



RESEARCH NOTE

REVISED People reporting experiences of mediumship have higher dissociation symptom scores than non-mediums, but below thresholds for pathological dissociation [version 3; referees: 2 approved, 1 not approved]

Previously titled: People who report anomalous information reception have higher dissociation symptom scores

Helané Wahbeh, Dean Radin

Institute of Noetic Sciences, Petaluma, CA, 94952, USA

v3 First published: 10 Aug 2017, 6:1416 (doi: [10.12688/f1000research.12019.1](https://doi.org/10.12688/f1000research.12019.1))
 Second version: 23 Oct 2017, 6:1416 (doi: [10.12688/f1000research.12019.2](https://doi.org/10.12688/f1000research.12019.2))
 Latest published: 04 Jan 2018, 6:1416 (doi: [10.12688/f1000research.12019.3](https://doi.org/10.12688/f1000research.12019.3))

Abstract

Background: Dissociative states exist on a continuum from nonpathological forms, such as highway hypnosis and day-dreaming, to pathological states of derealization and depersonalization. Claims of communication with deceased individuals, known as mediumship, were once regarded as a pathological form of dissociation, but current definitions recognize the continuum and include distress and functional disability as symptoms of pathology. This study examined the relationship between dissociative symptoms and mediumship in a large convenience sample.

Methods: Secondary analyses of cross-sectional survey data were conducted. The survey included demographics, the Dissociation Experience Scale Taxon (DES-T, score range 0-100), as well as questions about instances of mediumship experiences. Summary statistics and linear and logistic regressions explored the relationship between dissociative symptoms and mediumship endorsement.

Results: 3,023 participants were included and were mostly middle-aged (51 years ± 16; range 17-96), female (70%), Caucasian (85%), college educated (88%), had an annual income over \$50,000 (55%), and were raised Christian (71%) but were presently described as Spiritual but not Religious (60%).

Mediumship experiences were endorsed by 42% of participants, the experiences usually began in childhood (81%), and 53% had family members who reported similar experiences. The mean DES-T score across all participants was 14.4 ± 17.3, with a mean of 18.2 ± 19.3 for those claiming mediumship experiences and 11.8 ± 15.2 for those who did not ($t = -10.3, p < 0.0005$). The DES-T threshold score for pathological dissociation is 30.

Conclusions: On average, individuals claiming mediumship experiences had higher dissociation scores than non-claimants, but neither group exceeded the DES-T threshold for pathology. Future studies exploring dissociative differences between these groups may benefit from using more comprehensive measures of dissociative symptoms as well as assessments of functional impairment, which would help in discerning between pathological and non-pathological aspects of these experiences.

Open Peer Review

Referee Status:

	Invited Referees		
	1	2	3
REVISED version 3 published 04 Jan 2018			 report
REVISED version 2 published 23 Oct 2017		 report	 report
version 1 published 10 Aug 2017	 report		

- 1 **Etzel Cardeña**, Lund University, Sweden
- 2 **Colin A. Ross**, The Colin A. Ross Institute for Psychological Trauma, USA
- 3 **Adrian Parker**, University of Gothenburg, Sweden

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Comments (0)

Corresponding author: Helané Wahbeh (hwahbeh@noetic.org)

Author roles: **Wahbeh H:** Conceptualization, Data Curation, Formal Analysis, Investigation, Methodology, Project Administration, Writing – Original Draft Preparation, Writing – Review & Editing; **Radin D:** Conceptualization, Funding Acquisition, Methodology, Supervision, Writing – Review & Editing

Competing interests: No competing interests were disclosed.

How to cite this article: Wahbeh H and Radin D. **People reporting experiences of mediumship have higher dissociation symptom scores than non-mediums, but below thresholds for pathological dissociation [version 3; referees: 2 approved, 1 not approved]**

F1000Research 2018, **6**:1416 (doi: [10.12688/f1000research.12019.3](https://doi.org/10.12688/f1000research.12019.3))

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Grant information: This work was supported by FUNDAÇÃO BIAL (grant number No. 257/14).

