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3 **Emotional response bias, autistic traits and paranormal beliefs in**  
4 **patients with OCD**

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9

10 **Abstract**

11 **Objective:** To find the relationship involving autistic traits, paranormal beliefs and  
12 emotional response bias in obsessive compulsive disorder patients.

13 **Method:** The cross-sectional quasi-experimental study was conducted from  
14 November 2017 to November 2018 at the Government College University, Lahore,  
15 Pakistan, and comprised patients with obsessive compulsive disorder and healthy  
16 controls from the general population aged 20-40 years. Data was collected using the  
17 self-reporting Autism Spectrum Quotient, the Revised Paranormal Belief Scale, the  
18 Emotional Recognition Task and the Obsessive Compulsive Disorder symptom  
19 checklist. Data was analysed using SPSS 20.

20 **Results:** Of the 140 participants, there were 70(50%) patients and as many controls.  
21 Overall, there were 72(52%) males and 68(48%) females. High level of autistic traits  
22 ( $p<0.001$ ) and paranormal beliefs ( $p<0.001$ ) had a significant impact on obsessive  
23 compulsive disorder. Impairments in recognition of emotions were related to the  
24 presence of high autistic traits and obsessive compulsive symptoms in the patients  
25 group ( $p<0.05$ ). Emotion of disgust ( $p<0.001$ ) was significantly impaired in the  
26 patients, while the differences were not significant in terms of emotions of happiness  
27 and surprise ( $p>0.05$ ).

28 **Conclusion:** Autistic traits, paranormal beliefs and emotional response bias were  
29 found to have a significant relationship in obsessive compulsive disorder patients.

30 **Key Words:** Emotions, Obsessive compulsive disorder, Disgust.

31

## 32 **Introduction**

33 Over the last few years, the occurrence of obsessive compulsive disorder (OCD) has  
34 become more common than it was presumed initially and it is described by distress-  
35 inducing thoughts and beliefs called obsessions that an individual tries to dismiss  
36 through ritualistic actions or mental acts that are compulsions which can be seen in  
37 behaviour.<sup>1</sup> OCD is highly incapacitating, and the World Health Organisation (WHO)  
38 has reported it to be amongst the 10 most disabling medical conditions.<sup>2</sup> Prevalence  
39 data in Pakistan shows lifetime OCD rate of 3% in the general population.<sup>3</sup> OCD has  
40 earlier onset in males than females, while greater number of females suffer from it  
41 than males.<sup>4</sup>

42 High-functioning autism (HFA) is expressed in the form of OCD with autism in adult  
43 psychiatry, and in one study, almost 20% of adult OCD patients exhibited autistic  
44 traits.<sup>5</sup> Autism-related studies have found that autistic traits are distributed across the  
45 normal population as well with high level of impairments in people with autism  
46 spectrum disorder (ASD).<sup>6,7</sup> The incidence of co-morbidity of autism traits or ASD  
47 symptoms in OCD patients is 4-8 times higher compared to normal population.<sup>8</sup>

48 Literature highlights the presence of paranormal and superstitious beliefs in OCD  
49 patients. Magical thinking, stress and anxiety accounts for 62% variance in OCD  
50 symptoms.<sup>9</sup> A study found a strong relationship between magical ideation and OCD in  
51 clinical as well as non-clinical sample.<sup>10</sup> Most studies reported that approximately  
52 40% of OCD patients have impaired ability to recognise facial emotions accurately.<sup>11</sup>

53 Facial expressions represent a medium of conveying information about how someone  
54 feels, and emotional bias means biases in cognition and decision-making due to  
55 emotional factors. OCD patients experience difficulty in recognising emotions of  
56 disgust.<sup>12</sup> A study found that individuals with high autistic traits are not responsive to

57 social rewards compared to non-social rewards, and it can be concluded that people  
58 with autism or high predominance of autistic traits are deficient in identifying and  
59 responding to social rewards.<sup>13</sup>

60 There has been limited research exploring whether or not OCD, autistic traits and  
61 paranormal beliefs are interrelated. The current study was planned to explore the  
62 association involving autistic traits, paranormal beliefs and ability to recognise the  
63 facial expression of emotions in OCD patients.

