

# **Object permanence in adults: A cross-cultural perspective**

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### Summary, Zusammenfassung

Soviet and German adult subjects observed the phenomenon of object nonpermanence (destruction, reconstruction, or transformation of a physical object). Both samples attributed an equal degree of probability to real existence of object nonpermanence. However, Soviet subjects attributed a significantly higher probability to the existence of "religion-independent" nonpermanent mysterious phenomena, (e.g., "unidentified flying objects," "abominable snowman," "Loch Ness monster") while attributing a significantly lower degree of probability to the existence of "religion-linked" nonpermanent phenomena (e.g., "Supreme Being which created our universe," the "immortality of the human soul") than did German subjects. These and other results are analysed and discussed in a cross-cultural perspective.

#### Jugendliche bewerten Nicht-Permanenz von Objekten: eine Perspektive im Kulturvergleich

Jugendliche aus der ehemaligen Sowjetunion und aus Deutschland beobachteten Phänomene der Nicht-Permanenz: Destruktion, Rekonstruktion oder Transformation eines physikalischen Objektes. Beide Gruppen der Nicht-Permanenz nahmen mit gleicher Wahrscheinlichkeit einen real existierenden Charakter an. Die "sowjetischen" Versuchsteilnehmer attribuierten mit einer signifikant höheren Wahrscheinlichkeit die Realität "religions-unabhängiger", jedoch mysteriöser Veränderungen (z.B. "nicht identifizierte fliegende Objekte", "abscheulicher Schneemann", "Loch Ness Ungeheuer"); zugleich unterstellte die Gruppe mit einer wesentlich geringeren Wahrscheinlichkeit "religions-abhängige" Phänomene der Nicht-Permanenz (z.B. "das oberste Wesen, das unser Universum schuf", "die Unsterblichkeit der menschlichen Seele"). Diese Unterschiede gegenüber den deutschen Teilnehmern werden in einem Kulturvergleich diskutiert.

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### Introduction

The concept of object permanence is one of the most fundamental: together with the concepts of time, space, and causality it composes a foundation for human consciousness. In a broad sense of the word, "object permanence" means the "capacity" of some entity, be it mental or physical, to conserve its stability in an individual's mind. Traditionally, however, this notion is only applied to objects that constitute the "external" physical world. As far as a perceived object has any degree of stability, the empirical approach to the problem involves determining the permanence parameters - parameters of the object which, if changed, cause the object to be perceived as having changed - in contrast to parameters which, if changed, allow the object to be perceived as remaining stable.

Research on object permanence was pioneered by Piaget, who described its development during childhood over the course of 6 stages (Piaget, 1936, 1937). According to Piaget, children learn to attribute existence to objects through interaction with them on a sensorimotor level during the first two years of life. A key ability acquired in this process is that of using a special rule, according to which an object continues to exist even after it disappears from the perceptual field. This "permanence rule" (PR) is found to be fully developed in two-year-old children, whereas younger infants tend to make use of the "discontinuity rule" (DR), which assumes discontinuity of existence when the object is removed from the subject's immediate perceptual field.

Over the last few decades, the phenomenon has been studied in great depth by a number of researchers (for a review see, for example, Harris, 1975, 1987; Schubert, 1983). Although a number of aspects of the development of object permanence have evoked disagreement, the majority of researchers agree that at the age of about two a child has knowledge of the "permanence rule," i.e., ascribes continual existence (or "personal identity") to every stable material object that is accessible to sensorimotor manipulation, regardless of changes in the object's environment or in its features.

However, Michotte (1962) has shown that, under certain conditions, even adults can be made to reconsider their attribution of object permanence (for example, when the perceived object spontaneously, as if by magic, changes into quite another object in front of the observer's eyes). Michotte's contribution resulted in a careful analysis of the perceptual conditions under which adults ascribed permanence to phenomenal objects. This line of analysis of object permanence in adults was continued in Warren's study (1977), in which it was shown that an object that moved and changed its shape simultaneously was perceived as remaining the same object only if there was some sensible explanation for the change (for example, a door opening and closing when a square and a trapezoid were repeatedly substituted for one another). In cases that were devoid of such an explanation, the alternation of two different objects was perceived.

The results of this object permanence extend over the entire age scale. However, they are tied to the visual perception of experimental phenomena and provide no answer to the question about whether adult subjects in certain circumstances ascribe discontinuity to material objects in real life as well.

This question was addressed in a study by Subbotski (1991), in which the possibility of nonpermanence in adult subjects, ranging in age from 17 to 43 (mean age 26.2) was investigated. Subbotski proposed that the permanence rule presupposes that (1) an object cannot become nonexistent once its existence has been established, (2) an object cannot change into a completely different one, and (3) an object cannot be destroyed or reconstructed purely through the mental effort of the subject, i.e., without the use of any material tools or actions. The subjects were asked to observe all of these "impossible" phenomena in order for the experimenter to determine whether the subjects would be able to acknowledge the reality of a given object's nonpermanence. The subjects were also asked to estimate the probability of existence of certain unexplained mysterious phenomena all representing nonpermanent objects, either physical or spiritual (such as an UFO, parapsychological phenomena, etc.).

