

Commentary on A.Yasnitsky's article "Kurt Koffka: 'Uzbeks DO HAVE illusions!' The Luria-Koffka controversy"

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I would like to revisit the contradiction in the results of the studies of the two prominent psychologists Alexander Luria and Kurt Koffka that took place some eighty years ago. As is known, in the beginning of 1930s Luria organized two expeditions to Central Asia (in 1931 and 1932), one of the findings of which was the alleged absence of optical-geometrical illusions in the notable number of Uzbek subjects of Luria's studies [3; 4]. This conclusion is reflected in apocryphal telegram that Luria reportedly sent to Vygotsky stating that "Uzbeks do not have illusions". As I learned fairly recently, one of the participants of the second expedition (1932) was one of leaders of German-American Gestalt psychology Kurt Koffka, who conducted a replication and a follow-up study of optical illusions in local population and came to the opposite conclusion that almost all subjects of his experimental research succumbed to optical illusions, although to somewhat smaller extent than the subjects of similar studies that had been conducted in Europe [7].

I have done a great deal of research on optical-geometrical illusions myself; therefore, I believe I have something to share on the matter of Luria-Koffka controversy. Frankly, Luria's puzzling findings have always been a serious obstruction for me in my attempt to integrate into a unified conceptual framework the data of my experimental developmental and cross-cultural research. In contrast, Koffka's findings resolve seeming contradictions between mine and Luria's conclusions, and way better agree with empirical data of other studies. In this commentary, I would like to point out some organizational and methodological aspects of Luria's research and to demonstrate why I chiefly concur with Koffka in his conclusions.

On the methodology of research. Luria did not do quantitative comparison of optical illusions, but assessed them in binary oppositions, that is, either the illusion was observed or if there was no illusion whatsoever. In Luria's experiments this meant merely counting the number of instances of illusions and calculating the percentage of the total number of participants. In contrast, Koffka did not neglect the quantitative aspect of the study and measured how strong the illusion is in each specific instance. As a result, Koffka came to the conclusion about insignificant differences in perception between local population of Central Asia and European subjects. One also needs to take into account the subjects' attitude to the procedure of investigation, which was fairly idiosyncratic among the subset of illiterate subjects. These participants were considerably less involved in Luria's experiments than other participants, which was manifested in the characteristics of the attention they paid to the experimental procedures. The procedure of quantitative measurement in Koffka's experiment seemed to attract the attention of the participants.

Of more interest is the reconstruction of the general line of the theoretical explanation of empirical data. Luria seems to have taken into account only one line of reasoning, namely, explaining all his findings as the product of cultural and educational factor on the perceived optical illusions. According to this line of reasoning, „primitive“ peoples do not succumb to optical illusions, and only due to the growing impact of culture and education on psychological processes these illusions appear and increase. Following this logic, one might assume that the extent of optical illusions in children would be smaller than in the adults. Moreover, in animals that are not influenced by the impact of culture optical illusions would be non-observable. However, experimental data clearly demonstrates that multiple illusions exist even in the

primitive animals. In his developmental studies Jean Piaget found that the optical illusions in children are fairly notable in children, and slightly decrease with the age of the children [6]. In my studies I also revealed a tendency of age-related decrease of the size of Müller-Lyer illusion [2]. How can one explain the contradiction between the cultural-educational and ontogenetic lines in interpretation of the phenomenon of optical illusions?

On the problem of the emergence of optical-geometrical illusions I believe that they are in the very nature of visual perception and are regulated on the basic unconscious level by the inborn mechanisms. However, optical illusions are susceptible to the impact of various factors that modify and may even fully suppress them. Among the factors that affect the perception of optical illusions the most important is the focus and the distribution of attention. Piaget expresses this idea in terms of centration and decentration [6]. With the age the decentrating activity increases and illusions decrease. I conducted a study on the size of the effect of illusion using psychophysical methods of constants and attitudes [1]. In this study its participants performed active manipulations with variable stimuli and, thus, stayed focused on them. As a result, optical illusions were more significant under the conditions of active operations with stimuli as opposed to the control group situation when participants of the experiment were merely outside passive observers. This finding seems to explain the differences between Luria's and Koffka's observations. I believe that in Luria's experimental procedure, the participants of the study were merely passive observers, which resulted in equal distribution of attention between stimuli and could have become the reason why illusions were not observed in the backward subset of participants. Koffka's procedure of quantitative measurement of illusions makes participants to focus on one of the stimuli and results in the increase of the magnitude of the observed illusions.

I do not see any contradiction between the cultural and educational, and, on the other hand, age-related factors: all these indicate unidirectional effect on optical illusions. In the course of development of people their educational level grows, the mechanisms of decentration improve, and distribution of attention becomes increasingly efficient, which contributes to the age-related decrease of the phenomenon of optical illusions. Well, how, then, can various reports of the absence of optical illusions in „primitive“ peoples be explained?

In order to answer this question the impact of another factor needs to be taken into consideration: this is the factor of life ecology and Luria clearly ignored it in his experiments. This factor depends on the conditions of perceptual environment and it can have diverse effect on optical illusions. Segall et al. conducted a major study in African and Asian settings [8]. They discovered that the representatives of those ethnicities that live in the open space do not succumb to Sander and Müller-Lyer illusions. In contrast, in vertical-horizontal illusion they tended to overestimate the length of the vertical line more often than the European subjects did. These findings have been explained using the notion of the „carpentered world“. In rectangularly organized space of the urban environment of industrially developed societies people develop perception of the sharp and obtuse angles that correspond to the „perspective lines“. On the other hand, the African subjects from rural environments were less prepared to the perception of rectangular objects tri-dimensional space simply because they are very uncommon in their everyday environment.

We made an expedition to tundra in order to investigate optical-geometrical illusion in the indigenous tundra inhabitants [3] taking into account environmental and cultural-educational factors. On the one hand, the life conditions in tundra can be perfectly described as „non-carpentered world“ that is characterized by waste open spaces and the absence of straight lines and right angles. On the other hand, the level of education of the indigenous population is pretty low. In our study we hypothesized that the environmental factor would lead to the decrease or even full suppression of illusions, although the level of education would possibly affect the perception of optical illusions in the opposite way, i.e. would contribute to their increase. The findings concurred with the hypothesis: the impact of the opposite factors was evident in the data

that showed that optical illusions performance in the adults and children of the indigenous population of tundra occupied the intermediary position between the rate of illusions in the adults and children of urban population. Children of tundra inhabitants demonstrated slightly high rate of illusions than their parents. In order to clarify the impact of each of these factors we compared the experimental data collected with literate and illiterate tundra inhabitants. There were no notable differences between these. On the basis of these data we came to a conclusion that the impact of environmental factor of life in tundra is stronger than that of the factor of culture and education. Therefore, I believe one should not identify the notion of the life in particular environmental settings with low level of education of the “primitive” peoples. Both these conditions can be found in one population and may lead to the opposite influence on the magnitude of optical illusions.

Let us try to apply this material to the analysis of the results of Luria and Koffka expedition to Central Asia. From the environmental perspective, life conditions of Uzbeks cannot be defined as “non-carpentered world”. They live in rectangular houses and mountainous area limits their view of objects at very long distances. These conditions are beneficial for the phenomena of optical illusions to occur. An additional influence of the factor of education must be evident in the higher occurrence of illusions in illiterate population of Uzbeks. Therefore, Koffka’s observations appear to be more theoretically and empirically grounded, and serve better than Luria’s in resolving Luria-Koffka controversy. The main reason for Luria’s conclusions was, in my opinion, the specificity of the procedure he used in order to assess optical illusions.

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