

Discussion/Diskussie

The translation of the *Luria Neuropsychological Investigation* into Zulu: Its relationship to the work of A.R. Luria and L.S. Vygotsky

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Alexander Romanovich Luria (1902–1977) spent much of his life developing a unique approach to clinical neuropsychology. This approach, which he saw as representative of the 'Soviet' school, involved a qualitative and syndrome-based investigation of disturbed psychological functions resulting from brain injury, which he opposed to the quantitative methods employed by the 'American' school (Luria & Majovski, 1977). Throughout his copious writings Luria repeatedly acknowledged the influence of his colleague and mentor, Lev Semonovich Vygotsky (1896–1934), whose contribution to our understanding of the social nature of mind, Luria maintained, constituted the basis of his life's work (Luria, 1979). The relationship between Luria's and Vygotsky's work takes on a particular significance in South Africa in the light of a recent attempt (Tollman & Msengana, 1990) to translate a systematized version of Luria's method, the *Luria Neuropsychological Investigation* (LNI) (Christensen, 1979), into Zulu. Tollman and Msengana (1990) suggest that, unlike previous translations, their translation required major changes to the LNI because of differences in culture. In support of their argument Tollman and Msengana (1990) refer to another aspect of Luria's work — the research expeditions to Uzbekistan (Luria, 1976) — which they contend provide the rationale for adapting the LNI. In this regard we feel that Tollman and Msengana (1990) are conflating two separate areas of Luria's work and that some aspects of their article do not accurately reflect either the facts of Luria's and Vygotsky's work or the method by which this work should be applied in the South African context. We wish to discuss certain of these features in detail.

The LNI and Luria's research in Uzbekistan

Much of the argument of Tollman and Msengana (1990) relies on the fact that the LNI has previously been translated 'cross-culturally', by no less a person than Luria himself. They state that the 'LNI has been adapted for illiterate Russian peasants' (p. 20), and cite Luria's (1976) research

in support of this. This statement is factually incorrect. Luria's book, *Cognitive development: Its cultural and social foundations* is the publication of original research conducted under Vygotsky's auspices to demonstrate that 'the structure of mental activity — not just the specific content but also the general forms basic to all cognitive processes — change in the course of historical development' (Luria, 1976, p. 8). As such, the research bears no relationship to the LNI. There is no mention of Christensen's (1979) work in the entire monograph, and in fact the term 'neuropsychology' does not appear in the book. Rather than emanating from Luria's later neuropsychological work, the book is the (much delayed) publication of the research findings of Luria's 1931/1932 expedition to Uzbekistan. [Incidentally, Tollman & Msengana (1990) incorrectly refer to the subjects as 'Russian peasants', although Uzbekistan and Russia are separate states within the Soviet Union.] It describes research carried out four years before he turned his attention to neuropsychology (in 1936, see Luria, 1979, p. 56), and almost 40 years before Christensen developed the LNI (Christensen, 1979, p. 9). The relationship between the LNI and *Cognitive development*, suggested by Tollman and Msengana (1990), does not exist.

The implications of Luria's work for Zulu speakers

The LNI makes it clear that tests must be 'within the grasp of any normal — and even a relatively uneducated — subject' (Christensen, 1979, p. 24). Therefore it is surprising that Tollman and Msengana (1990) find certain differences between the cognitive abilities of Zulu and English speakers. These were observed even after translation of the LNI, and were particularly marked in the visuo-spatial sphere. To support these findings they attempt to link their results with those of Luria in Uzbekistan (repeatedly citing *Cognitive development*), together with extensive references to the cultural background of the Zulu people. From this we presume that they attribute the cognitive differences between English and Zulu speakers to cultural variation. We believe that this conclusion reveals a general misunderstanding of Vygotsky and Luria's theoretical formulations.

