

Conference Paper

Application of Lurian Approach to Assessment of Perpetrators of Crimes

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Abstract

The central question in law is whether a defendant is responsible for his/her wrongdoing. Recent progress in neuroscience, especially in brain imaging, has shown potential for finding more objective tools for the evaluation of brain disorders. In the case of perpetrators, damage to the prefrontal area is believed to be of relevance in criminal responsibility, since it modulates and controls aggressive urges originating from the limbic system. To absolve guilt, a brain scan would have to show that a perpetrator was unable to control his/her behavior; however, it shows only what is and not what could be. It is therefore impossible to obtain behavioral data that would indicate a disorder of executive functioning at both the time of evaluation and the instant offence. The diagnostic value of performing a neurolinguistics analysis of narratives elicited from brain-damaged patients was demonstrated in the first study. Another study supported the assumption of a frontal lobe defect in individuals with a history of violent behavior. The present study compared results obtained from three groups matched for age, sex, and education: perpetrators of crimes, healthy soldiers, and patients with lesions of the frontal lobes. A battery of tests measuring frontal lobe deficits was administered along with one of the tasks of the Narrative Abilities Test, based upon Luria's approach to the examination of speech. Statistically significant differences were found between perpetrators and healthy controls but not between frontal lobe patients and perpetrators, which confirms frontal lobe deficits in that group.

Keywords: Lurian approach, perpetrators, neurolinguistics analysis, narratives

1. Introduction

One of the latest works of A.R. Luria is a book *Basic problems of neurolinguistics* [1], it reflects deep and long-lasting interest of Alexandr Romanovich in language and its disorders. He used to stress that language endows the human brain with unique capabilities typical only of man. This idea was shared by a number of prominent scientists including Lashley [2], Critchley [3], and Konorski [4]. Luria, however, stressed also the

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Received: 25 July 2018

Accepted: 9 August 2018

Published: 1 November 2018

Publishing services provided by
Knowledge E

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Selection and Peer-review under the responsibility of the Fifth International Luria Memorial Congress Conference Committee.

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regulative role of speech both from developmental [5] and pathological perspective [6]. He argued that such regulation is closely linked with the prefrontal area of the human brain. It is now generally accepted that this area is involved with planning and self-control, hence its injuries often result in an inability of maintaining a course of action, and modifying it to conform to intervening circumstances. Of particular importance is an inability to control behaviors that require self-awareness and necessitate predicting their final outcome.

Frontal lobe deficits are closely linked to the disorders of executive functions, which again constitute an important facet of Luria's research. His research delineated inability to evaluate one's own behavior and its impact on others as well as problems in switching a principle of action. Hall [7] points to the close linkage of those disorders with offensive behaviors, which suggests that they may follow from frontal lobes dysfunctions. At the same time he states that "...in all jurisdictions impairment must always be the result of the accused's diagnosed condition. Further the cause must be direct, and not secondary." [7, p. 64]. Hence, it is imperative to show that the observed impairment of self-regulatory behavior was caused by the diagnosed frontal lobe dysfunction.

The diagnosis of frontal lobe syndrome, however, is very troublesome and complicated due to diversity of observed symptoms. Moreover, the symptoms exhibited by a particular patient depend upon the task s/he is asked to perform. Indeed, the accomplishment of all complex tasks tends to be impaired in frontal lobes pathology. A possible solution is a neurolinguistics analysis of verbal utterances elicited from such individuals. Yet it creates further difficulties since it requires knowledge in the areas of psychology, neurology, and linguistics. In addition, a complexity of language analysis makes it time-consuming, which limits its efficacy. The writers own studies, however, revealed that the neurolinguistics approach makes possible to delineate the symptoms typical of frontal lobe dysfunction. The diagnostic value of the linguistic structure of narratives has also been corroborated in a series studies [8–10]. One of the serious constraints, however, is a considerable impoverishment of language output manifested by the frontal lobe patients. Our studies have enabled us to construct methodology that enables gathering language samples that are long enough to perform a neurolinguistics analysis. This methodology was used in two experiments that included individuals with a history of violent crime [11, 12]. The main findings of those experiments are presented as follows.