64

### 65 **Patients and Methods**

66 The cross-sectional quasi-experimental study was conducted from November 2017 to  
67 November 2018 at the Government College University, Lahore, Pakistan. After  
68 approval from the institutional ethics review committee, the sample size was  
69 calculated using Raosoft website's calculations, with 50% response distribution, 5%  
70 margin of error and 76% confidence interval (CI).<sup>14</sup> The sample was raised using  
71 purposive sampling technique from different psychiatric units in Lahore-based  
72 hospitals, including Services Hospital, Mayo Hospital, Jinnah Hospital, Fountain  
73 House and Sir Ganga Ram Hospital. Formal permission was obtained from each of the  
74 participating hospitals' administration. Those included were OCD patients from the  
75 hospitals and healthy controls from the community aged 20-40 years regardless of  
76 gender. Those who refused to participate were excluded.

77 After taking informed consent from the subjects, data was collected using the  
78 Obsessive Compulsive Disorder Symptom Checklist (OCDSC) the Urdu version of  
79 which has reliability with  $\alpha = 0.9$ .<sup>15</sup> The 15-item checklist, filled by both the patients  
80 and the controls, was used as a screening tool to assess the frequency and severity of  
81 obsessive and compulsive symptoms. Each item is rated on a 4-point Likert scale  
82 ranging from 0 = "never" to 3 = "too much", with a cut-off score of 19. Also used was  
83 the self-administered Autism Spectrum Quotient (AQ)<sup>16</sup> for assessing the extent to  
84 which an adult with average intelligence has the traits related to the autistic  
85 spectrum.<sup>17</sup> It is a 50-item scale consisting of 5 areas assessing social skills, attention

86 switching, attention to details, communication and imagination. The subjects were  
87 rated on a two-point Likert scale 0 and 1 having a cut-off score of 32. Paranormal  
88 beliefs were measured using the Revised Paranormal Belief Scale (RPBS) that has 26  
89 items consisting of seven broad factors: traditional religious beliefs, Psi (extra sensory  
90 perception), witchcraft, superstition, spiritualism, extraordinary life forms, and  
91 precognition. The statements were rated on a 7-point Likert scale having a cut-off  
92 score of 40.<sup>18</sup> Emotion Recognition Task (ERT) is a computerised paradigm  
93 presenting morphed video clips of facial emotional expressions at different intensities,  
94 which has been developed for studies on emotion perception and has no time  
95 restriction.<sup>19</sup> A total of 96 trails with six basic universal emotions were presented.  
96 Urdu version of the AQ<sup>20</sup>, OCDSC tools was used in the study. RPBS was translated  
97 in Urdu (forward-backward translation method) and some items were modified to  
98 make them culturally relevant. The adapted scale has high reliability of .83; making it  
99 a reliable tool for use with the indigenous population. It took about 45-50 minutes for  
100 a subject to fill the questionnaire.

101 Data was analyzed using SPSS 20. The t-test was used to investigate significant mean  
102 differences in emotions between the groups. Regression analysis was applied to  
103 identify significant predictors. Statistical significance was set at  $p < 0.05$ .

104

## 105 **Results**

106 Of the 140 participants, there were 70(50%) patients and as many controls. Overall,  
107 there were 72(52%) males and 68(48%) females. The patients had high autistic traits,  
108 exhibited more paranormal beliefs and showed more emotional response bias than the  
109 control group ( $p < 0.05$ ). Happiness was the best recognised emotion by both groups,  
110 but they differed significantly in recognising the emotion of disgust ( $p < 0.05$ ). The  
111 emotion of anger was poorly recognised by OCD patients (Table 1).

112 No significant gender differences were found among OCD patients (Table 2).

113 Autistic traits were significant predictors of obsessive compulsive symptoms in OCD  
114 patients, and the decreased ability to recognise the emotion of disgust meant symptom  
115 severity (Table 3).

116 Paranormal beliefs emerged as positive predictors of obsessive compulsive symptoms,  
117 and poor recognition of the emotions of anger and disgust meant symptoms severity  
118 (Table 4).