Although characterized as 'cross-cultural' by some western researchers, Vygotsky's theory (and Luria's expedition) is more properly seen as 'cross-historical' in so far as they 'were concerned with the influence of sociocultural institutions from one historical era on the cognitive activity of individuals whose socialization had occurred amid institutions from another era' (Wertsch, 1985, p. 34). In this regard Uzbekistan in the early 1930s presented a unique research situation because the region was experiencing a fundamental change in its socio-historical development. Because of the unequal penetration of the process of collectivization in Uzbeki society, Luria could assess the effect of historical change on a continuum of illiterate to literate subjects. On the basis of his research findings Luria concluded that 'as the basic forms of activity change, as literacy is mastered, and a new stage of social and historical practice is reached, major shifts occur in human mental activity' (Luria, 1976, p. 161). In other words, the change from graphic-functional to formal mental activity occurred among the Uzbeki people. Significantly, therefore, these

differences occurred *regardless of culture*, because cognitive functions 'do not have an *a priori* spiritual character, but are the product of historical development' (Luria, 1971, p. 568). Understood in this way, the emphasis placed by Tollman and Msengana's (1990) on the spiritual characteristics and cultural traditions of the Zulu people (pp. 23–24) is not supported by Luria's research.

In misrepresenting the work of Luria and Vygotsky, Tollman and Msengana (1990) propose an argument which carries implications of which we presume they were unaware. Its basis is the assumption that the cognitive differences (i.e. poor visuo-spatial abilities) found in their sample are valid for all Zulu speakers, because they share a common belief system. Their sharp division between groups based on culture is further supported by the fact that they employ the unfortunate term 'species specific' (p. 23) to refer to differences in the cognitive abilities of children within each culture. (We read this phrase as a confusion of the terms 'culture' and 'species', an error which carries potentially racist implications which we assume they did not intend.) Their paper suggests that the performances of '21 Zulu women in domestic employ' (p. 21) are representative of *all* Zulu speakers because of their common culture — a dangerous assumption. This argument might be read as implying, for example, that it is unsuitable to train Zulu speakers as engineers, since they have demonstrated that (all) Zulu speakers have poor visuo-spatial abilities. This clearly ignores the fact that the potential for learning bears no relationship to the belief system (or 'cultural background') of an individual, and furthermore fails to acknowledge that many Zulu speakers are no longer raised in the 'Zulu culture'.

Luria's neuropsychology

Tollman and Msengana (1990) see the LNI as intimately related to Luria's work in clinical neuropsychology, and as deriving much of its benefit from this association; for example, they note that the LNI is 'unique in its linkage to an overall theory of brain function' (p. 20), which we presume refers to Luria's model. Thus they align themselves with the 'Soviet' school of neuropsychology (as one of the authors has explicitly done in a previous publication on the LNI; Watts & Tollman, 1980). However, Luria himself has provided an extensive commentary on the differences between 'Soviet' and 'American' neuropsychology and, based on this, we find that the approach to assessment which Tollman and Msengana (1990) describe does not appear to be representative of the 'Soviet' school.

For example, the Soviet approach relies on a detailed knowledge of the patient's medical history, while Tollman and Msengana (1990) offer no information on the history or presenting features of their five cases. Indeed, they adopt the 'American' method of assessing patients 'blind' (p. 21), while Luria notes that the Soviet approach is characterized by the development of a 'working hypothesis of the patient's presenting problem, *in contradistinction to a 'blind' approach* (Luria & Majovski, 1977, p. 962, emphasis added). Furthermore the fact that the LNI 'was administered' (Tollman & Msengana, 1990, p. 21) to subjects suggests that the *entire series* of tests was given to all patients

(as one must do if a patient is assessed 'blind'). This routine administration of a set of tests accurately fits Luria's description of 'American' neuropsychology, which involves 'a battery of tests, administered in the same ... systematized fashion to all patients' (Luria & Majovski, 1977, p. 960). Thus, using Luria's criteria, it seems that the approach of Tollman and Msengana (1990) would be far more appropriately categorized as part of the 'American' tradition in neuropsychology. The adoption of such an approach, however, may well not be suitable for use in the South African context, given the fact that patients seen by South African neuropsychologists vary greatly with regard to educational background. It would seem more appropriate to employ the far more flexible (Soviet) approach to assessment, and to rely on qualitative results and the syndrome approach (which has been so successfully employed in clinical medicine).

