

## Coincidences: Who Can Say How “Meaningful” They Are?\*

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Sheep usually remember more “meaningful” coincidences that have happened in their personal lives than goats do. The crucial question is: Do they really *experience* more coincidences, or are they simply more inclined to *attribute meaningfulness* to what for goats remains a *mere* coincidence? The latter possibility would justify the interpretation that sheep make more frequent reports because an event is more readily noticed, as well as more readily available for recall, if perceived as meaningful.

It is inherently impossible to obtain an objective measure of the meaningfulness of real life coincidences; the factors involved are not only too numerous but also interdependent in far too complex a way. The cues for the attribution of meaning to a coincidence are to be found in the subjective probability of its occurring by chance alone: the lower the subjective chance baseline, the greater the experience of meaningfulness. In fact, there is some evidence indicating that belief in ESP is associated with a low subjective chance baseline: In comparison to goats, sheep have been found 1) to underestimate the frequency of coincidences in ESP tasks as well as in randomness appreciation tasks; 2) to produce less repetitions of same-events in randomization tasks; and 3) to avoid repetitious responding in an ESP test situation to a greater degree.

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However, randomization performance in a laboratory situation might not be directly comparable to the experience of randomness in everyday life. The present work suggests some ways of examining people's subjective randomness that may provide for more direct inferences on its role in real life settings. It also points to a possible neurological basis for the process of meaning attribution.

### EXPERIMENT 1—ON SHEEP, GOATS, DUCKS, AND RABBITS: SUBJECTIVE RANDOMIZATION OF EVENTS RELATED BY MEANING

Real life coincidences are not simple repetitions of two identical events, but rather of two events linked by association. It is possible to simulate this natural condition within a subjective randomization task: We constructed a die showing 3 pictures (same picture on opposite faces): an ambiguous drawing of a duck/rabbit, a marsh reed (as an associate to duck), and a carrot (as an associate to rabbit). Thirty-eight undergraduates were shown the die, had to name the pictures, and, after being well blindfolded, had to roll it 61 times, each time "just guessing" the event. After the task, they rated their belief in ESP on a 6-point scale.

Nineteen subjects identified the ambiguous animal as a duck (group DUCK), and 12 identified it as a rabbit (group RABBIT); 7 subjects were not included in the analysis because they saw both animals. Irrespective of belief in ESP, all subjects avoided guessing the same picture twice in a row (Wilcoxon  $z > 4.7$ ,  $p < .01$ ). The response series of the subjects from group DUCK showed a lack of the pairs "duck"/"reed" and "reed"/"duck" ( $z = 3.0$ ,  $p < .01$ ); on the other hand, group RABBIT avoided guessing "rabbit" immediately before or after having guessed "carrot" ( $z = 2.3$ ,  $p < .05$ ). For both groups, the frequency of the *neutral* pairs ("reed"/"carrot" and "carrot"/"reed") was not significantly different from mean chance expectation. The 20 sheep (ESP rating 1-3) avoided both repetitions of identical events and those of associatively related events to a greater degree than goats ( $t = 2.2$ ,  $p < .05$ , and  $t = 2.5$ ,  $p = .05$ , respectively).

### EXPERIMENT 2—THE “MEANING ATTRIBUTION TASK” (MAT): AN INSTRUMENT TO MEASURE PERCEIVED MEANINGFULNESS FOR COINCIDENCES OF A GIVEN CHANCE BASELINE

To directly measure perceived meaningfulness of coincidences, we developed the MAT, which permits the study of subjective randomness *leaving aside any inference by probabilistic judgments*.

The test set consists of two decks of 20 cards each, each card showing a different drawing of an object or a person. Sixty-four undergraduates were individually tested in the following way: The two decks were placed face down in front of the subjects, who were led to believe that shuffling of the cards had occurred just prior to their arrival. Actually, the order of the cards within both decks was the same for all subjects. Subjects had to turn up the first card of each deck and to rate the semantic relation between the two drawings on a 6-point scale (ranging from “very close” to “wide or none”). No specific definition of the term “semantic relation” was given. This procedure was repeated for the remaining 19 pairs of cards. Immediately after the task, subjects had to rate their belief in ESP on the same 6-point scale used in Experiment 1.

