Mental representations of the supernatural: A cluster analysis of religiosity, spirituality and paranormal belief.

Abstract

The aim of the study was to establish a new typology of belief in the supernatural; categorising people, based on their levels of religiosity, spiritually and paranormal belief. Examining how the various beliefs are defined was a further objective. The reasons for people having different levels of these beliefs were discussed, highlighting "Metaphysical Chauvinism" as a possible explanation. Previous research that used various methods to measure religiosity, spirituality and paranormal belief were discussed. Participants ($n = 307$) completed an online survey consisting of the revised Religious Life Inventory (rRLI), the Intrinsic Spirituality Scale (ISS) and the revised Paranormal Belief Scale (rPBS). Two cluster analyses were performed: one on the three main scales and a secondary analysis on the ISS and the subscales of the rRLI and the rPBS. The results revealed a four cluster solution for each analysis. For the main analysis the clusters were "Believers", "Paranormal believers", "Sceptics" and "Religious believers". Metaphysical Chauvinism was supported; however, it was acknowledged that there still appears to be a lack of consensus when defining supernatural beliefs. It is proposed that the cluster analysis approach is more effective than a simple scale when trying to establish to *how* a person believes.

*Keywords***:** supernatural, religiosity, spirituality, paranormal belief, cluster analysis, metaphysical chauvinism.

Introduction

In his extensive summary on paranormal belief structures, Irwin (2009; p. 8) defines beliefs as having "…cognitive, affective and (sometimes) behavioural components; they are not an abstract value or statement of preference and they are more durable than mere opinions." To fully study the concepts of religiosity, spirituality and paranormal belief, it is important to establish working definitions of these and the supernatural in general. This will then enable the

examination of supernatural belief and how people's mental representations of these beliefs differ. The aim of this study is to examine *how* people group together according to their beliefs using a clustering approach.

The challenges to defining belief have been highlighted previously (Lindeman & Svedholm, 2012) but working definitions to contextualise this research are offered below for the supernatural, religious, spiritual, and paranormal. Supernatural belief has been used interchangeably to refer to both religious (Jong, Bluemke, & Halberstadt, 2013) and paranormal (Randall & Desrosiers, 1980) beliefs, and has been defined somewhat ambiguously as a 'ubiquitous mental model that depicts one or more sentient, volitional agencies that are independent of a biological substrate and understood to be the ultimate cause of elements of physical reality' (Lohmann, 2003; p.175); that is, the belief that non-physical forces can affect physical reality. In this paper the term 'supernatural' will encompass religiosity, spirituality, and paranormal belief. Hood, Hill, and Spilka (2009) concede that defining religion is difficult, but agree it has sacred and ritual elements. However, it could be argued that spirituality is also a search for the sacred; the sacred being defined as something in connection with divinity or holiness (Zinnbauer et al., 1997). Therefore, for something to be sacred it must be associated with religion, and for something to be religious it must be sacred; a circular argument. It can be seen that the difference between religiosity and spirituality is unclear. Spirituality has been defined as a more personal, "fuzzy" (Zinnbauer et al., 1997) concept that centres on individual values, rather than institutional ideas (Hood et al., 2009). Finally, paranormal belief is defined by Irwin (2009) as a belief that has come from ordinary society and from people who are rational, but has not been empirically validated by the scientific community; this includes phenomena such as apparitions and Extra-Sensory Perception (ESP). However, some definitions of paranormal belief contain references to religiosity and spirituality (Benson, Roehlkepartain, & Rude, 2003). While definitions have

been debated (Lindeman & Svedholm, 2012), as Yinger (1967) points out, when concepts such as religion are defined, the only person likely to agree with a given definition is its author; this arguably applies to the other concepts discussed.

Metaphysical Chauvinism (Beck & Miller, 2001) suggests that individuals may discriminate against beliefs that arguably have equal empirical validity. For example, a religious person might believe in miracles (Brown, 1975), but not in ESP. Metaphysical Chauvinism has been supported by Ladd and Borshuk's (2013) study; people with 'minority beliefs', such as alien visitation, were stigmatized more than people who believed in angels. The rise of the 'nones' (people who self-identify their religious belief as 'none') suggest that what people believe is changing; today many pick and choose their beliefs. Rice (2003) identified four groups: 'full believers'; 'skeptics'; 'classic paranormal believers'; and 'traditional religious believers'; the last two groups are consistent with Metaphysical Chauvinism. However, believers were grouped based on frequencies, not analysis, and different forms of belief were conflated; for example, one group was identified as 'religious paranormal believers'. A typology using separate measures of religiosity, spirituality and paranormal belief would provide a better test of Metaphysical Chauvinism.