2. Methodology

2.1. Experiment 1

2.1.1. Subjects

Two experimental groups were selected; one comprised 8 subjects with clinically diagnosed frontal lobe injuries and the other consisted of 8 schizophrenics kept in custody in a psychiatric hospital unit after their trial. In addition, four control groups without a history of offensive behavior were included: They consisted of patients with frontal area damage, patients with posterior area damage, schizophrenics, and non-brained damaged patients who stayed in the same hospital as the frontal lobe-damaged group.

2.1.2. Procedure

The following tasks were used in order to facilitate language production: (1) repeating a story; (2) describing a situation presented in pictures; (3) talking about a given topic. It permitted a careful analysis of both semantic and syntactic structure of the elicited narratives. Each narrative was tape-recorded and then transcribed verbatim. Further information on that study can be found in another work [11].

2.2. Experiment 2

2.2.1. Subjects

The study included three groups: (1) Perpetrators committed to prison (90 subjects), (2) patients with frontal lobe injuries (20 subjects), and (3) healthy soldiers (20 subjects). The participation was voluntary with informed consent being obtained from all participants.

2.2.2. Procedure

A battery of tests commonly used to assess frontal lobe dysfunctions was utilized. The battery comprised of *The Wisconsin Card Sorting Test (WCST)*, *The Tower of London*, *The Iowa Gambling Task (IGT)*, *The List of Things to Do*, and *Describing Picture Stories*. The first three tests are well known and their descriptions can be easily found on the Website so only the final two tasks will be presented here.

2.2.3. The list of things to do

The participant is presented a map of the city with marked service premises and a list of things to do starting from most urgent to less important. The accomplishment of that task requires good planning and an ability to decide, which errands should be run first and which can wait.

2.2.4. Describing picture stories

Picture stories provide an opportunity of detailed semantic and syntactic analysis. In addition, participants are asked to give the moral of the story. The stories elaborated by Kaczmarek in his Narrative Abilities Test [13, 14] were used here.

The gathered quantitative data were analyzed with the use of SPSS 14.01 PL. program for Windows. Test Sheffe's test was administered to make comparisons among group means and Levene's Test for evaluation of the homogeneity of variances (ANOVA).

3. Results

The results will be presented for each of the aforementioned studies separately to make it easier for the reader to follow the discourse.

3.1. Experiment 1

Content deformations were most pronounced in all three groups of patients with frontal area injuries. Their narratives were incoherent and they produced numerous digressions, confabulations and repetitions. In addition, both delinquent groups exhibited gross simplification of the grammatical structure of their narratives. A chi square statistical analysis of sentence types within each group type revealed statistical significance ($\chi^2 = 305.600$; $df = 25$; $p < 0.001$). Most significant proved to be the ratio of simple to complex sentences as measured with the Spearman correlation rank coefficient.

3.2. Experiment 2

Tasks administered in the second experiment produced a bit different results; therefore, they will be presented separately.

3.2.1. Wisconsin card sorting test

Close similarities between the scores of the prisoners and the frontal lobe damaged patients could be observed in performing this test but not in all measures. The difference occurred only in numbers of perseverations, which indicates rigidity of thought.

3.2.2. The tower of london

The scores of the perpetrators and the prefrontal patients were compatible. Moreover, statistically significant differences could be observed between both those groups and the soldiers, which reflect the difficulties with problem solving exhibited by both experimental groups.

3.2.3. The iowa gambling test (IGT)

Most perpetrators choose disadvantageous decks B in contrast to the soldiers who preferred advantageous cards from deck D. It suggests that both the prisoners and the patients do not take into account the future consequences of their actions despite the difficulties in evaluating the scores of the patients with frontal lobe lesions since they made only few choices.

3.2.4. The list of things to do

A very close similarity between the prisoners (72.2%) and the patients with frontal lobe injuries (85%) in their inability correctly to select the errands was noted. On the other hand, 80% of the soldiers proved to be able to flawlessly perform this task.