Results of this study indicated first, that many subjects who under normal circumstances denied the possibility of spontaneous disappearance or transformation of a material object, after having seen the nonpermanence phenomena, revealed a noticeable belief in nonpermanence. Subjects often expressed a desire to encounter the impossible or supernatural ("I'd like this transformation of the stamp to be possible," "I wish this phenomenon would exist because it would broaden the limits of reality.") The experimenters had the impression that a significant number of subjects experienced something like a "need" to encounter phenomena that transcend the boundaries of everyday reality.

The results, however, are restricted in many aspects, particularly in respect to the level of the subjects' education (university educated people or university students) and their cultural background. So far, there are no cross-cultural studies of object permanence in adults. However, as the belief in object permanence presupposes a belief in the existence of a magical causality (the possibility of influencing external physical events (by sheer will-power or desire), there is some direct evidence of a relationship between cultural background and the concept of object permanence in adults. Studies of "magical thinking" have shown that one aspect of magical thinking was the subject's belief in the

so-called "paranormal phenomena" which included parapsychological abilities (the ability to transfer thoughts telepathically, to move material objects by "will-power", ESP), unidentified flying objects, reincarnation of the soul, etc. (Zusne, 1985). Some of the studies revealed no differences in these beliefs between cultures (for example, in USA and England), others obtained the opposite results, showing the relationship of certain beliefs (associated with magical child-care practices) to ethnic and socio-economic factors (see Zusne & Jones, 1982).

Among the factors influencing paranormal beliefs (e.g., sex, age, urban or rural habitation, economic status, religion, etc.), personality factors are mentioned as well. While pointing out that the data should be treated with caution, Zusne and Jones (1982) nevertheless conclude that "...it would appear that variables related to feelings of uncertainty, the belief that one's fate is controlled externally, and social marginality may represent the composite dimension that often facilitates the development of paranormal beliefs" (1982, p. 190). According to Zusne and Jones, these feelings might be facilitated among other factors, by authoritarianism, externalization, life change, and/or emotional instability. One may assume that paranormal beliefs are based on the need to understand the world around and the relation between person and environment. This need may be related to the person's desire to predict and control the outcomes of one's actions.

There may be two basically different orientations in such explanatory behavior: On the one side, one may rather assume that the individual person is able (and responsible) to control his/her environment and fate and behavioral outcomes. On the other side one may rather assume that external factors like god, government, nature, the supernatural, or other powerful others control the world around and determine one's fate and given situation.

Rotter's (1966) concept of internal vs. external locus of control partially related to this notion of control beliefs. We assume that related generalized beliefs in powerful self vs. powerful others develop in culture-specific contexts on account of certain socialization experiences of self-efficacy and personal responsibility.

While the belief in powerful self may be more likely to develop under conditions of sanctioning individual responsibility and autonomy in a democratic context, the belief in "powerful others" should be more likely to develop in a context of authoritarian regulations, totalitarianism and strict negative sanctions of non-conformity.

Recent studies on cultural differences in interpersonal behavior have focussed on the differentiation between individualistic vs. collectivistic orientations (Triandis et al., 1988; Trommsdorff, 1989). The psychological functions of such values may be mediated by underlying control beliefs which are related to the belief in powerful others vs. powerful self. Accordingly, we assume less supernatural beliefs for persons being socialized in an individualistic, democratic context of individual responsibility than for persons being socialized in an authoritarian context where responsibility is attributed to powerful external agencies.

Taking this indirect evidence into consideration, one might hypothesize that such variables operate not only "inside" of a certain individual, but also on the interindividual and on the cultural levels as well. This means that, in those societies which undergo a

relatively stable and continuous development and which have permanent democratic traditions that allow persons to believe in control, the above-mentioned variables should have much less influence on an individual than in a society which goes through a period of social instability and uncertainty, and which will continue to go through in the near future. If such variables of predictability and security somehow have an influence on the magical beliefs of adults, one could expect them to correspond to different object permanence beliefs. In order to test this hypotheses one needs to look for adequate societal contexts which serve as representatives of these two types of societies. We assume that Germany and the Soviet Union may be chosen as such societal contexts. There is no doubt that Soviet society is presently undergoing crucial and painful changes. The official ideology which has dominated the Soviet peoples' behavior for over 70 years and monopolized the search for truth is faltering. Nationalist riots and separatist tendencies in Soviet republics are threatening the very existence of the Soviet empire, and the economy is collapsing - all of which is more than enough to create feelings of uncertainty and instability. It should also be mentioned that, in general, Soviet society has been historically extremely authoritarian and totalitarian.

Modern German society is a complete contrast to the picture described above. Although Germany also passed through a period of totalitarianism, this period was not as long as that of Soviet society. For over 40 years, German society has enjoyed consistent economic growth, democratic development, and cultural consolidation. If the factors of crisis or stability in a society do influence the tendency to accept or reject paranormal and magical beliefs, these beliefs should be expected to occur in modern German culture to a lesser extent than in modern Soviet culture.