The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

First published: 10 Aug 2017, **6**:1416 (doi: [10.12688/f1000research.12019.1](https://doi.org/10.12688/f1000research.12019.1))

REVISED Amendments from Version 2

This current version addresses the comments of reviewer three. It removes the term anomalous information reception and replaces it with the more specific term of mediumship. It also highlights that the DES-T is just one way to evaluate dissociative symptoms and that "contact with the dead" is not necessarily indicative of pathology.

See referee reports

Introduction

Dissociation is conceptualized as the disruption of usually integrated functions of consciousness, memory, identity or perception of the environment¹. Dissociative Identity Disorder (DID) is defined as a personality disorder, when two or more distinct identities or personalities are present, each with its own pattern of perceiving, relating to or thinking about the environment and self. The core clinical symptoms of DID include amnesia, depersonalization, derealization, identity confusion and identity alteration. Dissociative states are prevalent in other psychiatric disorders, such as PTSD², and are more prevalent in younger nonclinical populations³. Dissociative states exist on a continuum⁴⁻⁶, from nonpathological expressions, such as highway hypnosis and day-dreaming, to pathological states of derealization (surrealness), and depersonalization (absence of identity)⁷. Almost half of United States adults have experienced a dissociative episode at some time in their lives⁸.

A widespread belief possibly related to dissociative symptoms is the idea that it is possible to communicate with deceased individuals; people who report such experiences are called "mediums"⁹. A survey of 18,607 people in the United States and thirteen European countries found that some 25% reported contact with the dead¹⁰. Double-blind experiments indicate that in some cases the information obtained by mediums can be verified as accurate¹¹⁻¹⁴. This suggests that claims of mediumship experiences should not be uniformly dismissed as pathological, however, such claims are commonly regarded as symptoms of DID^{5,15,16}. This is despite a lack of clear evidence that mediums exhibit greater pathological symptoms than the general population^{17,18}. Perhaps this is because on average, mediums do not regard dissociative symptoms as distressful. Indeed, the most recent Diagnostic and Statistical Manual of Mental Disorders (5th edition) clarifies that pathological DID is defined when "the person must be distressed by the disorder or have trouble functioning in one or more major life areas because of the disorder," and that "the disturbance is not part of normal cultural or religious practices"¹.

In an effort to further our understanding of the relationship between self-report dissociative symptoms and claims of mediumship, we analyzed data from a large convenience sample. We hypothesized that the prevalence of dissociative symptoms in people who claim mediumship abilities would be the same as those who do not maintain such claims.

Methods

This study includes secondary analyses of a specific subset of data on mediumship experiences and dissociative symptoms collected for a different research study approved by the Institute of Noetic Sciences (IONS) Institutional Review Board (approval number, wabh_2016_01). A survey was administered through SurveyMonkey.com with HIPAA compliant methods. Participants were recruited through the IONS Facebook page, IONS mailing lists, and the IONS community networks.

The survey for the parent study from which the data for this study was extracted ([Supplementary File 1](#)) began with the study's purpose and informed consent details. Date and country of birth, race, education, and childhood and current spiritual/religious affiliation were collected. Gender was collected on a subsample of participants. Participants indicated if they had mediumship experiences, defined as the "ability to mediate communication between spirits of the dead and the living or the empathic ability to feel the presence and energies of spirits." They also indicated age of onset (if applicable), and family history of similar experiences.

Dissociation Measure

Participants then completed the Dissociation Experiences Scale Taxon (DES-T)³ that can be used to distinguish pathological from non-pathological dissociation with a threshold score of 30 with an 87% positive predictive value (Cronbach Alpha of 0.75, on a scale of 0–100)^{19,20}. The DES-T is just one of many dissociative symptom instruments and was chosen for this study because of its brevity and common use. Respondents selected a percent frequency for eight dissociative symptoms. The DES-T results in two variables: the mean of the eight items; and a binary variable based on the pathology threshold³.

