

Validating the Continuum Mysteriosum

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### Abstract

Current evaluations of paranormal claims are based around individually held beliefs (Tobacyk, 2004; Williams, et al, 2009). What lacks is an objective measure that can be used to classify paranormal claims independent of belief. Such an objective scale could base itself in the laws of physics; the scale ranging from claims proven to exist in the natural world to those that deviate most from the laws of physics. In this case, ‘paranormal’ is defined as those claims that contradict with what we know to be possible in the natural world, or rather, what can be explained and proven through science (Thalbourne, 1992; Smith, 2009). Smith (2009) proposes a scale of paranormal claims, the Continuum Mysteriosum, which gauges claims based on their adherence to the laws of physics and is broken up into eight categories. The categories, from lower-level to higher-level paranormal claims, are as follows: borderline gratuitous paranormal claims, simple superstitions, paranormal patterns, paranormal powers, simple energies, intelligent forces/entities, afterlife entities, and supernatural entities. The purpose of the current study is to validate Smith’s scale for use as measure of paranormal claims. We hypothesized that people would rate various paranormal claims in a way consistent with Smith’s scale. A total of 874 participants (308 male, 566 female) were randomly sampled from the University of Central Florida undergraduate population and online public forums. Participants completed an online survey in which they were instructed to evaluate each claim on an eight-point Likert-type scale that ranged from ‘natural’ to ‘supernatural’. A total of 46 claims and their definitions, chosen across Smith’s eight categories, were presented individually for evaluation. ‘Natural’ was operationally defined as those claims that could/have been proven with current science; ‘Supernatural’ as those claims that could not be proven with current science. In addition, demographics data and religiosity information was collected for each participant. A factor

analysis was performed on the data to determine which claims would factor load together and if these patterns were consistent with Smith's scale. Furthermore, the mean score for each claim was calculated in order to see where on the natural/supernatural spectrum the claims fell. The results are inconsistent with Smith's scale. Using a cutoff value of 0.3, the data factor loaded into four categories, which we have identified as Magical Thinking, External Forces or Agents, Complementary Alternative Medicine, and Unproven yet Plausible Claims. Future research should focus on constructing a full objective scale of paranormal claims using standardized definitions, like those provided by Thalbourne (2009) and the Society of Psychical Research.

### Validating the Continuum Mysteriosum

The term paranormal is “applied to any phenomenon which in one or more respects exceeds the limits of what is deemed physically possible on current scientific assumptions” or supernatural (Thalbourne, 1982). A spectrum of paranormal claims is necessary in order to critically evaluate a paranormal belief. In this study we intend to evaluate Smith’s “Continuum Mysteriosum” as a potential spectrum that paranormal claims may factor load based on their relative relation to physics based normality. “Paranormal claims contradict what we know about matter and energy as discovered through the science of physics” is how Smith (2009) defines the paranormal. He offers a footnote to explicate why physics is the basis for the definition, reasoning that any paranormal events that seem to break the laws of chemistry or biology fundamentally violate physics at a more basic level. Our expectation is participants will rate paranormal claims in the same manner as Smith’s scale is designed.

Extensive research in psychological literature has revealed little in the way of other metrics or scales beyond Tobacyk’s (2004) “Revised Paranormal Belief Scale” which evaluates an individual’s belief in the paranormal but does not offer insight into the origin of reasoning for their belief or any sort of relevant pattern. Lawrence et al. (1995) stated that one or several of the factors (mainly our defined Factor 4: Unproven, Yet Plausible Claims) in the “Revised Paranormal Belief Scale” may not be significant. Lawrence et al. also cited a study, Rao, 1992, where origins of paranormal beliefs were correlated with Tobacyk’s scale as well as an additional paranormal belief scale, “Subjective Paranormal Experiences Questionnaire” (Neppe, 1983). The correlation for Tobacyk’s scale was weaker than Neppe’s, implying a fault in the Tobacyk scale. Despite the implications of a fault in the Tobacyk scale, there is little information available about other paranormal belief scales.