However, there is one more fundamental difference between German and Soviet cultures that might influence the attribution of existence to some nonpermanent phenomena, namely, the attitude towards the Christian religious tradition. It is common knowledge that the suppression of the traditional religious beliefs by official ideology was a part of Soviet history. As a result, a materialistic and atheistic outlook on the world asserted itself in the consciousness of the Soviet individual at an early age. In contrast, in Germany, christian religious traditions (Protestant in the North, Catholic in the South), has been strong. Despite the fact that in Germany values of individualism have further-more contributed to a secularization of religious beliefs and a constant rise of "post-materialistic" values (Klages, 1984; Meulemann, 1985), a religious education is still an inseparable part of most Germans' socialization experience (in school and church).

Keeping this difference in mind, one might expect German and Soviet people to evaluate those nonpermanent phenomena which are rooted in the Christian religious tradition ("existence of a Supreme Being which created our universe and is responsible for its laws" and "immortality of the human soul") differently from those which are independent of this tradition.

Indeed, the three hypotheses about the causes of the transformation of a postage stamp proposed by the experimenter ("will-power," "hypnotic suggestion," and "trick") and some of the mysterious nonpermanent phenomena ("UFO," "parapsychological phenomena," "Abominable snowman," "Loch Ness monster") are not linked to the

Christian religious beliefs and can be easily understood in terms of scientific thinking or in terms of "magical/supernatural beliefs" which contradicts the traditional Christian outlook.

The former group will be labelled as "religion-linked phenomena"; we assume that these phenomena will be attributed a higher degree of existence in German culture because of its institutionalized religious tradition. The latter group of the nonpermanent phenomena will be referred to as "religion-independent". These may be expected to have a higher probability of existence in Soviet culture because of the influence of emotional instability and distress originating from the critical situation of the Soviet society, and due to traditional authoritarianism of this culture.

With all this in mind, we tried to repeat the experiment on object permanence and paranormal beliefs in Soviet adults (Subbotski, 1991), this time with a German sample. The aim of the study was to compare the explanatory behavior of Soviet with that of German subjects in the "nonpermanence provoking" experimental situations and to compare their beliefs in the existence of enigmatic "paranormal" phenomena.

## Method

### Sample

#### *(1) Soviet Subjects.*

For the comparative study from original Soviet sample four groups of subjects corresponding to four conditions of the experiment (15 subjects in each group) were chosen. Subjects ages ranged from 19 to 43 with a mean age of 25.5. Group means were 22.6 for "reconstruction condition" (4 men, mean age 26.7, 11 women, mean age 21), 24.8 for "destruction condition" (4 men, mean age 32, 11 women, mean age 22.3), 25.6 for "transformation condition" (5 men, mean age 25.8, 10 women, mean age 25.5), 28.9 for "questionnaire condition" (6 men, mean age 31.2, 9 women, mean age 26.6). All subjects were educated to university degree level although some first year psychology students at Moscow University also took part.

#### *(2) German Subjects.*

Sixty subjects participated in the experiment. Most of them were German students from of Konstanz University, others were former university graduates. The subjects were divided into four groups of fifteen each. Their ages ranged from 19 to 63 with a mean age of 24.2. The group means were 23.1 for the "reconstruction" condition (10 men, mean age 23.2; 5 women, mean age 23), 25.5 for the "destruction" condition (8 men, mean age 29.3; 7 women, mean age 23.1), 24 for the "transformation" condition (6 men, mean age 25.8; 9 women, mean age 22.9), 24.4 for the "questionnaire" condition (7 men, mean age 24.9; 8 women, mean age 24).

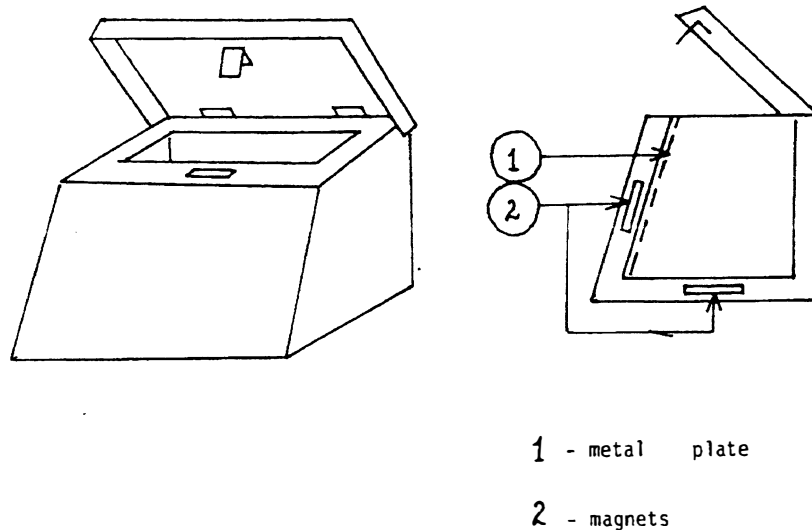


Fig. 1: The box used in the experiment.

**Materials.** A wooden box measuring 15x11x11 cm was employed. It was constructed in such a way that a metal plate would separate from one of the inside walls and sink to the bottom as the lid was closed (Figure 1). The special construction of the lid and a system of magnets built into the side and bottom of the box ensured that the box could be manipulated without the metal plate being revealed. The bottom and the inner side of the plate were covered with black velvet. In addition, three postage stamps were employed as stimuli: two small ones with identical pictures, one of which was new, the other appeared old and was torn in two places; the third stamp was much bigger and had a different picture.