119

## 120 **Discussion**

121 The current study found that autistic traits and paranormal beliefs were commonly  
122 found in OCD patients. High autistic traits were found in people suffering from  
123 anxiety, OCD and depression.<sup>21</sup> While investigating temperaments of OCD patients, it  
124 was found that approximately half of the patients scored high at shyness, low at  
125 activity and social interaction.<sup>22</sup> The present study found that males with OCD had  
126 high scores on autistic traits, which is consistent with literature.<sup>8</sup>

127 OCD is a mental disorder having features overlapping with superstitious behaviours.  
128 The current study revealed high prevalence of paranormal beliefs in OCD patients.  
129 Studies reported that about 54% of OCD patients believed in supernatural  
130 phenomenon and 57.3% participants ascribed supernatural causes to their illness.<sup>23</sup>  
131 Furthermore, overall results indicate almost equal prevalence of paranormal beliefs  
132 across gender. Another study revealed that considerable number of participants  
133 believed in black magic, ghosts and talisman in Pakistan.<sup>24</sup> Additionally, participants  
134 reported that the religion supported supernatural concepts. A study commented that  
135 Islam does not support paranormal beliefs, but such beliefs prevail in the community  
136 due to cultural traditions.<sup>24</sup>

137 Neurological deficits have been reported in people with high autistic traits and OCD,  
138 which may explain the fact that they are more emotionally detached from others than  
139 people with other anxiety disorders.<sup>2,25</sup> The current study found that females with  
140 OCD showed accurate recognition of emotions compared to males. Similar deficits  
141 were found in males' ability to understand thoughts and feelings of others, which

142 contribute to poor recognition of emotions and poor social interaction in them.<sup>19, 24, 26</sup>  
143 OCD patients showed poor performance with ERT. People with OCD or high autistic  
144 traits have deficits in understanding emotions, perspective and processing social cues  
145 of others.<sup>27</sup> Furthermore, the results of the present study suggested that OCD patients  
146 showed marked deficits in recognising emotions of disgust, anger and sadness on ERT  
147 which is in line with a study.<sup>28</sup> The emotions of happiness and surprise were easily  
148 recognised by participants of both groups, as reported earlier.<sup>19</sup>  
149 The emotion of fear was more accurately identified by OCD patients in the current  
150 study as has been explained by an earlier study.<sup>29</sup>

151

## 152 **Conclusion**

153 High levels of autistic traits and paranormal beliefs were present in patients with  
154 OCD. However, males performed poorly at recognising emotions from facial  
155 expressions. Marked deficits in recognition of facial expressions of disgust and anger  
156 were seen in the patients.

157

158 **Ethical approval:** The study commenced after approval from the institutional ethics  
159 committee.

160 **Disclaimer:** The text is based on an academic thesis.

161 **Conflict of interest:** None.

162 **Source of Funding:** None.

163

## 164 **References**

- 165 1. Stein D. Obsessive-compulsive disorder. *Lancet*. 2002 ;360(9330):397-405. doi:  
166 10.1016/S0140-6736(02)09620-4.
- 167 2. Anholt G, Cath D, van Oppen P, Eikelenboom M, Smit J, van Megen H et al.  
168 Autism and ADHD Symptoms in Patients with OCD: Are They Associated with  
169 Specific OC Symptom Dimensions or OC Symptom Severity?. *J Autism Dev*  
170 *Disord*. 2009;40(5):580-589. doi: 10.1007/s10803-009-0922-1

