Journal of Parapsychology
2019, Vol. 83, No. 1, 79-88

http://doi.org/10.30891/jopar.2019.01.06

Failure to Replicate an Electrical PK Experiment

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Abstract: The objective of this article is to describe an attempt to replicate the phenomenon of alleged bodily magnetism as described in a book by the leading figure of Czechoslovak parapsychology Břetislav Kafka (1891-1967). In his book, in addition to experiments focused on hypnotic phenomena in therapeutic practice, he describes one experiment that is the focal point of this paper. It describes the alleged phenomenon of bodily magnetism, which causes the illumination of a light bulb without connection to electrical power. The bulb is held in one hand as the fingers of the other hand are waved over the bulb. According to Kafka's claims, this act of illumination should be possible for every second or third person. The author of this article has repeated this experiment with students from an Experimental Psychology seminar at the University of Ostrava, with negative results. Following modification of the conditions to match Kafka's historical circumstances, the author was ultimately able to successfully repeat this experiment with illumination other than bodily magnetism.

Keywords: bioelectric fields, psychokinesis, bodily magnetism, light bulb

Bodily magnetism, sometimes also referred to as human magnetism, was defined by Břetislav Kafka (1891-1967) (1948) as a human ability best controlled by human magnets, that is, individuals who have a trained ability to control human magnetism. He asserts that these people can control this energy using the force of their own will through magnetic passes and can pass it to persons who then describe various sensations according to his account. He describes tingling in parts of the body, goose bumps, and in extreme cases vomiting and tremor of the entire body. In the very title and description of his paper we see an apparent reference to the terminology of Franz Anton Mesmer, who performed treatments using magnets and explained his therapeutic methods using the term animal magnetism. Thus far this consists of the already well known phenomenon of suggestibility, if not falling into a hypnotic state, in which it is possible, even indirectly, to suggest certain behaviors and experiences on the basis of Mesmerism. We can therefore work with the concept of human magnetism as something that is only an imperfect description and explanation of the origin of atypical responses of the human organism to psychic stimuli. When bodily responses to psychic stimuli are described, they consist of responses objectively difficulty to examine.

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The author thanks light expert Stanislav Slabyhoudek from Bulbmuseum for identification of the bulb used at the experiment. www.bulbmuseum.cz, Kralupy nad Vltavou, Czech Republic. He also thanks Ing. Pavel Dostál, Ph.D. for his technical assistance and guidance in using the laboratory equipment.

Nonetheless Kafka (1948) also described experiments in his book, first published in 1925, which we could classify rather as physical, and whose replication is well within the realm of possibility, or at least it would appear so. This consists of one specific passage from his book, in which on p. 96 he describes the following experiment:

> In the air magnetism manifests in light, by which oxygen and water vapor contained in the air are combined and thereby become visible to the naked eye. That magnetism glows and shines is well known to us, and anyone can be certain of this. We take an uninterrupted weak 3W-5W or 10W bulb and enter a completely dark room. In our left hand we take the metal base and with rapid, intermittent touches we lightly graze the glass surface with the fingers and palm of the right. After several passes the bulb and its filament begin to glow with a white-blue light. This magnetic light is composed of radioactive components released from the breakdown of atoms of the protoplasm (molecule) of the cells, which the bulb receives and through whose accumulation begins to light. This illumination can be achieved by any person, some more than others, depending on whether or not one is magnetic. With sufficient effects of magnetism we are able to practice illumination of bulbs of 25-50-100 and higher wattage. If the bulb's filament is disrupted, only its surface will glow. (p. 96)

This categorical and irrevocable claim directly invites validation. If the researcher establishes that the phenomenon occurs regularly in 33%-50% of attempts, we must consider the phenomenon as more or less common. And yet in reality it is not common for us to have seen the illumination of a bulb in everyday life, aside from magic performances and film tricks. It would be a truly excellent demonstration of psychokinesis, as its probability of occurrence would be several orders of magnitude higher than we are used to examining in the field of parapsychology.

The idea of illuminating a 10W bulb, which a large proportion of the population should be capable of illuminating, appears at first glimpse physically preposterous. And yet an individual is capable through one's own mechanical activity of producing a certain amount of electricity using a dynamo, alternator, or via piezoelectric phenomena. Its production is dependent on well-known mechanisms and tools adapted to this purpose. It consists merely of the transformation of mechanical energy to electricity and, in the case of its consumption in a light bulb, of transforming the electric current into great heat, and therefore the light emitting from it. And yet for a minimum of 33% of the population to commonly illuminate a 10W light bulb solely through intermittent touch without any assistive device appears to be a patently nonsensical idea.