In fact, the LNI makes it clear that the neuropsychological examination is an integral part of the general medical investigation (Christensen, 1979, p. 24) and, although not all neuropsychologists can be expected to have undergone medical and psychological training (as Luria did), a basic knowledge of the fundamentals of anatomy and pathology can be expected. However, the attempts at localization described in the article by Tollman and Msengana (1990) appear not to reflect such a knowledge. They describe five subjects on whom they attempted to find agreement between the LNI and CT scan reports. In four of their cases (Subjects 1, 2, 4 and 5) they cite *no* evidence of intracerebral injury, data which would normally be considered mandatory for a localization study. Instead Tollman and Msengana (1990) base their study largely on the location of *cranial fractures*, although localization based on this technique is notoriously unreliable (Kertesz, 1983, p. 14).

Tollman and Msengana (1990) attempt only one true localization on a patient who *had* a clearly visualized brain injury (Subject 3). Here the CT scan showed '*several ... intra-cranial foreign bodies*' and patchy oedema '*throughout both cerebral hemispheres*' (p. 22, emphasis added) — clearly a case which is highly unsuitable for the purposes of localization. Our perusal of the CT scan reports suggests that many of their cases (perhaps all but Subject 5) had suffered a traumatic head injury, implying that a localization study was attempted with a type of pathology entirely inappropriate for the purposes of localization (Damasio & Geshwind, 1985). Only in one case (Subject 5) does head injury appear to be an unlikely cause of pathology. However, in this case the radiological findings (we presume X-Ray) indicate atrophy at the base of the skull consistent with raised intracranial pressure — a finding of no localizing significance. Without entering into a discussion of specific details of the other attempts, we feel that it is quite unjustified for Tollman and Msengana (1990) to propose that there is 'agreement' (p. 22) between their findings and the CT scan reports. Moreover, one might question the need to carry out a localization study on Zulu speakers in order to validate the LNI. Is it really necessary to verify that Zulus have psychological functions organized within the brain in the same manner as people from other 'cultures'?

In conclusion, we feel that several aspects of both Luria's and Vygotsky's thinking have been incorrectly represented

by Tollman and Msengana (1990). The manner in which their translation was verified, the principles underlying this process, and the conclusions which they have drawn from these findings demonstrate an apparent lack of familiarity with the fundamental theoretical assumptions of the work of Luria and Vygotsky.

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The translation of the Luria Neuropsychological Investigation into Zulu: Its relationship to the work of A.R. Luria and L.S. Vygotsky. A reply

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I have read the above discussion (SAJP vol. 21, no.1, 1991) with interest, and I would judge that the author has failed to consider the following issues:

1. Luria's Neuropsychological Investigation

The origin of Luria's Neuropsychological Investigation (LNI) stems from his book entitled *Higher cortical functions in man* (first edition 1966, second edition 1980) to which the authors make no reference.

1.1 Objectives

In this seminal work, which is crucial to the understanding of the LNI, Luria outlines his theory of the Functional Organisation of the Brain, the objective of a Clinical Neuropsychological Investigation, and the procedure to be utilized for its execution. He wrote 'The principal objective of the study of the higher cortical functions in the presence of local brain lesions is to describe the general pattern of change taking place in mental activity and, from this, to identify the fundamental defect, to determine the secondary systemic disturbance, and in this way to attempt to explain the syndrome resulting from the fundamental defect' (p 387).

