

## Conference Paper

# Existential Neuropsychology: A Science of Making Values

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## Abstract

In neurorehabilitation and restoration of motor functions, there are Vygotsky-Luria's line and Leontiev-Zaporozhets' line that are obviously connected, but their connection isn't articulated enough. Their point of convergence dates back to mid 1940s, but since then the development of the two lines was largely parallel. And the missing link is Nikolay Bernshtein's non-classical biology of purposeful activity. Both lines are intrinsically based on his predictive explanatory framework, with the central role of task set in movement construction, which, in turn, determines the hierarchy of levels where backward reafference ('sensory corrections') takes place. Current neurorehabilitation disregards the Bernsteinian idea of the central role of values and meanings in the recovery of movements, which opposes neurohabilitation as training, or instruction, to neurorehabilitation as guidance, the latter relevant to Leontiev's 'personal meaning' problem. Neurorehabilitation as guidance is generation of the personal meaning, or 'making values', allowing to overcome bounds perceived as insuperable, the idea that brings it together with existential psychology and existential psychotherapy.

**Keywords:** rehabilitation, task set, value, image of the desired future, physiology of activity, existential neuropsychology, personal meaning

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## 1. Introduction

Among the core principles in the understanding of human personality is the principle of polymotivation ([1]; for the discussion of this principle in the contemporary context, see: [2]). Human life is driven by a vast variety of motives which sometimes confront, and sometimes form a very special value-based life strategy. The principle of polymotivation fully applies to the life and work of Alexander Luria. Some call him a father of neuropsychology, others – a founder of neurolinguistics, still others name him among

the key figures of the cultural historical psychology. Western specialists in the history of science continue this list, placing his name among the founding fathers of cognitive science [3], together with the famous constructivists in psychology Frederic Charles Bartlett and Jean Piaget.

Each of A.R. Luria's titles is not just a title, but a symbol of an accomplished project of his life. This article will elaborate on one more project, not fully accomplished, but being still under accomplishment. This project could be named 'Existential Neuropsychology'. It might be traced both in the earliest Luria's works, such as 'The nature of human conflicts' [4], and in his general-audience books such as 'The Mind of a Mnemonist: A Little Book About A Vast Memory' [5] and 'The Man with a Shattered World: The History of a Brain Wound' [6]. Beyond all these studies, one can clearly see Luria's idea that the power of human self might help to overcome irrepressible conflicts, including those related to the impairments of higher mental functions. Most of all, this general approach is relevant for the Luria's book 'The Man with a Shattered World' [6], which can be considered a manifesto of existential neuropsychology. Its original Russian title, 'The World Lost and Found', turns the reader to the famous poem by John Milton, a blind British poet, about yet another irrepressible inner conflict and the psychological struggle between good and evil.

To reveal the unique role of this Luria's book in the contemporary psychology and to describe the Existential Neuropsychology project more comprehensively, we should place this book in the context of some other works published after the World War II, in mid 1940s, which, taken together, bring forth a framework of existential neuropsychology. Among them are 'On the Construction of Movements' by Nikolai Bernstein (published in 1947), 'Rehabilitation of Movements. A study into the rehabilitation of hand movements after the war injury' by Alexey N. Leontiev and Andrey Zaporozhets (published in 1945), 'On the dependence of the range of movements on the psychological nature of the task' by Petr Galperin and Tamara Ginevskaya (published in 1947), and... 'Man's Search for Meaning', or 'From Death-Camp to Existentialism' by Viktor Frankl (published in 1946). All these seemingly scrappy fragments of a mosaic form a Gestalt of existential neuropsychology if we specify its key principle after Galperin and Ginevskaya [7] as overrunning the bounds which seem insuperable. In fact, the personality's existence beyond the limits which seem insuperable is a core principle of the existential psychology.

To explain this seemingly paradoxical thesis, which links remote concepts, we need to address two well-known lines of research in the rehabilitation of movements. The first line dates back to Luria's book 'Rehabilitation of brain function after the military

injury' (published in 1945) and can be labelled as '*Rehabilitation as Instruction*'. It can be described after Lyubov Tsvetkova, Luria's disciple and co-author, as construction of a new functional system on the basis of unimpaired afferentations [8]. The second line can be traced back to the studies by Leontiev and Zaporozhetsk from the same years [9] and can be labelled as '*Rehabilitation as Guidance*'. Here, rehabilitation is understood as transformation of motivational sets of the personality and of personal meanings, or as construction of values. Surprisingly, there was a paper by Leontiev and Luria 'Psychophysiological ways of rehabilitation of functions after the military injury' [10] integrating these two lines, which has been published in 1947. It is the paper that unequivocally introduces the key method of neurorehabilitation as guidance: involving the function to be rehabilitated into the dynamic personal meaning system.

