.00	100.00		

Note. The measure of Scopaesthesia was divided into Belief in Scopaesthesia (Belief) and Experience of Scopaesthesia (Experience). The Survey of Anomalous Experience (SAE) was also divided into Proneness to anomalous experience (PAE) and Proneness to paranormal attribution (PPA).

Scopaesthesia, Paranormal Belief and Cognitive-Perceptual Correlations

A series of Pearson's bivariate correlations were conducted between all scales used in the study (see Table 2).

Table 2

Correlations among variables related to Scopaesthesia

	1	2	3	4	5	6	7
1. BSCOP							
2. ESCOP	.71**						
3. PB	.29**	.10					
4. RT	.13*	-.01	.29**				
5. S	.17*	.11	.34**	.66**			
6. PAE	.09	.10	.29**	.62**	.56**		
7. PPA	.44*	.20**	.44**	.44**	.45**	.43**	

Note. * p < .05. ** p < .01.,one-tailed. BSCOP = Belief in scopaesthesia, ESCOP = Experience of scopaesthesia, PB = Paranormal Belief, RT = Reality Testing, S = Schizotypy, PAE = Proneness to anomalous experience, PPA = Proneness to paranormal attribution.

Belief in scopaesthesia shows a positive correlation with all of the independent variables, with paranormal belief showing the highest positive correlation.

From the correlation matrix, it was shown that belief in scopaesthesia and experience of scopaesthesia have a strong correlation.

Regression analysis

Regression analysis was used to test if paranormal belief, reality testing and schizotypy predicted participants' belief in scopaesthesia. Forward selection was used, as it enters predictor variables individually, in an order determined by the

relationship strength between predictor and criterion. This enables the effects of adding subsequent variables to be identified. Using this method, a significant model emerged (F (1,118) = 15.6 p <.001). The relationship between paranormal belief and belief in scopaesthesia was small (R=.29), with the model explaining approximately 8% (adjusted R^2 = 0.7%) variance in belief in scopaesthesia scores. These results are summarised below in Table 3.

Table 3

Regression Analysis predictors of belief in scopaesthesia

Variable	B	β	T	Sig. (p)
Paranormal Belief	.04	.29	4.00	<.001

Note. R^2= .78 (8% variance) (Reality testing and Schizotypy were not significant predictors in this model).

Descriptive Statistics for Experience of Scopaesthesia

Results outlined that 75.8% of participants reported a personal experience of scopaesthesia. Within the number of times participants had experienced scopaesthesia, 2-5 times was outlined as the most common frequency of scopaesthesia experiences (48.6%). In addition, strangers were highlighted as the type of people that scopaesthesia was experienced the most with (60.1%). Public transport was reported as the location where scopaesthesia had been experienced the most (see Table 4).

Table 4

Locations of scopaesthesia experiences and percentages

Location	Percentage (%)
Public Transport	32.4
Other	15.6
Workplace	13.9
In a vehicle	11.6
Home	10.4
Restaurant	8.1
Shopping Mall	8.1

Gender Differences in Scopaesthesia Belief

An independent-samples t-test was conducted to compare belief in scopaesthesia in males and females. Equal variances could not be assumed due to an unequal sample (Male, N = 40 and Female, N = 133). Women (M = 23, SD = 5.0) reported significantly higher levels of belief in scopaesthesia than men (M = 21, SD = 6.5), $t(53.67) = -2.00$, $p = .054$.

Note. Following the independent samples t test, the significant level for belief in scopaesthesia was .054, which is above the generally accepted level of $p < 0.5$. Although belief in scopaesthesia did not have a significant level below the test value of .05, it was still used in further analysis due to being close to the acceptable test value.

Summary of findings

Paranormal belief and cognitive-perceptual measures evidenced significant positive correlations with belief in scopaesthesia. However, only the measure of paranormal belief was shown to be a significant predictor of belief in scopaesthesia, explaining 8%

of the variance. Both reality testing and schizotypy were not significant predictors of scopaesthesia belief and did not account for any additional variance. Additionally, PAE scores from the SAE positively correlated with scopaesthesia belief, further showing a relationship between paranormal belief and belief in scopaesthesia.