- 171 3. Gadit AA. Psychiatry in Pakistan: 1947-2006: A new balance sheet. JPMA.  
172 2007 Sep;57(9):453-63.
- 173 4. O'Neal, M. A., & Mittal, L. (Eds.). (2019). Neurology and Psychiatry of  
174 Women: A Guide to Gender-based Issues in Evaluation, Diagnosis, and  
175 Treatment. Springer.
- 176 5. Bejerot S. An autistic dimension. *Autism*. 2007;11(2):101-110. doi:  
177 10.1177/1362361307075699
- 178 6. Ruzich E, Allison C, Smith P, Watson P, Auyeung B, Ring H et al. Measuring  
179 autistic traits in the general population: a systematic review of the Autism-  
180 Spectrum Quotient (AQ) in a nonclinical population sample of 6,900 typical  
181 adult males and females. *Mol. Autism*. 2015;6(1):2. doi: 10.1186/2040-2392-6-  
182 2
- 183 7. Foulkes, L., Bird, G., Gökçen, E., McCrory, E., & Viding, E. (2015). Common  
184 and distinct impacts of autistic traits and alexithymia on social reward. *PLoS*  
185 *One*, 10(4), e0121018. doi:10.1371/journal.pone.0121018
- 186 8. Arildskov T, Højgaard D, Skarphedinsson G, Thomsen P, Ivarsson T, Weidle B  
187 et al. Subclinical autism spectrum symptoms in pediatric obsessive-compulsive  
188 disorder. *Eur Child Adolesc Psychiatry*. 2016;25(7):711-723.
- 189 9. Helgadóttir F, Menzies R, Einstein D. Magical thinking and obsessive-  
190 compulsive symptoms in Australia and Iceland: A cross-cultural comparison.  
191 *JOCRD* 2012;1(3):216-219. doi: 10.1016/j.jocrd.2012.04.004
- 192 10. Agorastos A, Metscher T, Huber C, Jelinek L, Vitzthum F, Muhtz C et al.  
193 Religiosity, Magical Ideation, and Paranormal Beliefs in Anxiety Disorders and  
194 Obsessive-Compulsive Disorder. *J Nerv Ment Dis*. 2012;200(10):876-884. doi:  
195 10.1097/NMD.0b013e31826b6e92
- 196 11. Montagne B, Kessels R, Frigerio E, de Haan E, Perrett D. Sex differences in the  
197 perception of affective facial expressions: Do men really lack emotional  
198 sensitivity? *Cogn Process*. 2005;6(2):136-141. doi: 10.1007/s10339-005-0050-6

- 199 12. Daros AR, Zakzanis KK, Rector NA. A quantitative analysis of facial emotion  
200 recognition in obsessive-compulsive disorder. *Psychiatry Res.* 2014 Mar  
201 30;215(3):514-21. doi:10.1016/j.psychres.2013.11.029
- 202 13. Williams EH, Cross ES. Decreased reward value of biological motion among  
203 individuals with autistic traits. *Cognition.* 2018 Feb 1;171:1-9. doi :  
204 10.1016/j.cognition.2017.10.017
- 205 14. Raosoft.com. Sample Size Calculator by Raosoft, Inc. [Online] [Cited 2020 Sep  
206 05]. Available from: URL: <http://www.raosoft.com/samplesize.html>
- 207 15. Rahman, N. K., Dawood, S., Rehman, N., Mansoor, W., & Ali, S. (2009).  
208 Standardization of Symptom Checklist-R on psychiatric and non-psychiatric  
209 sample of Lahore city. *J. Clin. Psychol.*, 8(2), 21-32.
- 210 16. Baron-Cohen, S., Wheelwright, S., Skinner, R., Martin, J., & Clubley, E.  
211 (2001). The autism-spectrum quotient (AQ): Evidence from asperger  
212 syndrome/high-functioning autism, males and females, scientists and  
213 mathematicians. *J. Autism Dev. Disord.*, 31(1), 5-17.
- 214 17. Wakabayashi A, Baron-Cohen S, Wheelwright S, Tojo Y. The Autism-  
215 Spectrum Quotient (AQ) in Japan: a cross-cultural comparison. *J. Autism Dev.*  
216 *Disord.* 2006 Feb 1;36(2):263-70. doi.org/10.1007/s10803-005-0061-
- 217 18. Tobacyk JJ. A revised paranormal belief scale. *Int J Transpers Stud.*  
218 2004;23(1):11. doi.org/10.24972/ijts.2004.23.1.94
- 219 19. Montagne B, Kessels RP, De Haan EH, Perrett DI. The emotion recognition  
220 task: A paradigm to measure the perception of facial emotional expressions at  
221 different intensities. *Percept Mot Skills.* 2007 Apr;104(2):589-98.  
222 doi:10.2466/pms.104.2.589-598
- 223 20. Hoekstra, R., Wakabayashi, A., Wheelwright, S., Woodbury-Smith, M., &  
224 Baron-Cohen, S. (2020, September 03). Autism Spectrum Quotient (AQ)  
225 (Adult). Retrieved November 17, 2017, from  
226 <https://www.autismresearchcentre.com/tests/autism-spectrum-quotient-aq-adult/>