1.2 The difference between a 'process' approach and psychometric testing

It would seem that the difference between the neuropsychological 'process' approach to assessment and psychometric testing needs clarification. Luria clearly explains: 'Psychometric tests intended for the purpose of obtaining preliminary information on the psychological make-up of an individual for diagnostic purposes may, in principle, be divided into two different types. One type (exemplified by the Binet-Terman tests or any of their variants) utilizes a series of empirical problems whose psychological significance is difficult to determine but which allows a quantitative evaluation of successful performance so that the subject can be graded in a particular population. However, these tests provide no basis for the qualitative analysis of the psychological abnormalities on which the subject's defects are based ... The second type of psychometric test is designed for the study of particular mental functions: their objective is to reveal the degree of disturbance of each of these functions and to express this degree "quantitatively"' (p. 389). Examples cited are tasks such as the Wechsler-Bellevue series, and even 'the well-known series of tests suggested originally by Halstead (1947)' (p. 389.) Luria maintained that although this type of evaluation 'may indicate the degree of functional impairment in a particular subject, it is quite unsuited for determining the qualitative features of the disturbance and is even less suited for analysing the fundamental defects responsible for the impairment' (p. 390).

Turning to the neuropsychological investigation, he wrote that 'The result of the neuropsychological investigation must never be limited to the simple statement that a particular form of psychological activity is "impaired" ... it must indicate, as far as possible, the character of the observed defect and the causes or factors responsible for the appearance of this defect ... If a technique used in neuropsychological investigation permits a qualitative analysis to be made of one existing disturbance, and if it enables the effect of this disturbance on the whole range of the patient's mental activity to be studied, the result obtained will be reliable and of diagnostic importance' (p. 391.).

In summary, Luria's 'process' approach consists of an individualized case-study. It is a syndrome analysis based on the principle of double dissociation. The investigation proceeds according to a hypothetico-deductive process, to examine each of the higher mental processes. The list of

behavioural symptoms collectively constitute a behavioural syndrome that has developed in response to a particular form of brain injury. Thus the neuropsychologist, Luria pointed out, 'must have a clear idea of the syndromes arising from brain lesions in various locations, and he must direct his investigation to the discovery of one of these syndromes. The investigation satisfying these requirements must include a *sufficiently wide range of absolute definitive tests* to act as a guide among the great variety of disturbances that may arise from local brain lesions' (p. 390). It is clear that although Luria's neuropsychological investigation does not stipulate the use of a specific invariant number of tests for each individual, a whole range of tasks, tapping many different aspects of information processing for each of the higher mental functions must be available to the neuropsychologist for each neuropsychological investigation in order to achieve internal reliability and to identify the syndrome. For example, the cause or underlying factor leading to a particular speech difficulty as a consequence of head trauma, can only be reliably isolated when investigated within a holistic context that includes a wide range of behaviours, and is linked to a coherent theoretical underpinning.

A clear and easily understandable interpretation of Luria's conceptions is to be found in a publication entitled *An introduction to Luria's aphasiology, theory and application* by Kagan and Saling (1988).

2. Anne-Lise Christensen's formulation of Luria's Neuropsychological Investigation: A collaboration.

Anna-Lise Christensen's formal outline of Luria's Neuropsychological Investigation consists of a manual and a text. In the foreword to her text Luria himself wrote: '... we deeply appreciate the attempt of our friend and colleague Anne-Lise Christensen, to give not only a description of the neurological technique we use for the diagnosis of focal brain lesions, but to describe the very complicated methods for evaluation of the symptoms found, i.e. the careful qualification of the symptoms which can have different psychological structures and different meanings with different localizations of the injury' (1979, p. 8).

In her preface Anne-Lise Christensen stated 'During a three weeks' stay in Moscow in September–October 1970, I studied the methods of neuro-psychological investigation at the laboratory of Professor A.R. Luria at the Burdenko Neurosurgical Institute. At the end of my stay I presented my outline of *Luria's Neuropsychological Investigation* to Professor Luria. The outline was in Danish ... my immediate aim was to be able to carry out investigations along the lines described in "Higher Cortical Functions in Man"'.

Luria's first comment was: 'Of course it is a vulgarization — but I have always wanted someone to do what you have done.' He also suggested an English version so that he himself could make comments and corrections, which he did during my second stay at his laboratory in May, 1972' (1979, p. 9).

