

Contemporary Terrorism as a Challenge for Neuroscience

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The contemporary increase of the frequency of acts of terror and the emergence of new forms of terrorism, which is supported by a large fascist groups, with territorial background poses a challenge to neuroscience. Researchers explaining the functioning of the brain cooperating with psychologies and sociologies should be able to formulate a theory that explains the causes of these new phenomena.

It is known that most scientists trying to explain the behavior of terrorists does not sees its causes in psychopathological traits of these people, but rather in the characteristic of social organization of groups engaged in acts of terror.

The well-known researcher of these phenomena, Jerrold M. Post stresses that a typical psychological common feature of these people is their "psychological normality"[1,2,3,4] . He emphasizes, that the distinguishing characteristics of these people is founded in specific social relations expressed by strong "collective identity", wherein each group prone to commit the terrorist acts must be considered in a concrete cultural context. In addition, the formation of this "collective identity" is usually fabricated by a charismatic leader. In general, the leader tries to detect in the minds of the members of the group: grief, resentments, dissatisfaction and direct them to a certain external society, pointing to the undisputed cause of life frustration and the target of future attacks. The leader generates, by this way a sense of the meaning of life for members of the group. It is a known metaphor of Jerrold M. Post that their "hatred is bred in the bone" [2]. The phenomenon of terrorism is evolving. The mentioned researcher points out that in recent years the extremely important role play the mass media, used by terrorist group to spread fear and to strengthen the effects of its actions. Societal media (Internet) also enabled the creation of a virtual wide "community of hating" [4]. This approach to explanation of the contemporary terrorism emphasize that the group of people formed in this way has a kind of "collective consciousness", which control its behavior [5].

Some researchers, however, do not share the opinion of the lack of features of psychopathology in the average brain function of fundamentalists and extremists carrying out acts of terrorism [6,7]. Asp. et al., formulated so called False Tagging Theory, stating that people with extreme fundamentalist views reveal structural and functional changes in the ventro - medial parts of the prefrontal lobes [6]. These researchers justify this theory by results of psychometric measurements estimating the severity of authoritarianism, fundamentalism and intense religious beliefs among selected groups of patients with pathological changes in the prefrontal lobes, proved by the brain imaging methods (CT, MRI) compared to the control groups [6]. Shenhav et al. found also features of impaired coordination of the prefrontal lobes with amygdala [7].

One can doubt however whether it is permissible to transfer the conclusions of these studies, carried out on small groups of people and relate them to the causes of intense fundamentalism in large populations of people living in countries of the Middle East.

On the other hand, however, it is possible to formulate the hypothesis that a restrictive taboo system (halal/haram), forced through centuries perhaps was leading to these structural and functional changes in the prefrontal lobes, and contributed to the intensification of authoritarian and fundamentalist attitudes. The biological mechanisms of consolidation of such functional changes could be explained by possible role of epigenetic changes (changes in so called epigenome) [8].

The above-mentioned authors of the mainstream studies and opinions on the causes of fundamentalist attitudes invariably emphasize that the particular manifestations of terrorism should take into account the specific cultural and social context.

Because now the overwhelming problem is the fundamentalism and terrorism originating from the region of the Middle East, it is necessary to consider the following cultural and societal features, probably closely related to these phenomena:

- On average, among people living in the considered countries the values such as skepticism, tolerance, freedom of expression are not esteemed. Conversely, the opposite is socially expected, it means the universal adherence to the orthodoxy in behavior rules and thinking, not only in public matters, but also in private, personal thinking. It is termed by the mentioned principle haram / halal.
- The religious and ideological system of considered population is characterized by excessive fixation on prohibitions regarding human sexuality. It is extremely important for understanding the phenomenon under consideration [9,10]. To avoid bias of this statement we propose to consider the conclusions of Meloy'a Reid et al., who presented the psychoanalytic review of so called "lone wolf" terrorists [11]. These authors write: that their mental functioning of these people is characterized by: "a personal grievance and moral outrage; the framing of an ideology; dependence on a virtual community found on the Internet; the thwarting of occupational goals; radicalization fueled by changes in thinking and emotion - including cognitive rigidity, clandestine excitement, contempt, and disgust - regardless of the particular ideology; the failure of sexual pair bonding and the sexualization of violence; the nexus of psychopathology and ideology and predatory violence sanctioned by moral (superego) authority " [11].
- According to Hamed Abdel-Samad, a well-known philologist and political scientist and according to many other political and sociological analysts recently occurred, in the heart of the Middle East a kind of "Regime - State Terrorism" struck by "the ideology of fascism".