On the other hand, it is necessary to consider that Břetislav Kafka - the author of this claim - is considered by many to be the founder of parapsychology in Czechoslovakia. He was a notable and sought-after healer known for his moral conviction. He offered treatments entirely free of charge, and at the cost of his own health, due to his Christian faith. An estimated 15,000 persons consulted him. His renown as a healer was so considerable that even during a time when the Communist Party rise to power proved heavily unfavorable for parapsychologists, he still managed to obtain informal support for the publication of his book in 1949. This would have been impossible for any other author focused on parapsychology at that time. He became a legend during his lifetime, and is known to some of his

successors as the last Czech shaman. I can therefore from this description of his moral profile conclude that conscious deception or conscious manipulation of his results would not correspond to his character. For this reason, while I remain skeptical of his data, I would consider this rather an error, erroneous interpretation, or a disturbance of the senses, if not perhaps the result of unintentional autosuggestion. He was a passionate and devoted healer, but from the perspective of formal experimental psychology he was merely a diligent and devoted dilettante. Although in the context of his activity he used the term "Experimental psychology," it does not fully correspond to the stringency of parameters that experimental psychology would include in today's standards. It is rather based on the recording of his own experiments, not supported by statistical significance.

Theoretical Background of the Experiment

The actual experiment consisting of illuminating a light bulb using mental force is little known, if we do not consider obsolete magic shows operating on the principle of replacing a 230V light bulb with an apparently identical one but with a voltage of 24V and a hidden source of electricity. The attempt to illuminate a more modern LED light can be seen in a video on the internet as the alleged expression of the mental energy of a small child, but the conditions of the video clip are not at all controlled, the bulb is white and the base is opaque – it may with greater probability conceal either a switch or a battery, which nowadays would be ample for delivery of energy.

The only truly reliable reference to the illumination of a light bulb using bioelectric fields can be found in connection with an experiment by the world-famous medium Alla Vinogradova. She illuminated a neon lamp at a distance without contact (Benson, 1972, p.18): "For most people to make a neon lamp glow (the lamp not being electrically connected to anything) they must rub it fairly vigorously with their hands. By this means, one can make even an ordinary electric bulb glow faintly, sufficient to be visible in a dark room." It would seem that the original claim by Kafka more than a half-century later found support here, at least in certain individual facts – friction against an ordinary light bulb and its visible glow. This is another good reason for an attempt to replicate this experiment.

Method

Participants

The sample consisted of university volunteers (N = 23; 5 men, M_{age} = 21.8, SD = 0.75; 18 women, M_{age} = 22.7, SD= 3.59) who participated in practical instructional elective seminars in Experimental Psychology.

Materials

10W – NARVA 240V 10W E14 CLEAR. This bulb contains a vacuum - information obtained from the manufacturer on its customer line.

15W – PHILIPS Standard 15W E27 220-240V P45 CL 1CT/50X10F. The composition of the inner bulb refill cannot be confirmed, because on the basis of customer support: "the manufacturer does not provide this information to the public".

25W – POLAM, type designation: P220-230V25WI76. Manufactured in 1976 in Poland. Based on an expert's statement, this bulb almost certainly contains a vacuum.

Procedure

The students were instructed to rub their hands in the exact manner described by Kafka on a succession of three light bulbs (10W, 15W, 25W) in a dark room. The students worked in pairs – one person was the participant, the other was in the role of the experimenter. They then switched places and after an attempt lasting 5 minutes signed an experiment protocol, inquiring about the degree of belief in the psi hypothesis. The average value of belief in psi varied between rates 2.0 - 2.29, so it was close to "moderate non-belief".

Originally the purpose of the experiment, which was included among other common ones (the effect of stereoscopy, tapping, pursuit test, galvanic skin response, etc.), was for students to gain a rigorous perspective on performing an experiment, and for them to understand the basic premise of the study: "What is not verified cannot be ruled out in advance only because it looks unfeasible or nonsensical." Students were informed about the purposes of data collection and its use for scientific purposes. The communication style of individual experimenters (classmates) was usually friendly and the exercise was supervised by the author, who is an assistant professor.

Results

None of the students managed to illuminate the bulb. With general probability compared to the claim of Kafka of a minimum of 33% success, that is one successful attempt out of three, it should have resulted in 23 positive results – that is, the lighting of the bulb – out of a total 69 attempts. With a statistical comparison using the PAST program (Hammer, Harper, & Ryan, 2001) the expected results and the actual results validated using Chi square indicate that a statistically significant difference exists between the expected results and the measured results. In the case of 69 attempts it is Chi sq(1) = 27.6; $N = 69$; Cramer's $V = 0.44721$; $p<0.001$. Thus, the findings of the sample of Kafka were not replicated with the sample of the experimental psychology seminar.

