

## CONSTRUCTION AND BEHAVIORAL VALIDATION OF SUPERSTITION SCALE<sup>1</sup>

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*The main goal of this study was to create an instrument for assessing tendency towards superstition-related beliefs and behavior and validate it in real life situations. Superstition was considered and analyzed as an attitude toward specific objects of the superstition. In the first part of the study, a sample of superstitious beliefs and behaviors was collected, after which the former list was reduced to 44 descriptions, based on the average familiarity. A preliminary version of the instrument was administered to 266 participants. The factor analysis suggested a presence of one main factor and three highly correlated sub-factors. In the last part of the study, in order to validate the instrument through behavioral variables, the final version of the instrument was administered to a different sample and subjects were put in two situations that challenged their potential superstitious behavior (passing below or going around a ladder in a computer laboratory; forward a chain e-mail for good luck). Group of participants that exhibited at least one superstitious behavior and the group of participants that did not, differed significantly in the average superstition score.*

**Key words:** *superstitious beliefs and behavior, superstition scale, attitude behavior relation, predicting superstitious acts*

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Superstitious beliefs have been found in a diverse range of cultures and societies regardless of the level of technological development. Superstition persists today despite people fundamentally not needing to rely on mythical and irrational beliefs to explain and control their environment. Moreover, one may be superstitious regardless of one's socioeconomic or educational status.

The Serbian word *sujeverje* (*superstition*) originates from the Old-Slavic words: *vsue* – "in vain" and *verje* – "belief". The English word *superstition* is derived from Latin: *super* – "over, above, upon" and *sisto* – "stop, check, cause to stand, set up". The Latin etymology of *superstition* is difficult to disentangle, however some have claimed the meaning is "the one who over-stands" or "the one who is not progressive."

Dictionary definitions of superstition mainly point out the irrationality of this phenomenon, superstitious people's ignorance, and a fear of unknown. In the book "The Psychology of Superstition", Gustav Jahoda (1969) discusses diverse approaches in defining this concept, as well as possible restraints to these approaches. Oxford dictionary defines superstition as "*an irrational or groundless belief, overall*" or "*irrational religious belief or practice*". Jahoda points out that it is too broad, since it can also include every other false belief that may result from ignorance or unawareness and not from superstition alone. Another group of definitions, according to this author, focus on the emotional component of superstition - for instance "*Unjustified awe or fear towards the unknown, mysterious or chimerical: a principle habit that stands upon awe and fear*" (Jahoda, 1969, p. 33). Nevertheless, concepts of *unjustified* emotions, thinking and ignorance are subjective and people often use them to describe beliefs they do not share with other people and do not appreciate. Therefore these terms ought to be cautiously used. Another important characteristic of the superstition concept is its temporal and spatial relativity. For instance, in the middle ages, it was common for people to explain various unknown phenomena around them by virtue of witches, fairies, monsters and a diversity of other supernatural beings. Taking into account the difficulties that arise when trying to give a comprehensive definition of superstition, Jahoda finally defines it as: "*Every belief or action that a rational man of the present from the west culture considers as superstitious*" (Jahoda, 1969, p. 48). In our opinion, this definition remains highly subjective and is of little help for researchers aiming to create a superstition measure. Having that in mind, we opted for a definition that was easier to be operationalized so we used the classification given by Peterson (1978) which subsumes different forms of superstition:

- Belief in unspecific bad consequences (e.g. walking under a ladder, a black cat crossing one's path, breaking a mirror, etc...)
- Belief in unspecific good consequences (e.g. finding a four-leaf clover, seeing a chimney sweep, etc...)
- Engaging in protective rituals (e.g. spilling water after someone, knocking on wood, etc...)

- Belief in specific consequences (e.g. "If your palm is itchy, money is coming to you", "If your nose is itchy, you are going to have a quarrel with someone", etc...).

## **Superstition as an attitude**

There are certain studies that regard superstition as an attitude (Saenko, 2005). These authors point out tripartite nature of attitudes: like attitudes, superstition could also be decomposed into its affective, cognitive and behavioral component. The affective component would include diverse emotional states toward objects of superstition such as fear, anxiety, anger, joy, surprise, rapture, etc. The cognitive component would comprise understanding, categorization and anticipating outcomes of events, as well as planning a strategy of how to behave. The behavioral component would consist of different rituals and symbolic activities (e.g. spells, prayers, curses, etc...) people perform in order to protect themselves and their loved ones from potentially hazardous incidents, preventing these incidents or facilitating wish fulfillment. Furthermore, every concrete form of superstition (the same as attitude and attitudinal object) has its specific object (e.g. black cat, ladders) that is irrationally, groundlessly and causally linked to a certain experience and its consequences. By virtue of that link, certain intense emotions (fear, joy) are attributed to that object, as well as certain activities (relatively specific and invariant), which should be undertaken towards that object.

