

PARANORMAL BELIEFS OF LATVIAN COLLEGE STUDENTS:  
A LATVIAN VERSION OF THE REVISED PARANORMAL  
BELIEF SCALE<sup>1</sup>

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*Summary.*—A Latvian version of the Revised Paranormal Belief Scale (RPBS) was completed by 229 Latvian university students. Exploratory and confirmatory factor analyses revealed six relatively independent factors labeled Magical Abilities, Psychokinesis, Traditional Religious Belief, Superstition, Spirit Travel, and Extraordinary Life Forms. Based on the motivational-control model, it was hypothesized that the societal stressors affecting Latvian society during the last 50 yr. have led to a reduced sense of personal control which, in turn, has resulted in increased endorsement of paranormal beliefs to re-establish a sense of control. The motivational-control hypothesis was not supported. Results indicated that (except for Traditional Religious Belief in women), the majority of these students were disbelievers in paranormal phenomena. As hypothesized, Latvian women reported significantly greater paranormal belief than men.

This study reports the development of a Latvian version of the Revised Paranormal Belief Scale (RPBS) and provides preliminary information about the paranormal beliefs of Latvian university students. Although there is no full consensus about the definition of *paranormal* (Alcock, 1981; Irwin & Watt, 2007), consistent with the definition used in the RPBS paranormal beliefs were defined as *beliefs in entities/processes that, if authentic, violate basic limiting principles of science* (Broad, 1953; Tobacyk & Milford, 1983; Vyse, 1997; Tobacyk, 2004). This definition of *paranormal* includes beliefs concerning: traditional religion, psi, witchcraft, spiritualism, extraordinary life forms, and precognition (Tobacyk & Milford, 1983; Tobacyk, 2004). Magical thinking is a basic feature of many paranormal beliefs (Eckblad & Chapman, 1983; Tobacyk & Wilkinson, 1990; Markle, 2010).

According to Keinan's (2002) motivational-control model, stressors can threaten one's sense of perceived control, resulting in motivation to regain a sense of control. In situations that are largely uncontrollable by the individual, paranormal beliefs based on magical thinking may help re-establish a sense of personal control (even if illusory; Taylor, 1983) by reduc-

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ing anxiety (Markle, 2010), by providing explanation and prediction, and by providing motivation to adjust and persevere with problem solving (Malinowski, 1954; Keinan, 2002). Several studies are consistent with the motivational-control model at both individual and collective levels, and show how stress may be associated with increased magical thinking and, in turn, with paranormal beliefs (Malinowski, 1954; Padgett & Jorgenson, 1982; McCann & Stewin, 1984; Keinan, 1994). For example, Padgett and Jorgenson (1982) reported a significant relationship between economic threat in post-World War I Germany and indicators of societal magical thinking.

Latvian society is an informative context for the study of paranormal beliefs in relation to stress and perceived control because Latvian society experienced profound, largely externally caused societal upheavals during the second half of the 20th century. Sovietization and Russification after World War II invalidated Latvian national sovereignty and identity by incorporating Latvia into the Soviet Union, by massive forced population redistributions based on ethnicity, and by imposition of a totalitarian, command-driven political-economic system (O'Connor, 2003). Sovietization and Russification also imposed an atheistic worldview that invalidated the Latvian language and traditional religion (Taivans, 1997; O'Connor, 2003). Then, from 1989 through 1991, democratization led to the sudden collapse of this Soviet-imposed totalitarian political-economic system. Latvian national sovereignty was re-established, resulting in democratic political and capitalistic economic systems. From 1998 to 2006, Latvia joined the European Union and NATO and led Europe in GDP growth. However, in the global economic crisis of 2008–2010, Latvia experienced a profound economic collapse from which it is still recovering.

It seems reasonable to speculate that these externally driven societal upheavals may have resulted in stress, anxiety, and experienced loss of control. According to the motivational-control model (Keinan, 2002), such loss of control may be conducive to internalization of paranormal beliefs as a means to regain a sense of personal control. Although younger, college-age Latvians did not directly experience all of these upheavals, it is speculated that their shared national and cultural identity might reflect the effects of these events vicariously.

