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Reply to comment on "Indications and expectations for neuropsychological assessment in epilepsy surgery in children and adults"

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To the Editor,

We read the reply of Baxendale *et al*. (2019a) to our commentary (Patrikelis *et al*., 2019) on "Indications and expectations for neuropsychological assessment in epilepsy surgery in children and adults" (Baxendale *et al*., 2019b) and would like to respond as follows.

What about theory?

The authors state that when proposing recommendations and guidelines for experts around the world it is important to consider a theoretical framework that can be understood and applied by all. However, they do not specify to which precise neuropsychological theory they refer. They also state that the ILAE Neuropsychology Task Force aims to provide evidence-based guidelines which facilitate the communication of results and outcomes across and between centres.

According to Chelune (2010), evidence-based clinical neuropsychological practice (EBCNP) refers to methods for enhancing interactions between research and practice. In particular, Chelune claims "*EBCNP is clinical outcomes research in practice; i.e., the scientific method applied at the level of the individual-hypothesis formation, literature review, study design and data collection, analysis, and conclusion*". It can easily be discerned from this that EBCNP refers to a method rather than a theory framework.

When it comes to epilepsy, evidence-based neuropsychological knowledge (largely based on group studies) indicates, for instance, a lack or even absence of differentiation in terms of cognitive performance between localisation-related epilepsy syndromes (*e.g.* FLE vs. TLE), despite some significant differences found in individual subtests (*e.g.* Upton and Thompson, 1996; Exner *et al*., 2002), leaving a knowledge gap in preoperative neuropsychological diagnosis of the functional deficit zone. We believe that a theory-guided approach (such as that proposed by Luria for syndrome analysis) could bridge this gap. Consequently, we strongly propose that contextualised interpretation, based on theories, should be included in the scope of the ILAE Neuropsychology Task Force guidelines.

We are not opposed to the use of standardised cognitive measures, but do object to the logic of a strict mechanistic statistical approach. Such an approach is inherent to experimental settings, such as those used for conducting neuropsychological group studies, for which research hypotheses are well-defined problems (predetermined by researchers) and thus quite different from clinical neuropsychological practice, where each individual patient represents a clinical puzzle *per se* (an ill-defined problem). This is particularly the case for candidates of epilepsy surgery, given the inherent complexity of both epilepsy and associated clinico-demographic variables. Neuropsychologists are called upon to provide anatomical data prior to surgery, reflecting a constellation of areas involved in the epileptic network.

A false comparison?

We feel that the Lurian model has nothing to do with models such as those proposed by Baxendale *et al*. (functional adequacy vs. functional reserve), which are important models of postoperative memory and cognitive outcome but do not aim at explaining brain function in general. Instead, Luria proposed a complete theory of brain function based on data and observations from a myriad of individual brain-injured patients, upon whom thorough neuropsychological analyses were conducted. What's more, these observations and assumptions were further corroborated and integrated by widely-recognised theories stemming from Soviet physiology and experimental psychology (such as Pavlov's rule of force and Uznadze's fixed orientation or set theory, respectively) to determine the neurodynamic-pathophysiological substrate of such disorders.

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We are highly supportive of the combined use (mixed approach) of standard cognitive measures along with adopting an idiographic qualitative-nomothetic approach. However, what we do propose is not blinkered devotion to, or a dogmatic view of Luria's work, but rather consideration of its implications in the neuropsychology of epilepsy (see Patrikelis *et al*., 2017). The need for theory-based neuropsychological practice along with an evidenced-based method linking research to practice is imperative. We encourage people working in the area of neuropsychology of epilepsy to become familiar with theories of brain function (not necessarily that of Luria) and implement this knowledge to support their clinical decisions. Luria was inclined to strongly reject an approach in which "*auxiliary aids become the central method and in which their role as servant to clinical thought is reversed so that clinical reasoning follows instrumental data as a slave follows its master*" (Cole *et al*., 2014).

Insightful "blindness"

Finally, we believe that the authors (Baxendale *et al*., 2019a, 2019b) in their reply relied upon a very shallow interpretation of our suggestion that neuropsychologists should be blind to other sources of evidence during the initial phases of assessment. In our clinical practice, we frequently feel that there is a bias due to predetermined assumptions concerning morphological or electroclinical findings but not neuropsychological deficits and/or dysfunctions. After a first "blind" impression is formed on the nature of cognitive disturbances, it is imperative that neuropsychologists make use of other examinations (the clinical context) in order to obtain a comprehensive view and reach scientifically-based conclusions. □

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Comment from the Editors of *Epileptic Disorders*

Patrikelis *et al*. have responded to the comments made by Dr. Baxendale and the ILAE Neuropsychology Task Force. The Task Force members agreed that the neuropsychological approach to memory and executive function deficits, based on Luria's concept of functional systems, has the potential to extend our knowledge and practice in the field of epilepsy, but that such an approach does not negate the need for profile analysis and integrating neuropsychological test findings with the results of other neurophysiological and neuroimaging techniques.

It is recommended that Dr. Patrikelis and his colleagues provide evidence for the utility of the Lurian approach for peer review in order to further advance their argument.