Irwin (1997) established a typology specifically for paranormal beliefs and held that believers in the paranormal did not necessarily believe in the same things. In contrast with measuring paranormal belief on a continuum of low-to-high paranormal belief, Irwin's analysis aimed to show *what* they believed by grouping participants based on their scores on the revised Paranormal Belief Scale (rPBS) (Tobacyk, 1988; 2004). Using cluster analysis, Irwin found that four separate clusters emerged: 'traditional religious believers'; 'tentative believers'; 'sceptics' and 'new age believers'. Aarnio and Lindeman (2007) also used cluster analysis to examine the relationship between religious and paranormal belief, focussing on the 'traditional religious belief' subscale; the remaining subscales were combined to measure 'paranormal

belief'. They found four clusters: 'sceptics'; 'religious'; 'paranormal believers' and 'double believers'; presenting a more complex picture of belief. They speculated that the reason for the 'double believers' (people who had high scores for both measures), might be that their religious beliefs were not 'traditional'. A similar analysis was carried out by Wilson, Bulbulia, & Sibley (2014) using the rPBS and Irwin's typology study as a template. They found five groups using latent class analysis: 'religious exclusives', 'new age spiritualists', 'undifferentiated believers', 'moderate agnostics' and 'undifferentiated sceptics'. Despite using the rPBS, they focused only on the religious aspects, calling them 'faith signatures'. It also appears that they misidentified the 'spiritualism' subscale on the rPBS, mistaking it to mean spirituality. This highlights the problems that can be encountered when interpreting these types of analyses due to the various and complex definitions of the terms. Also, a better measure of religiosity might offer a clearer group identification.

The three previous studies mentioned all use the popular revised Paranormal Belief Scale (rPBS) (Tobacyk, 2004) in some form. The rPBS was developed from an older version of the scale (Tobacyk & Milford, 1983), has 26 items, and typically seven sub-scales: 'Traditional Religious Belief', 'Psi Belief', 'Witchcraft', 'Superstition', 'Spiritualism', 'Extraordinary Life-forms', and 'Precognition'. However, other factor structures have been suggested (Lawrence, 1995) and the scale has been criticised for validity issues (Dag, 1999). One of the reasons for its prevalence in previous cluster analyses is that it '…can be used to assess paranormal and religious beliefs, allowing the researcher to examine the nature of these beliefs and their implications for spirituality' (Tobacyk, 2004: p. 94). However, the rPBS's 'traditional religious belief' subscale may not be complex enough to fully measure religious belief or 'religiosity'. There are only four items on this subscale and the items, 'The soul continues to exist though the body may die', and 'I believe in God' could be endorsed by both religious and spiritual believers, leaving 'There is a devil' and 'There is a heaven and a hell' as the only items that

directly tap into traditional religious belief. Finally, the concept of spirituality is overlooked in the rPBS. Therefore, a more comprehensive measure of religious belief is needed when distinguishing typologies.

In the current study, a cluster analysis based on three scales used to measure religiosity, spirituality and paranormal belief was conducted. The three scales include the revised Religious Life Inventory (rRLI) (Hills, Francis, & Robbins, 2005). This focuses upon 'Intrinsic religious orientation', a measure of the spiritual aspects of a person's life with respect to their religion, however, still containing an element of the sacred; 'Extrinsic religious orientation' a measure of the instrumental aspect of religiosity; and 'Quest' attempts to measure the extent to which a person uses their belief to find meaning in their social world. This has been characterised as the difference between how an individual 'lives' and how and individual 'uses' their religion (Allport & Ross, 1967). The Intrinsic Spirituality Scale (ISS) is based on the idea that spirituality and religiosity are overlapping but individual concepts (Hodge, 2003). The language used in the scale offers an excellent measure of cross-cultural, theistic and non-theistic spiritual belief (i.e., statements such as 'Growing spirituality is...' or 'my spiritual belief affects...'). The aim of the ISS is to measure aspects of spirituality inside and outside of the religious belief construct and the salience of spirituality within an individual's life, recognising the link between religiosity and spirituality and offering a reliable and valid measure. Finally, the measure of paranormal belief used was the rPBS.

Two analysis were to be carried out. The hypothesis for the primary analysis was that people would cluster in a similar number of groups to Irwin's (1997) study around religiosity, spirituality and paranormal belief; the secondary analysis examining the subscales from the rRLI, the entire ISS scale and the subscales from the rPBS would add further detail about the nature of these groups, consistent with Irwin's analysis. It was anticipated that the use of the

subscales, such as extrinsic, intrinsic and quest from the rRLI, would yield a more complex typology of believers than previous research.

Methods

Design

The research design was correlational and cross sectional. The three variables analysed as part of a multivariate cluster analysis were religious belief, spiritual belief and paranormal belief. Ethical approval was granted for this study by University of * Psychology Research Ethics Committee.