Analysis of Unsuccessful Attempts and Subsequent Recombinations of Attempts

On the basis of the above results I began looking for the possibility that the mistake was somewhere else. For this reason I returned the study to the reality of the period. It was necessary to consider that, as an artist, B. Kafka might not have seen the difference in the structure of the device used and

could have considered any light with a bulb and standard Edison screw an incandescent light bulb, even a neon lamp, which was not always fitted with a bayonet screw.

And yet there are technically significant differences between the two types of lights: Neon lamps were and are most commonly full of the Penning mixture, which contains 99.9% neon and 0.1% argon (Kruithof & Penning, 1937, in Septhon, Turner, & Leake, 1984). Their inner component contains two electrodes which do not come into contact and after applying sufficient voltage the gas in the vicinity of the electrode gives off light. Without other additive substances, this mixture creates an orange-red light.

Typical bulbs nowadays up to circa 25W do not tend to be filled with any mixture; in other words, they are vacuum bulbs. They therefore do not contain any gas that could display luminescence. Incandescent light bulbs of higher wattage are typically filled with a mixture of 93% argon and 7% nitrogen. (Universal Industrial Gases, 2016). They thereby consist of a filling of different noble gases than a neon lamp. A light bulb also typically contains a spiral filament that joins both electrodes inside the bulb, which becomes heated and glows under the passage of the current following connection to an electricity source.

Because neither the students nor the author managed to obtain the slightest visible display of light, the author purchased larger neon lamps for the following experiment, with me as participant. My attitude about psi in this case is “strong non-belief”.

I attempted to rub the neon lamp exactly as per the original description in a dark room. After a moment it was possible to evoke faint pink-orange flashes of the cloud of gas in the neon lamp, up to a size of approximately 1 cm in diameter through a rapid pass of the bulb with the hand. Stronger flashes of light could be evoked by applying a comb, with which the author had previously combed his hair, and light sparking occurred with a cracking auditory component. I subsequently referred to this unexpected positive outcome at a conference and several members of the specialist audience were also able to evoke light due to friction on the bulb in the presence of witnesses. And yet despite the previous attempts I myself was unable to repeat them in front of the audience – an explanation of this failure is described in the discussion.

Discussion

I can state that with the use of a neon lamp, which has a completely different technical concept and different chemical filling than the light bulb referred to by Kafka, we can actually and rather simply evoke flashes of light through friction on a neon lamp, but not using an incandescent light bulb. The evoking of light through friction on neon lamps and incandescent light bulbs was also previously discussed by Benson (1972, p.18), who classified it as something that the majority of people can achieve. We can therefore confirm the given result of the experiment – that is, that it is realistic to evoke light radiation visible to the naked eye through mere friction on a neon bulb. This regardless of the frequency of such incidents. Even so, certain questions remain. Why did Kafka think he could light up a bulb?

It is very likely that even common incandescent light bulbs in the 30s were full of a different mixture than the currently used argon and nitrogen. Various mixtures of neon, krypton, or xenon could

easily be used. The situation regarding the manufacture of the bulbs at the beginning of the 20th century was very unregulated and only minimal standard existed. If incandescent light bulbs too were filled with an alternative mixture, they would quite probably have given off light.

B. Kafka describes the illumination of the spiral filament of the bulb as well. On the face of it this would of course indicate an incandescent light bulb, as a neon lamp typically does not have a spiral the way an incandescent bulb does. Nonetheless for a lay person a light bulb could have been switched with a neon lamp, as certain types of neon lamps were produced from the 30s with a spiral filament that was not connected with both electrodes, which may not have been apparent at first glance. And if the neon lamp glowed it would not have been clear to a non-expert that the spiral was connected only to one electrode.

Why did B. Kafka describe a different color of light than that which was discovered during the replication of the experiment? Since we cannot examine the equipment used by Kafka during his experiment, we can unfortunately only speculate why he described a blue-white light. Indeed, neon lamps most often used for indication purposes a glow with a pink-orange light. If mercury fumes are added to the neon in a clear or opal glass tube it would have been possible in the thirties to achieve light of blue color (Lněníčková, 2006). Another option is the use of other gas, e.g. xenon, which has a blue light when inserted into an electrical field (Xenon, 2017), which corresponds to a color temperature of 6500 Kelvin (Kuhlo & Eggert, 2010).