Christensen maintained that 'The theories put forward by A.R. Luria introduce new ways of thinking which also comprehend, combine and extend previous theories' (p. 9) and 'clarifies the demands made on the clinical psychologist in

the performance of the LNI' (p. 10). She wrote further 'It is true of this investigation, that the use of the method demands skill and knowledge. Human brain functions being so complex as they are, simpler methods cannot be expected to provide the same amount of information, and it does seem more reasonable to advocate for the training of and study by those who use the tool rather than simplification of the tool itself' (p. 13.). Christensen points out that although this investigation will assist in the topical diagnosis of brain lesions, today 'of far greater importance is the knowledge that can be gained by means of the method to plan rehabilitation programs, and work both in Europe and in the U.S.A. is in progress based on A.R. Luria's and L.S. Tsetkova's results' (p. 13).

The importance of translating, Christensen's outline of Neuropsychological Investigation into Zulu is only one step towards adapting this instrument for effective use with all the diverse communities which make up our South African population.

3. The troika 'Luria, Vygotsky and Leont'ev'

'The names (Luria and Vygotsky) are traditionally linked. Anyone who has the least interest in the history of Soviet psychology knows that Alexander Romanovich Luria (1902–1977) was a student of Lev Semenovich Vygotsky (1896–1934). In the 1920s they, together with Aleksei Nikolaev Leont'ev (1903–1979) formed the so-called troika that has played such an important role in the development of Soviet Psychology' (Radzikhovskii & Khomskaya, 1981, p. 3).

The exact influence that each of these great men had upon each other has created much interest [e.g. see the articles of the Luria Memorial Issue of *Psychological Research* (41), 2–3, 1980]. Leont'ev's important contribution has been touched on in Section 2, and will not be elaborated in this reply.

Radzikhovskii and Khomskaya focused upon the question 'What importance did his contact with Vygotsky have for Luria's scientific career?' (1981, p. 3). They argue, however, that 'The opposite question is no less important: 'What role did his contact with Luria have in Vygotsky's scientific career?' (p. 19). These authors claim that 'the expression "Luria was the pupil of Vygotsky" has become a permanent part of the assumptions of Soviet psychology. But what, in fact, is a scientist as pupil and a scientist as teacher?' (p. 7). They point to a number of paradoxes in the assumption of Luria, the pupil, and Vygotsky the teacher. For one 'It would seem that Vygotsky could not have been Luria's teacher simply because he entered scientific psychology later than Luria. Luria was already quite a well-known scientist in his own right ... it was Luria who introduced Vygotsky in the capacity of psychologist. Furthermore, Vygotsky had not only never formally been Luria's scientific director but ... to his very death, had never occupied a higher official position than Luria' (p. 5.) Another paradox highlighted by these authors is that 'Luria is known to psychologists throughout the world first and foremost as one of the founders of a new branch of science — neuropsychology. Though the range of his interests was broad, neuropsychology remained the focal point of his

research throughout approximately the last forty years of his life ... But all this work was done, for the most part, after Vygotsky's death' (p. 4-5). These authors point out that Vygotsky 'had a number of things to say in this domain, which were incorporated into the theoretical underpinnings of contemporary neuropsychology (Luria, 1973). But, they asked, 'Can Vygotsky be considered one of the founders of neuropsychology?' (p. 5). Wertsch, in his editor's introduction to *Language and cognition* by A.R. Luria, identified three major themes 'that characterize the research of both men: (1) the use of genetic (or developmental) explanation, (2) the search for the social origins of human psychological functioning, and (3) an emphasis on the role of sign systems in mediating social and individual processes. These three themes provided the cornerstones of Vygotsky's attempt to reformulate psychology on Marxist foundations. They have guided the research of Luria' (p. 3).