Discussion

Present research findings

The present study aimed to explore factors which could influence an individual's belief in scopaesthesia. The findings support all six hypotheses posed at the beginning of the study.

As predicted, paranormal belief and both cognitive-perceptual personality measures showed positive correlations with belief in scopaesthesia (H1-H3). The measure of paranormal belief was found to be the highest correlate, being the only variable which emerged as a significant predictor of belief in scopaesthesia. This supports the view that belief in the paranormal can act as a framework in interpreting unusual perceptions and experiences (Rattet and Bursik, 2001); concurring also with Williams (1983), who evidenced a positive correlation between scopaesthesia and paranormal belief.

These findings however, do not support results obtained by Coover (1913) and Wiseman et al (1995); with Wiseman evidencing a negative correlation between paranormal belief and scopaesthesia. These contrasting findings may be explained due to experimenter effects (Rosenthal, 1976). Experimenter effects are common within parapsychology research and refer to the impacts the experimenter creates

whilst conducting investigations (Palmer, 1989a, b). This could be the way in which they interact with the participant (Baker, 2007) or even the experimenter's own psi abilities (Watt and Ramakers, 2003). Both Coover and Wiseman outlined disbelief in the phenomenon and throughout past scopaesthesia research, there is a clear trend of sceptics gaining negative results in studies where they acted as the experimenter. In contrast, findings gained by experimenters holding non-sceptical attitudes present a majority of significantly positive results (Sheldrake, 1999).

These opposing findings, however, may not be due to experimenter effects, but instead caused by the 'file drawer effect' (Rosenthal, 1979). This bias is the tendency to only publish positive results, leaving negative or non-confirmatory results unpublished. It may be that if all the unsuccessful investigations of scopaesthesia were published then positive and negative effects would be equally reported (Henry, 2005), regardless of the attitudes of the experimenter. In order to explore the possibility of experimenter effects in scopaesthesia research, a collection of collaborative scepticproponent studies was conducted by Schlitz and Wiseman (2006). Findings partially outlined experimenter effects, but they concluded that more research is needed before experimenter effects can be validated.

Further support for paranormal belief as a predictor to belief in scopaesthesia was shown via the SAE; through a positive correlation between proneness to paranormal attribution scores and scopaesthesia belief (H4). It may be that those reporting a belief in scopaesthesia may have a tendency to interpret subjective experiences as paranormal, instead of other potential available explanations. As predicted, PAE scores did not significantly correlate with belief in scopaesthesia.

Although cognitive-perceptual personality measures did not emerge as significant predictors in the regression analysis, both proneness to reality testing deficits and schizotypy correlated positively with scopaesthesia belief. These findings are consistent with previous research suggesting that paranormal beliefs can arise from a deficiency in subjecting inferences to critical rational processing (Irwin, 2003; Dagnall et al., 2010; Pennycook et al., 2012). Furthermore, the positive correlation between scopaesthesia belief and schizotypy supports the theory proposed by Atkinson (2005); that higher levels of schizotypy can create a proneness to confirmation bias, neglecting disconfirming information and potentially forming and maintaining belief in scopaesthesia.

Although relationships between cognitive-perceptual factors and scopaesthesia belief were statistically significant, the positive correlations were small. Therefore, the predictive effects of these variables within this study should not be overstated. The inclusion of disorganised and interpersonal factors within the measure of schizotypy used (SPQ-B), could have weakened the correlation between schizotypy and scopaesthesia belief, as these factors do not play a role in the validation of unusual beliefs. Previous studies have shown only the cognitive-perceptual factors connected to positive schizotypy influence paranormal belief (Mohr et al., 2001; Dagnall et al., 2017), whilst disorganised and interpersonal characteristics evidence no direct contribution to the formation of paranormal beliefs (Hergovich et al., 2008; Dagnall et al., 2010). It may be useful to include only positive schizotypy measures in future studies, to test the relationship when positive schizotypy is isolated.

The correlation matrix evidences a strong positive correlation between belief in scopaesthesia and experience of scopaesthesia (H5). Although cause and effect cannot be established, it is clear that there is a strong relationship between the two

factors. Further investigation could attempt to identify which is the predominant variable.