Statistical analysis

Categorical variable percentages were calculated and examined qualitatively. Means, standard deviations and ranges of continuous variables were calculated. Covariates included gender, age, race, education, income, childhood spirituality and current spirituality, family history, and age of the claimed ability onset. Missing values were randomly distributed except for gender. T-test and chi-square tests evaluated differences between variables. Linear and logistic regressions examined the relationship between dissociative symptoms scores and mediumship experience status. A Bonferroni multiple comparison correction was applied to the α significance value, designating 0.003 as the cutoff for a significant result ($\alpha = 0.05$ divided by 19 items, including seven demographic items, eight DES-T items, DES-T total, DES-T cut-off, linear and logistic regression. Statistics were performed using Stata 12.0 (StataCorp LLC, College Station, Texas).

Results

In total, 3984 participants took the survey from May 4, 2016 to June 7, 2017. Participants were not required to complete all fields and thus only data from 3023 participants who answered the

mediumship question (question 49 of the survey) and completed the DES-T (question 75) were included. Most participants were from the United States (62.6%), followed by the United Kingdom (7.7%) and Canada (6.3%); the remaining participants represented thirteen other countries. Participants were mostly middle aged (51 years ± 16; range 17-96), female (70%), Caucasian (85%), college educated (88%), had an annual income over \$50,000 (55%), were raised Christian (71%), and now affiliated as Spiritual but not Religious (60%; Table 1). Current spiritual/religious affiliation was different by mediumship status.

Mediumship experiences were endorsed by 42% of participants, with their first experience starting in childhood (81%), and 53% having family members with similar experiences. The grand mean DES-T score was 14.4 ± 17.3 (range 0–100) across all participants and was significantly higher for mediumship claimants (18.2 ± 19.3) than for non-claimants (11.8 ± 15.2; t = -10.3, p<0.0005; Table 2). A linear regression model for the DES-T total score and mediumship responses, including all covariates, found race and education to be significant predictors (F (3, 2947) = 73.2, p<0.0005). Some 11% of mediumship non-claimants and 22% of

Table 1. Demographic variables for participants by purported ability for anomalous information reception about deceased humans. Mean ± standard deviation; t, Student's two-sample t-test statistic; X², chi-square statistic; p, probability.

	Mediumship			t or X ²	p
	Yes N - 1,257	No N - 1,766	N		
Age	51.7 ± 14.3	51.4 ± 16.4	2751	-0.4	0.68
	Range (17–96)	Range (17–89)			
Gender (% Female)	80.0%	67.2%	519	5.99	0.01
Race (% Caucasian)	86.5%	83.6%	2970	4.76	0.03
Education (% ≥ some college)	87.3%	88.9%	2977	1.66	0.20
Income (% ≥ \$50,000 annual income)	38.6%	35.7%	2768	2.32	0.13
Childhood Spiritual/Religious Affiliation (% Christian)	71.7%	70.6%	2986	0.44	0.51
Current Spiritual/Religious Affiliation (% Spiritual but not religious)	65.9%	56.1%	2991	29.6	<0.0005*

Table 2. The eight item and total means, standard deviations, and mean difference sorted by highest mean percentage by mediumship endorsement. Data are presented as the mean ± standard deviation. DES-T, Dissociation Experiences Scale Taxon; t - Student's two-sample t-test statistic; p, probability.