Introducing the principle of involvement of the function in the dynamic personal meaning system, they rely upon the N.A. Bernstein's physiology of activity [11, 12], a frequently overlooked missing link which brings together approaches to rehabilitation proposed by Luria, on the one hand, and Leontiev and Zaporozhets, on the other. Nowadays, this approach becomes demanded again in the studies of human movements [13]. In his model, Bernstein replaces the traditional physiological concept of 'reflectory arch' by the 'reflectory ring' and introduces the principle of backward afferentation, providing for the continuous construction of the movement in accordance with the task at hand and the current environmental conditions. It is the task that generates the functional organ of the movement. The movement itself is constructed and regulated at several hierarchically organized levels, among which the leading level fits the nature of the task and the so-called background levels correspond to the conditions of the movement performance and provide for the necessary sensory corrections. Bernstein performs a detailed analysis of four such levels: the level of tonus (A), the level of synergies (B), the level of space (C), and the level of actions (D). Their involvement and hierarchical organization are determined by the task, with lower and evolutionary older levels subserving the leading one.

The concept of task is the cornerstone of the Bernsteinian predictive physiology of activity. The use of this concept makes the whole framework applicable not only to motor action, but also to perception and attention [14], revealing their constructive nature [15]. The main implication is that the meaningful image of the future (not the expected result of the movement, as it is supposed in Petr Anokhin's functional systems approach) becomes a predictor of the leading level of movement construction. In his 'On the Construction of Movements' [12], Bernstein explains how values and personal meanings change the coordination of movements. For example, with

a knife one can cut paper or bread, but the situation drastically changes 'when the subject with a knife is Damon, Sand, or Charlotte Corday', and 'the analysis of motor composition of such acts presumes a higher coordination level' (cit. Russian edition). What Bernstein means is that this intentional act is beyond the other high levels of the coordination of movement (such as the level of actions with objects, which normally controls operating a knife). Moreover, he continues that in such actions there might be 'more hierarchically arranged levels or, which is the same, more hierarchically layered coordinating recoding than the number of levels we've described, including the level of actions with objects' (ibid). So, the Bernstein's idea is that value-based, motivated actions require the highest level of coordination. And we can trace the development of this line in the aforementioned works on rehabilitation, for example, in Leontiev and Zaporozhets' 'Rehabilitation of hand movements after the war injury'.

Galperin and Ginevskaya's study of rehabilitation of the hand movement [7] is literally an empirical implementation of this idea. In their study, they used tasks which either possessed or did not possess a personal meaning for the patient, or, in other words, provided either for a goal-based set or for a value-based set. More specifically, they demonstrated how the range of the hand movement drastically increased when they instructed the patient either to raise the hand as high as he could, or to reach the highest mark on the screen, or to pick up his hat from the rack. Galperin and Ginevskaya documented 'an abrupt and sudden increase in the movement efficiency, *well beyond the bounds which seemed insuperable*, due to the change of the task psychological structure ([7], p. 79, italics added – A.A., M.F.). What they discovered was the effect of the motivational set, or the effect of the meaning structure change, which in turn changes the conditions of afferentation and control of the movement. It is this change which provides for overcoming bounds perceived as insuperable, in line with the core principle of existential psychology. And the essential function of this system to be recreated through neurorehabilitation is, according to Bernstein's physiology of activity framework [11], prediction of the future movement.

Thus, the principles beyond this experiment are not the principles of rehabilitation as instruction which rests upon cultural meanings, but rather the work with personal meanings and motivation. Within the theory of activity framework, rehabilitation as instruction transforms task-related goal sets and thus operates at the level of separate acts, and rehabilitation as guidance transforms motivational or personal meaning sets, mediating movements at the level of the whole activity. That's exactly what Luria writes in 'The Man with a Shattered World: The History of a Brain Wound' [6]: "And what an astonishing result of the wound: it didn't affect at all the world of his feelings,

the world of his creative enthusiasm, and his personality – the personality of a human being, a citizen, a fighter – remained absolutely intact!” (cit. Russian edition).

