

# Affect dynamics : a focus on genes, stress, and an opportunity for change

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**Valorization**

Valorization is “[a] process [that] facilitates the practical application of scientific knowledge. By enhancing the suitability and availability of research findings, valorization increases the possibility that third parties can apply these findings” (AWT, 2007). More specifically, for me, valorization translates to answering the question of why I did this research and how the findings of my thesis can be used for fostering mental wellbeing.

In my thesis I was driven to find out what makes us feel happy and even-tempered in our day-to-day living. I addressed this from different perspectives and with various methods. One very important factor hampering feeling well is the experience of stress. The experience of stress is not necessarily solely caused by exposure to more stressful events. Rather the *appraisal* of particular situations as stressful results in feeling stressed. For example, individuals suffering from mood symptoms are oftentimes plagued by the stressful appraisal of naturally ambiguous situations (Beck, 1970; Beck, Emery, & Greenberg, 1985). Even though the situation is ambiguous, these individuals appraise it as negative and consequently they experience more stress. In the current thesis I elaborate on the possibility of changing the tendency to negatively appraise situations in order to decrease the experience of stress.

In the last two chapters of my thesis (Chapter 6 and 7) I report on computerized trainings for benign or positive interpretation biases. Interpretation biases consist of cognitive tendencies to interpret ambiguous situations in daily life in either a negative or threatening, or a benign or positive manner. For example, imagine you enter a room at work. Some of your colleagues are standing in a corner. As you enter the room they are looking at you laughing. This situation is inherently ambiguous as it does have neither a positive nor a negative implication for you. However, our brains are preprogrammed to make sense of the world and are therefore tempted to interpret this situation to be either good or bad. Imagine this interpretation is that your colleagues are laughing because they were talking about that something you said earlier was ridiculous. This would be a negative interpretation bias and transfer the inherently ambiguous situation into a stressful or even threatening situation, most likely causing you to feel stressed and negative about yourself. Contrary, your interpretation could also have been that your colleagues are happy seeing you or are in a good humor. This then would be a positive/benign interpretation bias. This transfers the inherently ambiguous situation into a pleasant one and probably makes you feel good and happy. Such ambiguous situations occur frequently in our daily lives. Having a tendency to interpret these situations negatively makes the world a stressful and hostile place for us and leaves us depressed or anxious. Contrary, having a tendency

to interpret these situations as benign or positive, would make us feel at ease and more happy. Researchers have explored the possibility of training benign/positive interpretation biases via computerized trainings. Various training paradigms have been developed and it has very recently been shown that practicing these trainings is associated with decreased symptoms in depression and anxiety (Williams, Blackwell, Mackenzie, Holmes, & Andrews, 2013). In the current thesis I add to the indicated use of such trainings in two ways. First, I showed that these trainings are not only effective in adults (in whom all trainings for inducing a benign interpretation bias had been conducted thus far) but also in adolescents. This is important because we know that adolescents are particularly vigilant to social interactions (Sommerville, 2013), which are very often ambiguous. Furthermore, adolescents are at increased risk to develop mood symptoms (Lewinsohn, Hops, Roberts, Seeley, & Andrews, 1993). Second, I was able to pin down the factors that increase the effectiveness of interpretation bias trainings. For example, I found that when people are instructed to really imagine being in the ambiguous situations presented to them during the training, it was much more effective in inducing a benign interpretation bias than when individuals were not instructed to do this. Also, when more training sessions were conducted effectiveness was increased.

### **Relevance and Target groups**

These findings are of relevance for the treatment and prevention of mood symptoms. Depression and anxiety cause the most years lived with disability from all mental health disorders (WHO, 2013) and negative interpretation biases are common in these disorders (Beck, 1970; Beck et al., 1985). However, large percentages of individuals with such symptoms are not treated (WHO, 2013). The findings of the current thesis indicate that these trainings are effective in a broad age-range including adolescents and adults. Furthermore, the findings of the current thesis show how such trainings need to be implemented in order to effectively reduce negative interpretation biases. One way of valorizing these findings for society is through making effective trainings broadly and – ideally – freely available. Giving free access to such training methods to both adults and adolescents suffering from mood symptoms or feel particularly stressed may be a promising new avenue for self-help and supporting psychotherapy. For example, individuals may realize that they are always alert to potentially threatening or negative situations and suffer from the resulting stress. Other individuals may be receiving treatment for their mood symptoms already. Those that receive psychopharmacological treatment may feel somewhat passive about their own role in remission and wish to engage more. Those that receive psychotherapeutic treatment may feel that it can sometimes be (too) demanding for their cognitive resources to disengage from

automatized maladaptive cognitive strategies, i.e. negative interpreting ambiguous situations. For these individuals (and their therapists) it may be of high value to have a tool that supports them modifying automatized negative interpretation biases.

#### **What do we have to offer and what does still need to be done?**

The results of the current thesis clearly indicate how training needs to be conceptualized to effectively manipulate negative interpretation biases. The neatest thing about it is that it can be fully computerized and accessed on the internet. For this purpose a website needs to be created and sustained. Individuals interested in training their positive interpretation biases could log-in to this page by creating their own username. As a start individuals could assess the existence and the strength of a negative interpretation bias through a short experiment. As our findings suggest that trainings are more effective when conducted repeatedly a username would enable the program to offer slightly different versions of the training every time the individual logs in. Individuals can then 'train' repeatedly at own pace without getting used to the situations within the training.

Even though we demonstrated in this thesis that trainings for benign interpretation biases are effective and how they should be conceptualized to gain most effectiveness in adapting interpretation biases, two important issues need attention. First, it may be necessary to quantify the effects of such a free-paced self-help program. For this purpose, individuals can be asked whether they agree to provide their data anonymously for research purposes quantifying the effects of such trainings. For individuals agreeing to take part, additional information including basic demographic variables (age, sex), brief mood symptom measurements, and engagement in other treatment, including psychopharmacological and psychotherapeutic treatment, needs to be collected. For a fixed number of individuals (e.g., one hundred) and after a number of training sessions (e.g., 6) interpretation bias and symptoms would be assessed again and the effectiveness of training on both interpretation style and symptoms can be quantified. The second important issue is the costs. The website needs to be developed and sustained, data need to be managed, assessment and training of interpretation biases need to be developed, and server space needs to be available. It is possible to ask individuals to pay a short amount of money when they register on the website. Ideally, however, insurances or universities may sponsor such an endeavor to fulfill a social commitment. The latter option is to be preferred because it prevents that only those individuals with sufficient money have access to the website. Adolescents and individuals with low socio-economic status may be at a disadvantageous position.

#### **Outreach**

In order to successfully establish such a website, it is important to make known to several groups of individuals that fully computerized interpretation bias modification trainings exist and that they can effectively change interpretation biases. To this end, patient organizations, insurances, associations of psychotherapists, psychiatrists, and teachers need to be personally targeted. This might be achieved by personally presenting the results of the current thesis and the website to them. Furthermore, it would be important to explore their judgment about the feasibility and interest in such a program. If necessary, their concerns might be used in optimizing the program and website.

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