3.2.5. Describing picture stories

Again a very close resemblance in the inability to identify the moral of a story between the perpetrators (68.3%) and the patients (86%) could be observed, while most soldiers were able to give the moral. Levene's Test revealed also serious difficulties of the prisoners in their language behavior, which reflects their low communication competencies.

4. Discussion

The first study described here supported the assumption of frontal lobe disorders in individuals with a history of violent behavior. It has also confirmed the value of neurolinguistics analysis of language samples elicited from brain-damaged patients. The analysis revealed deformations of the content of narratives characteristic of the prefrontal area pathology. Narratives elicited from the frontal lobe damaged patients also showed significant simplifications. Such simplifications are often referred as 'poverty of speech' in psychiatric literature [15]. In addition, the study confirmed the effectiveness of evaluation based upon classical Luria's techniques. It might be worthy to remind here that the standardized version of Lurian approach is not frequently administered in a clinical setting [16]. First, it is time-consuming, which considerably limits its efficacy, and second, most clinical psychologists find flexibility of testing the patient to be most useful in delineating the deficits underlying observed symptoms [17].

The findings of the second study confirmed the existence of disorders of planning, monitoring, decision-making, and temporary structured thinking disorders in the group of perpetrators. Indeed, striking similarities between those two groups could be noted. Accordingly, both the delinquents and the patients with frontal lobe pathology exhibited considerable difficulties in performing the aforementioned tasks. At the same time, the ratio of mistakes to correct responses in the group of healthy soldiers was inversely proportional, since the percentage of their correct responses reached 80%. It might be of interest to note that the prisoners exhibited bigger impulsivity than the patients. It points to the fact that the perpetrators seem to lack an ability to foresee the consequences of their acts and are rather guided by immediate prospects [see 9, 10, 18].

The most pronounced differences between the soldiers and the other two groups could be noted while describing a picture story. First of all they were not capable of describing a situation presented in a story, and proved to be unable to give the

moral, which points to disorders of abstract thinking. Moreover, a gross simplification of grammatical structure of their utterances was noted, which confirmed the findings of the first experiment. Interestingly, the simplification of the verbal output was bigger in the group of violent offenders. It could be observed not only in the syntactic structure but also in the content. In other words, their narratives showed features typical of a restricted code first described by Bernstein [19]. As pointed out in another work [20], users of the restricted code display a simplified world image, overconfidence, peremptoriness, belief in one truth, and lack of insight. In effect, they tend to be self-confident and their morality is based upon external norms and rules, which may be the prime cause of delinquent behavior [21].

5. Conclusions

Both studies discussed in the present article utilized a number of neuropsychological tasks of clinical and standardized nature. The findings of the studies confirmed the observations that in the case of such complex and diverse symptoms as those observed in the frontal lobe syndrome the results do not give a clear cut picture. One possible solution is to analyze narratives produced by individuals with suspected frontal lobe disorders. It was found that such an analysis allows us to delineate the features characteristic of the frontal lobe deficits. Moreover, the aforementioned experiments showed that the studies based upon original Lurian approach proved to be of particular value also in forensic settings in contradistinction to its later revised versions.

Acknowledgements

The author would like to thank Anna Herzyk, Paweł Krukow, Beata Ledwoch, and Małgorzata Sitarczyk for their contribution in performing this experiment.

Funding

The second experiment described in this article was supported by the Ministry of Science and Higher Education [grant number 1 Ho1Fo6527].

References

- [1] Luria, A. R. (1976). *Basic Problems of Neurolinguistics*. The Hague: Mouton.