However, it is important to point out that superstition cannot be completely equated with attitudes, because superstition has certain characteristics which do not have to be characteristics of attitudes as well. Namely, superstition, in comparison to attitudes, is a specific phenomenon because its cognitive component is always irrational and groundless, and its behavioral component always implies relatively specific and invariant (fixed) activities, which is not always true of attitudes.

If superstition is to be viewed as an attitude, it would be similar to what Giner-Sorolla (1999) calls affective attitude and defines as "evaluative process that occur without necessarily involving deliberative thought" (p. 445). As for the way superstitious beliefs guide one's emotions and behavior, we argue that it is an automatic mechanism, similar to one proposed by Fazio et al. in their attitude accessibility model and later in Fazio's MODE model (Fazio, Chen, McDonel & Sherman, 1982; Fazio & Towles-Schwen, 1999; Fazio, 2000, 2001). They suggest that attitudes represent associative connections between objects of attitudes and their evaluations that are automatically activated when an attitudinal object occurs and affect perception of that object. The extent to which an attitude would determine the perception of an object and behavior towards an object will depend on the attitude's accessibility and strength of the object-evaluation associative connection. We propose that, when a person who has adopted a certain superstitious belief faces a

concrete object of superstition, it automatically triggers associated evaluations, driving a person to feel and behave accordingly.

## **Assessing individual proneness to superstition**

One of the first instruments made for measuring superstitious beliefs was the Paranormal Belief Scale (further in the text "The PBS Scale", Tobacyk & Milford, 1983). Although there are some controversial facts about its factorial structure (e.g. Lawrence, 1995, cf. Wiseman & Watt, 2004; Tobacyk & Thomas 1997) and internal validity (Lange, Irwin & Houran, 2000), it continues to be the most prevalent measure of paranormal belief. One of its seven subscales, named "belief in superstition", has been given special attention. Albeit it includes only three items<sup>3</sup>, this scale has been utilized as a representative superstition scale in vast amount of research, and it has been linked to a variety of psychological constructs.

The major weakness of the PBS scale is its items' direction. Namely, all three items represent so-called *negative* superstitions, i.e. beliefs that certain objects and situations can bring bad luck or portend to an evil destiny. Nevertheless, besides negative superstitions, there are so-called positive ones- superstitions that represent the desire to bring about good luck or at least to avoid bad luck (e.g. carrying amulets to bring good luck, knocking on wood, etc...). Important question is whether these two categories of superstition (negative and positive) have the same psychological function. A large amount of research has demonstrated that psychological variables that correlate with this subscale reflect a relatively poor psychological adjustment (Wiseman & Watt, 2004). However, there is reasonable suspicion whether those so-called *positive beliefs* may actually be psychologically adaptive rather than maladaptive (Darke & Freedman, 1997). If this presumption is true, then the PBS scale is not the correct representative scale for examining superstition, and every further generalization of its origin, development and function would be partial and incomprehensive. This observation implies that future superstition scales for measuring proneness to superstition must include so-called positive superstition items, which was done in this research.

## **Superstitious beliefs and behavior**

So far, there has been a few scientific data on the relation between superstition related beliefs and superstitious behavior. It is unknown whether people would act in accordance to the beliefs they would express in the instrument that measures their global tendency toward superstition. Furthermore, it is unidentified weather that

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<sup>3</sup> Those three items are 1. Black cats can bring bad luck. 2. The number 13 is unlucky. 3. If you break a mirror, you will have bad luck.

kind of instrument would be a better predictor of single-act measures or global behavioral tendencies.

Research on attitude-behavior relation has often revealed contradictory results. Conclusions spanned from the idea that the attitudes do not have any predictable value, to the idea that they can be used for a very reliable prediction of behavior (Prišlin, 1991). According to *the principle of aggregation* proposed by Ajzen and Fishbein (2005), although one cannot expect strong relation between general attitudes toward an object and any single act directed at that object, if one identifies a set of behavior representative of the same behavioral domain, stronger correlation can be expected. The inconsistencies occur because individual behaviors performed in a particular context tend to be influenced not only by general attitudes but by a wide range of moderating variables (Ajzen, 1982). The overall behavioral trend, on the other hand, is supposed to be consistent with a person's attitude. For example, in a study of religious behavior (Fishbein & Ajzen, 1974), after religiosity was assessed, participants were asked whether they perform each of a set of 100 behaviors. Aggregate behavioral measure exhibited strong correlation with religious attitudes (ranging from .61 to .71).