Furthermore, results supported the final hypothesis of gender differences within scopaesthesia belief; showing females reported higher levels of belief in the phenomenon compared to men (H6). This supports previous studies which found similar gender discrepancies (Sheldrake, 2003) and also additional research highlighting that females express a greater general paranormal belief than males (Rice, 2003). Descriptions of scopaesthesia experiences found within the present study also support those presented by Sheldrake (2003), who found scopaesthesia occurred most with strangers in public places. These similar findings add further support towards the validation to the existence of the phenomenon.

Implications of findings

Role of anecdotal evidence

There is much dispute within the area of scopaesthesia, but what is difficult to contest is the high prevalence of personal experience of the phenomenon, repeatedly reported throughout studies, including this one. However, this large body of anecdotal evidence is quick to be dismissed by the scientific community (Sheldrake, 2013), with questions surrounding the scientific plausibility of the anecdotal claims proposed (Moore and Stilgoe, 2009). Experiences and observations are often the beginning of scientific inquiry, so it seems counter-productive to disregard and discourage investigations into a phenomenon, due to the fact that scientific bodies cannot currently provide an explanation as to how it can occur. With public opinions appearing to endorse and show interest in scopaesthesia, further exploration of the experience through scientific

investigations seems logical. Dismissal of this reportedly everyday phenomenon could potentially limit an expansion in scientific knowledge and understanding.

Real-world applications

Regardless of the absence of scientific explanations for scopaesthesia, belief in the phenomenon has been evidenced within professional practice. An extensive series of interviews conducted by Sheldrake et al (2003) found that many police officers, surveillance personnel and soldiers were familiar with the ability of detecting remote stares. A number of detectives reported they were trained not to stare at people's backs for longer than necessary, as the individual may detect this and notice the detective. Scopaesthesia was also reported to occur when observers were looking through binoculars or telephoto lenses. However, Blackmore (2005), comments how binocular lenses can have highly reflective surfaces, which can draw attention to the observer by conventional means. This said, these professions involve a lot of remote viewing and belief in scopaesthesia amongst these professionals remains high. These workers rely on being able to carry out covert operations, therefore if scopaesthesia is proven to exist, this would have implications within training (i.e. the most effective way to watch someone without this being detected through scopaesthesia).

Furthermore, over the past decade, there has been a dramatic rise in CCTV around the world (Hu and Gong, 2017) and particularly in the UK (Baker, 2007). Systems used for surveillance by businesses and the government mean people are observed via CCTV on a daily basis (Sheldrake, 2005). With positive scopaesthesia effects being demonstrated to still occur through this medium (Radin, 2005), it could be said that the number of possible scopaesthesia experiences may be higher than ever. If the

phenomenon was to be genuine, this increase in scopaesthesia experiences could prompt a greater prevalence of scopaesthesia belief.

Research limitations

Self-report questionnaires

This study relied exclusively on self-report measures, assessing only subjective evaluations of thinking styles and experience. Within the study background, participants were told that scopaesthesia is currently acknowledged as extrasensory perception. This paranormal affiliation may have created some respondents to answer items differently, as self-reports of paranormal belief can underestimate the actual level of belief due to social desirability (Zusne & Jones, 1989). Altered responses could have also been present in the R-PBS. This effect may have been heightened as the questionnaires were administered with associations to an academic institution, this may have caused participants to feel their convictions were likely to be met with disapproval (Genovese, 2005). Additionally, it has been previously noted that selfreport measures of reality testing may not reflect a true index of individual RT deficits (Irwin, 2003). Due to its complex and sub-conscious nature, a performance measure may be more beneficial in gaining genuine RT deficits scores than a self-report questionnaire in future studies. The relationship between subjective perceived performance and actual performance is often weak, a common issue when metacognitive measures are employed (Denovan et al., 2017). This means that findings should be interpreted with precaution.

Sample limitations

Convenience sampling was employed in the present study. This method is useful for studies like this which have limited time and resources, as it is affordable and provided

easy accessibility to potential participants. However, using this method impedes the ability to draw inferences about scopaesthesia belief across the wider population. The sample possessed a fairly sufficient age range of 18-69 years, but gathered an unequal proportion of males (40) to females (133). With the present study and previous studies outlining a tendency for females to hold a greater belief in scopaesthesia, this could have compromised findings.