**Procedure.** The procedure of the German study strictly followed that of the study carried out in Moscow (see above). The same semi-structured interview method was employed, i.e., while all subjects were asked core questions (formulated in the description of the procedure) in an identical manner. The exploratory questions which followed were asked in a structured clinical interview.

Subjects were tested individually. They were told that the purpose of the experiment was to investigate their judgement of a given physical object's existence. The experimenter pointed to a postage stamp lying on a table next to the box and asked "What is this?" and then "Does this postage stamp exist?" "Why do you think so?" the aim of this line of questioning was to establish the subjects' reasons for attributing existence to physical objects in their perceptual field.

The subjects were then asked to put the stamp into the box and to close it. They were there upon asked: "Does the postage stamp still exist?" "Why do you think so?" "But you can't see it or touch it - why do you think it still exists?" The aim of this line of questioning was to establish the subjects' reasons for attributing existence to material objects when out of their perceptual field.

Next, the experimenter moved his hands towards the box and held them on either side at a distance of about 10 to 15 cm from the box. He looked at the box intently, showing a great deal of effort by a facial expression of concentration, strain, and trembling hands. After a few seconds, he took his hands away and asked, "Do you believe that this postage stamp has disappeared from the world or turned into another postage stamp? Please estimate the probability with which you believe this on a probability scale from 0 - 100%, where 0 % probability means that you are absolutely certain that the event did not occur, 100 % probability that it did occur, and 50 % probability that you acknowledge both possibilities equally." The aim of these questions was to determine whether the subjects would acknowledge the possibility of mental transformation of a given object in the absence of physical contact.

The subjects were then asked to remove the stamp from the box and to put it on the table. Upon opening the box, the subjects found a transformed object (that had been hidden between the metal plate and the wall of the box prior to the beginning of the experiment). The experimenter asked the following questions: "What is it?" "Is it the same object that you put into the box or is it another object?" "Did you notice the change at once or only after my last question?" After the subjects' replies, the experimenter tried to elicit an explanation of what had happened.

The first three experimental conditions represented three variations of object transformation. In the first (reconstruction) a torn and crumpled stamp became new; in the second (destruction), a new stamp became torn and crumpled; and in the third (transformation), a larger stamp with a different picture and colour appeared.

After the subjects' explanations of what had happened, the experimenter asked them to judge the probabilities of three explanations: (a) I have the ability to change (reconstruct, destroy, or transform) small material objects by sheer "will-power" even without touching them; (b) I hypnotized you and substituted the stamp while you were asleep. I also suggested a posthypnotic amnesia to you so that you would not be able to remember what had happened; (c) It was just a trick.

Finally, the subjects were asked to estimate the probability of the existence of certain unexplained mysterious phenomena, all of which represented nonpermanent objects (either physical or spiritual): (a) unidentified flying objects as cosmic stations of extraterrestrial civilisations, (b) parapsychological phenomena, (c) the "abominable snowman," (d) the "Loch Ness monster," (e) a Supreme Being which created the universe and is responsible for its laws, and (f) the immortality of the human soul. All these phenomena represent nonpermanent objects, because even a Supreme Being and the immortality of the human soul have been sometimes reported to be observed, not only heard of (personal encounters with God and the so called "near death experiences"). The purpose of these questions was to ascertain the probability of existence an individual

attributed to unusual, enigmatic phenomena representing nonpermanent objects in order to compare this probability to that attributed to the mental transformation of material objects. Under the fourth condition ("questionnaire"), subjects were required to fill out a questionnaire regarding the probability estimates of the six unexplained phenomena mentioned above. A comparison with the experimental groups (conditions 1 - 3) would show whether the observation of an unusual phenomenon (nonpermanence of a physical object) increased the subjective probability estimate of other mysterious phenomena.

### Scoring

The main score in the experiment was the subjective probability subjects attributed to the possibility of disappearance or transformation of material objects. The percentage scale was used because it was well-known to all subjects in both cultures. The mean subjective probability of a particular event under a given condition was calculated as

$$MSP = \frac{\sum_{i=1}^n P_i}{n}$$

where  $P_i$  = subjective probability attributed to an event by an individual and  
 $n$  = number of subjects.

In two instances only the scores related directly to the number of subjects and not to the MSP were used. First, the score related to whether a subject did or did not notice the change in the postage stamp, which was recorded in terms of frequency of the event; the criteria used for determining that a subject had not noticed the change ("perceptive identification") were the absence of facial and verbal surprise in addition to a negative response to the direct question. Second, the frequency of the event was employed for the estimation of a subject's tendency to identify the original and transformed objects ("cognitive identification"); the subject was considered to be "cognitively identifying" if (1) he or she noticed the change in the object, and (2) he or she answered the question "Is it the same object that you put into the box or is it another object?" in the affirmative.

### Results

A preliminary analysis using the method of paired comparisons revealed no evidence of gender differences in the data in either sample.

The results of the Soviet sample indicated first that all subjects recognized the stamp as existing. As the basis for this judgements, they referred to (a) the fact that the stamp

was in their perceptual field; (b) the fact that the experimenter could also see it; (c) the fact that they had encountered such objects in their past experience. Subjects also recognized the stamp as continuing to exist after it had been put into the box. The reasons offered were (a) the clarity of the experience of placing it in the box ("I put it there myself, I remember it clearly"); (b) the fact that it has been placed into the box could not have transformed it ("No physical event happened that could change it or destroy it"); and (c) the fact that there were no gaps in the subject's consciousness or attention ("I watched the box attentively and I saw that you didn't touch it").