However, when trying to predict a single behavior based on attitudes, it is then vital to take into account *the principle of compatibility* (Ajzen & Fishbein 2000; Ajzen & Gilbert Cote, 2008) that requires that measures of attitude and behavior should involve the same action, object, situation and time elements, as well as the same generality level (whether very specific or very general).

## THE SUPERSTICION SCALE

Following these principles, we decided to create different opportunities for respondents to behave in superstitious way, to register whether they do so or not and then to create aggregate measure of superstitious behavior. This provided us with the opportunity to determine if general superstitious attitude would be better predictor of a single superstitious act or a more general behavioral measure; we could also test the assumption that pairing concrete object of superstitious belief and object of superstitious behavior would result in higher correlation. Furthermore, we decided to test real-life behaviors instead of asking participants whether they perform different behaviors. This decision implied that we had less potential variability of behavior, but that registered data should be more reliable in terms of ecological validity.

The research consisted of three consecutive steps:

- Selecting a representative sample of superstitious beliefs and behaviors.
- Creating an instrument for assessing tendency toward superstition-related beliefs and behavior.
- Behavioral validation of the instrument.

We decided to start with gathering a pool of representative, highly familiar superstitious beliefs and behaviors, in order to use it as a base for creating

preliminary version of the instrument. After analyzing its' psychometric properties, we created a shorter final version of the scale. Finally, we tested predictive power of the scale, using actual superstitious behavior in real life situations as a criterion-variable.

All three steps were performed on students from University of Belgrade, Serbia.

## **Collecting a representative sample of superstition-related beliefs and behavior**

In the first step, a representative sample of superstition-related behaviors and beliefs was obtained through a content analysis of Internet forums and websites, press, and through informal communication channels. At the end, a pool of 82 descriptions of superstition-related behaviors, customs and beliefs was gathered.

Pertaining to the cultural specificity of superstitions, it was necessary to determine whether the descriptions of the superstition were generally familiar to the population that participated in the research. If the superstitions were unfamiliar to the participants, it would not be clear if the score on the questionnaire would be a measure of the alleged disposition for superstitious beliefs and behavior or the familiarity of the superstition itself. Therefore, unfamiliarity had to be reduced to the lowest level possible.

### *Method*

An 82-item questionnaire was created, based on the descriptions of superstitions. Subjects rated the level of familiarity of each superstition on a 3-point scale, ranging from one ("I have never heard of this superstition") to three ("I am fully familiar with this superstition").

The questionnaire was administrated to a group of 44 third-year Psychology students at the University of Belgrade.

### *Results and Discussion*

Based on the average of familiarity, the former list was reduced to 44 descriptions of superstitious behavior and beliefs, which had an average familiarity of over 2.5<sup>4</sup>. A large part of the list could be aligned with the classification given by Peterson (1978). The descriptions that could not be classified into one of these four

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<sup>4</sup> Total average familiarity for all items was 2.13; average familiarity of short-listed items was 2.81.

groups were related to "institutionalized" fortune telling (such as horoscope, predictions based on looking at cards or into a cup of coffee, etc...). Therefore, a new category, "Fortune Telling" was introduced. In this way, compared to the PBS scale of Tobacyk and Milford (1983), a wider pool of superstition was included in the research. The pool of descriptions of superstition gathered in this study was used in the next study as a base for constructing items to enter the preliminary questionnaire.

## **Construction of a questionnaire**

The main goal of the second step was to construct a questionnaire that would meet the psychometric standards (internal consistency, discriminability, construct validity) and was easy to administer. The preliminary questionnaire was constructed for the purpose of exploration of the factor structure, psychometric properties for the whole scale, and every item individually. Based on the results obtained in this study, a number of items from a preliminary questionnaire were selected for creating a final questionnaire, which consisted of a lesser number of items and therefore was easier to conduct. The number of items in the final questionnaire was determined in a way to maintain proper psychometric properties of the scale.

## *Method*

The questionnaire was given to a group of 262 students from the following colleges: The Faculty of Economics (77 participants), The Faculty of Teaching (89), The Faculty of Security (26) and The School of Electrical Engineering (70). The participants were between 18 - 20 years of age. The sample consisted of 100 men and 162 women.

Based on the familiar forms of superstition obtained in the previous study, a 58-item questionnaire was constructed. The following principles were taken into consideration during the construction of the preliminary questionnaire:

(1) Related to the existing categories of superstition, based on the work of Peterson (1978) and the conclusions derived from the previous study, an equal number of items represented all five categories of superstition.