The tradition of N. Bernstein, A. Luria, A. Zaporozhets, together with Olga Protopopova’s research into the ‘inner postural adjustment’, was continued in the investigation into the change of personal meaning sets in oncology patients [16, 17] and in the study of non-verbal communication as transmission of personal meanings [18, 19]. In these works, the main principles and techniques of rehabilitation as guidance have been formulated.

The most important among the techniques of the existential rehabilitation is the social position change in the situation of cultural shock. A patient always experiences cultural shock, and his or her axiological position inevitably differs from those of the surrounding people. And what becomes essential here, according to Luria and Bernstein, is to rely upon inner unimpaired personal meanings and sets. Hooking these personal meanings and value sets is the best way to initiate the whole process of rehabilitation. At the same time, for the successful rehabilitation it is no less important to involve the Significant Other [17]. Without the Significant Other, no value-based rehabilitation is possible. And the most important techniques we’ve already mentioned are engagement in the personally and socially meaningful activity and demonstration of the patient’s action’s importance for other people. The core principle of existential neuropsychology is activity mediation of motivational and personal meaning-based personality structures, which most closely resemble Bernstein’s ‘higher coordination levels’.

Non-verbal communication is of central importance here due to its function of transmission of personal meanings. Relying upon the unimpaired personality sets as a rehabilitation technique is possible through the body language, or, in Zaporozhets’ terms, ‘inner postural adjustment’ as implementation and expression of personality meanings and personality experience. Zaporozhets, in turn, expanded some ideas put forward by O. Protopopova, who studied meanings in the movements of children with developmental disorders under Lev Vygotsky’s supervision, and proposed the method of correction of personality disorders in children through movements.

The human cultural history produced a lot of techniques allowing to proceed from covert to overt meanings. Analyzing the theory of stage movement proposed by Stanislavsky, Luria demonstrates how intentional movements, directed movements uncover personal meanings of heroes [20]. After the cinematograph had become enriched with sound (which some theorists consider as a step back from metaphorical cinema), in the contemporary art there remained two activities mostly relying upon

non-verbal communication transmitting personality meanings: balley and pantomime. However, in the theatre, according to Luria's analysis of Stanislavsky's theatrical system, it is the expression of covert meanings which is the most elaborate part of this system. And the investigation into this experience and into the relevant cultural practices might be of importance for rehabilitation as guidance, based on the transformation of personal meanings and personality sets, or making values.

A renown American neuropsychologist and writer Olives Sacks [21, 22] can be considered as a follower and a representative of the existential neuropsychology line. His descriptions of the personality transformations through making or recovery of the personal meaning are always descriptions of overcoming, going beyond the limits. In a famous quotation from 'An anthropologist on Mars', he says: "Defects, disorders, diseases, in this sense, can play a paradoxical role, by bringing out latent powers, developments, evolutions, forms of life, that might never be seen, or even be imaginable, in their absence" [22, p. xii]. Why has Sacks attracted so much attention nowadays? His books set a unique motivation of providing a support for the people 'with a shattered world'. In his logotherapy focused on the search for meaning, Viktor Frankl [23] also returns the lost world to the patient, creating new personal meanings. It's almost the same as when Leontiev and Zaporozhets, to transform the patient's protective set toward an injured arm, create a new personal meaning through occupational therapy by including the patient into socially important activities. What emerges in all these cases is a new motivational image of the world, fulfilled with personal meanings. Hence existential neuropsychology, which integrates Luria's, Leontiev's, Zaporozhets' and Bernstein's approaches, is a bridge not only to the works of Sacks, but also to the existential psychotherapy by Irvin Yalom, who deals with inner conflicts through the prism of so-called 'ultimate concerns' as an inescapable part of human existence [24].

Thus, in Russian neuropsychology there are two faces of neurorehabilitation, both deeply rooted in A.R. Luria's work. The first is cognitive neuropsychology and rehabilitation as instruction, represented by a Pleiad of eminent Luria's disciples Lyubov Tsvetkova [8], Tatiana Akhutina [25], Janna Glozman [26], and many others. The second is existential neuropsychology and neurorehabilitation as guidance, transformation of personality sets and meanings (represented by A.N. Leontiev and A.V. Zaporozhets who applied N.A. Bernstein's physiology of activity to rehabilitation). The core principle of the latter is activity mediation of the personality values and personal meanings. In clinical practice, the two should be combined to provide for the most successful rehabilitation.

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