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RESEARCH NOTE

POSTSCRIPT TO WATT (2014) ON PRECOGNITIVE DREAMING: INVESTIGATING ANOMALOUS COGNITION AND PSYCHOLOGICAL FACTORS

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ABSTRACT. Mörck and Hansen have questioned whether the results of Watt (2014) could be affected by unreported data from participants who dropped out of the study. We welcome this observation and present the results of these unreported trials. We also compare the outcome of the unreported trials with those reported in Watt (2014) and find a significant difference suggesting that the hit rate in Watt (2014) is inflated due to the omission of the dropouts' data.

Keywords: precognitive dreaming, filedrawer effect, precognition

Our online dream precognition study recently reported in the *JP* (Watt, 2014) obtained overall significant results on the planned analysis: 64 hits in 200 trials (32% hit rate where MCE = 25%, exact binomial $p = .015$, one-tailed, effect size (ES) = $z/N^{1/2} = 0.16$. However, as was pointed out in the Discussion, post hoc analyses did not support an interpretation of these results in terms of dream precognition on the part of our participants. For example, the independent judges' ratings of targets were not significantly higher than their ratings of decoys. So the excess hits in the study did not appear to be attributable to the participants' dreams resembling the targets more than they resembled the decoys.

Recently in a Letter to the Editor in the *JP*, Mörck (2015) helpfully raised an issue that George Hansen brought to his attention. This point may help to disambiguate the original study findings. As planned, the end of the study was defined as the first 50 participants to complete four trials (= 200 trials), and the data from any participants who did not complete four trials were discarded. There were 10 participants in the latter group (another 11 did not complete any trials). Statistically, this is not necessarily a problem if participants' departure from the study is random. However, Mörck and Hansen raised the question of whether there could be some pattern to their departure that might have influenced the hit rate on the remaining 200 trials. This would be a form of filedrawer effect that could either raise or lower the published hit rate, contributing to a type I or type II error, respectively. Although participants might depart a study for numerous reasons unrelated to the study itself, one factor that *could* influence participants' decision to depart or stay with the study is their perception of their performance on the precognition task.

Although participants did not receive trial-by-trial feedback on the judges' ratings of their trials, participants *were* given feedback in the form of viewing the target video clip after they had submitted their dream reports. This is because in a precognition study participants' task is to dream about the target clip they will later view. It is therefore possible that participants' continuation in the study might have been influenced by their perception of whether or not their dream predicted the target clip. This could occur in two ways.

First, in line with Tart's (1984) "fear of psi" concept, some participants may have been alarmed if they perceived a strong correspondence between their dreams and the target clip. After all, unlike a telepathy study, in a precognition experiment there is no sender with whom to share responsibility for any seemingly psychic ability. If so, frightened participants might have dropped out of the study, and the independent judges might have judged these trials to be hits. This "frightened by early success" hypothesis would have the effect of reducing the overall hit rate of the study because hits are being discarded, contributing to type II error.

Alternatively, it is possible that some participants may have dropped out because they were disappointed that their dreams did not seem to resemble the target clip. Let us assume on this "discouraged by early failure" hypothesis that independent judges scored these trials as misses. This trend would have the effect of artifactually inflating the overall hit rate of the study because misses are being discarded, contributing to type I error. Since we wish to understand the significant overall hit rate, it makes sense to test this discouraged by early failure hypothesis. We therefore present a post hoc analysis of the scoring of those 10 participants who dropped out of the study before completing four trials, to see whether it is consistent with this discouraged by early failure hypothesis.

The 10 incomplete data participants scored just three hits in 19 trials (15.8% hit rate; exact binomial $p = .53$, two-tailed). Combining their data with that of the 50 participants who each completed four trials gives 67 hits out of 219 trials (30.6% hit rate, exact binomial $p = .04$, one-tailed, ES = 0.12). (A one-tailed p value is reported for this combined analysis because the original planned analysis was one-tailed). The difference between the hit rates (number of hits/number of trials completed per participant) of the 10 incomplete data participants and the 50 completed is significant (Mann-Whitney $U = 149.5$, $p = .04$, two-tailed). These analyses therefore support the discouraged by early failure hypothesis. The combined analysis remains significant by a one-tailed test, so by our planned analysis the psi hypothesis is still supported. But the outcome is no longer significant by a two-tailed test, and the effect size is lower, indicating that the originally reported hit rate is inflated by the omission of the dropouts' data. These further analyses do not change our original assessment that it is difficult to account for the study results in terms of our participants dreaming precognitively.

Seven participants in our experiment completed four trials after the planned criterion for ending the study was reached. Their data were therefore not included in the analyses reported in Watt (2014). Although their data are not relevant for the disappointed by early failure hypothesis, we report them here to bring them out of the file drawer. They obtained five hits out of 28 trials (17.9% hit rate, exact binomial $p = .51$, two-tailed).

Our original *JP* manuscript was submitted in August 2012 and went through four rounds of reviewing and revision before it was accepted for publication in April 2014. This account shows that even with such scrutiny, potential artefacts can be missed, and parapsychologists need to be continually on their guard against both type I and type II errors.

References

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Abstracts in Other Languages

French

POSTCRIPT À WATT (2014) SUR LA REVERIE PRECOGNITIVE :
ETUDE DE LA COGNITION ANOMALE ET DES FACTEURS PSYCHOLOGIQUES

RÉSUMÉ : Mörck et Hansen se sont demandés si les résultats de Watt (2014) pouvaient être affectés par

des données non-reportées par les participants qui ont quitté l'étude en cours de route. Nous recevons cette observation et nous présentons les résultats de ces essais non-reportés. Nous comparons aussi les essais non-reportés avec ceux reportés dans Watt (2014) et trouvons une différence significative suggérant que le taux de succès dans Watt (2014) est exagéré du fait de l'omission des données mises de côté.

German

POSTSKRIPT ÜBER PRÄKOGNITIVE TRÄUME (WATT 2014):
ZUR UNTERSUCHUNG ANOMALER KOGNITION UND PSYCHOLOGISCHER FAKTOREN

ZUSAMMENFASSUNG: Mörck und Hansen haben die Frage aufgeworfen, ob die Ergebnisse von Watt (2014) nicht durch Daten von Teilnehmern hätten beeinflusst werden können, die nicht berichtet wurden, weil sie aus der Studie vorzeitig ausgeschieden sind. Wir begrüssen diese Beobachtung und präsentieren die Ergebnisse dieser nicht berichteten Versuche. Wir vergleichen auch die Ergebnisse der nicht berichteten mit denjenigen bei Watt (2014) und finden eine signifikante Differenz, die darauf hindeutet, dass die Trefferrate bei Watt (2014) als überhöht angegeben wurde, weil die Daten der vorzeitig ausgeschiedenen Teilnehmern nicht berücksichtigt wurden.

Spanish

POSDATA A WATT (2014) SOBRE SUEÑOS PREMONITORIOS:
INVESTIGANDO A LA COGNICIÓN ANÓMALA Y LOS FACTORES PSICOLÓGICOS

RESUMEN: Mörck y Hansen han cuestionado si los resultados de Watt (2014) podrían haber sido afectados por los datos no reportados de los participantes que dejaron prematuramente el estudio. Agradecemos esta observación y presentamos los resultados de esos datos no reportados. También comparamos los resultados de los datos no comunicados con los mencionados en Watt (2014) y encontramos una diferencia significativa que sugiere que la tasa de éxito en Watt (2014) se infló debido a la omisión de los datos de abandono.