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Johannes Hahn
Creating an Innovation Union through regional policy

Zoltán Cséfalvay
The Hungarian Presidency's support for Europe 2020

Petr Nečas
Building upon educational excellence in the Czech Republic

Androulla Vassiliou
The knowledge triangle: business, research and education

Brighter heights

Why innovation can enhance the Europe of tomorrow

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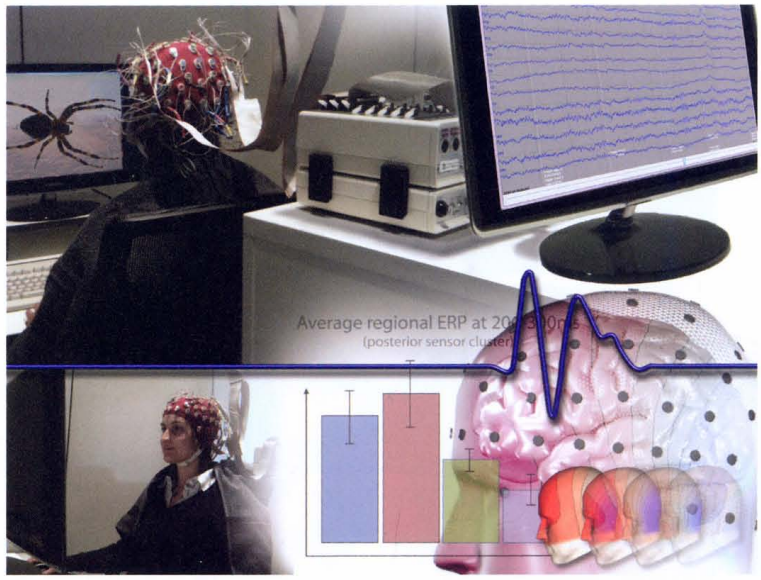
Fear, anxiety and beyond

From basic research to therapy...

Fear and anxiety are common emotions that represent evolutionary developed responses to threat. They involve behavioural, autonomic, cognitive, and endocrine changes that help the organism escape and avoid danger. However, if fear and anxiety are excessive, intrusive, and uncontrollable, they can lead to enormous suffering and significant damage to psychological and physical health.

Anxiety disorders are widespread in the general population (lifetime prevalence estimates range between 14 and 29%) and are among the most common mental disorders. When untreated, they tend to become chronic and, in the wake of anxiety disorders, depression or substance abuse frequently develops. Anxiety disorders are associated with high levels of social and occupational disability as well as with high suicide rates. Therefore, the development of effective treatments has been a major goal within the field of clinical psychology and psychotherapy. Enormous progress has been made with respect to this goal; even for severe anxiety disorders, successful psychotherapeutic treatments with high effect now exist. In general, disorder-specific cognitive-behavioural treatments are the gold standard for anxiety disorders. A key element of these treatments is the danger-free exposure to the feared object, situation, context, thought, or memory in the presence and with the help of the therapist.

Although these treatments have literally saved many lives, not all patients benefit from them. The non-responder rates for severe anxiety disorders (eg. post traumatic stress disorder or obsessive-compulsive disorder) lie between 30 and 50%. Thus, the development of more effective treatments remains crucial. To achieve this, a better understanding of both the maintaining factors of the disorders and the active ingredients of psychotherapy is required.



While exposure is supposed to be the most important single intervention in the treatment of anxiety disorders, it is still not fully understood why exposure works. An important hypothesis is that exposure represents extinction (unlearning) of previously acquired associations between inherently fear-provoking situations and principally innocuous stimuli, which happened to become associated with the aversive event and which subsequently provoke fear by themselves.

In line with the assumption that fear extinction is one of the active ingredients of exposure-based therapies, we could show in laboratory studies that patients with anxiety disorders have less fear reduction during the extinction phase. Further, we could confirm that certain personality and genetic traits as well as current negative 'affects' (anxiety, depression) put people at risk for reduced fear extinction. This might explain why – after frightening experiences – only some individuals develop anxiety disorders whereas others are able to adapt.