A simple scale of religiosity (Abdel-Khalek, 2006) was included in the survey to consider religion's similarity to our operational definition of paranormal, not provable with current science. Further review of literature regarding paranormal and religious beliefs revealed that extensive research has been conducted in the area (Emmons & Sobal, 1982; Orenstein, 2002; Rice, 2003; Williams, Francis, & Lewis, 2009; Shiah, Wu, & Chang, 2010), and no consistent results have been found.

Two main hypotheses from this area of research stand out: a negative correlational relationship between paranormal beliefs and religion and a positive correlation between the two (Rice, 2003). Support for the negative relationship comes from Emmons and Sobal (1981), stating that people replace religious beliefs with paranormal beliefs. Other negative relationship theorists propose that Christian religious beliefs do not agree with paranormal beliefs, and that is the cause of the relationship (Sparks, 2001).

Supporters of the positive relationship imply that if a person believes in one of the areas, paranormal or religious, it is easier for that person to believe the other due to the similar nature of the beliefs (as cited in Rice, 2003). Orenstein (2002) found that among Canadians (a representative sample surveyed by a mail in questionnaire), there is a relationship between people who have religious beliefs and paranormal beliefs.

Rice (2003) found little support for either hypothesis; although he did find that there are different patterns for beliefs (e.g., some people have both paranormal and religious beliefs, believe in only one, and don't believe in either). Williams, Francis, and Lewis (2009) further develop this notion, and found a positive correlation between religiosity and religious based paranormal beliefs, but found no relationship between religiosity and paranormal beliefs.

## **Method**

### **Participants**

A total of 874 participants, 566 female and 308 male, were randomly sampled from the University of Central Florida student population, and online public forums; the mean age of the participants was 21.75. Students were recruited through SONA systems, an online recruitment program that offers extra credit for certain classes, and through word-of-mouth. This study was approved for research by the Institutional Review Board of the University of Central Florida (see Appendix A). The treatment of these participants was in accordance with the ethical standards of the American Psychological Association.

### **Design**

This study employed a factor analysis of the data. The questionnaire included a total of 46 paranormal claims that spanned all eight categories of Smith's "Continuum Mysteriosum" (2009). Participants rated each of these claims on an eight-point scale. The data was factor loaded to determine if the paranormal claims were in accordance with Smith's scale.

### **Apparatus**

The questionnaire was built in Qualtrics, an online survey service (see Appendix B). Because each session was conducted online, each participant was free to participate at their convenience. Additionally, each session took no more than thirty minutes to complete. Within the questionnaire the participants answered demographics questions as well as questions about their current mental state, and they rated the paranormal claims on an eight-point scale.

As the participants began the questionnaire, they were first asked questions about their global estimation and general feeling. This section included items such as, "What is your estimation of your mental health in general?" and "What is your estimation of physical health in

general?” (Abdel-Khalek, 2006). The purpose of these items was to eliminate possible ‘Christmas tree-ers,’ that is, people who were not honestly answering questions but choosing their responses at random. Therefore, if a participant marked their mental or physical health as ‘1’ they were immediately taken to the end of the survey. These questions offered a filter so as not to contaminate the data with unrepresentative and dishonest responses.

The main section of the questionnaire followed. Participants were provided with instructions on how to sort each claim. The instructions stated that each term would be presented individually with their brief definition along with an eight-point Likert-type scale where they could rate each term from ‘Natural’ to ‘Supernatural’. ‘Natural’ was defined as those terms that could be proved with current science. For example, Mithril (a fictional metal described in Tolkien’s famous *Lord of the Rings* series) could possibly exist, but there is currently no physical evidence of it. ‘Supernatural’ was defined as those terms that could not be proved with current science. For example, transmutation (the process of converting inanimate objects into living creatures) is impossible; there is no plausible way this could exist.

A total of 46 claims were chosen for this section of the questionnaire. These paranormal claims were selected from each of the eight categories described by Smith in the “Continuum Mysteriosum” (2009). The categories, ranging from lower-level to higher-level paranormal claims, are as follows: borderline gratuitous paranormal claims, simple superstitions, paranormal patterns, paranormal powers, simple energies, intelligent forces/entities, afterlife entities, and supernatural entities. In addition to those claims from Smith’s scale, 4 of the 46 claims were included to act as extremes, i.e. 2 purely ‘Natural’ claims (oxygen and giant squid) and 2 purely ‘Supernatural’ claims (Santa Claus and tooth fairy). These extremes were included as a validation check of the scale.