In the original text we find somewhat inadequate the explanation that: “magnetic light acts on the radioactive components resulting from breakdown of the atoms of protoplasms” (that is, the parts of live cells) (Kafka, 1948). Such a claim may be explained by the lay knowledge of the time and the inconsistent scientific and linguistic terminology at the beginning of the last century. In Czech, the English concept of “Radiation” may be automatically and incorrectly interpreted as a derivative of the chemical radioactive element “Radium” and logically placed on the same level as the term “Radioactivity”.

And yet radioactivity is ionizing radiation with at least two orders of frequency higher than visible blue light to which Kafka refers. Luminescence may be evoked in a bulb filled with the right mixture (e.g., the Penning mixture) in three different ways: radioactive radiation, increased temperature in hundreds of degrees Celsius, or exposure to a powerful electrical field. Of course in this case a person could be exposed to radioactivity from a secondary source of radioactivity, but this situation is apparently rare.

There is, however, another explanation, in which the continuum of the visible spectrum from blue light further continues into other types of UV radiation, types, UVA, UVB, and finally hard radiation of type UVC. It is UVC radiation at wavelengths at a range of 180-280nm. And radiation at wavelengths lower than 240nm begins to become ionizing. For example, it results in the exchange of oxygen (O2) for ozone (O3) (Navy Environmental Health Center, 1992).

Information about the fact that even the human body can produce UV radiation during meditation in the range of 400nm-200nm has been described in the research of Joines, Baumann, and Kruth (2012). They state that it would be possible to determine only the quantity of photons produced in the measured

range of 200nm – 400nm, but it would not be possible to identify the exact wavelength of the radiation produced by the test participants with the device used (PMT - cooled photomultiplier tube).

If such ionizing radiation could occur in a person at sufficient strength at a wavelength lower than 240nm, the test subject might hypothetically illuminate a light bulb filled with a suitable mixture. Radiation with wavelengths smaller than 200nm for all practical purposes do not propagate and appear only in a vacuum (Ultraviolet Radiation Guide, 1992). Hypothetical ionization radiation would have to be within a very narrow range of 200nm-240nm.

Because we can rule out the influence of the thermal effect that leads to luminescence, just as with radioactive radiation in the classical sense and because we do not have enough evidence thus far about UVC radiation with ionizing effects produced by humans, the most probable influence on the production of light in the gas of a neon bulb can be attributed to electrical fields – static electricity, which was certainly produced during the experiment.

As regards the second part of the claim by Kafka, that light comes from the breakdown of the atomic parts of live cells, this information can be considered inaccurate due to the described breakdown of atoms that occurs only in radioactively unstable elements. In reality, however, the description of the phenomenon during the degradation of cells is distinctly similar to the results of modern research. The research conducted by Joines, Baumann, and Kruth (2012) yielded the information that the destruction of cells by bacteria using oxygen, bases, or oxidants produce a spectrum of radiation over 580nm. This is visible light of an approximately yellow color. The authors also carried out the destruction of red blood cells using several drops of water, which resulted in the tearing of the membrane of the cells and the subsequent emission of ultraviolet light in the visible spectrum. This a surprising result, but even more compelling is the fact that this light phenomenon of dying cells was probably described by Kafka at least 69 years ago!

As a result we can speculate about the fact that if the destruction of cells occurs in exceptional situations in the human body on the basis of psychological or physiological stimuli (for example, exposure to powerful stress), a person could in some way "glow." If sensitive persons with an ability to better perceive a spectrum approaching ultraviolet light existed, it might explain the claims of seeing so-called auras.

If we return to the original experiment with a light bulb, which is meant to be illuminated using bodily magnetism, with today's knowledge and the result of the experiment with the neon bulb we would no longer need to discuss bodily energy as if it were some specific mental power. Now we know that certain gases are lightly ionizable and that a neon bulb produces light on the basis of sufficiently high voltage – in our case, static electricity. This can be produced mechanically at a certain quantity using friction of the hand against the glass, which for certain light sources can lead to ionization. Proper movement (it is necessary to rub the bulb quickly) in the proper environment (low humidity) on the proper experimental equipment (under today's conditions, apparently nothing more than a neon lamp) may elicit flashes of light fairly reliably.

This opinion with reference to the experiments of B. Kafka is also shared by Patrovský (2012). He reached the conclusion, independent of the findings of the author of this article, that this does not con-

sist of radiation produced through magnetism, but static electricity produced by friction. At the same time he adds that the light bulb must be filled with noble gas (he specifically mentions krypton). With today's light bulbs, according to his claim, this experiment cannot be performed. In sum, we can state that the original photoelectric psychokinesis claims of Kafka (1948) are in reality merely common physical phenomena under atypical circumstances.