Given the circumstance that extinction is a delicate learning process, it seems perhaps less surprising that not all patients profit from exposure-based therapies. During extinction, fear associations are not erased, but remain intact and exist in parallel with the newly learned no-fear associations. Thus exposure-based therapies may be improved by enhancing the unlearning of fear during therapy or by improving the storage and retrieval of the information acquired in therapy.

Our group is currently testing new fear reduction methods within these possible pathways. For example, we

are running a psychotherapy trial testing whether the natural fluctuation of cortisol (a steroid hormone) during the day can be used to improve consolidation of the information acquired in therapy. According to results from basic research on the influence of cortisol on memory, we expect exposure to be more effective when conducted during the morning (when cortisol levels are high), as cortisol enhances the consolidation of new memories. In laboratory experiments we examine whether reminders of the extinction context can improve retrieval of no-fear memories. Since there are strong neuroanatomical links between olfactory functions, emotional and memory processes, we propose that odours are particularly promising stimuli for reminding people of the extinction context. If this hypothesis is confirmed, we will test in a subsequent psychotherapy trial whether odours can be used to prevent the return of fear. These are just two examples of our work, but they clearly illustrate how combining basic laboratory research on learning and memory with applied clinical research can be fruitful in developing more effective psychotherapeutic interventions. As this combination is necessary for opening new avenues in the field, I am grateful to Saarland University for giving me the opportunity to assemble a team of highly qualified scientists and trained psychotherapists and for providing our team with state-of-the-art laboratory equipment.

Applying a transdiagnostic approach also contributes to improvements in psychotherapy. For example, much of my work has been focused on the role of intrusive memories in post traumatic stress disorder, particularly flashback memories. Recent work from our group has found out that flashback memories also occur in other anxiety disorders (eg. panic disorder) and depression (when sufferers have a history of trauma, which is often the case). Flashback memories consist of brief sensory fragments of the traumatic experience that can take the form of visual images, sounds, smells, tastes or bodily sensations such as pain. They are characterised by a high sense of nowness, meaning that sufferers reexperience their original emotions of fear, terror or helplessness and the accompanying thoughts (eg. 'I will not survive this'). Such flashbacks are not only extremely distressing, but are also important maintenance factors for long-lasting anxiety responses after traumatic experiences. Within the context of post traumatic stress disorder research, specific interventions for dealing with flashbacks have been developed. However, as other patient groups seem to suffer from similar memories, such interventions should be incorporated into their treatment. Another example of a transdiagnostic phenomenon is rumination. Rumination is defined as repetitive, self-focused negative thinking about past negative experiences. It is particularly prominent in depression and is known to contribute to its development and maintenance. Rumination is treated through a combination of methods that include its curbing by conducting positive activities instead. There is sound evidence that regular exercise is a particularly good activity for fighting rumination and depression. We found that rumination is also very common in post traumatic stress disorder. Given the significant symptom overlap of these disorders and their high co-morbidity, we propose that complementing psychotherapy with regular exercise should improve treatment efficacy in post traumatic stress disorder. A randomised controlled treatment trial is under way to test this proposal.

Though clearly important, improving current treatments is only one step in bettering the lives of people with psychological disorders. In Germany (and across most of the world) only a minority of patients are seen by qualified psychotherapists. Therefore most people with mental disorders are not profiting from available treatments that have – after all – already proven their effectiveness. This is due to a combination of factors (eg. too few psychotherapy places available, psychotherapy not being refunded in some countries, unwillingness of people to see psychotherapists) and it remains a major challenge of health politics to amend this untenable situation. Last but not least, it has to be stressed that psychological problems are often the result of traumatic or adverse experiences. Adverse childhood experiences like abuse or neglect are not only strong predictors of mental disorders, but also of risky health behaviour (eg. smoking) and somatic health problems during adulthood (eg. heart disease). Therefore, improving mental and somatic health also requires political efforts aimed at alleviating difficult life circumstances and a better communication and cooperation between psychotherapists and medical practitioners.

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