

Depression: Too Much Negative Affect or Too Little Positive Affect?

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The focus of research in depression is on negative affect. However, positive affect is under-investigated and plays an important role in resilience against depression by neutralizing the effects of genetic vulnerability to depression.

There is much research in the field of depression dedicated to risk factors and vulnerability to develop negative affect (NA). Stress-sensitivity, for example, is often studied and appears to be an important risk factor for depression. Positive affect (PA), however, is much less studied. Watson and Clark (1997) discovered that PA and NA are not the two extremes of the same dimension, since factor analyses showed that they are two independent dimensions. Both dimensions can fluctuate relatively independent from each other and therefore they deserve further investigation. Fredrickson (2001) built a theory of positive emotions, proposing that positive emotions are involved in the broadening of attention, in contrast to negative emotions that narrow the attention scope. Hereby positive emotions, such as interest, love, enthusiasm and contentment, broaden the momentary thought-action repertoire, leading to engagement in activities that will again increase PA.

Since positive emotions broaden the attentional focus, they distract individuals from stressors so that they may pick up other positive elements from the current environment. Fredrickson therefore predicted that PA leads to an upward spiral of wellbeing and to decreased stress-sensitivity. Thus, the experience of PA may serve as an important protective factor against depression, and since PA and NA are part of two separate dimensions of emotional experience, research into the other branch of emotional experience (PA) is needed urgently. Some studies have been performed that have confirmed that PA may function as a source of resilience in buffering stress responses (Fredrickson, 2001). It was shown that the experience of positive emotion diminishes cardiovascular reactivity after a stressor (Fredrickson & Levenson, 1998),

influences the stress hormone cortisol (Steptoe & Wardle, 2005), and decreases the negative emotional response to stress (Ong et al. 2006; Zautra et al., 2005). The new area of research into resilience as opposite to vulnerability and the underlying genetics of resilience seem a promising direction for future investigation with high clinical relevance.

Methods

A female adult twin sample from The East Flanders Prospective Twin Study (EFPTS) provided an excellent possibility to examine the genetics of emotional experience in relation to depression. Twin pairs collected data concerning their daily life experiences for 6 consecutive days. They received a wristwatch that emitted signals at 10 unpredictable moments during the day, at which times the subjects filled in booklets with questions concerning events and mood. Whether responding with more NA to small everyday occurrences was a genetic risk factor to develop depression was examined. The cross-twin cross-trait method was used to examine this hypothesis and is characterized as follows: Trait 1 (response of NA to daily life stress) of Twin 1 is associated with Trait 2 (the lifetime depression diagnosis) of Twin 2 and the other way around.

This method prevents contamination of the two measurements since both traits are measured in different subjects. Measured in the same subject stress sensitivity may be influenced by the current depressive state. This method allows the further establishment of the genetic association between the two traits by comparing monozygotic (MZ) and dizygotic (DZ) twin pairs.

Results

Results showed (Wichers et al., 2007) that having a diagnosis of lifetime depression in Twin 1 increased stress-sensitivity in the second twin. In addition, this association was higher in MZ than in DZ twin pairs. This means that genetic risk for depression is expressed as subtle changes in affective reaction towards small daily life stressors and that this daily

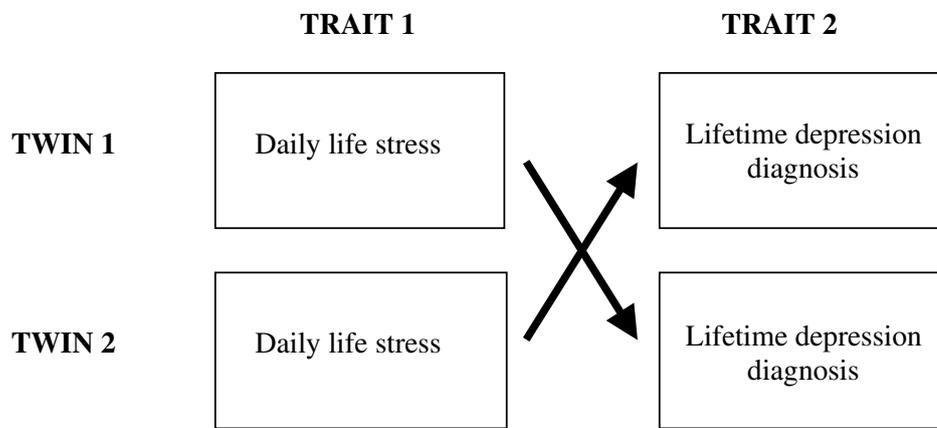


Figure 1

life stress-sensitivity could well be the mechanism whereby depression eventually develops.

Second, the twin study was used to examine the PA dimension in relation to resilience against depression. The study replicated previous findings that the experience of PA at the moment of the stressor in daily life decreased strongly the amount of stress-sensitivity in terms of negative affect (Wichers et al., in press). Moreover, not only did it decrease stress-sensitivity, it decreased as well the expression of genetic risk for depression. Thus, subjects *with* a co-twin with lifetime depression again resembled those *without* a co-twin with lifetime depression, *if* they were able to experience positive emotions at the moment of the stressor (Wichers et al., in press).

Discussion

Increased stress-sensitivity, that is responding with increased NA towards small daily life stressors, is a genetic risk factor for depression and therefore a likely endophenotype. However, this process is not deterministic and can apparently be moderated when subjects are able to coexperience higher levels of positive emotions alongside increases of negative affect after stressful events. Subjects that are genetically at risk for depression are thus able to neutralize their vulnerability by the ability to experience PA. This finding has considerable clinical relevance, also since anhedonia, or the *loss* of pleasure in everyday activities (and thus decreased ability to experience PA), is one of the two core symptoms of depression. Future research should strive to examine the causes of the diminished capacity in some individuals to experience PA and examine ways in which the experience of PA or its subsequent effects, such as the broadening of the attentional focus, can be stimulated. A potential method to expand this capacity is mindfulness-based therapy that has recently gained attention. Thus, both dimensions of NA and PA are important in depression and further research into resilience as a personality

trait, the underlying genetic factors and plasticity of the ability to experience positive emotions, is needed.

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