Participants

There are no strict rules concerning sample sizes on Cluster Analysis (Dolnicar, 2002). Sample sizes in previous research using cluster analysis vary: $n = 220$ for a study on religious belief using 37 variables (Filsinger, Faulkner, & Warland, 1979) and $n = 228$ for a study examining paranormal belief using seven variables (Irwin, 1997). Therefore a sample of $n > 300$ was deemed to be adequate. The participants were mainly students at the *. Recruitment for the study was conducted using social media (Facebook and Twitter) and by face-to-face recruitment using opportunity sampling. Recruitment was also facilitated by the following groups at the University: the Islamic Society; the Christian Society; the Society, Religion and Belief Research Cluster; the Multi Faith Centre; and the Sikh Society. The participants age range was from 18 to 70 (*mean* = 32.09, *SD* = 10.06) years. There were 72 (23.5%) males and 235 (76.5%) females. 260 (84.7%) participants were students; 197 (75.8%) undergraduates, 58 (22.3%) post-graduates and five (1.9%) were in another form of education; the remaining 15.3% were of varying occupations. A total of 344 attempted to fill out the questionnaire, with 307 completing the study (89.24% completion rate).

Materials

An online survey tool was used to administer the following three questionnaires:

Revised Religious Life Inventory

The Revised Religious Life Inventory (rRLI) (Hills et al., 2005) was used to measure religious belief. The questionnaire has 24 items. The scale has three subscales: Intrinsic religious belief (nine items), extrinsic religious belief (seven items) and quest (eight items). The measurement used was a 7 point Likert scale, ranging from 1 (strongly agree) to 7 (strongly disagree). Example of the items included in the scale are as follows: 'I try hard to carry my religion over into all my other dealings in life.', 'I am constantly questioning my religious beliefs.' and 'As I grow and change, I expect my religion also to grow and change.' To increase cross cultural validity, the following words were replaced: 'church' was replaced with 'place of worship', 'pray' was replaced with 'pray/meditate', and 'bible' was replaced with 'sacred text'. For example, item 7 would now read 'It is important for me to spend periods of time in private religious thought and meditation.'

Intrinsic Spirituality Scale

Spirituality was measured by Hodges' (2003) Intrinsic Spirituality Scale (ISS), which consists of six items with no sub-scales. The items on this scale include statements such as: 'In terms of the questions I have about life, my spirituality answers' and 'When I am faced with an important decision, my spirituality'. The ISS used an 11 point Likert scale that had statement linked to the questions at either end of the scale. For example, for the statement 'In terms of the questions I have about life, my spirituality answers' at 0 the statement is 'no questions' and at 10 'absolutely all my questions'. Hodges (2003) states that the ISS is a reliable and valid measure of spiritualty.

Revised Paranormal Belief Scale

Tobacyk's (1988) Revised Paranormal Belief Scale (RPBS) was used to measure paranormal belief. The scale itself has 26 items and seven subscales. The subscales are as follows: precognition, spiritualism, witchcraft, psi (all having four items), superstition and extraordinary life forms (having three items). The Likert scale used ranged from 1 (strongly disagree) to 7 (strongly agree). Items on the scale include: 'The soul continues to exist though the body may die', and 'There is a devil'. Hergovich, Schott, and Arendasy (2005) and Tobacyk (2004) found the scale to be a valid measure.

Procedure

After the participants had been recruited they were emailed initial details of the study and sent a link to the study that was hosted on www.surveymonkey.com. They were then presented with the brief and a series of questions regarding informed consent and the right to withdraw. The three questionnaires followed this in the order: ISS, rRLI and the rPBS; an additional four questionnaires were also present to collect data as part of a larger project (Schofield, 2014). This was followed by demographical question, including what their self-identified current religious identity is, and what religion they were born into. The final page was a debrief that went into further detail regarding the study and again, restated the right to withdraw.

Analysis

Results

Primary Analysis: The rRLI, ISS and rPBS Cluster Analysis

Cronbach's α for the three scales ranged from .93 to .94; similar to, and in the case of the rPBS, an improvement on previous research. The analysis used to determine the optimal numbers was a hierarchical cluster analysis. The primary analysis used the rRLI, ISS and rPBS to establish groupings of participants based on similar levels of belief. The data was normalized using *z*-

scores and Table 1 contains descriptive statistics and ANOVA results for the three scales. Ward's method was employed and an inspection of the dendrogram proved inconclusive, however, based on an inspection of a graph (Figure 1) constructed using the agglomeration schedule, a four cluster solution was indicated.