DES-T Item	Mediumship		Mean Difference	t	p
	Yes (n=1257)	No (n=1766)			
5. Some people sometimes have the experience of feeling that other people, objects, and the world around them are not real.	25.8 ± 32.0	17.5 ± 26.7	8.3	-7.7	<0.0005*
8. Some people sometimes find that they hear voices inside their head which tell them to do things or comment on things that they are doing.	25.5 ± 33.5	13.7 ± 25.7	11.8	-11.0	<0.0005*
3. Some people sometimes have the experience of feeling as though they are standing next to themselves or watching themselves do something and they actually see themselves as though they were looking at another person.	22.2 ± 29.8	12.9 ± 22.9	9.3	-9.7	<0.0005*
7. Some people find that in one situation they may act so differently compared to another situation that they feel almost as if they were two different people.	21.5 ± 30.6	17.6 ± 28.2	3.9	-3.6	<0.0005*
6. Some people sometimes have the experience of feeling that their body does not seem to belong to them.	20.6 ± 30.0	13.4 ± 24.5	7.2	-7.2	<0.0005*
1. Some people have the experience of finding themselves in a place and having no idea how they got there.	13 ± 23.3	7.8 ± 17.2	5.2	-7.06	<0.0005**
2. Some people have the experience of finding new things among their belongings that they do not remember buying.	10.4 ± 21.5	6.9 ± 17.4	3.5	4.95	<0.0005
4. Some people are told that they sometimes do not recognize friends or family members.	6.6 ± 17.7	4.3 ± 14.3	2.3	-4.0	.0001*
Total	18.2 ± 19.3	11.8 ± 15.2	6.4	10.3	<0.0005*

mediumship claimants had scores greater than 30 ($X^2 = 63.0$, $p < 0.0005$). A logistic regression based on this threshold showed a significant difference in mediumship responses with education (> college) and income (>\$50,000) to be significant covariates (LR $X^2 = 99.12$, $p < 0.0005$).

Dataset 1. Dissociation symptoms for those with and without self-report anomalous information reception

<http://dx.doi.org/10.5256/f1000research.12019.d171352>

DT# are the Dissociation Experience Scale Taxon items.

Discussion

In total, 42% of participants endorsed mediumship experiences. Given that the population surveyed was comprised mostly of individuals interested in mediumship-type experiences, this high percentage is not surprising. The prevalence of similar “contact with the dead” reports in other surveys ranges from 10%²¹, 25–30%¹⁰, 29%²², and up to the same figure found in the present survey, 42%²³. The overall mean dissociation experience score for mediumship claimants was substantially below the DES-T clinical cutoff for pathological dissociation, but it was significantly higher than for non-claimants^{3,24}.

The threshold for determination of pathological dissociation continues to be debated, and the present findings may be idiosyncratic with respect to use of the DES-T scale^{3,24,25}. In addition, the experience of communicating with the dead may also be considered a symptom of a high degree of schizotypy, not just

dissociation²⁶. We also note that the grand mean DES-T score in our sample was higher than that observed in the general population¹⁹. This again likely reflects the convenience sampling of IONS members, which reduces the generalizability of our findings. Future studies comparing those who claim versus do not claim mediumship experiences may benefit from use of more comprehensive measures of dissociative symptoms. In addition, specifically asking questions about functional impairment would help discern between pathological and nonpathological aspects of purported mediumship experiences.

Data availability

Dataset 1: Dissociation symptoms for those with and without self-report anomalous information reception. DT# are the Dissociation Experience Scale Taxon items. doi, [10.5256/f1000research.12019.d171352](https://doi.org/10.5256/f1000research.12019.d171352)²⁶

Competing interests

No competing interests were disclosed.

Grant information

This work was supported by FUNDAÇÃO BIAL (grant number No. 257/14). The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

Acknowledgements

The authors would like to thank Amira Sagher, Leena Michel and the Institute of Noetic Sciences.

Supplementary material

Supplementary File 1: Survey on genetics of psychic ability.

[Click here to access the data.](#)

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27. Wahbeh H, Radin D: **Dataset 1 in: People who report anomalous information reception have higher dissociation symptom scores.** *F1000Research.* 2017.
[Data Source](#)

Open Peer Review

Current Referee Status:   

Version 3

Referee Report 19 January 2018

doi:10.5256/f1000research.14736.r30021



Adrian Parker

Department of Psychology, University of Gothenburg, Gothenburg, Sweden

The authors have taken into account the mandatory changes. The article is now substantially improved and merits indexing.