With regard to the experimenter's attempt to influence the object by "will-power," the majority of the subjects denied the possibility of its disappearance or transformation. In the "reconstruction" condition, 43 % of the subjects failed to notice any transformation and upon opening the box recognized it only after the experimenter had pointed it out. Spontaneous explanations of the change were mostly based on a permanence rule. For example, subjects mentioned the possibility of a chemical or mechanical process that might have taken place in the box. Only a few subjects made reference to the mental effort of the experimenter. However, once the three explanations were suggested by the experimenter (see above), the subjects' responses changed. Mean probabilities that the change was accomplished by the experimenter's mental effort ranged from 32 % (transformation condition) to 52 % (destruction condition). The other two explanations ("hypnosis" and "trick") were less popular. The mean subjective probability for mysterious phenomena (36 %) was almost exactly the same as the average mean for will-power from the three conditions (40 %). Finally, it was found that the experience of an "impossible" phenomenon did not increase the subjects' readiness to ascribe existence to other enigmatic phenomena: The mean subjective probability of this was about the same in the three "experimental" and "questionnaire" conditions.

Just as the Soviet subjects, all German participants answered the first question in the affirmative. As a basis for this judgement, two reasons were pointed out: (1) clarity and distinctiveness of their personal perception ("I can see it, I can touch it, taste it," etc.) and (2) past experience the subject had had with the postage stamp ("I know that this is a postage stamp, it has a price and a year of issue on it, I put postage stamps on my letters, etc."). In contrast to some of the Soviet subjects, the German subjects did not use the other person's experience (intersubjectivity) as proof of the object's existence ("You can see this postage stamp as well as I can, so it really exists").

There were no differences in the answers to the second set of core questions which were asked after the stamp had been placed into the box: All of the German subjects considered the postage stamp to be existent on the grounds that (1) they clearly remembered having placed it into the box themselves (the criterion of clarity and distinctiveness of a past experience), (2) a postage stamp is a physical object and nothing can happen to it in such a short period of time (criterion of permanence of a physical object), and (3) there was nothing in the manner the stamp was put into the box that could have changed it in any way (the criterion being the way of an object's disappearance from the perceptive field which does not affect the object's existence). After the experimenter's attempt to influence the contents of the box by sheer will-power, the subjects were asked

whether the postage stamp had disappeared from the world or turned into another post stamp; here, the majority of the subjects answered in the negative. Nevertheless, a 2-way-ANOVA of condition (3) x culture (2) produced a main effect of culture ( $F(1,84) = 4.87, p < .05$ ): The MSP attributed to this possibility by German subjects significantly exceeded that given by the Soviet subjects (Table 1, top line).

In contrast to the Soviet subjects, all of the German subjects noticed the change in the postage stamp immediately after having opened the box. That was expressed through facial expressions and exclamations of surprise, which indirectly pointed out that the postage stamp had changed or had become a different postage stamp altogether. A 2-way-ANOVA of condition (3) x culture (2) on the parameter "perceptive identification"

Table 1  
Mean Scores of mastering the nonpermanence phenomena score/(s)

Score	Condition						total	
	1 reconstruction		2 destruction		3 transformation		S	G
	S	G	S	G	S	G	S	G
A	7.33 (17.51)	25.46 (31.62)	9.66 (19.31)	8.76 (17.52)	3.60 (5.75)	16.46 (27.72)	6.87 (15.27)	16.90 (26.60)
B	0.40 (0.50)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.13 (0.34)	0.00 (0.00)
C	0.26 (0.45)	0.46 (0.52)	0.66 (0.48)	0.73 (0.45)	0.13 (0.35)	0.13 (0.35)	0.35 (0.48)	0.44 (0.50)
D	32.20 (31.40)	38.26 (36.66)	51.66 (35.13)	30.33 (37.29)	32.00 (31.15)	34.33 (31.62)	39.95 (32.99)	34.31 (34.62)
E	40.33 (37.15)	11.28 (25.33)	15.00 (23.37)	9.06 (16.24)	41.33 (29.90)	10.40 (20.53)	32.22 (32.39)	10.91 (21.68)
F	28.80 (39.81)	66.05 (32.17)	36.00 (30.25)	66.93 (38.19)	34.00 (34.70)	57.00 (35.75)	32.93 (34.46)	63.32 (34.94)

Notes:

A - subjects believe that the postage stamp, which is concealed in the box, changed its appearance after influence of will-power (MSP, per cent)

B - perceptive identification (proportion of subjects)

C - cognitive identification (proportion of subjects)

D - subjects believe that the object which reappeared from the box, had been changed as a result of experimenter's will-power (MSP, per cent)

E - subjects believe that they were in a hypnotic state (MSP, per cent)

F - subjects think that it was a trick (MSP, per cent)

S - Soviet sample

G - German sample

showed condition to be a main effect ( $F(2,84) = 9.33, p < .01$ , and a condition x culture interaction ( $F(2,84) = 9.33, p < .001$ ). This indicates that only in Soviet subjects and solely under the "reconstruction" condition did the phenomenon of perceptive identification take place. The same analysis on the parameter "cognitive identification" produced a main effect of condition ( $F(2,84) = 12.46, p < .0001$ ; i.e., the German subjects as well as the Soviet subjects identified the new and the original postage stamps under the "transformation" condition significantly less often than under the "destruction" condition (Table 1, line 3 from the top). Thinking that the new stamp was the original one, the German subjects added: "Common sense tells me it has to be the same object though my eyes see a different one."