Table 1 here

Figure 1 here

The four cluster model was internally validated by performing a one-way MANOVA ($IV_1 = 4$ × clusters; $DV_1 = ISS$, $DV_2 = rRLI$ and $DV_3 = rPBS$), showing that there was a significant multivariate difference between scales (the model accounts for 82% of the variance), $F(9, 9,732.71) = 153.94$, $p < 0.001$, Wilk's $\Lambda = 0.076$. Levene's test was significant (all values $p < .001$) and Box's test could not be calculated due to there being less than two non-singular cell covariance matrices. This indicates the assumption of equality of covariance matrices was not met. Despite this, Tabachnick, Fidell and Osterlind (2007) state that the probability values can be trusted if the sample size is large enough. The current sample size was larger than previous research (Irwin, 1997), therefore the significance values were trusted. For an interpretation of the four cluster solution, a graph was constructed using the means z scores from the scales (see Figure 2) and a series of one-way ANOVAs for each of the sub-scales (as the DVs) were carried out (see Table 1) with significant ($p < .05$) *post-hoc* Tukey HSD tests examining the statistical significance of the relative squared Euclidian distances between each cluster. *Post-hoc* cluster analyses were conducted where the data were randomly allocated to two equal samples; the results were all significant and mirrored the main findings, demonstrating their internal validity.

Figure 2 here.

Post-hoc: Relationship of the Primary Cluster Analysis to Self-Reported Religious Belief

Participants self-reported their answer to the open question 'What is your current religion?' The answers given were split into four categories or 'belief groups': Traditional religious belief, including answers such as, 'Christian' or 'Islamic'; 'agnostic' or 'atheist', with answers that referred directly to these two terms; 'spiritual', if the answer was spiritual in nature, for example 'wiccan' or 'I follow my own spiritual path'; the final group was 'other', this group consisted of participants who stated 'none', left the section blank or identified in a way that did not fit the previous categories, for example, 'science'. For the frequencies and percentages of these groups within the four clusters, see Table 2. As two cells had an expected count of less than five, Fisher's Exact Probability was used to examine the association between the clusters in the primary analysis and 'belief group', the association was significant, $p < .001$. Also, due to the size of the contingency table, the Monte Carlo Method was employed (Field, 2013).

Table 2 here

Secondary Analysis: ISS and the Subscales of the rRLI and the rPBS

A secondary analysis was carried out on the ISS and the subscales of the rRLI and the rPBS. Table 3 contains descriptive statistics and ANOVA results for scale and subsequent subscales. Ward's method was once again adopted; the subscale scores were converted to z-scores and the dendrogram was inconclusive. Therefore, a graph was constructed using the agglomeration schedule (Figure 3) and indicated a four cluster solution.

 ($n = 307$).

Table 3 here

Figure 3 here

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The four cluster model was internally validated by performing a one-way MANOVA ($IV_1 = 4$ × clusters; $DV_1 = ISS$, DV_2 through $DV_4 = rRLI$ subscales, and DV_5 through $DV_{11} = rPBS$ subscales), showing that there was a significant multivariate difference between scales (the model accounts for 67% of the variance), $F(33, 863.94) = 40.94$, $p < .001$, Wilk's $\Lambda = 0.062$. For significance and results for the *post-hoc* one-way ANOVAs see Table 3. In order to interpret the four cluster solution, a graph was constructed using the mean *z*-scores from the scales (see Figure 4) and *post-hoc* Tukey HSD test was carried out to examine the relative squared Euclidian distances between each cluster.

Figure 4 here

Discussion

Two cluster analyses were performed using the three scales to measure: religiosity (rRLI); spiritual belief (ISS); and paranormal belief (rPBS). The first analysis was conducted on the overall scores for each of the three scales, followed by the degree of association between self-reported belief and the clusters found in this analysis. The second analysis was conducted on the 11 individual sub-scales for all three scales. Each analysis is discussed separately below, followed by an overall discussion of the findings of the study.

The primary analysis revealed a four cluster solution. Cluster 1 had high scores in all three scales and essentially consists of 'believers'. Cluster 2 had low levels of religiosity and spirituality, but higher levels of paranormal belief; this cluster was labelled 'paranormal believers'. Cluster 3 had low scores across all three scales and labelled 'sceptics'. Cluster 4 had a high level of religiosity, a neutral level of spirituality, and a low level of paranormal belief. This group were labelled 'religious believers'.

The 'believers' cluster is consistent with Johnston et al.'s (1994) research that states that when people believe in one supernatural idea, they are more likely to subscribe to others. The

'sceptics' cluster is consistent with research that suggests sceptical people will be sceptical across a range of ideas (Krull & McKibben, 2006). While 'paranormal believers' and 'religious believers' exhibited contrasting beliefs. This is in-line with Metaphysical Chauvinism theory (Beck & Miller, 2001), which states that people who subscribe to a particular supernatural belief may reject other supernatural beliefs.