The mean rating of semantic relatedness was 3.3 (sd=0.7) for the 50 sheep and 2.6 (sd=0.6) for the 14 goats ( $t=3.6$ ,  $p<.001$ ). Belief in ESP correlated significantly with the rating of semantic relatedness of the 40 coincidences (Spearman  $\rho=.50$ ,  $p<.001$ ).

### EXPERIMENT 3—CREATIVITY, HYPERCREATIVITY, AND THE RIGHT HEMISPHERE: A TACHISTOSCOPIC STUDY USING SHEEP AND GOATS AS SUBJECTS

Theoretically, the results of Experiment 2 could be explained by the greater creativity of the sheep in finding an associative relationship between the two pictures of a pair. To differentiate between the *creative interpretation* of the meaningfulness of some cues (“creativity”) and the *creation of meaningful cues* that were actually not given (“hypercreativity”), we performed Experiment 3.

The stimuli were 40 random dot patterns of the Julesz-type. One by one, they were presented unilaterally in a tachistoscope for 50 ms at 1 to 5 degrees of visual angle either to the right or to the left of a central fixation point. The subjects were 22 right-handed male undergraduates to whom the task was introduced as "an experimental investigation of unconscious perception." They were told that "about half the stimuli" would contain some meaningful pictorial information and that they were to press two response buttons with the index finger of both hands whenever they had seen something meaningful. They were also told that they would never need to comment on *what* they felt they saw and were even instructed to refrain from any verbalization during the task. Immediately after the experiment each subject rated his belief in ESP on the same scale as that used in Experiments 1 and 2.

The mean number of manual responses was greater after left visual field/right hemisphere (RH) stimulations than after right visual field/left hemisphere stimulations ( $t=2.7$ ,  $p<.01$ ). Irrespective of visual field, the 14 sheep gave more responses than the 8 goats gave ( $t=2.0$ ,  $p <.05$ ), and the subject's belief in ESP correlated positively with the total number of responses given in the tachistoscopic task (Spearman  $\rho=.57$ ,  $p<.001$ ).

### COMMENTS AND CONCLUSIONS

The crucial question raised initially was whether sheep really *experience* more coincidences than goats do or whether they are just more inclined to *attribute meaningfulness* to a coincidental event. A direct proof of the former possibility cannot be given, since an objective measure of the frequency of meaningful coincidences is not obtainable. However, the results of Experiment 1 strongly suggest the validity of the latter view: Sheep's lower chance baseline for associatively related events to appear in close succession points to an overestimation of such coincidental events once they have actually happened. This perceptual overestimation is likely to be paralleled by a similar overrepresentation in memory and may thus further depress the subjective baseline for a coincidence to be ascribed to chance alone. Put differently, even if we were to suppose that sheep objectively experience

more coincidences, how could that fact explain their stronger repetition avoidance of semantically related events in the randomization setting?

The results of Experiment 2, taken by themselves, must remain somewhat more ambiguous: Although sheep rated the associative closeness of randomly paired stimuli higher than goats did, this effect can be interpreted as being due to their greater creativity. However, being more creative does not imply a greater tendency to avoid repetitive events. If, in the experimental situation, sheep are simply more creative and original than goats are in seeing semantic relatedness, this again points to the fact that they do not experience more coincidences in real life but will consider as meaningful a coincidence that would be labelled a "mere" coincidence by goats.

The distinction between creativity and hypercreativity seems to be useful in this context: Creative acts offer generally valid solutions to problems, whereas hypercreative acts remain purely subjective interpretations of cues and cannot be shared with others. The stimuli used in Experiment 3 contained no objective cues for creative interpretations but were purely random patterns, the perceived meaningfulness of which should be considered to be an act of hypercreativity. In line with previous experimental findings, this perceived meaningfulness was more pronounced not only for the right cerebral hemisphere as compared to the left, but also for sheep as compared to goats.

Taken together, the results of the three experiments corroborate the view that perceived meaningfulness of coincidences and belief in ESP depend on the threshold of subjective chance and that both are consequences of an underestimation of what can happen simply by chance.

It promises to be a fruitful task for future parapsychological research to examine more thoroughly the relationships between belief in ESP, (hyper)creativity, and the concept of subjective chance. Given the well-established links between meaning attribution and the temporal lobes, on the one hand, and between belief in ESP and nonpathological temporal lobe behavioral signs, on the other, a close cooperation between parapsychologists and neuropsychologists seems indispensable.