(2) Related to the cognitive, affective and behavioral component of superstition, an equal number of items referred to each of these components.

(3) In respect to the results of research concluding that the usage of positive and negative items yields different results (Wiseman & Watt, 2004) an equal number of positive and negative items were included in the questionnaire.

At the end, all of five categories of superstition were represented with 12 items in the questionnaire<sup>5</sup>. Within those 12 items, four referred to each of the components of superstition; and within each group of four items, two had a positive valence and two had a negative valence. The item: "I find myself to be more superstitious than people I know", which represented self-report on superstition- proneness was also included.

The examination was conducted in classrooms of the respective colleges, before or after classes. Participants were told this was a research measuring students' attitude towards different local customs and beliefs. Each participant was handed a booklet containing preliminary version of the scale. To avoid the effect of a standardized item position in the questionnaire, eight versions of the questionnaire were made using the Excel random numbers algorithm. Participants rated their level of agreement with each item on a five-point scale ranging from "1" (strongly disagree) to "5" (strongly agree).

## *Results and Discussion*

*Factor Structure:* A correlation matrix of the 58 items from the questionnaire was subjected to Principal Components Analysis and Principal Axes Factoring. Both analyses yielded practically the same results, with small differences in the factor structure.

Cattel's Scree Criterion suggested the presence of one factor, with the lowest item loading .33 (six items did not have primary loading on the first factor). This factor was labeled "*General Superstition*". The percentage of variance in the observed variables accounted for by the first factor was 24% (percentage of variance accounted for by the second factor was below 4%). The first factor correlated highly with the average score on the questionnaire in total ( $r = .99$ ;  $df = 264$ ;  $p = .008$ ). This finding was an additional support for the conclusion that this factor represents a general disposition towards superstition beliefs. Considering the large number of items and previously unknown factor structure of superstition, a parallel analysis method was used to determine an optimal number of factors to be kept in the model. This method suggested optimal number of factors for the data was three. In the next stage of the analysis, three factors were kept, and a promax rotation was applied. The factors were significantly and highly correlated (correlations spanned from .57 to .59). The cumulative amount of observed variable variance explained by three factors was 31.2%.<sup>6</sup>

Primary loadings on the first factor were found for 21 items. The items belonged to different primary categories: "Unspecified Bad Consequences" (11

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<sup>5</sup> Three items from the category "fortune telling" were eliminated because, after administering the scale, we concluded they were ambiguous. The last, 58<sup>th</sup> item, was self-assessment: "I find myself to be more superstitious than people I know" and didn't belong to any of Peterson's categories.

<sup>6</sup> Complete pattern matrix for the factor analysis is available from the first author.



items from this category), "Specific Consequences" (five items), "Protective Rituals" (three items) and "Unspecified Good Consequences" (one item) (Peterson, 1978). However, most of these items represented a form of superstition related to unwanted or unpleasant consequences, and therefore this factor was labeled "*Bad Consequences*". The items with the highest score loadings for the first factor were "When a friend of mine takes my last chewing gum or last cigarette, I think about weather my boyfriend/girlfriend or someone I like could be attracted to this person", "If a black cat crosses my path, I do not hesitate to carry on", etc.

Primary loadings on the second factor were found for 19 items. The items belonged to three different primary categories: "Unspecified Good Consequences" (nine items), "Protective Rituals" (four items), "Specific Consequences" (five items), and "Unspecified Bad Consequences" (one item). In a manner similar to the first factor's items, most of the items represented a form of superstition that was related to wanted or pleasant consequences, due to which this factor was labeled "*Good Consequences*". The items with the highest loadings on the second factor were: "If I found a four-leaf clover, I would pick it up, because it brings good luck", "In situations of a great significance, it is important to me to have an object that brings me luck", etc.

Primary loadings on the third factor were found for 18 items. All nine items from the primary category "Fortune Telling" had primary loading on this factor, and were, at the same time, items with highest loading on this factor (7 out of 8 items with the highest loadings on this factor belong to this group). Other items that have the highest loadings belonged to "Protective rituals" (five items), "Specific Consequences" (two items) and "Unspecified Good Consequences" (two items). Most of these items focus on the possibility of important influence on the outcome of future (i.e. jinxing the outcome) and prediction of the outcome of events. However, acknowledging that the highest item loadings on this factor are from the group "Fortune Telling" this factor was labeled "*Fortune Telling*". Items with the highest loadings on this factor were: "I do not care about the horoscope sign of the person I like", "I believe that a person who knows how to read Tarot cards can tell me something about my future", etc. Items with higher loadings on sub-factors were given advantage in the selection of items for the final questionnaire.