Several studies of paranormal beliefs in Nordic samples that share some cultural similarities with Latvia are relevant. Tobacyk and Pirttilä-Backman (1992) reported that Finnish college students who completed a Finnish version of the original Paranormal Belief Scale (PBS) reported disbelief in most paranormal belief dimensions (e.g., Psi, Witchcraft, Superstition, Spiritualism, Extraordinary Life Forms, and Precognition), with a mid-range score (Neither believe nor disbelieve) recorded for traditional

religion. Sjödin (2002) reported that about 15% of Swedish high school students recorded belief in superstitions, whereas about 77% reported belief in some forms of precognition (i.e., prediction of future events) and in extraterrestrial life. Harraldsson and Houtkooper (1996), who used an Icelandic version of the original PBS (Tobacyk & Milford, 1983), indicated that Icelandic college students reported disbelief in six of the PBS dimensions (i.e., Traditional Religion, Psi, Witchcraft, Superstition, Spiritualism, and Extraordinary Life Forms), reporting belief only in Precognition. Further, Harraldsson and Houtkooper reported that Icelandic women recorded significantly greater belief than Icelandic men in Traditional Religion, Superstition, Spiritualism, and Precognition. Finally, Taivans (1997) hypothesized that many Latvian youth had largely lost their Christian identity and replaced it with an *invisible religion* (i.e., a mixture of paranormal and occult beliefs with some similarities to folk religions of earlier centuries). Taivans reported that a relatively high percentage of Latvian youth gave affirmative answers to one or more paranormal beliefs, a finding consistent with his invisible religion hypothesis.

Findings from these studies show that Nordic youth generally show disbelief in the paranormal (Tobacyk & Pirttilä-Backman, 1992; Harraldsson & Houtkooper, 1996; Sjödin 2002). However, because of the profound societal upheavals characterizing 20th century Latvia, two hypotheses consistent with the motivation-control model are proposed.

*Hypothesis 1.* The Latvian student sample would report relatively high paranormal belief.

*Hypothesis 2.* Consistent with Harraldsson and Houtkooper (1996), the women in the sample would report greater paranormal belief than the men.

## METHOD

### *Participants*

In 2011, a Latvian version of the 26-item Revised Paranormal Belief Scale (RPBS; Tobacyk, 2004) was administered to 229 Latvian (62 men,  $M$  age = 23.4 yr.,  $SD$  = 4.1; 164 women,  $M$  age = 23.3 yr.,  $SD$  = 2.6) university student volunteers in classroom settings supervised by the Latvian authors. Participation was voluntary, confidential, and received human use committee endorsement.

### *Measures*

The Latvian translation and adaptation of the RPBS used standard back-translation procedures. The American-English RPBS was translated into Latvian by a research group and an English language expert. This

version was then translated back into English by another expert English translator. Both English language versions (original and back-translated) were compared and judged acceptable by the scale authors.

The RPBS items are rated on a 7-point Likert-type scale with anchors 1: Strongly disagree and 7: Strongly agree, with the midpoint of the rating scale at 4: Neither agree nor disagree. This study represents the first use of the Latvian RPBS version, and therefore care must be taken in interpretation because of the lack of validation studies.

## RESULTS

The full sample ( $N=229$ ) was randomly divided into two groups ( $n_1=114$ ;  $n_2=115$ ). Exploratory factor analysis was conducted on Group 1, followed by confirmatory factor analysis on Group 2 (to test the generalizability of the factor structure obtained for Group 1).

### *Exploratory Factor Analysis*

Principal components factor analysis of the Latvian version of the RPBS were conducted for Group 1. Data met standard criteria for factor analysis (Bartlett's test  $\chi^2=1,371.97$ ,  $df=210$ ,  $p<.001$ ; Kaiser-Meyer-Olkin=0.84). On the basis of inspection of eigenvalues, total variance accounted for, scree plots, and residuals, six factors were retained for rotations. Five of the 26 RPBS items (Items 1, 3, 14, 20, and 23) were removed due to substantial cross-loadings or small communalities: "The soul continues to exist though the body may die," "Black magic really exists," "The horoscope accurately tells a person's future," "There is life on other planets," and "Mind reading is not possible." A six-factor varimax rotation accounting for 73.1% of the total variance was selected as the best representation of the structure of the 21 RPBS items. As conventional (Hair, Black, Babin, Anderson, & Tatham, 2006, pp. 128-129), items with factor loadings  $> |.50|$  were used to interpret these six paranormal belief dimensions: Magical Abilities (i.e., witchcraft, predicting the future, communicating with the dead), Psychokinesis, Traditional Religious Belief, Spirit Travel, Superstition, and Extraordinary Life Forms. The varimax factor loading matrix, sum of squared factor loadings, and communalities for this six-factor solution are listed in Table 1.