Future Research

Identification of further scopaesthesia correlates

It is clear that belief in scopaesthesia cannot be fully explained in terms of the psychological correlates tested in this study; paranormal belief accounted for only 8% variance in the measure of scopaesthesia belief, with both cognitive-perceptual factors only presenting weak positive correlations with belief in scopaesthesia also. This indicates that other variables must influence the formation and maintenance of scopaesthesia belief; posing the question as to what other psychological factors may play a role.

Mindfulness is described as the ability to be aware of the self; one's thoughts, surroundings, internal - external stimuli and behaviours (Baer et al., 2006) and has been associated with paranoia and social anxiety, both of which have previously been shown to relate to scopaesthesia (Baker, 2015). This potential correlate has yet to be investigated as a predictor of scopaesthesia belief and experience in a peer-reviewed journal. Further investigation between these two concepts could be advantageous.

An interesting future study could test a potential model for belief or experience of scopaesthesia, with the inclusion of additional variables. This would require a larger sample but would enable researchers to see how multiple psychological factors

influence scopaesthesia belief in combination. As the present study found that paranormal belief was a significant predictor of belief in scopaesthesia, it may be useful to consider a dual-influence model; investigating the effects of paranormal belief alongside another psychological variable and the extent to which both together relate to belief in scopaesthesia. For example, investigating belief in science alongside paranormal belief may provide more insight into the cognitive processes involved within scopaesthesia. Belief in science employs rational-critical thought, whilst belief in the paranormal uses intuitive-experimental thinking (Irwin et al., 2015). Investigating the influence of dual thinking processes in relation to scopaesthesia belief and experience may prove valuable.

Valid scopaesthesia measure

The development of an instrument to assess scopaesthesia belief accurately may be beneficial for future research. Although the one created and used in the present study held up as a good measure with no emerging problems, a measure used consistently within scopaesthesia research and investigations into psychological correlates would enable studies to be more easily compared and repeated.

Conclusion

Scopaesthesia continues to be a complex and intriguing issue, still insufficiently researched. Whilst the effects of paranormal belief and cognitive-perceptual factors were relatively minor in influencing belief in scopaesthesia, these psychological correlates provide a greater insight into what underlying aspects affect scopaesthesia belief and experience. This may well be the key to fully understanding of the phenomenon.

References

American Psychiatric Association. (1994) *Diagnostic and statistical manual of mental disorders.* 4th ed., Washington, DC: American Psychiatric Association.

Atkinson, A., Blackmore, S., Baker, I., Carpenter, R., Clarke, C., Ellis, R., Fontana, D., French, C., Radin, D., Schlitz, M. and Schmidt, S. (2005) 'Open Peer

Commentary on ‘The Sense of Being Stared At Parts 1 & 2.’ *Journal of Consciousness Studies*, *12*(6), pp.50-116.

Axelrod, S. R., Grilo, C. M., Sanislow, C., and McGlashan, T. H. (2001) ‘Schizotypal personality questionnaire-brief: factor structure and convergent validity in inpatient adolescents.’ *Journal of Personality Disord*ers*,* 15(2) pp. 168–179. doi: 10.1521/pedi.15.2.168.19219

Bailey, E. L. and Swallow, B. L. (2004) ‘The relationship between cannabis use and schizotypal symptoms.’ *Eur. Psychiatry,* 19(2) pp. 113–114. doi: 10.1016/j.eurpsy.2003.12.001

Baker, I. S. (2007). *The Electrophysiological Processing of Remote Staring Detection*. Ph.D. University of Edinburgh.

Baker, I., Atkinson, A., Blackmore, S., Carpenter, R., Clarke, C., Ellis, R., Fontana, D., French, C., Radin, D., Schlitz, M. and Schmidt, S. (2005) ‘Open Peer Commentary on ‘The Sense of Being Stared At Parts 1 & 2.’ *Journal of Consciousness Studies*, *12*(6), pp.50-116.

Baker, I.S. (2015) ‘The relationship of the feeling of being watched to paranoia, selfconsciousness, and social anxiety.’ *The Journal of Parapsychology*, *79*(2) p. 203.

Barrantes-Vidal, N., Grant, P., and Kwapil, T. R. (2015) ‘The role of schizotypy in the study of the etiology of schizophrenia spectrum disorders.’ *Schizophrenia Bulletin,* 41(2) pp.408–416.