*Internal Consistency:* Cronbach's Alpha for all 58 items from the preliminary questionnaire was .94. An analysis of the increase in Cronbach's Alpha if the item is omitted was applied. The analyses suggested that six items reduced the value of internal consistency. Those items were eliminated as candidates for the final questionnaire. The final internal consistency for 52 item-scale was .943.

*Scale Discriminability:* The Kolmogorov – Smirnov test tested the hypothesis that summary scores in the questionnaire were distributed normally. The results showed that distribution of General Superstition (both the factor and average score) as well as the distribution of the sub-factors "Good Consequences" and "Fortune Telling" was normal (General Superstition:  $z = .95$ ;  $n = 266$ ;  $p = .18$ ; Fortune Telling:  $z = 1.10$ ;  $n = 224$ ; Good Consequences:  $z = .58$ ;  $n = 224$ ;  $p = .23$ ). The distribution of "Bad Consequences" was significantly different from normal

distribution ( $z = 1.47$ ;  $n = 224$ ;  $p = .037$ ). Due to the fact that distribution of this sub-factor was positively asymmetric, items from this group with a relatively higher mean score (if they fulfill all other psychometric criteria: high correlation with sub-factor, high standard deviation) were selected for the final instrument.

*Item Discriminability:* Corrected item - total correlations for the 52 remaining items ranged from .30 to .65. Standard deviations of items ranged from .94 to 1.67. Standard deviation of the average score on the questionnaire was relatively low (.64), therefore the items with higher standard deviations were given an advantage in the selection of items for the final instrument.

As factor analysis suggested the presence of one general factor (General Superstition) and three sub-factors labeled: "Good Consequences" (26 items), "Bad Consequences" (22) and "Fortune Telling" (9), groups of items based on the factor structure were formed. Items were selected from these groups for the final questionnaire based on the following psychometric criteria, listed in order of importance:

1. Items which don't reduce overall internal consistency of the questionnaire
2. Items with higher sub-factors primary loadings and a higher item total correlation
3. Items with higher variability
4. An equal number of positive and negative items
5. An approximately equal number of items representing components of superstition (cognitive, affective, and behavioral).

The final instrument (Superstitious beliefs and behavior scale (SBBS)) consisted of 20 items. An equal number of items (seven) were selected from the groups "Good Consequences" and "Bad Consequences", while the number of items selected from group "Fortune Telling" was six. This was due to the fact that the factor structure of the preliminary questionnaire has shown that a lesser number of items had primary loadings for this factor than for the other two. Conversely, the number of items selected from the category was not proportional in order to preserve the representatives of the item sample. The internal consistency of the SBBS in the same sample of participants was .87.

## **Behavioral validation**

In the final step, two quasi-experiments were conducted in order to measure behavioral indicators of superstition. The main goal was to validate the SBBS by correlating the participants' score on the questionnaire and two single-act behaviour measures, which were registered in those experiments.

In the first experiment, subjects were put in a situation in which they had to make a decision either to pass below, or to go around a ladder. In the second experiment, subjects were in a situation to decide whether to forward a "chain" e-mail that was supposed to bring them a good luck.

## *Method*

In total, 95 first year students from the Department of Psychology were tested. Out of those, 84 students were given the superstition questionnaire, 62 participated in the ladder-experiment, and the chain-email was sent to 50 e-mail addresses. Only 44 students participated in all three phases.

First, 84 first year psychology students completed superstition questionnaire created in phase 2, in exchange for course credits. They were instructed to carefully read each item and to be as honest as possible. One questionnaire was eliminated because it was incomplete.

### *Experiment with a ladder*

Sixty two students participated as part of an introductory psychology course obligation. They took a psycholinguistic experiment, which was set in an experimental room and lasted for 10 minutes. The ladder was set in a particular way, which made it easier for examinees to pass beneath it, rather than going around it. The examiner was sitting next to the PC on the other side of the room. After entering the room, (and passing below / going around the ladder), the examinee was seated at the PC and was asked by the examiner about the basic information (name, last name, personal student identification number), and about the e-mail address. In order to obtain an e-mail address, the examiner used the alleged reason that a new student organization was being founded, which would use an e-mail service to send important notifications, news, study material, announcements, etc... (this information was used for the second behavioral experiment: sending a "chain" e-mail<sup>7</sup>). Upon completion of the experiment and on the way out of the room, the examinee was again in a situation to choose whether to pass under the ladder or to go around it. The assumption was that participants that are more superstitious would go around the ladder more frequently than participants that are less superstitious.

