Expression of Concern About Dr. Nicolas Guéguen's Article Published in the *Letters on Evolutionary Behavioral Science* (*LEBS*)

In the summer of 2019, some blog posts written by Nicholas J. L. Brown (one of them were jointly written by James Heathers) were brought to our attention. In his blog (Brown, 2017; Brown & Heathers, 2019), he expressed concerns regarding the articles written by Dr. Nicolas Guéguen. In a more formal commentary, Brown and Heathers (2017) summarized their concerns for 10 selected articles that they considered to be of dubious quality. We learnt that one of the 10 articles was published in *LEBS*:

> Guéguen, N. (2012). Risk taking and women's menstrual cycle: near ovulation, women avoid a doubtful man. *Letters on Evolutionary Behavioral Science*, 3, 1-3. https://doi.org/10.5178/lebs.2012.17
> * Henceforth referred to as Guéguen (2012).

Brown and Heathers (2017) questioned the credibility of the means and standard deviations reported in Guéguen (2012), given its experimental setup and conditions.

Shinya Yamamoto, the editor-in-chief of *LEBS*, and Masanori Takezawa, the vice president of the Human Behavior and Evolution Society of Japan (HBES-J; *LEBS* is the official journal of HBES-J), took Brown and Heathers's (2017) concerns seriously, and appointed Yohsuke Ohtsubo (YO), co-editor-in-chief of *LEBS*, to organize an investigation committee. YO recruited two members of HBES-J (Mayuko Nakamaru and Kai Hiraishi) and one non-member (Asako Miura) and commenced their investigation. After carefully examining Guéguen (2012), the investigation committee concluded that although there are some questionable aspects in the methodology and results of Guéguen's (2012) study, there is no decisive evidence to conclude that Dr. Guéguen committed any academic misconduct. However, the investigation committee found some objective errors in the reported results, which are summarized below.

Accordingly, on November 23rd, 2019, they sent an e-mail to Dr. Guéguen to invite him to submit an erratum. In the e-mail, the investigation committee also mentioned Brown and Heathers's (2017) concerns and suggested that, if he wished, he could include some rebuttals against the criticisms. In the e-mail, the investigation committee requested that Dr. Guéguen reply to them by the end of January, 2020. Although the investigation committee sent two subsequent reminders (one on December 11th, 2019,

and the other on January 22nd, 2020), they did not receive any reply from Dr. Guéguen. Accordingly, we decided to publish this commentary based on the investigation.

The investigation committee found the following two errors.

1. Means and standard deviations reported in Table 1

Assuming that the variable labeled "gaze-smile during interaction" is a count variable, and thus takes only integer values, some reported means and standard deviations (*SD*) are implausible. In the high fertility risk group ($n = 15$), the reported mean is 0.32. However, it is impossible to obtain this mean from 15 integer values. The probable, closest mean value is 0.33 (when there are ten 0s and five 1s). However, *SD* is 0.49 for this pattern, which is greater than the reported *SD* of 0.45. Because there is no combination of integer values whose *SD* is smaller than 0.49 (given that the mean is 0.33), it seems impossible to obtain the mean of 0.33 and *SD* of 0.45. For the moderate fertility risk group (n = 20), the reported mean of 0.58 implies that the sum of the count data was 11.6. This also seems impossible.

The investigation committee also considered the possibility that the author took the average of two coders to obtain each participant's number of "gaze-smile during interaction." If this is the case, however, it is equivalent that the author had 30 and 40 integer data points. However, even when this possibility was accounted for, as far as each data point is assumed to be an integer value, it is impossible to obtain the mean of 0.33 and 0.58 ($0.33 \times 30 = 9.9$ and $0.58 \times 40 = 23.2$). Accordingly, the investigation committee concluded that there are some errors in the means and *SD*s reported in Table 1.

2. F-value/p-value

In the Results section, the author reports the significant effect of fertility risk on gaze-smile during interaction, which entails $F(2, 93) = 7.09$, $p = .002$. However, given the *F*-value and the degrees of freedom, the *p*-value should be .0014. Therefore, the investigation committee concluded that there are some errors in this test statistics. There is another possibility that the author could have rounded up the forth decimal place, but this is extremely uncommon in psychology.

Although the investigation committee concluded that there is no decisive evidence of scientific misconduct, they still share Brown and Heathers's (2017) concerns. Moreover, the above errors in statistics severely discredit the scientific value of Guéguen (2012). In sum, we admit that we do not have decisive evidence to retract the publication of Guéguen (2012). However, we would like to advise readers of *LEBS* to exercise great caution in interpreting the reported results in Guéguen (2012).

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References

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