Competing Interests: No competing interests were disclosed.

I have read this submission. I believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Version 2

Referee Report 01 December 2017

doi:10.5256/f1000research.13998.r27912



Adrian Parker

Department of Psychology, University of Gothenburg, Gothenburg, Sweden

The version I have seen is basically sound but needs some attention to the issues that I raise below. As a native (UK) English speaker, I can endorse that the English in this version is correct (with the exception of a couple of missing words noted below) and clear. The statistical treatments are appropriate and are judged to be correct. The study has some importance relating to the efforts to distinguish little understood spiritual and transpersonal experiences from the more bizarre and perhaps pathological ones.

Given the major constraints of the word count then the paper is acceptable but it is less than commendable that no hint of the complexity of the issues has been made in the paper. The article focuses rather exclusively on one singular conception of dissociation – that by Colin Ross and co-workers and their the DES-T scale. According to this view there is a normal continuum to dissociative experiences along with a cut-off point for the more bizarre types of experiences, which are seen then as an expression of pure pathology. The eight questions from DES-T that were selected for this study are those highlighting this potential diagnosis. There are of course other conceptions – such as those of Watson and co-workers - and at least a half dozen other tests of dissociation (Watson, 2001¹; Watson & Loftus, 1999²). The authors write “Claims of such abilities have been considered symptoms of dissociative disorders” which is

partially true but it is equally true that contact with dead (or even living) spirits is often considered to be symptomatic of individuals being psychosis-prone that is schizotypy – and if there is no distress to warrant a main DSM-diagnosis or DSM axis of personality disturbance - then this is labeled “happy schizotypy”. Indeed, found amongst the authors’ battery of tests and questions which number some 70 or more, are a set relating to just this. From this presentation it is clear that this study is only a minor part of a larger one, which will be or is being “milked” for several papers. This is of course nowadays a standard practice (but involving naturally some major weaknesses) with internet studies. What is perhaps here rather misleading is that the study is presented to the potential responders as “a study of genetics of extended human experience” – a presentation which might be considered a little disingenuous in the context of the issues in the current paper(s).

This brings up the issue of what I think needs to be dealt with before indexing: how the context of the presentation might have influenced the major finding that the authors report and which the reviewer Prof. Ross attributes much importance to, namely that mediumship claimants were twice as likely as non-claimants to end up on the ill-side of the pathology cut-off. Although together 42% of the respondents endorsed communicating with the dead - the so-called “AIR experiences”, it should be emphasized that AIR experiences were not the same as trance in that so-called channeling and clairaudience experiences might fall under this. Indeed it is surprising that a simple question concerning trance states does not seem to have been included since such individuals might have formed an interesting core group. The Noetic Sciences website under the aegis of which the (SurveyMonkey) study was conducted, is dedicated to studying “interconnectiveness” so it seems likely that those viewing the website and willing to answer the huge multitude of questions were highly motivated to confirm the mission of the website. This may well have created response biases. The authors write: “Notably, the top five endorsed DES-T items were consistent with an AIR experience.” (Personally I think the addition of yet another acronym and neologism in the form of AIR only adds confusion to the overladen terminology in this field – it would surely have been better to keep to the explicit term mediumhip.). Accordingly I think their comment should be extended here so as to make some concession as to how the above findings can be vulnerable to the above mentioned influence.

Page 1 line 6 from bottom: should read than non-claimants

Page 3 line 3 from bottom should read (presumably) of pathological dissociative

References

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Is the work clearly and accurately presented and does it cite the current literature?

Yes

Is the study design appropriate and is the work technically sound?

Yes

Are sufficient details of methods and analysis provided to allow replication by others?

Yes

If applicable, is the statistical analysis and its interpretation appropriate?

Yes

Are all the source data underlying the results available to ensure full reproducibility?

Yes

Are the conclusions drawn adequately supported by the results?