We created two dummy variables that could take the values zero (if participant passed below the ladder) or one (if participant went around ladder) when entering or leaving the room. We also created one aggregate behavioral variable, ranging from zero (passed below both times) to two (went around both times).

### *"Chain e-mail" experiment*

The students were sent a "chain e-mail" from a fictional person (Mr. Mateo Plančak) whose e-mail address was created for the purpose of the experiment. The e-mail was sent to the private e-mail addresses of the participants with request for

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<sup>7</sup> Five students declined to give us e-mail address.

automatic notification when they open it. In this e-mail (original text is in Appendix 2) they were asked to both send the e-mail to the person they received the mail from and to forward it to one additional person. The e-mail stated that if they do the task required, they would be lucky in everything they do, but if they do not, they would have to face certain negative consequences (i.e. bad luck). We hypothesized that there would be a higher probability the e-mail to be forwarded by a more superstitious person. We created a dummy variable that could take the values zero (if the participant did not forward the e-mail) or one (if the participant forwarded the e-mail).

### *Results and discussion*

A relation between scores obtained using an instrument for assessing tendency toward superstition-related beliefs and behavior, and variables of behavioral validation was initially determined separately for every registered behavior and afterwards for aggregate scores obtained in different behavioral validations.

**Table 1: Mean score and standard deviation on the SBBS, by "ladder behavior" variable**

		N	Score on the SBBS	
			Mean	SD
Entering the room	Bellow the ladder	37	1.96	.6
	Around the ladder	17	2.28	.55
Exiting the room	Bellow the ladder	43	2	.63
	Around the ladder	11	2.28	.41
Entering and exiting the room together	Twice bellow the ladder	36	1.94	.61
	At least once around the ladder	18	2.3	.52

Table 1 summarizes the analysis relating participant's score on the SBSS and his/hers behavior in the ladder-experiment. The first part of the table 1 refers to separate behaviors of the participants on their way in and out of the room. Analysis suggested that there was no statistically significant difference in the average SBSS scores between the group of participants that went around the ladder and the group of participants that passed under the ladder in either of situations (on the way in:  $t = 1.83$ ;  $df = 52$ ;  $p = .07$ ; on the way out:  $t = 1.36$ ;  $df = 52$ ;  $p = .18$ ). However, when we looked at the behaviors manifested in both experimental situations together (second part of the Table 1), statistically significant difference emerged between the group of participants that passed twice bellow the ladder and the group of participants that went around the ladder at least once ( $t = 2.14$ ;  $df = 52$ ;  $p = .04$ ).

**Table 2: Mean score and standard deviation on the SBBS, by "chain email- behavior" variable**

		N	Score on the SBBS	
			Mean	SD
Chain email experiment	Didn't reply to the email	37	2.01	.64
	Replied to the email	6	2.47	.48

In similar fashion, Table 2 summarizes analysis relating score on the SBBS and the chain email experiment. Analysis suggested that there was no statistically significant difference in the average scores for the final instrument between the group of participants that replied to the "chain" e-mail and the group of participants that did not, although the mean scores differed in expected manner ( $t = 1.65$ ;  $df = 41$ ;  $p = .1$ ).

**Table 3: Mean score and standard deviation on the SBBS, by "overall superstitious behavior"**

		N	Score on the SBBS	
			Mean	SD
Overall superstitious behavior	No superstitious behaviors	24	1.85	.61
	At least one superstitious behavior	17	2.3	.52

Finally, in Table 3, we analyzed the overall demonstrated superstitious behavior. There was a statistically significant difference in the average SBBS scores between the group of participants that exhibited at least one superstitious behavior and a group of participants that did not ( $t = 2.48$ ;  $df = 41$ ;  $p = .02$ ).

It is important to notice that the value of t statistic was increasing (simultaneously with the decrease of p value) with the number of behaviors taken into consideration. Our results are in accordance with those of Fishbein and Ajzen (Fishbein and Ajzen, 1974; 2000 & Fishbein 2005), which reveal that higher correlations are obtained when a general attitude is linked with measures based on the representative set of behaviors, in contrast to a separate behavior. The greater the number of behavioral validations, and the better they represent a repertoire of behavior versus an object of attitude, the more reliable the measures are, and the higher correlations between the general measure of an attitude and a behavior are obtained. A statistically significant relation between overall behavioral validations and the score on the final questionnaire was found because that measure represents a wider range of superstitious behavior than each measure individually. On the other hand, a statistically significant relation between a single-act behavior and the score on the final questionnaire was not found due to the presence of other relevant factors such as coincidence, habits, actual motives, situation restraints etc.