Bentall, R.P., Kaney, S. and Bowen-Jones, K. (1995) ‘Persecutory delusions and recall of threat-related, depression-related, and neutral words.’ *Cognitive Therapy and Research*, 19(4) pp. 445–57.

Blackmore, S., Atkinson, A., Baker, I., Carpenter, R., Clarke, C., Ellis, R., Fontana, D., French, C., Radin, D., Schlitz, M. and Schmidt, S. (2005) 'Open Peer Commentary on 'The Sense of Being Stared At Parts 1 & 2.' *Journal of Consciousness Studies*, *12*(6), pp.50-116.

Braud, W.(2005) 'The sense of being stared at: Fictional, physical, perceptual, or attentional/intentional?' *Journal of Consciousness Studies*, 12(6) pp. 66-71.

Braud, W., Shafer, D. and Andrews, S. (1993) 'Reactions to an unseen gaze (remote attention): A review, with new data on autonomic staring detection.' *Journal of Parapsychology,* 57(4) pp. 372-390.

Braud, W., Shafer, D., and Andrews, S. (1990) 'Electrodermal correlates of remote attention: Autonomic reactions to an unseen gaze,' *Proceedings of Presented Papers, Parapsychology Association 33rd Annual Convention*, 33, May, pp. 14–28.

Braud, W., Shafer, D., and Andrews, S. (1993) 'Further studies of autonomic detection of remote staring: Replication, new control procedures, and personality correlates.' *Journal of Parapsychology,* 57(4) pp. 391-409.

Carpenter, J. (2005) 'First sight: Part two, elaboration of a model of psi and the mind.' *Journal of Parapsychology,* 69(1) pp. 63-112.

Colwell, J., Schröder, S. and Sladen, D. (2000) 'The ability to detect unseen staring: A literature review and empirical tests.' *British Journal of Psychology*, *91*(1) pp. 71-85.

Coover, J.E. (1913) 'The feeling of being stared at — experimental.' *American Journal of Psychology*, 24(4) pp. 570–581.

Cottrell, J.E., Winer, G.A. and Smith, M.C. (1996) 'Beliefs of children and adults about feeling stares of unseen others.' *Developmental Psychology*, 32(1) pp. 50–61.

Dagnall, N., Drinkwater, K., Parker, A., and Munley, G. (2010) 'Reality testing, belief in the paranormal, and urban legends.' *European Journal of Parapsychology,* 25, March, pp. 25–55.

Dagnall, N., Denovan, A., Drinkwater, K., Parker, A., and Clough, P. (2016) 'Toward a better understanding of the relationship between belief in the paranormal and statistical bias: the potential role of schizotypy.' *Frontiers in Psychology*. 7, July, pp. 1664- 1078.

Dagnall, N., Denovan, A., Drinkwater, K., Parker, A. and Clough, P.J. (2017) 'Urban legends and paranormal beliefs: the role of reality testing and schizotypy.' *Frontiers in psychology*, *8*, June, p. 942.

Dembinska-Krajewska, D., and Rybakowski, J. (2014) 'The Oxford-Liverpool Inventory of Feelings and Experiences (O-LIFE) schizotypy scale in psychiatry.' *Archives of Psychiatry and Psychotherapy*. 2, February, pp.15–22.

Denovan, A., Dagnall, N., Drinkwater, K. and Parker, A. (2018) 'Latent profile analysis of schizotypy and paranormal belief: Associations with probabilistic reasoning performance.' *Frontiers in psychology*, *9*, January, p.35.

Denovan, A., Dagnall, N., Drinkwater, K., Parker, A. and Clough, P. (2017) 'Perception of risk and terrorism-related behavior change: dual influences of probabilistic reasoning and reality testing.' *Frontiers in psychology*, *8*, October, p. 1721.

Drinkwater, K., Dagnall, N. and Parker, A. (2012) 'Reality testing, conspiracy theories, and paranormal beliefs.' *The Journal of Parapsychology*, *76*(1) p. 57.

