
Neuroscience provides insights into leadership qualities

Frontal lobe crucial to competence in mastering complex situations



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Jutta Menzenbach has been researching the phenomenon of visionary leadership – entrepreneurial behaviour in an environment of complexity and uncertainty – for several years.

When choosing senior executives, we must gain a comprehensive overall picture of the personality of the potential candidate and his or her performance capability. This is done via biographical data such as the curriculum vitae, credentials and references, as well as the personal interview, where the candidate's demeanour and language can reveal a great deal.

Characteristics such as high performance capability, above-average motivation and problem-solving competence are all exemplified in the profiles of successful senior executives. But we also know from our own observations that people's behaviour is variously well controlled in situations which demand their initiative. Individual performance always depends on the accessibility and targeted use of existing resources. Expressed in simplified form: *"How much of the available horsepower can be put to use on the road?"*

How can we measure these crucial competencies for mastering complex challenges? Modern brain research has gained remarkable insights through state-of-the-art imaging: The ability to understand and master complex facts and circumstances is related to the interconnecting patterns of nerve cells within the human brain.

Early emotional experiences, referring to everything a person has accumulated about himself and his relationship to the external world, are anchored as patterns in the brain. These largely determine later perceptions and behaviours. They affect internal orientation, influence decisions, and govern attention. What is perceived and what is not, or to what a person does or does not react, depends on his or her sense receptors. These interact with the so-called "interior images" and produce empirical values showing either deviation or accordance with the new external images. The ability to successfully confront challenges is hence by no means congenital or in any way accidental. Rather, it is acquired by socialisation and the learning process.



Frontal lobe executive function controls, among other things, the focusing of attention on a solution to attain a goal.

The region of the brain where these complex neuronal circuits ultimately come together is the frontal lobe. Investigations have determined that the prefrontal cortex (PFC) evaluates a situation with regard to its significance to the individual's action and experience, and translates the current motivational situation into action planning and activity control.

Researchers call the competencies controlled by this region of the brain "frontal lobe executive functions":



A multitude of competencies must be learned and trained in order to develop the requisite skills of managerial thought and action.

- Predictive thinking and action (strategic competence)
- Understanding complex problems and situations (problem-solving competence)
- Estimating the consequences of one's own actions (decision-making and discretion)
- Focusing of attention on the solution to achieve targets (motivation and concentration)
- Timely recognition and correction of errors and faulty development (capacity to understand when an action is wrong; flexibility)
- Inhibition of spontaneous impulses and rejection of short-term success or immediate gratification in favour of long-term achievement of targets (tolerating frustration and impulse control)
- Empathy and observance of social norms and common standards

It soon becomes clear that these competencies are prerequisites for adequate managerial thinking and action, and are therefore highly relevant.

Interestingly, damage to the PFC causes no deficits in perception or intelligence; rather it manifests primarily in breakdowns in activity planning and individual personality. The affected person is not in a position to evaluate the consequences of his actions, and therefore can scarcely put himself in someone else's position or perceive a sense of responsibility. Further, he persists in well-tried approaches and cannot find innovative solutions in problematic situations to which he is unaccustomed. He is very distractible, reacts immediately to change, and does not wait to see how matters which require a flexible approach might develop. Accordingly, individuals who have prefrontal cortex damage often take high risks "with their eyes wide open."



Executives must be capable of directing their perceptions toward goals despite unstable and changing conditions in their environment.

Amidst changing conditions, executives must have the ability to focus their perceptions on what is essential to achieve the current goal. If the senior executive is able to control his/her individual thought processes and activities flexibly and without internal conflicts, he/she can make the best use of her potential. This is especially true when a situation changes suddenly or personal errors occur. The frontal lobe, as "command central," can deploy the individual's ability to master complex problems and situations in a balanced manner.

Neuroscience is already working on instruments to reliably measure the performance of frontal lobe executive functions. The effectiveness of top executives, their thought processes, intentions and attitudes – particularly under pressure, fear and prolonged stress – often go unrecognized. What's more, in the scope of the usual recruitment and selection process for executives, candidates are all too often successful in masking personal deficiencies with their demeanour and elocution. Examining these meta-competencies within the scope of executive recruitment could yield inestimable benefits.