Each paranormal claim was presented independently from each other and in a random order. The force response option within Qualtrics was applied to all items to insure every item would be answered. Also, the back button was disabled, so participants could not go back and change their responses.

Included at the end of the questionnaire were demographics questions about age, gender, and religious preference.

### **Results**

It should first be noted that due to an error within Qualtrics, every participant rated 45 claims, not all 46. Therefore, one data point for each participant was missing. To be able to carry out the factor analysis, we generated five random values between 1 and 8 for each missing point for each participant. Without a full data set for each participant (i.e. 46 total responses) we could not move forward with the factor analysis. Those five random values were averaged and rounded to replace the missing point for each participant.

All analyses were performed using SPSS Statistics version 21.0. A Principal component factor analysis with Varimax rotation was performed on these paranormal claim evaluation survey responses. Factor loading values less than .30 were suppressed from inclusion in the output. To create a clear picture of the factors any claim that correlated with more than one factor was restricted to only its strongest value. Psychokinesis factor loaded evenly on both two and four, we removed it from four as it fit with our labeling theory. The analysis resulted in the identification of four factors, accounting for 45% of the variance. See Table 1 for the rotated factor matrix and Table 2 for Eigenvalues and variance accounted. An examination of the Kaiser-Meyer Olkin measure of sampling adequacy suggested that the sample was factorable (KMO=.930).



Table 1

Obliquely rotated component loadings for 46 survey items\*

Component	1	2	3	4			
Stepping on a crack	<b>.756</b>	Ghosts	<b>.790</b>	Modern Acupuncture	<b>.723</b>	UFO	<b>.678</b>
Rabbit's Foot	<b>.705</b>	Spirits of Inanimate	<b>.745</b>	Modern Tai Chi	<b>.721</b>	Bigfoot	<b>.643</b>
Tooth Fairy	<b>.679</b>	Communicate w/Dead	<b>.726</b>	Traditional Tai Chi	<b>.656</b>	LochNess	<b>.634</b>
Haruspex	<b>.673</b>	Karma	<b>.622</b>	Meditation/Yoga Traditional	<b>.654</b>	Monster	<b>.612</b>
Santa Claus	<b>.657</b>	Fate	<b>.589</b>	Acupuncture	<b>.653</b>	UFO Cults	<b>.612</b>
Number 13	<b>.644</b>	ESP	<b>.581</b>	Magnet Therapy	<b>.552</b>	Giant Squid	<b>.452</b>
Tasseography	<b>.640</b>	Astral		Early Chiropractic	<b>.527</b>	Fire Walking	<b>.422</b>
Tarot Cards	<b>.630</b>	Projection/OOBE	<b>.572</b>	Homeopathy	<b>.516</b>	Lunacy	.311
Palmistry	<b>.599</b>	Healing Touch	<b>.534</b>	Oxygen	.344		
Magic Charms	<b>.586</b>	Chi	<b>.502</b>				
Fortune-Telling	<b>.572</b>	Faith Healing	<b>.477</b>				
Werewolves	<b>.505</b>	Witches	<b>.471</b>				
Numerology	<b>.464</b>	Yin-Yang	<b>.463</b>				
Astrology	<b>.457</b>	Psychokinesis	<b>.433</b>				
Dowsing	.394	Org. Religion	.349				
Bible Code	.343						

Notes. Factor loadings  $\geq .40$  are in boldface.

\*Loadings  $\geq .30$

Table 2

Eigenvalues by Factor and Variance Accounted			
Factor	Total	% of Variance	Cumulative %
1	11.195	24.337	24.337
2	3.966	8.621	32.958
3	2.974	6.465	39.423
4	2.502	5.439	44.862

A mean value was derived for each claim to better understand the sample's perception of the paranormal. Please see Table 3 for the means in ascending order.

