

Methodological Queries Regarding Zhang et al (2014)'s Paper "Exploratory Quantum Resonance Spectrometry"

Thom Baguley¹, Philip Moriarty², Steffen Nestler³, Stuart J Ritchie⁴

1. School of Social Sciences, College of Business, Law & Social Sciences, Nottingham Trent University, UK
2. School of Physics and Astronomy, University of Nottingham, UK
3. Department of Psychology, Institute of Psychiatry, Psychology and Neuroscience, King's College London, UK
4. Centre for Cognitive Ageing and Cognitive Epidemiology, The University of Edinburgh, UK

ACKNOWLEDGEMENTS: This Letter includes some queries first raised on the pseudonymous Neuroskeptic blog (Neuroskeptic 2014), used here with the permission of the author and of Discover Magazine.

Neuroskeptic Blog (2014) The Mystery of "Quantum Resonance Spectroscopy". *Discover Magazine*. Retrieved 8th September, 2014, from

<http://blogs.discovermagazine.com/neuroskeptic/2014/04/20/quantum-resonance-psychiatry/>

Dear Professor Talbot,

We would like to declare our concern with respect to the paper "Exploratory quantum resonance spectrometer as a discriminator for psychiatric affective disorders." This was published in the Journal of Nervous and Mental Disorders in April 2014 by Zhang and colleagues (Zhang et al., 2014).

The authors outline results from a large sample of patients and their conclusions, if established as correct, would be of great clinical importance. Their data was collected using a non-invasive Quantum Resonance Spectrometry (QRS) as a purportedly accurate and reliable tool for the detection of mood disorder symptoms. We are, however, unable to properly assess the validity of these claims because the Methods section of this publication does not adequately describe how the measurements were acquired.

Zhang et al. describe that a "biological wave detection unit" grasped by the patient "recorded the special biological wave and could effectively transform message into electrical signals, which can be dealt by computers, to get [a] resonance score." They go on to outline how "Measurement and analysis released by the brain were obtained through the size of the vibration frequency (weak magnetic field fluctuations in energy) to determine whether there are psychiatric symptoms."

In our opinion, the following fundamental points were left unaddressed:

1. What parameters characterize the "special biological wave"? What biological entity does it originate from?
2. Which amplitude is common for this biological wave? Over what range of frequencies is it typically observed?
3. How are waves transformed into electrical signals by this detection/sensor device?
4. How was the detector calibrated and what is its sensitivity?

5. Were filters used to minimize any background noise and what is the QRS' signal-to-noise ratio?
6. What is meant by the formulation "measurement and analysis released by the brain"? If the detector is held in the patient's hand, how can it detect signals from the brain?
7. What is the nature of the relationship between the biological wave and psychiatric symptoms? In other words, how does the frequency of the former predict any presence of the latter?
8. How does the computer "deal with" the wave signal "to get [a] resonance score"? For instance, in order to obtain the final resonance scores, what mathematical functions were applied to the raw data? Were these processing steps validated and how were they selected? What options are available for processing of the signal and does the choice of options impact on performance?

There are widely accepted standards for scientific manuscripts (ICMJE 2014). This is reflected in the author guidelines for the Journal of Nervous and Mental Disorders (JNMD, 2014). For Methods sections specifically, it is stated that they shall contain: "A precise description of subjects, procedures, apparatus, and methods of data analysis, all sufficiently detailed to allow other competent researchers to evaluate or replicate the study."

While Zhang et al.'s paper contains a reasonably comprehensive description of the subjects involved, it is our perception that it does not specify their methodological procedures, apparatus, and data analyses at a reasonable level of detail or with sufficient clarity to permit readers and fellow academics to evaluate the study thoroughly, nor sufficient to replicate its results.

Yours sincerely,

Thom Baguley, Philip Moriarty, Steffen Nestler, & Stuart Ritchie

References

ICMJE. (2014). International Committee of Medical Journal Editors (ICMJE) Manuscript Preparation Guidelines. Retrieved 9th September, 2014, from <http://www.icmje.org/recommendations/browse/manuscript-preparation/preparing-for-submission.html> .

JNMD. (2014). Journal of Nervous and Mental Disease Online Submission and Review System: Organization of Manuscripts Section 2(c). Retrieved 9th September, 2014, from <http://edmgr.ovid.com/jnmd/accounts/ifauth.htm> .

Zhang Y, Liu F, Shi J, Yue X, Zhang H, Du X, Sun L, Yuan J (2014). Exploratory quantum resonance spectrometer as a discriminator for psychiatric affective disorders. J Nerv Ment Dis. 202:287-91.