### *Confirmatory Factor Analysis*

A confirmatory factor analysis (CFA) was conducted on Group 2 ( $n=115$ ) to determine whether the six-factor paranormal beliefs model was a good fit for the data. After removing two outliers with significant Mahalanobis distance values ( $p<.001$ ), the final sample size for this analysis was 113. The model was examined using the maximum likelihood method with Amos Version 7 (Arbuckle, 2006). The model included six latent variables (i.e., Magical Abilities, Psychokinesis, Traditional Religious Belief,

TABLE 1  
VARIMAX FACTOR LOADING MATRIX FOR THE 21 REVISED PARANORMAL BELIEFS SCALE ITEMS

Item	Factor and Item Content	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	F <sub>5</sub>	F <sub>6</sub>	<i>h</i> <sup>2</sup>
Magical Abilities—F <sub>1</sub>								
21	Some psychics can accurately predict the future.	<b>78</b>	22	29	04	20	03	79
25	It is possible to communicate with the dead.	<b>77</b>	22	06	13	24	10	74
24	There are actual cases of witchcraft.	<b>76</b>	13	13	23	17	13	71
17	Through the use of formulas and incantations, it is possible to cast spells on persons.	<b>72</b>	17	02	08	14	14	60
26	Some people have an unexplained ability to predict the future.	<b>69</b>	22	28	11	27	-09	71
10	Witches do exist.	<b>66</b>	32	10	08	03	20	59
7	Astrology is a way to accurately predict the future.	<b>52</b>	-07	36	11	41	10	60
Psychokinesis—F <sub>2</sub>								
2	Some individuals are able to levitate (lift) objects through mental forces.	19	<b>86</b>	01	08	19	02	83
9	Psychokinesis, the movement of objects through psychic powers, does exist.	27	<b>82</b>	04	08	19	09	80
16	A person's thoughts can influence the movement of a physical object.	30	<b>72</b>	-05	01	29	08	71
Superstition—F <sub>3</sub>								
4	Black cats can bring bad luck.	02	07	<b>83</b>	19	03	09	75
18	The number "13" is unlucky.	23	02	<b>81</b>	07	01	18	76
11	If you break a mirror, you will have bad luck.	44	-13	<b>67</b>	11	12	02	70
Traditional Religious Belief—F <sub>4</sub>								
22	There is a heaven and a hell.	11	08	23	<b>84</b>	08	-01	78
15	I believe in God.	15	05	06	<b>83</b>	14	-10	75
8	There is a devil.	15	04	08	<b>81</b>	09	28	79
Spirit Travel—F <sub>5</sub>								
5	Your mind or soul can leave the body and travel (astral projection).	17	27	-03	20	<b>76</b>	17	77
12	During altered states, such as sleep or trances, the spirit can leave the body.	30	18	01	06	<b>74</b>	03	68
19	Reincarnation does occur.	25	30	16	12	<b>71</b>	02	72
Extraordinary Life Forms—F <sub>6</sub>								
6	The abominable snowman of Tibet (the Yeti) exists.	13	10	03	01	06	<b>88</b>	82
13	The Loch Ness monster of Scotland exists.	17	05	32	12	12	<b>70</b>	66

Note.—Decimal points have been removed. Rotated sum of squared loadings (percentage of variance): F<sub>1</sub>: 20.3%, F<sub>2</sub>: 11.9%, F<sub>3</sub>: 11.3%, F<sub>4</sub>: 11.0%, F<sub>5</sub>: 10.9%, F<sub>6</sub>: 7.5%.

