Dear Editor,

We are pleased to submit to *…* our manuscript entitled “**The Structure of Chaos: An Empirical Comparison of Fractal Physiology Complexity Indices using NeuroKit2**”.

Illusions are among the first objects and phenomena studied by early psychologists, and have since then sustained an important scientific (and public) interest beyond the fields of perception and vision, with applications within consciousness science, Bayesian brain theories, and psychiatry. One major issue limiting the growth of illusion science was the difficulty to adapt illusions stimuli to experimental contexts, which ideally require a controlled and gradual modulation of effects and objective measurable outcomes (such as reaction time or error rate).

In this set of pre-registered studies (total participants *n*= 296), we validate a novel and innovative paradigm that allowed us to study the objective effect of visual illusions (in 10 different classical visual illusions) and explore the structure and correlates of the participant-level scores of illusion sensitivity.

This work represents the culmination of several years of effort and planning that started with the development of the *Pyllusion* software (Makowski et al., 2021). Here, we finally make full use of it to investigate both key questions of illusion science (e.g., the presence of a common factor of illusion sensitivity), and explore novel inspiring directions (such as links with personality).

Notably, we discovered strong evidence in favour of the existence of a general factor of illusion sensitivity (that we labelled *Factor i*), and present breaking results on the relationship between illusion sensitivity and seemingly unrelated personality characteristics (in particular, a negative relationship between illusion sensitivity and “pathological” personality traits such as psychoticism, antagonism, and disinhibition).

In conclusion, this is an exciting set of princeps studies which open many doors for discussion and future developments, and represents a real breakthrough in the field of illusion research and beyond.

In line with our aim to set the highest standards of methodological rigour and reproducibility, all the materials (the raw data, the pre-processing script, and the analysis scrip containing additional analyses and the code to generate the figures) has been made fully available in open-access at https://github.com/RealityBending/IllusionGameValidation.

This manuscript is original, not previously published, and not under concurrent consideration elsewhere and the data were collected in a manner consistent with ethical standards for the treatment of human subjects. There is no conflict of interest to disclose. All authors have approved the manuscript and agree with its submission to *…*.

We hope you will find our manuscript interesting and suitable for publication in your journal.

On behalf of all the authors,

Dominique Makowski

dom.makowski@gmail.com