The secondary analysis also had a four cluster solution. Due to the use of 11 subscales, as opposed to the three primary scales, this analysis produced a more complex picture. Cluster 1 showed tentative belief across the spirituality and the three religiosity subscales, but beliefs rose when it came to the paranormal belief subscales. This indicated that this group was less likely to believe in religious concepts and is subsequently labelled 'paranormal believers'. Cluster 2 was the 'sceptic' group; they displayed low levels across all the scales but showed an elevated score on the 'extraordinary life forms' category, which is explored below. Cluster 3 was labelled as 'religious believers', with higher scores on 'spirituality', the 'traditional religious belief' subscale of the rPBS, the 'intrinsic' and 'extrinsic' aspects of religiosity, and moderately high levels on the 'quest' subscale. Cluster 4 was the most challenging to interpret; they had higher levels on the rRLI 'extrinsic' subscale, indicating that this cluster may exhibit religious behaviours (going to church for example). However, the higher score on the 'quest' subscale suggests they might question their religious convictions. This group is less spiritual, and also only believe in 'precognition' out of the rPBS subscales. This group are labelled 'questioning believers'. Challenges in interpreting this group are explored below.

The secondary analysis reveals more support for Metaphysical Chauvinism (Beck & Miller, 2001). The 'paranormal believers' are common to both analyses. Rather than showing a negative level of religiosity, this cluster was neutral on the religiosity subscales, and show higher levels across all the subscales on the rPBS. This could indicate more of a 'metaphysical bias' towards paranormal beliefs, rather than an outright rejection of other belief systems.

Cluster 3 in the secondary analysis was again classed as 'religious believers'. This analysis showed more detail than the primary analysis; religiosity tended to be more intrinsic than extrinsic, and the group questions their beliefs to a certain extent. It could also be argued that elements such as 'witchcraft', 'spiritualism' and 'precognition' (also slightly elevated) may have religious/spiritual connotations, possibly to do with negative religious associations, the afterlife, and fate or destiny respectively. In effect, religious believers are only rejecting 'psi', 'superstition', and 'extraordinary life forms' from the rPBS subscales; all aspects of belief which do not clearly fit within conventional religious beliefs. In contrast, the 'sceptics' cluster remained constant across both analyses. The secondary analysis revealed that this group was more open to the existence of extraordinary life forms. This could be a side effect of one of the items from the rPBS, 'There is life on other planets'; people may be of the opinion that alien life, statistically, must exist elsewhere in the universe, but this does not mean that they believe in intelligent life or that it has visited this planet. This would also support the assertion that sceptical people would be more likely to be swayed by a rational scientific argument (Vitz & Matzat, 2001). Both analyses support the four clusters found by previous research (Aarnio & Lindeman, 2007; Irwin, 1997) and also give empirical justification for the four groups identified by Rice (2003). However, the results are open to interpretation and the definitions of these concepts has been problematic (Linderman & Sveldholm, 2012).

When measuring an individual's level of belief, the researcher is generally tied to the definitions used by a particular scale. For example, rPBS has the item 'The Loch Ness monster of Scotland exists', however the status of The Loch Ness Monster as being paranormal has been debated (Dag, 1999), and therefore the appropriateness of this item on such a scale is questionable. The definitions problem is also applicable when discussing intrinsic religiosity and spirituality; namely, the degree of overlap between these two concepts has been questioned (Piedmont, Ciarrochi, Dy-Liacco, & Williams, 2009). The strength of cluster analysis is that people are

placed into groups based on their similarities, and it is therefore possible to examine how they believe rather than an arbitrary value on a particular measure. This means that the researcher can build a 'bottom-up' picture of what a particular cluster or group's main attributes are; this informs a definition of which phenomenon fall under the remit of which belief based on how people believe. This method helps to resolve the fundamental problem of taking a multi-dimensional approach to measuring religious, spiritual and paranormal belief: which dimensions should be included under within each belief. This is particularly poignant when examining the beliefs in non-Western populations, due to some concepts being considered 'paranormal' in one culture, but considered 'normal' in another (Northcote, 2007).

Both the primary and secondary analyses provide support for Metaphysical Chauvinism theory. However, the picture is much clearer in the primary analysis. Although the increased resolution of moving from three overall measures to 11 individual subscales provides greater fidelity, the increased complexity makes the interpretation and labelling more challenging. The identification of the labels in the first analysis is simpler than the second; as the number of variables increases, so does the number of different interpretations. Using too many measures that encompass different concepts is also a problem: for example, the rRLI is comprised of 'intrinsic', 'extrinsic' and 'quest' subscales. If it were a true measure of religious belief it would only need to cover religious *belief*, and not religious *behaviour*. The identification of the groups in the second analysis was driven by theory and this could place a subjective element on the labelling of the groups. Rather than confirming the structure, it would just repeat it and add more detail, detail that might not be relevant given the way the cluster analysis works. The solution to this problem is to tighten the definitions and create a scale that encompasses certain aspects that fall under a certain definition.