Conclusion

Despite the negative findings of the experiment, a psychological aspect was discovered that influences the creation of static energy and therefore also the ability to illuminate a neon lamp. Stress. As indicated above, the author was unable to publicly demonstrate illumination (despite having achieved it with 100 percent success in private). The reason was the physiological reaction when responding to stress and increased sweating of the hand.

With a certain degree of benevolence we can therefore accept even this attempt, which is based on physical conditions, as a psychological phenomenon. Its evaluation could hypothetically be possible through measuring physiological manifestations of stress and anxiety. It may be that people more mentally stable and self-assured would have a greater chance of performing this experiment in a manner conforming to the claims of Kafka.

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Echec de Réplication d'une Expérience de PK Électrique

Résumé : L'objectif de cet article est de décrire une tentative pour reproduire le soi-disant phénomène de magnétisme corporel tel que décrit par la figure majeure de la parapsychologie tchécoslovaque Břetislav Kafka (1891-1967). Dans son livre, en plus d'expérimentations focalisées sur les phénomènes hypnotiques dans la pratique thérapeutique, il décrit une expérimentation qui est au centre de cet article. Le soi-disant phénomène de magnétisme corporel est décrit comme étant pouvant causer l'allumage d'une ampoule sans connexion à un pouvoir électrique. L'ampoule est tenue dans une main tandis que les doigts de l'autre main font des passes par-dessus. Selon les revendications de Kafka, l'action d'allumage serait possible pour toute personne en seconde ou troisième position par rapport à celui qui actionne son magnétisme corporel. L'auteur de cet article a répété cette expérimentation avec des étudiants d'un séminaire de psychologie expérimentale à l'université d'Ostrava, avec des résultats négatifs. Suite à modification des conditions pour coller à la réalité historique, l'auteur fut finalement capable de répéter avec succès cette expérimentation avec un allumage qui n'était pas dû au magnétisme corporel.

Ein gescheiterter Replikationsversuch eines elektrischen PK-Experiments

Zusammenfassung: Gegenstand dieses Artikels ist die Beschreibung eines Replikationsversuchs hinsichtlich eines Phänomens, das vermeintlich mit dem Körpermagnetismus zusammenhängt, so wie es in einem Buch von Břetislav Kafka (1891-1967), einem führenden Vertreter der tschechoslowakischen Parapsychologie, beschrieben wird. In Ergänzung zu Experimenten, die sich auf hypnotische Phänomene in der therapeutischen Praxis konzentrieren, beschreibt er in seinem Buch ein Experiment, das im Mittelpunkt dieses Artikels steht. Es beschreibt das vermeintliche Phänomen des Körpermagnetismus, der das Aufleuchten einer Glühbirne ohne elektrische Verbindung bewirken soll. Die Glühbirne wird in einer Hand gehalten, während sich die Finger der anderen Hand über die Birne bewegen. Nach Kafkas Angaben soll sich dieses Aufleuchten bei jeder zweiten oder dritten Person einstellen. Der Autor dieses Artikels hat dieses Experiment mit Studenten in einem Seminar für Experimentelle Psychologie an der Universität Ostrava mit negativen Ergebnissen wiederholt. Nachdem die Bedingungen an die historische Realität angepasst worden waren, gelang es dem Autor schließlich, das Experiment mit der Glühbirne erfolgreich zu wiederholen, allerdings ohne Körpermagnetismus.

No Replicación de un Experimento Eléctrico de PK

Resumen: El objetivo de este artículo es describir un intento para replicar el fenómeno del supuesto magnetismo corporal descrito en un libro de la figura principal de la parapsicología checoslovaca, Břetislav Kafka (1891-1967). En su libro, además de los experimentos centrados en los fenómenos hipnóticos en la práctica terapéutica, Kafka describe un experimento que es el punto focal de este documento. Describe el supuesto fenómeno del magnetismo corporal, que provoca la iluminación de una bombilla sin conexión a una fuente de electricidad. La bombilla se sostiene en una mano mientras los dedos de la otra mano se agitan sobre la bombilla. Según las afirmaciones de Kafka, este acto de iluminación debería ser posible para cada segunda o tercera persona. El autor de este artículo repitió este experimento con estudiantes en un seminario de psicología experimental en la Universidad de Ostrava, sin ningún resultado. Después de modificar las condiciones para que fueran semejantes a los tiempos de Kafka, el autor pudo replicar el experimento de la iluminación pero sin magnetismo corporal.