Table 3

Claims sorted by rounded means ascending

1	2	3	4
Oxygen (1.21)	Meditation/Yoga (1.91)	Traditional Tai Chi (3.09)	Early Chiropractic (3.69)
	Modern Tai Chi (2.11)	Traditional Acupuncture (3.40)	Homeopathy (3.92)
	Giant Squid (2.28)	Fire Walking (3.44)	Chi (4.12)
	Modern Acupuncture (2.49)		Yin-Yang (4.13)
			Magnet Therapy (4.30)
5	6	7	8
Karma (4.59)	Lunacy (5.6)	Fortune-Telling (6.57)	
Dowsing (4.78)	UFO (5.90)	Palmistry (6.60)	
Bible Code (5.04)	Healing Touch (5.99)	Rabbit's Foot (6.65)	
Fate (5.13)	Numerology (5.99)	Santa Claus (6.70)	
E.S.P. (5.38)	Astral Projection/OOBE* (6.05)	Communication w/Dead (6.73)	
Astrology (5.38)	LochNess Monster (6.05)	Tarot Card (6.82)	
Faith Healing (5.42)	Organized Supernatural Religion (6.08)	Tasseography (6.85)	
	UFO Cult (6.17)	Stepping on a Crack (6.85)	
	Ghosts (6.18)	Witches (6.88)	
	Bigfoot (6.18)	Tooth Fairy (7.01)	
	Magic Charms (6.28)	Psychokinesis (7.02)	
	Spirits of Inanimate Objects (6.40)	Haruspex (7.16)	
	Number 13 (6.47)	Werewolves (7.40)	

Note. Calculated mean is presented in parenthesis

\*Out of body experience

## Discussion

This experiment included the evaluation of both a scale of paranormal claims based on physics and a factor analysis of the commonality in paranormal claims. The factor analysis yielded four distinct factors accounting for 45% of the variance.

Examination of each factor and the claims associated with it, themes became evident. We interpreted, of what we believe are, a suitable set of preliminary labels for each factor. See Table 4 for factor labels and their labels.

Table 4

Factor labels	
1	Magical Thinking
2	External Influential Agent
3	Complementary Alternative Medicine
4	Unproven Yet Plausible Claims

We also evaluated the means of participant's perception of the claims as based on a scale of normal to paranormal. These means were sorted in ascending order, and when evaluated appear to support Smith's scale and the categorization of paranormal claims into degree of physics violations. There are some claims in the survey that did not seem to fit with the others in their means, but it could be from the definition provided.

This experiment had some limitations. This experiment was intended as a sixteen week undergraduate project to be conducted as professionals. Undergraduates are often enrolled in many classes, and have other extracurricular activities we were limited in the amount of time to prepare our experiment. A second limitation, due similarly to the prior, was during the randomization process a single question (at random) was not given to each participant. The absent data then had to be fabricated using a random number generator. Another limitation may have also been similarity of terms and participants assumptions to the meaning of the claim from

prior experience (e.g., modern acupuncture), only to be confronted by what they knew the claim as later (e.g., traditional acupuncture).

We intend to replicate this experiment with some modifications; (a) a reduction of the claims to include only those found in the first two factors, as they are clearly paranormal in nature; (b) a larger and more diverse sample size; and (c) a properly randomized survey, to prevent the need to create random values for missing data points.

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## Appendix A



University of Central Florida Institutional Review Board  
Office of Research & Commercialization  
12201 Research Parkway, Suite 501  
Orlando, Florida 32826-3246  
Telephone: 407-823-2901 or 407-882-2276  
[www.research.ucf.edu/compliance/irb.html](http://www.research.ucf.edu/compliance/irb.html)

**Approval of Exempt Human Research**

From: **UCF Institutional Review Board #1  
FWA00000351, IRB00001138**

To: **Mustapha Mouloua and Co-PIs: Ian Fund, Jessica B. Siler, Keith R. MacArthur**

Date: **September 20, 2013**

Dear Researcher:

On 9/20/2013, the IRB approved the following activity as human participant research that is exempt from regulation:

Type of Review:	Exempt Determination
Project Title:	Factors of a Scale of Paranormal Phenomena
Investigator:	Mustapha Mouloua
IRB Number:	SBE-13-09631
Funding Agency:	
Grant Title:	
Research ID:	N/A

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

Signature applied by Joanne Muratori on 09/20/2013 03:08:20 PM EDT

A handwritten signature in black ink that reads 'Joanne Muratori'.