TABLE 2  
FACTOR LOADINGS OF THE CONFIRMATORY FACTOR MODEL

Variable	Unstandardized Factor Loadings	SE	z	Standardized Factor Loadings
Magical Abilities				
Item 7	1.00			0.65
Item 10	1.43	0.20	7.32	0.80
Item 17	1.30	0.19	7.04	0.77
Item 21	1.37	0.19	7.20	0.79
Item 24	1.51	0.20	7.69	0.86
Item 25	1.43	0.19	7.44	0.82
Item 26	1.46	0.20	7.40	0.82
Psychokinesis				
Item 2	1.00			0.90
Item 9	0.99	0.07	14.29	0.92
Item 16	0.88	0.08	11.66	0.82
Traditional Religious Belief				
Item 8	1.00			0.67
Item 15	1.19	0.18	6.53	0.74
Item 22	1.33	0.20	6.79	0.87
Superstition				
Item 18	1.00			0.64
Item 11	1.12	0.21	5.40	0.67
Item 4	1.01	0.18	5.67	0.74
Spirit/Soul Travel				
Item 5	1.00			0.65
Item 12	0.92	0.15	6.12	0.73
Item 19	1.16	0.19	6.17	0.74
Extraordinary Life Forms				
Item 6	1.00			0.79
Item 13	1.15	0.17	6.98	0.97

Note.— $N=113$ . All factor loadings are significant at  $p<.001$ .

Spirit Travel, Superstition, and Extraordinary Life Forms) and 21 observed indicators. The first item of each factor was fixed to 1 for identification purposes. Although not ideal, the results of the CFA indicated acceptable fit for the data [ $\chi^2(174)=329.30$ ,  $p<.001$ ,  $\chi^2/df=1.89$ ; comparative fit index (CFI)=0.89, root mean square error of approximation (RMSEA)=0.09, standardized root mean square residual (SRMR)=0.06; see Bentler, 1992; Browne & Cudeck, 1992, 1993]. In addition, all factor loadings were significant at  $p<.001$  (see Table 2 for standardized and unstandardized factor

loadings). Together, these findings provide preliminary support for the six-factor structure of the RPBS and indicate that latent variables were appropriately measured by their indicators.

*Descriptive Statistics*

Summated scale scores were computed for each of the six paranormal belief dimensions (subscales) based on items with loadings  $> |.50|$  for each dimension. Descriptive statistics for the Latvian version of the RPBS and for the six subscales are listed in Table 3. As listed in Table 3, Cronbach's  $\alpha$ s are .91 for the total RPBS and range from .74 (Extraordinary Life Forms) to .90 (Magical Abilities) for the subscales.

As indicated in Table 3, for the full sample, the women and the men, none of the mean RPBS subscale scores exceeded 4.0 (the midpoint of the 7-point rating scale, Neither agree nor disagree), except for Traditional Religious Belief for the women, with a mean score of 4.0.

TABLE 3  
DESCRIPTIVE STATISTICS AND RESULTS OF *t* TESTS OF LATVIAN COMPARING WOMEN AND MEN

Scale	$\alpha$	Total Sample		Women		Men		$t_{224}$	Cohen's <i>d</i>
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
RPBS Total	.91	65.1	20.3	68.2	19.3	56.3	20.5	4.06‡	0.60
RPBS Subscale									
Magical Abilities	.90	3.4	1.2	3.6	1.2	2.7	1.2	4.56‡	0.75
Psychokinesis	.87	3.0	1.4	3.2	1.4	2.6	1.4	2.68†	0.42
Traditional Religious Belief	.81	3.8	1.5	4.0	1.4	3.4	1.5	2.93†	0.42
Superstition	.75	2.1	1.1	2.2	1.1	1.8	0.9	3.00†	0.38
Spirit Travel	.77	3.0	1.3	3.1	1.3	2.7	1.3	1.98*	0.30
Extraordinary Life Forms	.74	2.3	1.2	2.3	1.2	2.4	1.3	0.73	0.08

Note.— $N=229$ ; 164 women, 62 men, 3 non-reporters of sex.  $\alpha$ =Cronbach's  $\alpha$ . \* $p<.05$ . † $p<.01$ . ‡ $p<.001$ .

Table 3 provides a listing of results of *t* tests, and Cohen's *d* (1988) effect size measures comparing the paranormal belief scores of the Latvian women and men. As hypothesized, the Latvian women reported significantly greater total RPBS mean scores, as well as significantly greater mean scores on five subscales: Magical Abilities, Psychokinesis, Traditional Religious Belief, Superstition, and Spirit Travel. Cohen's *d* effect size measures indicated that two of these differences were of medium size (total RPBS scores and Magical Abilities), two were small to medium (Psychokinesis and Traditional Religious Belief), and three were small (Superstition, Spirit Travel, and Extraordinary Life Forms).