Partly

Competing Interests: No competing interests were disclosed.

I have read this submission. I believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Reader Comment 19 Dec 2017

Helané Wahbeh, Oregon Health & Science University, USA

Thank you for your thoughtful comments to our manuscript. We have revised the manuscript in an attempt to address your feedback.

Regarding complexity of dissociative pathology:

We have added a sentence about this in the discussion and included another sentence and reference about schizotypy.

Regarding larger dataset.

Additional language was added to the manuscript to clarify that this manuscript included a secondary analysis of data collected from a study with very different research questions. The survey included "a study of genetics of extended human experience" since that was the purpose of the larger study through which the data was collected. This secondary analysis was not a research question or aim of that study. The results of that study will be submitted for publication when it is complete.

Regarding mediumship versus the other AIR experiences surveyed.

Yes, we agree we are very interested in such relationships. We are working on another analyses that will explore the relationship of the different AIR data collected in this and other studies in a full-length research paper. We were particularly interested in the mediumship and dissociation relationship and thus, evaluated this relationship in the data in this short report.

Regarding AIR versus mediumship terminology.

We agree this language likely confuses the issue. We have replaced AIR with mediumship throughout.

Competing Interests: No competing interests were disclosed.

Referee Report 06 November 2017

doi:10.5256/f1000research.13998.r27178



**Colin A. Ross**

The Colin A. Ross Institute for Psychological Trauma, Richardson, TX, USA

This is an interesting study with a large N. Within the limitations of the methodology, it tells us that individuals with anomalous information reception (AIR) tend to be somewhat more dissociative than those without such experiences. This is consistent with prior literature. The study would have been stronger if the taxometric statistical analysis had been applied to the 8 DES-T items (available at www.isst-d.org), and if the full 28-item DES had been administered, but this would have made for a lengthy survey. The sample population is more dissociative and has more AIR than the general population and this provides interesting information about IONS members and affiliates that I don't think has been published before. As Dr. Cardena noted, the references could have been more extensive, but I would say they are sufficient for a brief report.

Is the work clearly and accurately presented and does it cite the current literature?

Yes

Is the study design appropriate and is the work technically sound?

Partly

Are sufficient details of methods and analysis provided to allow replication by others?

Yes

If applicable, is the statistical analysis and its interpretation appropriate?

I cannot comment. A qualified statistician is required.

Are all the source data underlying the results available to ensure full reproducibility?

Yes

Are the conclusions drawn adequately supported by the results?

Yes

Competing Interests: No competing interests were disclosed.

Referee Expertise: Dissociative disorders, psychological trauma

I have read this submission. I believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Version 1

Referee Report 21 August 2017

doi:[10.5256/f1000research.12999.r24906](https://doi.org/10.5256/f1000research.12999.r24906)

**Etzel Cardeña**

Center for Research on Consciousness and Anomalous Psychology (CERCAP), Department of Psychology, Lund University, Lund, Sweden

This paper is a good example of why the F1000Research model is so bad... The manuscript is poorly written, does not show a good grasp of the relevant literature or that a good literature search was conducted, misrepresents some of its references, and very probably has an important mistake in a Table or its analyses. All of these issues could have been solved during the regular peer review process so that at the end the only publicly available version would have been an adequate one.

Although it is a short paper, it would take me too long to list all of the problems in it, so I will just mention 2-3 examples per problematic issue:

1. Poor writing:

From the abstract: a) "symptoms of [a] dissociation [dissociative] disorder". b) "Both AIR claimants and non-claimants scored lower than the clinical cutoff" [despite the previous sentence in the abstract mentioning that percentages of both groups had scored above the cutoff. c) "incorporating [a] comprehensive dissociative symptom measurement, as well as their effects on the person's functionality" [grammatical number is inconsistent, besides the fact that "measurement[s]" would not have an effect on functionality.