IRB Coordinator











Block 54

Please rate the following topic on the 8 point scale from natural to supernatural.

The Number "13" - a number associated with misfortune.

Natural



Supernatural



Block 55

Please rate the following topic on the 8 point scale from natural to supernatural.

Palmistry - the art of characterization and foretelling the future through the study of the palm.

Natural



Supernatural



Block 56

Please rate the following topic on the 8 point scale from natural to supernatural.

TarotCards - a deck of cards used to predict the future.

Natural



Supernatural



Block 57

Please rate the following topic on the 8 point scale from natural to supernatural.

HarrispeX - the inspection of the entrails of sacrificed animals to predict the future.

Block 58

Please rate the following topic on the 8 point scale from natural to supernatural.

Tasseography - the inspection of tea leaves left at the bottom of a cup to predict the future.

Natural         Supernatural

Block 59

Please rate the following topic on the 8 point scale from natural to supernatural.

Astrology - divination based on the relationship between astronomical phenomena and events in the human world.

Natural         Supernatural

Block 46

Please rate the following topic on the 8 point scale from natural to supernatural.

Numerology - divine, mystical or other special relationship between a number and some coinciding observed event.

Natural         Supernatural

Block 61

Please rate the following topic on the 8 point scale from natural to supernatural.

Bible Code - a set of secret messages encoded within the Hebrew text of the Torah.

Block 62

Please rate the following topic on the 8 point scale from natural to supernatural.

E.S.P. (Extrasensory Percepts) - reception of information not gained through the recognized physical senses but sensed with the mind.

Natural         Supernatural

Block 63

Please rate the following topic on the 8 point scale from natural to supernatural.

Psychokinesis - The ability to move objects using only the mind.

Natural         Supernatural

Block 64

Please rate the following topic on the 8 point scale from natural to supernatural.

Fortune-Telling - the practice of predicting information about a person's life.

Natural         Supernatural

Block 65

Please rate the following topic on the 8 point scale from natural to supernatural.

Astral Projection: Out-of-body experience - the ability of an "astral body" separate from the physical body, that is capable of travelling outside it.

Natural         Supernatural

Block 66

Please rate the following topic on the 8 point scale from natural to supernatural.

Dowsing - a type of divination employed in attempts to locate ground water.

Natural         Supernatural

Block 67

Please rate the following topic on the 8 point scale from natural to supernatural.

Qi (Chi) - is translated as "vital life energy", "life force", or "energy flow", a part of all living things.

Natural         Supernatural

Block 68

Please rate the following topic on the 8 point scale from natural to supernatural.

Magnet Therapy - subjecting certain parts of the body to magnetic fields produced by permanent magnets has beneficial health effects.

Natural         Supernatural

Block 69

Homeopathy - remedies are prepared by repeatedly diluting a chosen substance in alcohol or distilled water. Dilution usually continues until past the point where some of the original substance remains. The remedies are then administered to the ill.

Natural          Supernatural

Block 70

Please rate the following topic on the 8 point scale from natural to supernatural.

Early Childhood - a vertebral dislocation leads to interference with an "innate intelligence" exerted by the immune system and is a primary underlying risk factor for many diseases.

Natural          Supernatural

Block 71

Please rate the following topic on the 8 point scale from natural to supernatural.

Traditional Tai Chi - promotes a healthy balance of yin and yang through slow moving martial arts.

Natural          Supernatural

Block 72

Please rate the following topic on the 8 point scale from natural to supernatural.

Traditional Acupuncture - stimulating specific acupuncture points corrects imbalances in the flow of qi (energy) through channels known as meridians.

Natural          Supernatural

Block 73







Demographic

Age

Gender

Male

Female

What is your religious preference?

Christian

Judaism

Islam

Hindu

Buddhism

Agnostic

Atheist

Other

Prefer no answer