Some of the subjects refused to give a spontaneous explanation about what caused the postage stamp to change; others gave the following reasons: (1) There was some sort of mechanism in the box (a double bottom, chemicals, air pressure, etc.), (2) it was just a trick, which can be interpreted as a variation of explanation (1) that points out the possibility of a substitution of the postage stamp (not noticed by the subject), (3) the change resulted from the "will-power" of the experimenter. Hypotheses (1) and (2) were most popular while hypothesis (3), founded on the "discontinuity rule", was less popular.

However, when hypothesis (3) was suggested as a possibility, subjects commented that they didn't believe it and added hypotheses (1) and (2) as alternatives. The only hypotheses suggested by a few of the Soviet subjects but never included among the reasons given by the German subjects was that the experimenter's hand influenced the subject's consciousness; as a result, the new postage stamp "just seems to have changed but in reality it remained the same."

In order to compare the results of the probability estimations of the three hypotheses given by the experimenter ("the influence of will power," "hypnosis," and "trick"), a 3-way-ANOVA of condition (3) x hypothesis (3) x culture (2) was carried out. This analysis produced a main effect of hypotheses ( $F(2,252) = 16.11, p < .0001$ ) and an interaction hypotheses x culture ( $F(2,252) = 15.90, p < .0001$ ), which means that in the German sample, the probability of the "trick" hypotheses significantly exceeds that of the "hypnosis" hypothesis which does not take place in the Soviet sample (see Table 1, bottom three lines).

To evaluate the interrelationship between the MSP given by the Soviet and the German subjects for various nonpermanent enigmatic phenomena under various experimental conditions (plus questionnaire), a series of 2-way-ANOVA's of condition (4) x culture (2) for each phenomenon were run. These revealed a main effect of culture for each phenomenon (except "parapsychological phenomena"): Soviet subjects estimated the probabilities of "UFO's," the "abominable snowman," and the "Loch Ness monster" to be higher than did the German subjects ( $F(1,112) = 6.01, p < .02$ ;  $F(1,112) = 21.18, p < .0001$ ;  $F(1,112) = 7.76, p < .01$  accordingly). German subjects estimated the probabilities of a "Supreme Being" and the "immortality of the human soul" to be higher than did Soviet subjects ( $F(1,112) = 14.89, p < .001$ ;  $F(1,112) = 74.93, p < .0001$  accordingly).

In order to reveal the interrelationships between separate scores, a correlation analysis was performed. The scores included the MSP attributed (a) to the experimenter's

Table 2  
Mean subjective probability of unusual phenomena MSP/(s)

Score	Condition									
	1 reconstruction		2 destruction		3 transformation		4 questionnaire		total	
	S	G	S	G	S	G	S	G	S	G
A	33.86 (35.06)	41.24 (37.32)	47.33 (39.85)	20.47 (27.50)	44.40 (33.12)	22.66 (26.04)	41.00 (23.39)	24.66 (31.36)	41.65 (32.93)	27.26 (31.19)
B	70.73 (33.59)	77.40 (30.63)	69.67 (34.14)	69.50 (34.17)	60.34 (42.11)	71.00 (28.54)	70.73 (31.79)	70.60 (32.55)	68.37 (34.89)	72.13 (30.80)
C	53.66 (41.90)	24.06 (27.37)	34.26 (33.32)	15.46 (25.51)	53.73 (38.39)	32.00 (30.04)	57.80 (35.16)	20.66 (26.31)	49.61 (37.51)	23.05 (27.34)
D	20.03 (19.48)	27.73 (26.49)	30.33 (37.85)	10.86 (22.33)	22.33 (29.19)	11.33 (17.16)	39.33 (31.21)	8.00 (17.18)	27.76 (30.41)	14.48 (22.16)
E	28.06 (30.21)	48.68 (36.75)	24.84 (40.38)	60.26 (41.26)	20.40 (30.68)	61.33 (40.86)	35.40 (34.95)	45.43 (45.60)	27.18 (33.86)	53.90 (40.79)
F	10.00 (18.25)	55.33 (41.98)	25.46 (35.33)	55.60 (33.76)	2.20 (4.07)	70.00 (33.81)	17.46 (31.65)	69.66 (34.15)	13.78 (25.58)	62.65 (35.90)

Notes:

A - Unidentified flying objects

B - Genuine parapsychological phenomena

C - Abominable snowman

D - Loch-Ness monster

E - Supreme Being

F - Immortality of the human soul

S - Soviet sample

G - German sample

Table 3  
Pearson correlation coefficients between MSP's given in each of the main experimental conditions  
(R-reconstruction, D-destruction, T-transformation)