Other issues with the study relate to the validity of the scales used. The original rRLI has problems with cross-cultural validity, with many items only being relevant to the Christian

faith, which resulted in its amendment for this study. Also both the rRLI and the ISS have items that assume the respondent has religious and/or spiritual belief. These items can be difficult for people with no religious or spiritual beliefs to answer. Assessing religious belief could be simplified by asking people what they believe. However, the rise of people identifying as 'none' (Singleton, 2015) is evident in this research, so the need for a non-denomination specific scale is ever more prevalent. Although one of the most popular scales used to measure paranormal belief, the rPBS has also been criticised. For example, the item 'Witches do exist' could be construed as asking 'Are there people who call themselves witches?' This is very different to believing that witches have supernatural powers. Other items, such as, 'The number 13 is unlucky' also have problems with cross-cultural validity (Scanlon, Luben, Scanlon, & Singleton, 1993). Also, the inclusion of the religious belief subscale inflates a person's rPBS score, even though they might not subscribe to paranormal beliefs *per se*. Furthermore, Lindeman and Svedholm (2012) argue that the categories used in various measures of the paranormal are too narrow and recommend that this be remedied. As Zinnbauer et al. (1997) pointed out in their study, religiosity and spirituality themselves are 'fuzzy' concepts, and when paranormal belief is added it makes definition even more difficult. A unitary scale with well-defined subscales with an all-encompassing term, 'supernatural belief' for example, would go some way to overcoming this problem.

Conclusion

This study has identified a new typology of supernatural belief, uniquely utilising three different scales to measure religiosity, spirituality and paranormal belief, and using a cluster analysis approach which allows us to quantitatively identify how individual's group together in their beliefs. Four distinct groups were identified, the first two being a group of consistent sceptics, followed by a group of consistent believers. The final two groups were arguably more interesting, with the first demonstrating higher levels of paranormal belief with a rejection of

religious beliefs, and the second demonstrating the complete inverse of this; offering empirical support for the Metaphysical Chauvinism theory. This contributes to our understanding of how people identify with their beliefs, and brings into question how such beliefs are defined; primarily the fundamental issue with including religious belief within paranormal belief, as exemplified by the Traditional Religious Belief subscale in the rPBS, which has dominated the measurement of such beliefs for decades.

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	Mean (SD) Z-scores				ANOVA	
	Cluster 1 'Believers' (n = 115, 37.5%)	Cluster 2 'Paranormal believers' (n = 57, 18.6%)	Cluster 3 'Sceptics' (n = 68, 22.1%)	Cluster 4 'Religious believers' (n = 67, 21.8%)	f (3,303)	p
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)		
ISS	.90 (.76)	-.62 (.64)	-.95 (.34)	-.05 (.71)	136.61	<.001
RRLI	.82 (.59)	-1.07 (.34)	-1 (.43)	.52 (.54)	300.53	<.001
RPBS	.90 (.62)	.33 (.66)	-1.13 (.31)	-.68 (.45)	245.85	<.001

Table 1. The mean (and standard deviation) *z*-scores for the four clusters with ANOVA *f* values and significance levels for the ISS, rRLI and rPBS scales (*n* = 307).
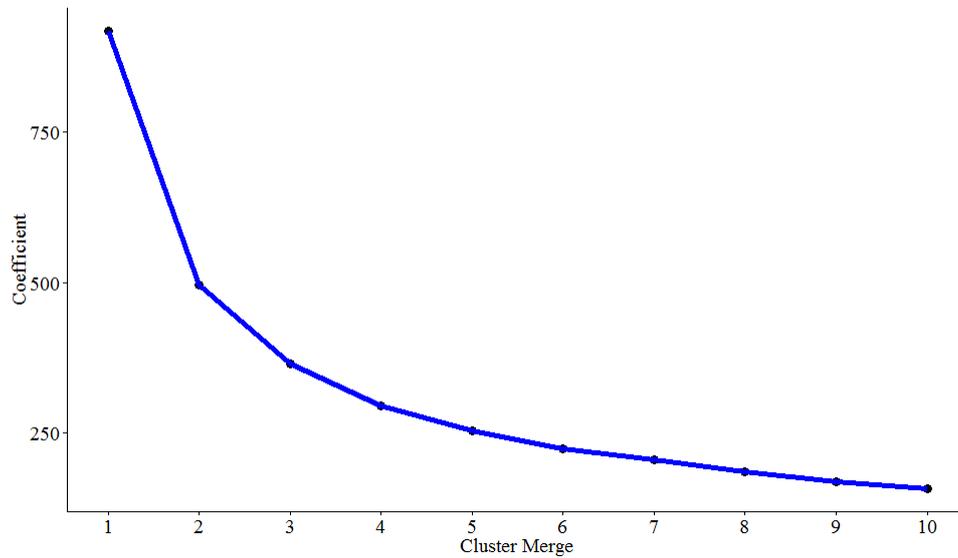
Figure 1. Graph showing the last 10 merged squared agglomeration distances and the cluster merges the ISS, rRLI and rPBS scales.
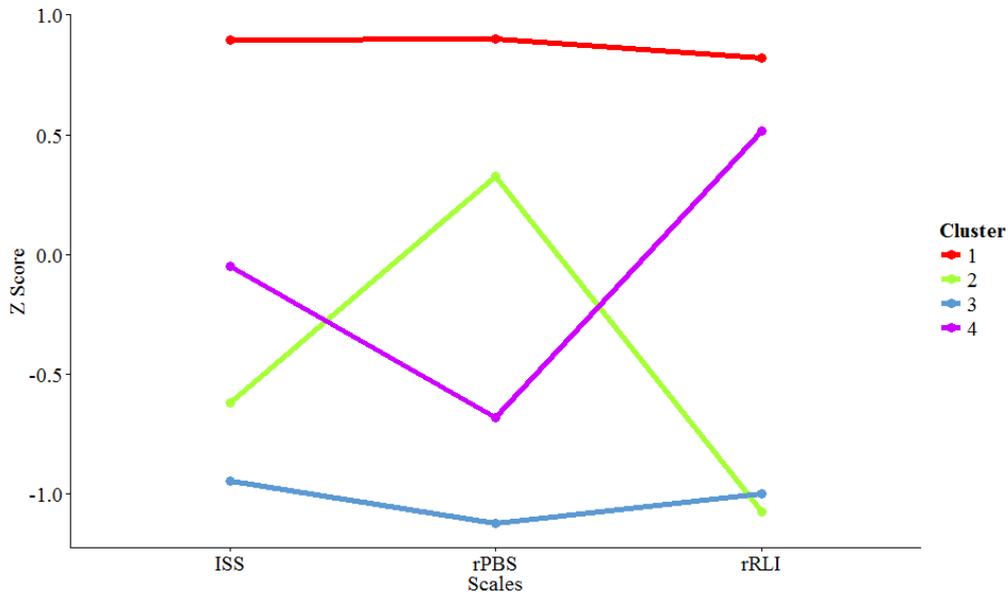