## GENERAL DISCUSSION

The main goal of this research was to create a psychometric measure of proneness to superstition-related beliefs and behaviour. The phenomenon of superstition was conceptualized as a special form of attitude with its affective, cognitive and behavioural components. Construct validity of the created scale was verified through factor analysis and behavioural validation.

As for internal consistency, the Cronbach alpha for the final version of the scale (SBBS) was .87. All items loaded on a single factor, and there were three sub-factors corresponding theoretical model. These results provided interesting insight into the structure of the superstition phenomenon: although there is a general tendency towards superstitious beliefs and behaviour, it is possible to discern three related aspects of this general tendency, named "Bad Consequences", "Good Consequences", and "Fortune Telling". It may indicate that positive and negative forms of superstition have at least partially different underlying mechanisms, as well as diverse psychological functions.

Regarding the ability of the scale to predict concrete superstitious behaviour, results are in line with Ajzen's aggregation principle. Although it may come as no surprise that global attitude must be validated through representative set of related behaviour instead of a single behavioural act, it is noteworthy that in this study, we registered superstitious behaviour in real-life situations with real objects of superstition. In sum, the present research demonstrated that the created superstition scale offers considerable predictive power in predicting such superstitious acts. Further applications of this scale would benefit from use of nonstudent population; testing its predictive validity could include a broader set of superstitious behaviours and, more importantly, longer time line for registering possible repeated behaviour or behavioural pattern. In addition, it would be informative to cross validate self reports on specific behavioural acts and real life behaviours. Not many attitudes are so closely linked to the behaviour as superstitious attitudes tend to be linked to superstitious acts- this fact may be inspiring for future research on attitude-behaviour relation.

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**Web sites used for content analysis of superstitious beliefs and behaviors:**

[www.paralax.co.yu/praz.htm](http://www.paralax.co.yu/praz.htm)  
[www.krstarica.com/lat/anketa/index.php?anketa=307](http://www.krstarica.com/lat/anketa/index.php?anketa=307)  
[www.zvrk.co.yu/Kviz/kultura/sujever/index.htm](http://www.zvrk.co.yu/Kviz/kultura/sujever/index.htm)  
[www.nadlanu.com/Dynamic/News,intLangID,2,intItemID,8405,intCategoryID,132.html](http://www.nadlanu.com/Dynamic/News,intLangID,2,intItemID,8405,intCategoryID,132.html)  
[magazin.krstarica.com/l/muskarci/sujeverje/](http://magazin.krstarica.com/l/muskarci/sujeverje/)  
[www.zokiforums.com/exyu/showthread.php?t=1660](http://www.zokiforums.com/exyu/showthread.php?t=1660)  
[www.paralax.co.yu/](http://www.paralax.co.yu/)  
[www.balkanforum.com/forum/viewtopic.php?t=1972&sid=9a4b1c6aa13c669c2914bfd879269ef6](http://www.balkanforum.com/forum/viewtopic.php?t=1972&sid=9a4b1c6aa13c669c2914bfd879269ef6)  
[www.tvorac-grad.com/forum/viewtopic.php?p=26646&sid=a5ba16915163444fcefdb1b8277cd7a7](http://www.tvorac-grad.com/forum/viewtopic.php?p=26646&sid=a5ba16915163444fcefdb1b8277cd7a7)  
[www.kurir-info.co.yu/Arhiva/2004/maj/13/SP-07-13052004.shtml](http://www.kurir-info.co.yu/Arhiva/2004/maj/13/SP-07-13052004.shtml)  
[tesla.rcub.bg.ac.yu/~japan/nacin%20zivota/Sujeverje.htm](http://tesla.rcub.bg.ac.yu/~japan/nacin%20zivota/Sujeverje.htm)  
[www.glas-koncila.hr/rubrike\\_mladi.html?news\\_ID=9498](http://www.glas-koncila.hr/rubrike_mladi.html?news_ID=9498)  
[www.tportal.hr/teen/svastara/page/2006/06/19/0151006.html](http://www.tportal.hr/teen/svastara/page/2006/06/19/0151006.html)  
[www.kriz-zivota.com/crkva/157/spiritizam\\_i\\_njegove\\_opasnosti/](http://www.kriz-zivota.com/crkva/157/spiritizam_i_njegove_opasnosti/)  
[www.crocafe.net/forum/printthread.php?t=5981](http://www.crocafe.net/forum/printthread.php?t=5981)  
[www.forum.hr/showthread.php?t=119722](http://www.forum.hr/showthread.php?t=119722)  
[portal.ludbreg.hr/kolumne/show.asp?kol=63](http://portal.ludbreg.hr/kolumne/show.asp?kol=63)  
[www.forum.hr/archive/index.php/t-24657.html](http://www.forum.hr/archive/index.php/t-24657.html)  
[tekstovi.net/forum/?opt=go&threadid=25085&msgid=414445](http://tekstovi.net/forum/?opt=go&threadid=25085&msgid=414445)  
[www.crocafe.net/forum/showthread.php?t=3012](http://www.crocafe.net/forum/showthread.php?t=3012)  
[p078.ezboard.com/ffoursoftpawsfrm11.showMessageRange?topicID=171.topic&start=21&stop=32](http://p078.ezboard.com/ffoursoftpawsfrm11.showMessageRange?topicID=171.topic&start=21&stop=32)  
[www.crotalk.com/.../viewtopic.php?topic\\_id=961&forum=6&PHPSESSID=29741567fbd1638334ac2366f03375d7](http://www.crotalk.com/.../viewtopic.php?topic_id=961&forum=6&PHPSESSID=29741567fbd1638334ac2366f03375d7)