## DISCUSSION

Although this study did not directly involve cross-cultural comparison, similarities and differences are noted in the structure of paranormal beliefs between this Latvian sample and the original American PBS factor analytic study (Tobacyk & Milford, 1983). The largest factor for the Latvians (Magical Abilities) comprised items from both the Witchcraft (Items 10, 17, 24), Precognition (Items 7, 21, 26), and Spiritualism (Item 25) factors in the factor analysis of the original American sample. The contents of the Magical Abilities factor appear consistent with Taivans' (1997) "invisible religion" conception—a fusion of paranormal and pre-Christian folk beliefs. These Magical Abilities items share the theme of using magic to predict (i.e., passive magical thinking) and influence (i.e., active magical thinking) external events—characteristics that might provide a sense of control in a largely uncontrollable environment. The Latvian Spirit Travel factor comprised the three original Spiritualism items, each item emphasizing the separability of mind/soul and body, and therefore was labeled Spirit Travel. The Psychokinesis factor closely corresponded to the original Psi factor for the Americans, except that an item concerning telepathy did not load on this factor for the Latvians; therefore, this Latvian factor was labeled Psychokinesis. The Latvian Traditional Religious Belief, Superstition, and Extraordinary Life Forms factors closely corresponded to those same factors in the original American sample.

These Latvian college students did not report even slight belief (i.e., mean  $\geq 5.0$ ) on any of the six RPBS subscales. The highest mean was on Traditional Religious Belief for the women ( $M=4.0$ , 4: Neither agree nor disagree). Thus, the motivation-control model of paranormal beliefs was not supported. These findings, however, do not disconfirm the motivation-control model, because paranormal beliefs may be only one of many ways for persons to deal with experienced loss of control. Also, the personal effect of loss of control due to past events may be generationally and temporally limited. Such a conclusion is consistent with evidence that shows remarkable human resiliency in recovery from trauma (Bonanno, 2004; Kelly, 2005; Bonanno, Galea, Bucciarelli, & Vlahov, 2006).

As indicated in Table 3, the most consistent finding was the significantly greater mean RPBS scores reported by the Latvian women compared to those of the men. The women reported significantly greater total RPBS scores and significantly greater scores on five of the six subscales: Magical Abilities, Psychokinesis, Traditional Religious Belief, Superstition, and Spirit Travel. The finding that women report greater traditional religiosity than men was consistent with past findings (Tobacyk & Milford, 1983; Francis, 1997; Tobacyk, 2004). However, it is important to contextualize the meaning of these mean score differences. Although the Lat-

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vian women reported significantly greater belief on five RPBS subscales, their absolute levels of reported belief were still below 4.0, the midpoint of the rating scale. Thus, the Latvian women cannot be characterized as believers in these phenomena; in fact, as a group they are disbelievers. More specifically, the proportion of women and men with mean scores greater than 4.0 on the RPBS were, respectively: Total RPBS, 18.3 vs 8.1%; Traditional Religious Belief, 51.9 vs 30.6%; Magical Abilities, 33.5 vs 11.3%; Psychokinesis, 29.9 vs 14.5%; Spirit Travel, 19.5 vs 19.4%; Extraordinary Life Forms, 7.3 vs 6.4%, and Superstition, 6.7 vs 3.2%. It is possible that moderator variables (e.g., sex differences in social-economic power, personal dispositions linked to students' choice of major) could be implicated in these finding of sex differences in paranormal beliefs. Further study could clarify these speculations.

The major contribution of this article is the introduction of a Latvian version of the RPBS and the clarification of the structure of paranormal beliefs in this college sample. Further validation is needed using Latvian samples in which such demographics as age, ethnicity, religious affiliation, and social class are assessed. Longitudinal data collected in real time before and after the occurrence of societal stressors would more clearly assess the validity of the motivation-control model in relation to paranormal beliefs. Also, the motivation-control model of paranormal beliefs may be influenced by both person-based and situational-based moderator variables. For example, greater endorsement of paranormal beliefs following exposure to stressors might occur, particularly for persons higher in Desirability of Control (Burger & Cooper, 1979).

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