Epstein, S., Pacini, R., Denes-Raj, V., & Heier, H. (1996) 'Individual differences in intuitive–experiential and analytical–rational thinking styles.' *Journal of Personality and Social Psychology, 71*(2) pp. 390-405. http://dx.doi.org/10.1037/0022-3514.71.2.390

Etikan, I., Sulaiman A. M. and Alkassim, R. S. (2016) 'Comparison of Convenience Sampling and Purposive Sampling.' *American Journal of Theoretical and Applied Statistics,* 5(1) pp. 1-4. doi: 10.11648/j.ajtas.20160501.11

Eysenck, H. J. (1960). 'Classification and the problem of diagnosis.' in *Handbook of Abnormal Psychology*, ed. H. J. Eysenck (1960), London: Pitman.

Fenigstein, A. and Vanable, P. A. (1992) 'Paranoia and self-consciousness.' *Journal of Personality and Social Psychology*, 62(1) pp. 129-138.

Genovese, J.E. (2005) 'Paranormal beliefs, schizotypy, and thinking styles among teachers and future teachers.' *Personality and Individual Differences*, *39*(1) pp. 93102.

Goode, E. (2000). *Paranormal beliefs: A sociological introduction*. Prospect Heights, IL: Waveland Press.

Goulding, A. and Parker, A. (2001) 'Finding psi in the paranormal: Psychometric measures used in research on paranormal beliefs/experiences and in research on psi-ability.' *European Journal of Parapsychology*, 16, pp. 73–101.

Green, S. B. (1991) 'How many subjects does it take to do a regression analysis?' *Multivariate Behavioural Research*, 26(3) pp. 499-510.

Henry, J. (2005) *Parapsychology: research on exceptional experiences*. UK: Psychology Press.

Hergovich, A., Schott, R., and Arendasy, M. (2008) 'On the relationship between paranormal belief and schizotypy among adolescents.' *Personality and Individual Differences.* 45(2), pp.119–125.

Hu, Z., Ji., D. and Gong, Y. (2017) 'From the outside in: CCTV going global in a new world communication order.' *China's Media Go Global*, 27(43) p. 4.

Irwin, H. J. (1993) 'Belief in the paranormal: a review of empirical literature.' *Journal of the Society for Psychical Research*, 87(1) pp. 1-39.

Irwin, H. J. (2003). Reality testing and the formation of paranormal beliefs. *European Journal of Parapsychology,* 18(1) pp.15–28.

Irwin, H. J. (2004) 'Reality testing and the formation of paranormal beliefs: a constructive replication.' Journal Society for Psychical Research. 68, July, pp. 143–152.

Irwin, H. J. (2015) 'Paranormal attributions for anomalous pictures: a validation of the Survey of Anomalous Experiences' *JSPR*, 79(1) pp. 11–17.

Irwin, H.J. (1993) 'Belief in the paranormal: A review of the empirical literature.' *Journal of the American society for Psychical research*, *87*(1) pp.1-39.

Irwin, H.J., Dagnall, N. and Drinkwater, K. (2013) 'Parapsychological experience as anomalous experience plus paranormal attribution: A questionnaire based on a new approach to measurement.' *The Journal of Parapsychology*, *77*(1) p. 39.

Irwin, H.J., Dagnall, N. and Drinkwater, K. (2015) 'The role of doublethink and other coping processes in paranormal and related beliefs.' *Journal of the Society for Psychical Research*, *79(2)* pp. 80-96.

Jones, J. (1996) *Automatic Detection of Remote Observation and Schizotypal Personality Correlates.* Ph.D. University Of Bristol.

Kahneman, D. and Tversky, A. (1972) 'Subjective probability: a judgment of representativeness.' *Cognitive Psychology* 3(3) pp. 430-454.

Kaney, S., Bowen-Jones, K., Dewey, M.E. and Bentall, R.P. (1997) 'Two predictions about paranoid ideation: Deluded, depressed and normal participants' subjective frequency and consensus judgments for positive, neutral and negative events.' *British Journal of Clinical Psychology*, 36(3) pp. 349–64.

Kernberg, O. F. (1996) A psychoanalytic theory of personality disorders. In J. F. Clarkin and M. F. Lenzenweger (Eds.), *Major theories of personality disorder* (pp. 106-140). New York, US: Guilford Press.