	1		2		3		4		5		6		7		8		
	S	G	S	G	S	G	S	G	S	G	S	G	S	G	S	G	
1. Will-power	R.																
	D.																
	T.																
2. Hypnosis	R.-0.13	-0.14															
	D.-0.34	0.26															
	T.-0.02	0.11															
3. Trick	R.-0.62 <sup>a</sup>	-0.85 <sup>c</sup>	-0.66 <sup>b</sup>	0.03													
	D.-0.75 <sup>b</sup>	-0.57 <sup>a</sup>	-0.31	0.12													
	T.-0.71 <sup>b</sup>	-0.77 <sup>c</sup>	-0.64 <sup>b</sup>	-0.14													
4. UFO	R. 0.09	0.78 <sup>c</sup>	0.42	-0.11	-0.51 <sup>a</sup>	-0.70 <sup>b</sup>											
	D.-0.14	0.21	0.41	-0.03	-0.12	0.01											
	T. 0.31	0.10	0.08	-0.22	-0.41	-0.04											
5. Parapsychology	R. 0.58 <sup>a</sup>	0.55 <sup>a</sup>	0.42	0.18	-0.75 <sup>b</sup>	-0.42	0.44	0.35									
	D. 0.60 <sup>a</sup>	0.52 <sup>a</sup>	0.14	-0.19	-0.69 <sup>b</sup>	-0.25	0.47	0.37									
	T. 0.39	0.54 <sup>a</sup>	-0.18	-0.12	-0.16	-0.45	-0.23	0.30									
6. Snowman	R.-0.10	0.21	0.21	0.48	-0.19	-0.11	0.50	0.41	0.00	0.37							
	D.-0.36	0.67 <sup>b</sup>	0.34	0.07	0.05	-0.52 <sup>a</sup>	0.17	-0.06	-0.09	0.34							
	T.-0.29	0.26	-0.52 <sup>a</sup>	0.05	0.58 <sup>a</sup>	-0.47	-0.05	0.00	0.19	0.11							
7. Loch Ness monster	R. 0.02	0.55 <sup>a</sup>	0.34	-0.06	-0.30	-0.43	-0.01	0.75 <sup>c</sup>	0.00	0.43	0.32	0.62 <sup>b</sup>					
	D.-0.21	-0.01	0.55 <sup>a</sup>	-0.01	-0.24	0.23	0.66 <sup>b</sup>	-0.03	0.26	0.41	0.47	-0.09					
	T.-0.05	0.49	-0.05	-0.01	0.07	-0.41	0.32	0.45	-0.12	0.29	0.22	0.54 <sup>a</sup>					
8. Supreme Being	R. 0.37	0.18	-0.14	0.10	-0.20	0.03	-0.04	-0.03	0.39	0.48	-0.18	0.35	0.13	0.17			
	D. 0.11	0.04	0.00	0.09	-0.15	0.20	0.20	0.34	0.31	0.32	0.01	-0.36	0.32	0.39			
	T. 0.37	0.33	0.04	0.27	-0.21	-0.31	0.19	0.31	0.07	0.41	0.02	0.25	0.22	0.33			
9. Immortal soul	R. 0.43	0.85 <sup>c</sup>	-0.37	-0.10	-0.13	-0.69 <sup>b</sup>	0.26	0.67 <sup>b</sup>	-0.05	0.73 <sup>b</sup>	0.22	0.36	0.42	0.56 <sup>a</sup>	0.29	0.33	
	D. 0.45	0.41	-0.08	0.21	-0.45	0.00	0.27	0.37	0.47	0.20	-0.07	0.07	0.40	0.29	0.80 <sup>c</sup>	0.50 <sup>a</sup>	
	T. 0.30	-0.09	0.13	0.26	-0.29	0.17	0.15	0.35	0.04	0.48	-0.47	0.05	0.15	0.13	0.57 <sup>a</sup>	0.64 <sup>b</sup>	

Notes: a < .05; b < .01; c < .001

S-Soviet sample; G-German sample



suggestion that after the influence of his "will-power", the postage stamp would disappear from the world or turn into another postage stamp, (b) to the three hypotheses given by the experimenter explaining the change to the postage stamp and (c) to all 6 mysterious phenomena. The score (a) revealed no significant correlations with any other score; the significant correlations for the scores (b) and (c) are given in Table 3.

Table 3 shows that for Soviet and for German subjects, the MSP for the "will-power" hypotheses correlated negatively with the MSP for the "trick" hypotheses and positively with the MSP of "parapsychological phenomena"; the MSP for "Supreme Being" correlates positively with the MSP for "immortality of the soul."

At the same time, religion-linked phenomena ("Supreme Being" and "immortality of the soul") and religion-independent phenomena (including the three hypotheses from the experimenter) compose two separate independent correlative clusters for the Soviet sample. For the German sample, the "Supreme Being" phenomenon only correlates with the "immortality of the soul" phenomenon; the latter, however, is linked positively to some religion-independent phenomena and negatively to the "trick" hypothesis.

#### Discussion

The data reveal some similarities as well as some substantial differences between the Soviet and the German samples in respect to the attribution of permanence. Thus, the subjects of both samples state unanimously that the physical object in their perceptual field really exists, and they give the same reasons (clarity and distinctiveness of visual impression, past experience with the object). However, German subjects didn't go beyond giving these reasons whereas some Soviet subjects used the other person's experience (intersubjectivity) as well.