- 227 21. Barber CM. (2015) Autistic traits and cognition in individuals with obsessive  
228 compulsive disorder (Doctoral dissertation, UCL (University College London)).
- 229 22. Ivarsson T, Melin K. Autism spectrum traits in children and adolescents with  
230 obsessive-compulsive disorder (OCD). *J Anxiety Disord.* 2008 Aug  
231 1;22(6):969-78. doi: 10.1016/j.janxdis.2007.10.003
- 232 23. Grover S, Patra BN, Aggarwal M, Avasthi A, Chakrabarti S, Malhotra S.  
233 Relationship of supernatural beliefs and first treatment contact in patients with  
234 obsessive compulsive disorder: An exploratory study from India. *Int J Soc*  
235 *Psychiatry.* 2014 Dec;60(8):818-27. doi: 10.1177/0020764014527266
- 236 24. Farooq A, Kayani AK. Prevalence of superstitions and other supernaturals in  
237 rural Punjab: a sociological perspective. *South Asian Stud.* 2012 Jul  
238 1;27(2):335.
- 239 25. Bejerot S, Nylander L, Lindström E. Autistic traits in obsessive-compulsive  
240 disorder. *Nord. J. Psychiatry.* 2001 Jan 1;55(3):169-76. . doi:  
241 10.1080/08039480152036047
- 242 26. Baron-Cohen S. Autism: the empathizing–systemizing (E-S) theory. *Ann N Y*  
243 *Acad Sci.* 2009 Mar;1156(1):68-80. doi: 10.1111/j.1749-6632.2009.04467.x
- 244 27. Pino, M. C., De Berardis, D., Mariano, M., Vellante, F., Serroni, N., Valchera,  
245 A. et al. (2016). Two systems for empathy in obsessive-compulsive disorder:  
246 mentalizing and experience sharing. *Rev Bras Psiquia,* 38(4), 307-313. doi:  
247 10.1590/1516-4446-2015-1679
- 248 28. Ghasempour A, Fahimi S, Amiri A, Akbari E, Abolghasemi A, Fakhari A.  
249 Comparing the Recognition of Emotional Facial Expressions in Patients with  
250 Obsessive-Compulsive and Major Depression. *ZJRMS* 2014 May 1;16(5):59-  
251 62.
- 252 29. Woody, S. R., & Teachman, B. A. (2000). Intersection of disgust and fear:  
253 Normative and pathological views. *Clin Psychol (New York)* 7(3), 291-311.  
254 doi: 10.1093/clipsy.7.3.291

256 **Table 1: Differences between experimental (n=70) and control (n=70) groups in**  
 257 **autistic traits, paranormal beliefs, emotional response bias, obsessive compulsive**  
 258 **disorder (OCD) symptoms and mean differences in scores at recognition of six**  
 259 **emotions.**

Variables	Experimental Group	Control Group	95 % CI				Cohen's <i>d</i>
	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>t</i> (138)	<i>p</i>	<i>LL</i>	<i>UL</i>	
AQ	37.99 (6.23)	13.04 (6.20)	23.76	.000	22.87	27.12	4.01
RPBS	114.59 (20.48)	101.8 (21.66)	3.59	.000	5.74	19.83	0.61
ERT	40.49 (10.55)	49.49 (9.63)	-5.27	.000	-12.37	-5.63	0.89
OCDSC	36.86 (7.48)	3.50 (4.46)	32.06	.000	31.30	35.41	5.41
Anger	5.89 (3.29)	10.07 (3.36)	-7.45	.000	-5.29	-3.07	1.25
Disgust	4.60 (3.17)	9.81 (3.98)	-8.57	.000	-6.42	-4.01	1.44
Fear	4.76 (3.20)	3.21 (2.50)	3.18	.002	.58	2.50	0.54
Happiness	14.87(1.28)	14.67 (1.55)	.83	.407	-2.28	.68	0.14
Sadness	4.14 (2.82)	5.20 (2.86)	-2.20	.029	1.40	-2.01	0.37
Surprise	6.23(2.97)	6.36 (3.13)	-.25	.803	-1.15	.89	0.04