Kumar, V. K. and Pekala, R. J. (2001) 'Relation of hypnosis-specific attitudes and behaviours to paranormal beliefs and experiences: A technical review.*' Hauntings and poltergeists: Multidisciplinary perspectives,* 18(4) pp. 260–279.

Langdon, R. and Coltheart, M. (2000) 'The cognitive neuropsychology of delusions.' *Mind & Language*, (15) December, pp. 183–216. doi: 10.1111/1468- 0017.00129

Lenzenweger, M. F. (2015) 'Thinking clearly about schizotypy: hewing to the schizophrenia liability core, considering interesting tangents, and avoiding conceptual quicksand.' *Schizophrenia Bulletin*, 1(2) pp. 483–491

Lenzenweger, M. F., Clarkin, J. F., Kernberg, O. F. and Foelsch, P. A. (2001) 'The Inventory of Personality Organization: Psychometric properties, factorial composition, and criterion relations with affect, aggressive dyscontrol, psychosis proneness, and self-domains in a nonclinical sample.' *Psychological Assessment*, 13(4) pp. 577–591. doi: 10.1037//1040-3590.13.4.577

Marks, D.F. and Colwell, J. (2001) 'Fooling and falling into the feeling of being stared at.' *Skeptical Inquirer*, *25*(2) pp. 62-63.

Meehl, P. E. (1962) 'Schizotaxia, schizotypy, schizophrenia.' *American Psychologist.* 17(12) pp. 827–838.

Mohr, C. and Claridge, G. 'Schizotypy—Do Not Worry, It Is Not All Worrisome.' *Schizophrenia Bulletin*, 41(2) pp. 436–443.

Mohr, C., Graves, R.E., Gianotti, L.R., Pizzagalli, D. and Brugger, P. (2001) 'Loose but normal: a semantic association study.' *Journal of psycholinguistic research*, *30*(5) pp.475-483.

Moore, A. and Stilgoe, J. (2009) 'Experts and Anecdotes: The Role of ''Anecdotal Evidence' Public Scientific Controversies.' *Science, Technology, & Human Values*, *34*(5) pp. 654-677.

Palmer, J. (1989) 'Confronting the Experimenter Effect, Part 2.' *Parapsychology Review, 20*(5) pp. 1-5.

Paulhus, D. L. (1991) 'Measurement and control of response bias.' *Measures of personality and social psychological attitudes*, 6(1) pp. 17-59.

Pennycook, G., Cheyne, J. A., Seli, P., Koehler, D. J., and Fugelsang, J. A. (2012) 'Analytic cognitive style predicts religious and paranormal belief.' *Cognition,* 123(3) pp. 335–346.

Poortman, J.J. (1959) 'The feeling of being stared at.' *Journal of the Society for Psychical Research*, 40, June, pp. 4–12.

Rado, S. (1953) 'Dynamics and classification of disordered behaviour.' *American Journal of Psychiatry,* 110(6) pp. 406–416.

Raine, A. (1991) 'The SPQ: A scale for the assessment of Schizotypal Personality based on DSM-III-R criteria.' *Schizophrenia Bulletin*, 17(4) pp. 555-564.

Raine, A. and Benishay, D. (1995) 'The SPQ-B: a brief screening instrument for schizotypal personality disorder.' *Journal of Personality Disord*ers, 9(4) pp. 346–355. doi: 10.1521/pedi.1995.9.4.346

Rattet, S.L. and Bursik, K. (2001) 'Investigating the personality correlates of paranormal belief and precognitive experience.' *Personality and Individual Differences*, *31*(3) pp. 433-444.

Reber, A. S. (1995) *The Penguin Dictionary of Psychology (2nd edition),* London: Penguin Books.

Rice, T. W. (2003) 'Believe it or not: religious and other paranormal beliefs in the United States.' *Journal for the Scientific Study of Religion*, 42, February, pp. 95- 106.

Rock, A.., Abbott, G.R., Childargushi, H. and Kiehne, M.L. (2008) 'The effect of shamanic-like stimulus conditions and the cognitive-perceptual factor of schizotypy on phenomenology.' *North American Journal of Psychology*, 10(1) pp. 79-98.

Rosenthal, R. (1976) *Experimenter Effects in Behavioral Research.* New York: John Wiley.