The same reasons for the fact that the postage stamp did not disappear from the world after having been put into the box were given by both cultural groups. Nevertheless, the probability estimations for the experimenter's suggestion that the stamp had disappeared or turned into another postage stamp, which were given after the experimenter had attempted to influence the contents of the box by "will-power," produced different results: German subjects estimated this possibility (MSP) to be significantly higher than did Soviet subjects. This assessment, however, does not mean that the German subjects used the "permanence rule" to a lesser extent than did the Soviet subjects, i.e., that the German subjects thought the postage stamp had been changed as a result of the experimenter's "will-power." More probably, the German subjects' answers were due to their suspicion that there was some sort of mechanism in the box and to their expectation that some changes would take place. This suggestion is supported by the fact that there was no significant correlation between the MSP given upon being questioned and the MSP given later after having heard the experimenter's "will-power" hypothesis.

Another important difference was the absence of the "perceptive identification" phenomenon by the German subjects which took place by the Soviet subjects under the "reconstruction" condition. This fact can be explained in light of the above-mentioned

differences: Indeed, the higher degree of expectation of a change that was shown by German subjects mostly under the "reconstruction" condition, led to the attitude that they should "look for the change" and thus facilitated their ability to detect the real change immediately after having opened the box, whereas the attitude that one will not see any changes, which was characteristic of the Soviet subjects, decreased this tendency. "Cognitive identification" took place to an equal extent in both samples, with the German subjects as well as the Soviet subjects giving cognitive identification responses significantly more often under the "destruction" condition than under the "transformation" condition - a fact that Subbotski (1991) tried to explain through a "law of entropy."

The spontaneous explanations from both cultural groups were in general alike, though in a few cases, Soviet subjects suggested that the experimenter had manipulated their consciousness. The estimations of the three hypotheses given by the experimenter about the causes of the changes to the postage stamp revealed indirect differences between the German and Soviet participants: For the German subjects, the "trick" hypothesis was significantly more probable than the "hypnosis" hypothesis which got a very low MSP. For the Soviet subjects, there was no such difference, with all three hypotheses getting approximately equal MSP's.

The data do not show that the two cultural samples rely upon the "nonpermanence rule" to different degrees in their assessment of the possibility of nonpermanence of a physical object. However, the results do reveal some differences on a dimension that can be designated as "self- vs. other people-orientation": Soviet subjects were more prone to use another person's experience and were less ready to trust their own perceptions than German subjects were. This tendency was represented in some Soviet participants' use of another person's perception when discussing the reasons for their conviction regarding a physical object's existence and in the phenomenon of perceptive identification and in the stronger feeling they experienced of their own suggestibility (e.g., spontaneous hypothesis that the experimenter had changed their perception, high MSP of "hypnosis" hypothesis). In contrast, German subjects were generally more suspicious in the experimental situation; they were less willing to admit that their consciousness had been manipulated and more inclined to solely trust their own perception. However, these observations rely upon indirect evidence only and must be treated with caution.

More definite differences were revealed in the subject's assessment of the existence of the nonpermanent mysterious phenomena. As expected, the Soviet subjects attributed a higher MSP to the religion-independent phenomena's existence ("UFO," "abominable snowman," "Loch Ness monster") than did the German subjects; in contrast, the MSP's the German subjects gave to religion-linked phenomena ("Supreme Being" and "Immortality of the human soul") significantly exceeded those given by the Russian subjects. The only exception was for the "parapsychological phenomena", which got approximately equal MSP's in both cultural samples.

The different attitudes of Soviet and German subjects to these two groups of enigmatic nonpermanent phenomena was also revealed in the results of the correlational analysis: In Soviet subjects, the religion-linked phenomena composed an isolated cluster that may be interpreted as evidence of an attitude of alienation towards these phenomena,

whereas in German subjects, religion-linked phenomena were integrated into the whole structure of "paranormal beliefs." At the same time, in both cultural groups, high "trick" hypothesis estimations were indicators of a generally sceptical attitude of the subject towards "paranormal phenomena" and high scores given to the "will-power" hypotheses indicated the subject's belief in the existence of "parapsychological phenomena."

In sum, the study does not reveal significant differences in the estimation but rather in the explanation of nonpermanent phenomena (change of a physical object) observed by German and Soviet participants. The hypothesis about the role of cultural factors in the attribution of existence of various paranormal phenomena has gained support: In a society undergoing a series of crucial and painful changes, a higher probability of existence is attributed to paranormal phenomena than in a society enjoying the conditions of economic and social stability. This, however, is relevant only to those nonpermanent phenomena that are not rooted in traditional religious beliefs; Religion-linked phenomena are assessed as being more reliable in the culture with more stable religious traditions than in a more atheistically-oriented culture.

Furthermore, the results of this cross-cultural study suggest the usefulness of a methodological approach for the assessment and description of cultural values which may be relevant to the cognitive processes of explaining and understanding the world. Such values can either be oriented to the self and to self-control or to another person and control by others. Related theoretical questions suggest psychological transformations from the level of sociocultural traditions (e.g., a democratic vs. a totalitarian system) into individual cognitions. These questions should be investigated in further cross-cultural studies which focus more on the interrelationships between the psychological processes and sociocultural and individual characteristics.

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