2. Inadequate coverage of the literature:

a) There have been various recent studies specifically evaluating possible psychopathology in people reporting anomalous experiences (in general) and spirit possession/mediumship (in particular), yet only very few are listed in the Reference section. b) Contrary to what the authors write that "Claims of such abilities are often considered to be symptoms of dissociation [dissociative] disorders", yet both the anthropological literature and, more relevant in this case, the Diagnostic and Statistical Manual taxonomy, ever since its 4th edition, has specifically required that clinically significant levels of distress or dysfunction be present to consider a dissociative manifestation pathological.

3. Misrepresentations of cited literature:

a) A paper by Rebecca Seligman is used to support the above quotation that mediumship abilities are often considered to be symptoms of dissociation, yet she specifically states that "dissociation is not a pathological experience, but rather a therapeutic mechanism", along the lines of what others in anthropology and psychology have written. b) "Almost half of United States adults...", yet this study was conducted in Winnipeg, Canada.

4. Statistical issues:

a) In Table 1, a 3% difference (87 vs 84%) is reported as significant at the minus .05 level, yet an almost identical difference with about the same number of participants (87 vs 89%) is reported as non-significant. I very much doubt that both statements, particularly the first one, are accurate. b) There are multiple references to probability values = 0 or less than 0, but of course it goes against inferential statistics to state that instead of, for example, less than .001, or whatever.

Is the work clearly and accurately presented and does it cite the current literature?

No

Is the study design appropriate and is the work technically sound?

Partly

Are sufficient details of methods and analysis provided to allow replication by others?

No

If applicable, is the statistical analysis and its interpretation appropriate?

No

Are all the source data underlying the results available to ensure full reproducibility?

Yes

Are the conclusions drawn adequately supported by the results?

No

Competing Interests: No competing interests were disclosed.

I have read this submission. I believe that I have an appropriate level of expertise to state that I do not consider it to be of an acceptable scientific standard, for reasons outlined above.

Author Response 10 Oct 2017

Helané Wahbeh, Oregon Health & Science University, USA

Response to Reviewer #1

"This paper is a good example.....so that at the end the only publicly available version would have been an adequate one."

-Thank you for you taking the time to review our paper and for your thoughtful comments. Yes, we agree that through the traditional peer-review process, the final public version is superior to initial versions. We appreciate the transparent nature of F1000 review process as a way to reduce bias in publishing.

"Poor writing"

-Thank you for highlighting writing errors in our manuscripts. We have corrected the highlighted grammatical errors and unclear wording. We have also reviewed the entire paper for other writing errors.

"Inadequate coverage of the literature"

-We agree that the paper does not fully examine the literature related to this topic. The reason for this is the word count limits of a short article (1000 words). We have included additional references and attempted to succinctly include a broader understanding of the current literature.

"Misrepresentations of cited literature"

a) A paper by Rebecca Seligman

- Rebecca Seligman also states "Medical approaches to the question have implicated psychological disturbance as a motivational factor for some, yet they fail to explain how and why some psychological disturbances, in some individuals, come to be expressed as spirit-possession mediumship." She also has a very nice discussion in the section "MEDIUMSHIP AND MENTAL ILLNESS REVISITED" on mediumship being considered a pathology. Because of the word limitations, we did not highlight the specific sections of her paper that refer to these issues but allow the reader to read the paper to appreciate the full scope of the discussion of mediumship and mental illness.

b) "Almost half of United States adults...", yet this study was conducted in Winnipeg, Canada.

-This reference has been corrected.

"Statistical issues"

a) In Table 1, a 3% difference (87 vs 84%) I very much doubt that both statements, -particularly the first one, are accurate."

-These statistics have been double checked and they are accurately represented. We have also included a conservative Bonferroni multiple comparisons correction.

b) There are multiple references to probability values = 0 or less than 0, but of course it goes against inferential statistics to state that instead of, for example, less than .001, or whatever.

-The p statistic reporting has been corrected.

Competing Interests: We have no competing interests to disclose

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