

<sup>1</sup>The newsletter title has been changed from **Aphasia Insights to Plasticity Insights** to encompass brain function and plasticity as the foundation of all learning as well as recovery.

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Luria suggested that ... “instead of considering some “centers” for complex psychological processes, he introduced the concept of dynamic structures or constellations of brain areas” and “suggested that each area contains a segment of a functional system, having a particular function, and participating in one or another type of cognitive activity.”

Ardila A, Akhutina TV, Mikadze Yu V. **A.R. Luria's Contribution to the Study of the Brain Organization of Language.** *Neurology, Neuropsychiatry, Psychosomatics.* 2020;12(1):4-12.

Aphasia Nation, Inc. is committed to educating the wider public about stroke and aphasia and the “*Aim High for Aphasia!*” international Aphasia Awareness campaign.

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# Plasticity Insights!<sup>1</sup>

## Alexander Luria: The Working Brain & the controversy over *localization versus function.*

By Tom Broussard, Ph.D.

This is the next in a series of articles about the science and scientists behind the brain, stroke, aphasia, plasticity and recovery.

**Alexander Romanovich Luria (16 July 1902 – 14 August 1977)** was a Soviet [neuropsychologist](#) and is often credited as the father of modern neuropsychology. He designed extensive and original batteries of [neuropsychological tests](#) during his clinical work with brain-injured victims of World War II ([Wikipedia](#)).

Luria was born to Jewish parents in [Kazan](#), east of Moscow. His father, Roman Albertovich Luria was a professor at the [University of Kazan](#) and became a founder of the Kazan Institute of Advanced Medical Education. His mother, Evgenia Viktorovna Khaskina was a practicing dentist ([Wikipedia](#)).

Alexander studied at [Kazan State University](#) and graduated in 1921. He met [Lev Vygotsky](#) in 1924 and was greatly influenced by him. The two psychologists started the Vygotsky Circle that became the [Vygotsky-Luria Circle](#). He was appointed Doctor of Medical Sciences in 1943, Professor in 1944 and established the Kazan Psychoanalytic Society. He also exchanged letters with [Sigmund Freud](#) ([Wikipedia](#)).



Alexander Luria  
(1902 – 1977)

During [WWII](#), he treated hundreds of hospitalized patients with traumatic brain injury but kept up with his research. He wrote [Traumatic Aphasia](#) (1947), but was published only in Russia and not published in English until

1972. His explanations “formulated an original conception of the neural organization of speech and its disorders (aphasias) that differed significantly from the existing western conceptions about aphasia” (Homskaya, 2001).

Luria’s magnum opus, [Higher Cortical Functions in Man](#) (1962), is still a much-used psychological textbook which has been translated into many languages. He also

wrote *The Working Brain* (1973) as a supplement to *Higher Cortical Functions in Man*. The two books are "among Luria's major works in neuropsychology, most fully reflecting all the aspects (theoretical, clinical, experimental) of this new discipline" (Homskey, 2001).

The purpose of *Higher Cortical Functions in Man* is to "analyze the disturbances of higher mental functions caused by local lesions of the brain" and start to understand the mental processes based on the deficits and symptoms of the disturbances (Luria, 1962). *The Working Brain* took the next step towards understanding "the internal structure of mental activity" with the emerging details "of the basic principles of neuropsychological research" (Luria, 1973).

Among the many themes of Luria's decades of research about neuropsychology, resolving the controversy of *localization* (or narrow localization) versus *function* became, in his words, a "crisis" (Luria, 1973).

[Paul Broca](#) had discovered that a lesion in a particular place on the left side of the brain was considered the 'language center' and was focused on and localized in, what became, the [Broca's area](#). But other imagined 'centers' with 'functional maps' had arrived with centers for concepts, writing, mathematical calculation, reading, and orientation in space spurring the debate between localization and function (Luria, 1973).

As [Broca](#) established the Broca's area and [aphasia](#), [Hughlings Jackson](#) established a new hypothesis that "approached from the standpoint of

the level of their construction rather than that of their *localization* in particular areas of the brain" (Luria, 1973). As [Jackson](#) said, "Whilst I believe that the hinder part of the left frontal convolution is the part most often damaged, I do not localise speech in any such small part of the brain. To locate the damage which destroys speech and to localise speech are two different things" ([Brain, 1915, pp. 81, Head, 2014/1926, pp. 50](#)).

Luria's challenge was that the "fundamental forms of conscious activity must be considered as complex functional systems; consequently, the basic approach to their 'localization' in the cerebral cortex must be radically altered" (Luria, 1973, pp 30).

Luria explained that mental functions are incredibly complex and widespread, and are not limited to one circumscribed location or another as the only place where those functions operate within the brain.

As Luria stated, those systems "cannot be localized in narrow zones of the cortex or in isolated cell groups, but must be *organized in systems of concerted working zones, each of which performs its role in complex functional system, and which may be located in completely different and often far distant areas of the brain*" (Luria, 1973, pp 31).

As noted by Luria, it has been difficult to reimagine the operation of the different parts of the brain, not as confined centers, locations, or functions but as the "essential apparatus for *organizing intellectual activity as a whole*" (Luria, 1973, pp 340). But in Pavlov's words, recorded by Luria, "...it is abundantly obvious

here that, for longer than we can tell, the truth is immeasurably greater than all the tiny fragments we have so far been able to discover..." (Luria, 1947, Lecture 22).

This is the case, especially when the whole of the brain *really* is greater than the sum of its parts.

Signed: *The Johnny Appleseed of Aphasia Awareness*

The author is a three-time stroke survivor and has aphasia as a result of the strokes. He continues to recover his language skills.

He is Founder and President, Aphasia Nation, Inc., a non-profit organization whose mission is educating the wider public, national and international, about aphasia and plasticity, the foundation of all learning.

1. Ardila A, Akhutina TV, Mikadze Yu V. A.R. Luria's Contribution to the Study of the Brain Organization of Language. Neurology, Neuropsychiatry, Psychosomatics. 2020;12(1):4-12.
2. Homskey, Evgenia (2001). *Alexander Romanovich Luria: A Scientific Biography*, Plenum Publishers, New York, NY, p. 38.
3. Jackson's papers on Aphasia in "Hughlings Jackson on Aphasia and kindred affections of Speech, together with a complete bibliography of his publications on Speech and a reprint of some of the more important papers." *Brain*, 1915, XXXVIII, pp. 1-190. [Brain, Vol XXXVIII, 1915, on Hughlings Jackson's views on aphasia | Wellcome Collection](#), also quoted in Head, 2014.
4. Luria, A. R., *Traumatic Aphasia: Its Syndromes, Psychology and Treatment*, Translated from Russian by Douglas Bowen, with a forward by MacDonald Critchley. *Janua Linguarum, series maior 5* (1947/1970), Mouton, The Hague.
5. Luria, A. R., *Higher Cortical Functions in Man*. Translated by Basil Haigh. Basic Books, Inc., Publishers, New York. Consultants Bureau, New York (1962/1980).
6. Luria, A. R., *The Working Brain: An Introduction to Neuropsychology*. Translated by Basil Haigh. Allen Lane, The Penguin Press, Penguin Books (1973).