Figure 2. Mean *z*-scores for the scales of the ISS, rRLI and rPBS and their respective cluster membership.

	Traditional Religious Belief	Agnostic or Atheist	Spiritual	None	Other	Total
Believers	72 (62.6 %)	7 (6.1%)	8 (7%)	11 (9.6 %)	17 (14.8%)	115 (100 %)
Paranormal Believers	7 (12.3 %)	13 (22.8 %)	0 (0 %)	30 (52.6 %)	7 (12.3 %)	57 (100 %)
Sceptics	2 (2.9 %)	25 (36.8 %)	0 (0 %)	31 (45.6 %)	10 (14.7 %)	68 (100 %)
Religious Believers	23 (34.3 %)	15 (22.4 %)	1 (1.5 %)	21 (31.3 %)	7 (10.4 %)	67 (100 %)

Table 2. Table showing the frequency and percentages of the 'belief groups' within the four clusters in the Primary Analysis.

	Mean (SD) Z scores				ANOVA	
	Cluster 1	Cluster 2	Cluster 3	Cluster 4		
	'Paranormal believers'	'Sceptics'	'Religious believers'	'Questioning believers'	f (3,303)	p
	(n =119, 38.8%)	(n =88, 28.7%)	(n =42, 13.7%)	(n =58, 18.9%)		
ISS	0.19 (.92)	-.82 (.55)	1.33 (.608)	-.11 (.7)	127.18	<0.001
Intrinsic Belief (RRLI)	.068 (.84)	-.84 (.27)	1.6 (.67)	-.016 (.69)	48.75	<0.001
Extrinsic Belief (RRLI)	.17 (.88)	-.83 (.65)	.87 (1)	.27 (.82)	65.41	<0.001
Quest (RRLI)	.15 (.96)	-.91 (.62)	.35 (.77)	.82 (.59)	153.65	<0.001
Traditional Religious Belief (RPBS)	.36 (.71)	-.93 (.41)	1.42 (.53)	-.35 (.78)	87.42	<0.001
psi Belief (RPBS)	.81 (.79)	-.69 (.61)	-.02 (.88)	-.60 (.68)	93.93	<0.001
Witchcraft (RPBS)	.65 (.72)	-.63 (.64)	.66 (1.12)	-.87 (.4)	47.58	<0.001
Superstition (RPBS)	.71 (1.21)	-.44 (.44)	-.36 (.46)	-.52 (.41)	142.71	<0.001
Spiritualism (RPBS)	.87 (.64)	-.83 (.54)	.19 (.87)	-.68(.62)	28.7	<0.001
Extraordinary Life Forms (RPBS)	.55 (1.02)	-.16 (.947)	-.3 (.78)	-.67 (.49)	132.75	<0.001
Precognition (RPBS)	.87 (.77)	-.72 (.47)	.14 (.91)	-.8 (.39)	82.42	<0.001