260 SD: Standard deviation, AQ: Autism Spectrum Quotient, RPBS: Revised Paranormal Belief Scale,  
 261 ERT: Emotion Recognition Task, OCDSC: Obsessive Compulsive Disorder Symptom Checklist, CI:  
 262 Confidence interval, LL: Lower limit, UL: Upper limit. \**p*<0.05, \*\**p*<0.01, \*\*\**p*<0.001, *p*>0.05,  
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266 **Table 2: Gender differences in experimental group (n=70) related to autistic**  
 267 **traits, paranormal beliefs, emotional response bias and obsessive compulsive**  
 268 **disorder (OCD) symptoms.**

Variables	Men ( <i>n</i> = 36)	Women ( <i>n</i> = 34)	95 % CI				Cohen's <i>d</i>
	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>t</i> (68)	<i>P</i>	<i>LL</i>	<i>UL</i>	
AQ	39.03 (5.62)	36.88 (6.71)	1.45	.15	-7.79	5.09	0.36
RPBS	115.50 (23.66)	113.62 (16.77)	.38	.70	-7.95	11.72	0.09
ERT	38.92 (10.87)	42.15 (10.08)	-1.29	.20	-8.24	1.78	0.30
OCDSC	37.61 (7.65)	36.06 (7.32)	.87	.39	-2.02	5.13	0.20

269 SD: Standard deviation, AQ: Autism Spectrum Quotient, RPBS: Revised Paranormal Belief Scale,  
 270 ERT: Emotion Recognition Task, OCDSC: Obsessive Compulsive Disorder Symptom Checklist, CI:  
 271 Confidence interval, LL: Lower limit, UL: Upper limit. \* $p < 0.05$ ,  $p > 0.05$ .

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275 **Table 3: Hierarchical regression analysis on emotion recognition task subscales**  
 276 **and autistic traits predicting obsessive compulsive symptoms in experimental**  
 277 **group (n=70).**

Predictors	Obsessive Compulsive Symptoms	
	$\Delta R^2$	$\beta$
<b>Step 1</b>	.107	
AQ		.33**
<b>Step 2</b>	.07	
AQ		.16
Anger		-.32*
<b>Step 3</b>	.11	
AQ		.13
Anger		-.15
Disgust		-.39**
<b>Step 4</b>	.006	
AQ		.13
Anger		-.15
Disgust		-.40**
Fear		.08
<b>Step 5</b>	.001	
AQ		.13
Anger		-.15
Disgust		-.39**
Fear		.09
Happiness		-.03
<b>Step 6</b>	.001	
AQ		.14
Anger		-.15
Disgust		-.41**
Fear		.08
Happiness		-.03
Sadness		.03
<b>Step 7</b>	.02	
AQ		.14
Anger		-.16

Disgust		-.36**
Fear		.11
Happiness		-.03
Sadness		.04
Surprise		-.15
Total R <sup>2</sup>	.02	

278 AQ: Autism Spectrum Quotient. \*p<0.05, \*\*p<0.01, \*\*\*p<0.001

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281

282 **Table 4: Hierarchical regression analysis on emotion recognition task subscales,**  
 283 **and paranormal beliefs predicting obsessive compulsive symptoms in**  
 284 **experimental group (n=70).**

		Obsessive Compulsive Symptoms	
Predictors	$\Delta R^2$	$\beta$	
<b>Step 1</b>	.108		
RPBS		.329**	
<b>Step 2</b>	.17		
RPBS		.34**	
Anger		-.41***	
<b>Step 3</b>	.09		
RPBS		.29**	
Anger		-.24*	
Disgust		-.35**	
<b>Step 4</b>	.002		
RPBS		.29**	
Anger		-.24*	
Disgust		-.36**	
Fear		.05	
<b>Step 5</b>	.000		
RPBS		.29**	
Anger		-.24*	
Disgust		-.36**	
Fear		.05	
Happiness		-.007	
<b>Step 6</b>	.000		
RPBS		.29**	
Anger		-.24*	
Disgust		-.36**	

Fear	.05
Happiness	-.007
Sadness	-.009
<b>Step 7</b>	.019
RPBS	.293**
Anger	-.25*
Disgust	-.32*
Fear	.07
Happiness	-.007
Sadness	-.001
Surprise	-.15
Total R <sup>2</sup>	.019

285 RPBS: Revised Paranormal Belief Scale. \*p<0.05, \*\*p<0.01, \*\*\*p<0.001.

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