Schlitz, M. and Braud, W.G. (1997) 'Distant intentionality and healing: Assessing the evidence.' *Alternative Therapies in Health and Medicine*, 3(6), pp. 62–73.

Schlitz, M., Wiseman, R., Watt, C. and Radin, D. (2006) 'Of two minds: Scepticproponent collaboration within parapsychology.' *British Journal of Psychology*, *97*(3) pp. 313-322.

Schmidt, S., Schneider, R., Utts, J. and Walach, H. (2004) 'Distant intentionality and the feeling of being stared at: Two meta-analyses.' *British Journal of Psychology*, 95(2), pp. 235–247.

Sheldrake, R. (1994) *Seven Experiments that Could Change the World*. London: Fourth Estate.

Sheldrake, R. (1999) 'The 'sense of being stared at' confirmed by simple experiments.' *Biology Forum,* 92, January, pp. 53-76.

Sheldrake, R. (2001) 'Experiments on the sense of being stared at: the elimination of possible artefacts.' *Journal-Society for Psychical Research*, *65*, June, pp.122-137.

Sheldrake, R. (2001) 'Experiments on the sense of being stared at: The elimination of possible artifacts.' *Journal of the Society for Psychical Research*, 65, June, pp. 122–37.

Sheldrake, R. (2003) *The Sense of Being Stared At And Other Aspects of the Extended Mind*, London: Hutchinson.

Sheldrake, R. (2003) *The Sense of Being Stared At, And Other Aspects of the Extended Mind*. London: Hutchinson.

Sheldrake, R. (2005) ‘The Sense of Being Stared At -- Part 1: Is it Real or Illusory?’ *Journal of Consciousness Studies*, *12*(6) pp.10-31.

Sheldrake, R. (2013) *The sense of being stared at: And other aspects of the extended mind*. London, UK: Random House.

Simmonds-Moore, C. A. (2010) ‘A review of the relationship between anomalous and paranormal experiences and boundary thinness in the mind and brain,’ in *Anomalous Experiences: Essays from Psychological and Parapsychological Perspectives*, ed. M. D. Smith. Jefferson, MO: McFarland Press.

Titchener, E. B. (1898). ‘The feeling of being stared at.’ *Science*, 8(208) pp. 895-897.

Tobacyk, J. (1988) *A Revised Paranormal Belief Scale.* Ruston, LA: Louisiana Tech University.

Tobacyk, J. (2004) ‘A revised paranormal belief scale’ *Int. J. Transpers. Stud,* 23(1) pp. 94–99.

Tobacyk, J. and Milford, G. (1983) ‘Belief in paranormal phenomena- assessment instrument development and implications for personality functioning.’ *J. Pers. Soc. Psychology,* 44(5) pp. 1029–1037. doi: 10.1037/0022-3514.44.5.1029

Wainer, H. (2013) *Drawing inferences from self-selected samples*. New Jersey: Routledge.

Watt, C. and Ramakers, P. (2003) ‘Experimenter effects with a remote facilitation of attention focusing task: A study with multiple believer and disbeliever experimenters.’ *The Journal of Parapsychology*, *67*(1) p. 99.

Weiner, B. (1986) *An Attributional Theory of Motivation and Emotion*. New York: Springer-Verlag.

Williams, L. (1983) ‘Minimal cue perception of the regard of others; The feeling of being stared at.’ *Journal of Parapsychology*, 47(1) pp. 59–60.

Wiseman, R. and Watt, C. (2006) ‘Belief in psychic ability and the misattribution hypothesis: a qualitative review.’ *British Journal of Psychology*, 97(3) pp. 323-338.

Wiseman, R., Smith, M.D., Freedman, D., Wasserman, T. & Hurst, C. (1995) ‘Examining the remote staring effect: two further experiments.’ *Parapsychological Association*, 66(4) pp. 480–490.

Wolfradt, U., Oubaid, V., Straube, E. R., Bischoff, N., and Mischo, J. (1999) ‘Thinking styles, schizotypal traits and anomalous experiences.’ *Personality and Individual Differences.* 27(5) pp. 821–830.

Zusne, L. and Jones W. H. (1989) *Anomalistic psychology: A study of magical thinking.* Hillsdale, NJ: Lawrence Erlbaum Associates.