## **APPENDIX 1**

### **Translation of the chain e-mail sent to the addresses of the examinees**

FIRST OF ALL CONGRATULATIONS!!!

Only one person in thousand receives this e-mail!

Every time when the Lunar Eclipse happens, a new cycle of accumulation and aggregation of great amount of energy begins. On the 3rd of March this year, the new energetic wave of enormous potential has begun, and it's going to emerge again only in 73 years.

These cycles have been followed and used over the centuries by transferring energy from one person to another. Today, the way to transfer this energy and participate in its further accumulation is to send this e-mail to the person you received it from, and to one additional person.

You have become the part of the Chain! If you continue it, you will be protected and followed by a great success over the following three lunar cycles. If you want it to happen, you will have to complete your task: Forward the e-mail! If you break the cycle, all this energy will turn against you and everything you start will fail.

I have faith in you!!

M.P.

## REZIME

### KONSTRUKCIJA I VALIDACIJA SKALE SUJEVERJA

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Cilj ovog istraživanja bio je konstrukcija skale koja bi procenjivala sklonost sujevnim verovanjima i ponašanju i bihejvioralna validacija skale. Oslanjajući se na tripartitni koncept stava, sujeverje smo definisali i analizirali kao stav prema konkretnom objektu sujeverja, koji podrazumeva verovanje, afektivni odnos i definisano ponašanje u odnosu na objekat.

U prvoj fazi istraživanja, na osnovu analize sadržaja internet foruma, web stranica i neformalne komunikacije, prikupljen je uzorak sujevnih verovanja. Uključena su kako negativna sujevna verovanja (određeni objekat ili događaj izaziva negativne posledice, "donosi nesreću"), tako i pozitivna sujevna verovanja (određeni objekat izaziva pozitivne posledice, "donosi sreću"), kako bi se proverila pretpostavka da ona mogu biti relativno nezavisna. Početna lista skraćena je na 44 opisa, na osnovu prosečne poznatosti (zadržana su samo visoko poznata verovanja).

Preliminarnu verziju instrumenta popunilo je 266 studenata Beogradskog univerziteta. Faktorska analiza rezultata otkrila je prisustvo jednog glavnog faktora, i tri visoko korelirana subfaktora ("Negativne posledice", "Pozitivne posledice" i "Predviđanje budućnosti"), u skladu sa početnim teorijskim modelom. Instrument je pokazao zadovoljavajuću pouzdanost (.94 u dužoj verziji, a .87 u skraćenoj verziji).

U poslednjoj fazi istraživanja, validirali smo instrument preko bihejvioralnih varijabli. Na odvojenom uzorku ispitanika primenili smo konačnu verziju skale sujeverja a zatim smo kreirali situacije u kojima su imali prilike da demonstriraju sujevno ponašanje (da prođu ispod merdevina u jednom slučaju, odnosno da proslede "lančani" e-mail koji navodno donosi sreću, u drugom slučaju). Grupa ispitanika koja je ispoljila barem jedno sujevno ponašanje značajno se razlikovala u ukupnom skor u skali sujeverja od grupe koja nije ispoljila nijedno.

***Ključne reči:*** sujevna uverenja i ponašanja, skala sujeverja, , odnos stavova i ponašanja, predikcija sujevnog ponašanja

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