Because this type of terrorism, having territorial background and state structure spread quickly and reached already many corners of the world, it is necessary here to highlight the circumstances known from former cases of the formation of the patterns of behavior of Nazi groups. Hundreds of studies considered the reasons for undertaking such inhumane, evil actions [12,13,14,15]. It should be however possible to summarize it shortly.

Most authors trying to formulate theories explaining the inhuman, cruel, sadistic, bad behaviors of certain groups or even populations repeat at the beginning of such considerations the very general opinion that: "evil is in all of us," and then tries to explain the circumstances that trigger "doing evil".

Among such circumstances the most important is the dissemination of a certain exaggerated ideology, which indicates a hostile group of people who are different from us (so called "others", "strangers"). This ideology states usually that such "foreign" group is a threat to us and is the "external dangerous enemy". It argues at the same time that these "aliens" are deprived of features characteristics for people for "right mankind". It dehumanizes this "indicated" group. This helps to rationalize the harm done to individuals of such a stigmatized group. Totalitarian ideology quickly begins to indicate also those people, who do not want to surrender to the launched theses and begins to terrorize the entire community, demanding absolute obedience. At the same time, the implementation of totalitarian ideology is performed, especially in the initial phase by actions of persons, who managed to get a kind of recognition and authority. Those leaders of the political movement and then of a totalitarian regime determine which actions and behaviors are expected and desirable.

For consistency of these theories it is needed, however, to be able to explain why a totalitarian ideology is respected by so many followers. Attempts to explain why so many people "starts to do evil" need however to appeal to the knowledge of neuroscience. It is necessary to discuss the role of several structural and functional elements of the human brain.

Perceived situations are immediately colored emotionally in the amygdale. This happens also in lower animals. The human nervous system has in the prefrontal lobes of the brain the structures that realize "tagging" (evaluation) of new adopted information. It is also important to take into account, the structures responsible for the behavior that mimic the actions of other people (mirror neurons) and the structure of implementing the so-called "theory of mind". These structures of ToM are composed from many elements. Some of them is localized in precuneus, and temporo-parietal junction [16]. In humans the mirror neurons has been found in the premotor cortex, the supplementary motor area, the primary somatosensory cortex and the inferior parietal cortex [17]. Some researchers believe that we have additionally an unconscious moral grammar independent from the educational process [18, 19].

Simon Baron-Cohen believes however, that the most fruitful approach to explanation of behaviors of "evil doers" is the assessment of their ability to empathy. This approach allows for point to specific neural structures and assess their deficit function [21].

The undertaking of inhuman atrocities is difficult to explain fully by the deficit of empathy.

Paradoxically, the most convincing are the explanations proposed by contemporary psychoanalysts, who try to explain the mechanism of the so-called "totalitarian state of mind", i.e. of the "mind of a nobody". Argano tries to describe "how primitive emotions and defenses, superego pathology, and latent schizoid, narcissistic, and projective mechanisms provide fuel and rationalization for malignant, aggressive, duplicitous, and sadistic behaviors".

Covington remembers the essential ideas of Hannah Arendt, who wrote that "being a person necessarily entails the acts of memory and thought" and that "in granting pardon, it is the person and not the crime that is forgiven; in rootless evil there is no person left whom one could ever forgive" [13]. He writes also about the psychodynamic mechanism of dissociation causing an "impairment of subjectivity" as distinct from Freud's view of dissociation as a form of repression [13]. To put it as straight as possible contemporary psychoanalysts want to say that the terrorists, especially belonging to the fascistic groups have the dissociated feeling of identity and a part of their personality is displaced, which enables actions according to the indications of a "collective sub consciousness".

The existing challenge for neuroscience is demanding because the interdisciplinary considerations and research are needed. This research should include the investigation on neural systems of "theory of mind" and mirror neurons, as well as the role of prefrontal lobes in emotional evaluation of perceived situations. The investigations should consider also the nature of feeling of identity and especially collective identity, collective consciousness and collective sub consciousness. It should explain the possibility of epigenetic transfers of behavioral patterns. The notions of superego pathology ("impairment of subjectivity") should be clarified.

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