Table 1. The mean (and standard deviations) *z*-scores for the four clusters, with the ANOVA *f* values and significance levels for the ISS scale, and subscales of the rRLI and rPBS
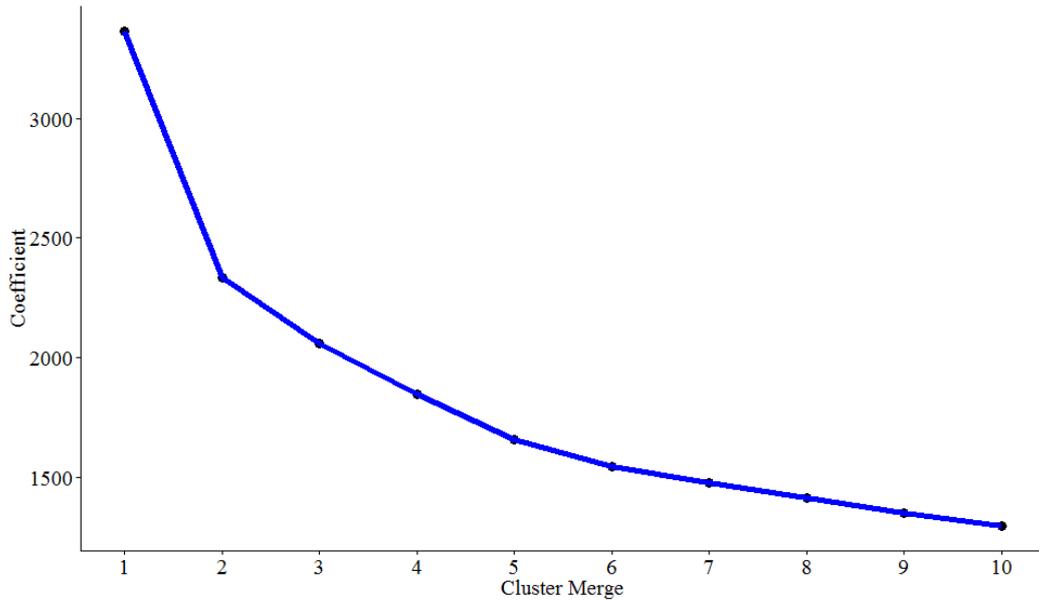
Figure 3. Graph showing the last 10 merged squared agglomeration distances and the cluster

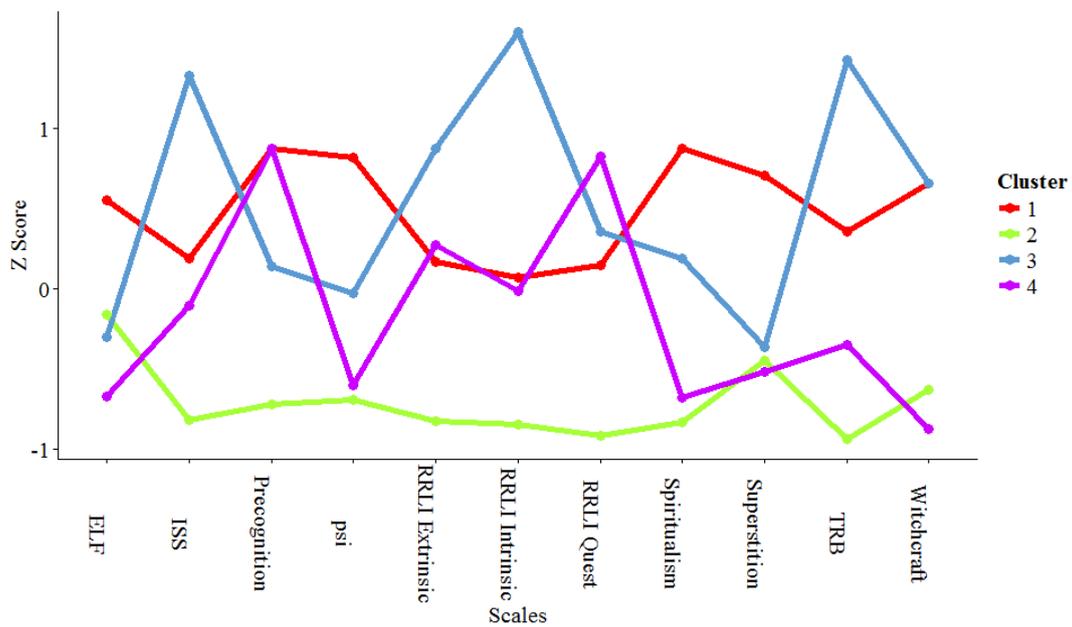merges the ISS scale and the Subscales from the rRLI and rPBS.

Figure 4. Mean *z*-scores for the scales of the ISS, rRLI and rPBS and their respective cluster

membership.