- [2] Lashley, K. S. (1951). The problem of serial order in behavior, in L. A. Jeffress (ed.) *Cerebral Mechanisms in Behavior*, pp. 112–131. New York, NY: Wiley.
- [3] Critchley, M. (1970). *Aphasiology: And Other Aspects of Language*. London: Edward Arnold.
- [4] Konorski, J. (1967). *Integrative Activity of the Brain*. Chicago, IL: University of Chicago Press.
- [5] Luria, A. R. (1961). *The Role of Speech in Regulation of Normal and Abnormal Behavior*. Oxford: Pergamon Press.
- [6] Luria, A. R. (1966). *Higher Cortical Functions in Man*. New York, NY: Basic Books.
- [7] Hall, H. V. (1993). Criminal-forensic neuropsychology of disorders of executive functions, in H. V. Hall and R. J. Sbordone (eds.) *Disorders of Executive Functions*, pp. 39–77. Winter Park, FL: PMD Publishers.
- [8] Morice, R. (1986). Beyond language – Speculations on the prefrontal cortex and schizophrenia. *Australian and New Zealand journal of Psychiatry*, vol. 20, pp. 7–10.
- [9] Pontius, A. A. (2002). Neurological aspects of violence, particularly in youth, in R. R. Corrado, R. Raymond, S. D. Hart, and J. K. Gierowski (eds.) *Multi-problem Violent Youth*, pp. 130–137. Amsterdam, Washington DC: IOS Press.
- [10] Pontius, A. A. and Yudowitz, B. S. (1980). Frontal lobe system dysfunction in some criminal actions as shown in the narrative test. *The Journal of Nervous and Mental Disease*, vol. 168, pp. 111–117.
- [11] Kaczmarek, B. L. J. (1993). Neurolinguistic aspects of crime-related frontal deficits, in H. V. Hall and R. J. Sbordone (eds.) *Disorders of Executive Functions*, pp. 111–127. Winter Park, FL: PMD Publishers.
- [12] Kaczmarek, B. L. J. (ed.) (2009). *Neuropsychologiczne uwarunkowania kontroli zachowania u dorosłych sprawców przestępstw. [Neuropsychological determinants of behavior control in adult perpetrators]*. Lublin: UMCS Press.
- [13] Kaczmarek, B. L. J. (1995). Narrative abilities test. *Polish Quarterly of Developmental Psychology*, vol. 1, no. 1, pp. 27–32.
- [14] Kaczmarek, B. L. J. (1999). Extension of Luria’s psycholinguistic studies in Poland. *Neuropsychology Review*, vol. 9, no. 2, pp. 79–87.
- [15] Fervaha, G., Takeuchi, H., Foussias, G., et al. (2016). Using poverty of speech as a case study to explore the overlap between negative symptoms and cognitive dysfunction. *Schizophrenia Research*, vol. 176, pp. 411–416.
- [16] Rabin, L. A., Paolillo, E., and Barr, W. B. (2016). Stability in test-usage practices of clinical neuropsychologists in the United States and Canada Over a 10-year period:

- A follow-up survey of INS and NAN members. *Archives of Clinical Neuropsychology*, vol. 31, no. 3, pp. 206–230. Retrieved from <https://doi.org/10.1093/arclin/acw007>
- [17] Puente, A. E. and Puente, A. N. (2013). Assessment of neuropsychological functioning, in K. F. Geisinger (Editor in Chief) *APA handbook of testing and assessment in psychology: Vol. 2. testing and assessment in clinical and counseling psychology*, pp. 133–152. Washington, DC: American Psychological Association.
- [18] Hughes, M. A., Dolan, M. C., Trueblood, J. S., et al. (2015). Psychopathic personality traits and Iowa Gambling Task performance in incarcerated offenders. *Psychiatry, Psychology and Law*, vol. 22, no. 1, pp. 134–144. DOI: 10.1080/13218719.2014.919689
- [19] Bernstein, B. (2000). *Pedagogy, Symbolic Control and Identity. Theory, research, critique*. Lanham: Rowman & Littlefield.
- [20] Kaczmarek, B. L. J. and Markiewicz, K. (2003). The real nature of the restricted code, in B. D. MacQueen and M. Pachalska (eds.) *Society As Text in the Thought of Richard Harvey Brown*, pp. 75–85. Wrocław: Continuo Publishing House.
- [21] Antonaccio, O. and Tittle, C. R. (2008). Morality, self–control, and crime. *Criminology*, vol. 46, pp. 479–510. DOI:10.1111/j.1745-9125.2008.00116.x