4. Luria's Neuropsychological Investigation and cultural considerations

An LNI is administered in order to investigate the way in which a brain injury has interfered with the cognitive activity of an individual. Discovering the nature of the processing deficit is crucial for understanding the behavioural changes that have occurred, for management, and for planning appropriate rehabilitation programmes. Acknowledging that their cultural environment impacts upon the way in which an individual thinks and interacts with the world means that cultural factors need to be accounted for when behavioural interpretations are being made.

A distinction must be drawn between two different issues. One concerns the restructuring of a productive tool for the identification, management and rehabilitation of head-injured persons, so that it becomes accessible to the majority of South Africans, and the other is an attitude issue. It is to the former that we, and our two Zulu collaborators (a psychologist and a teacher), addressed ourselves.

4.1 Luria and the development of mental activity

In his book *Cognitive development its cultural and social foundations* Luria wrote 'It seems surprising that the science of psychology has avoided the idea that many mental processes are social and historical in origin, or that important manifestations of human consciousness have been directly shaped by the basic practices of human activity and the actual forms of culture' (1976, p. 3).

Luria's investigation into the working brain included research conducted cross-culturally, with developing twins, and also with the effects of signs and symbols. All these studies strengthened his belief that 'the higher human mental functions are complex reflex processes, social in origin, and conscious and voluntary in mode of function' (1980, p. 30). An explanation of this definition is beyond the scope of this paper. If these functions are social in origin, however, the prevailing culture would influence the way individuals interpret the language, the signs and symbols of their world, and they would act according to the goals of their society.

4.2 Luria's procedures and his cross-cultural research

In all his research work, Luria used the same tasks and procedures he outlined in *Higher cortical functions in man* to discover the different ways in which people engage in cognitive activity. These are also included in the LNI. That Luria then proceeded to imply, intentionally or unintentionally, some type of hierarchical order to his findings in terms of cultural evolution, as in the then current German-European tradition, is a different issue and had disastrous consequences for him (e.g. Cole & Cole, 1979; Zaporozec, 1980). 'For example, I could not find any report of the results of the Central Asian expeditions prior to the late 1960's save in an abstract in the *Journal of Genetic Psychology* (Cole & Cole, 1979, p. 214-215).

As Nell, 1990, pointed out 'Cross-cultural sensitivity to a family's "indigenous background" is praiseworthy in so far as it attempts to contextualize the family within its ecology. However, South African psychologists need to be aware of the now widely acknowledged Colonial roots of cross-cultural psychology. ... While the true aim of cross-cultural psychology is to develop a science of human universals, this discipline's research agenda was for many years determined by the needs of Colonial agriculture and industries' (p. 142).

5. Brain-damaged patients and the LNI

The objective of our study was to make the LNI accessible for use with all the Zulu-speaking people in our country. Since the purpose of the LNI is to identify the behavioural syndrome in the presence of brain trauma, it was logical that 'to assess the effectiveness of the Zulu version, it was administered "blind" to five brain-damaged persons' (Tollman and Msengana, 1990, p. 21).

5.1 Administration of the LNI

A distinction needs to be made between the administration of the LNI for research purposes and in clinical practice. In this research project, all items needed to be explored. Similarly, Kagan (1982) followed the procedure 'carried out in full in this case for research purposes' (p. 231), and Kagan and Saling's (1988) symptom chart (p. 36) is a complete list as per the LNI (Christensen, 1979).

5.2 Validation of the LNI

Luria himself wrote of the need to use the LNI in conjunction with medical data, and in particular with modern radiological techniques. Luria and Majovski (1977) wrote '... it has become necessary to correlate the discoveries obtained by modern techniques of neuroradiology with the neuropsychological data concerning the nature of the disturbance observed in order to put the clinical neuropsychological method on a valid foundation' (p. 962).

In conclusion, it seems that the authors of the article in question have attached a meaning that was not intended, and an interpretation that is sometimes spurious and fails to comprehend the fundamental objective of the research. By stating what an individual can or cannot do at a particular moment in time in no way negates the dynamic nature of human behaviour.

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