



## REVIEW ARTICLES

### The Possibilities Of Using A Stress Profile In Psychotherapy

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#### Abstract

A stress profile is a result of psychophysiological activity measurements of the patient during the mental strain situations, which are mostly induced by various test situations. From the physiological variables heart rate, skin conductance, blood volume pulse, respiration rate, temperature and EMG are usually measured. This gives us an objective view of how the patient responds to stress situations. The stress profile then serves to educate the patient: we can clearly explain how his/her body responds to stress and at the same time it provides us with an objective measure of how the patient's therapy progresses. The main advantage of the stress profile is that in this way it is possible to describe to the patient the functioning of the body properly and accurately and shed light on the relationship between the mental and physiological responses of his/her body.

#### Keywords

CBT, stress profile, psychophysiology, biofeedback

#### Introduction

We define stress as the organism's response to a stressful stimulus from the environment (Baštecká, Goldmann, 2001). Cannon (in Mohapl, 1990) described an alarm response in which the sympathoadrenal system plays a major role in developing emotions of fear, anxiety, or anger. The stimulus for the occurrence of an alarm reaction are situations when the organism defends itself against imminent danger. Cannon (1915, in Baštecká, Goldmann, 2001) considers the basic type of alarm reaction to be a condition which he describes as a fight or flight and which, according to him, is a prototype of the organism's response to stress. The organism's response to the threat has typical physiological manifestations which include (Mohapl, 1990):

- tachycardia,
- increase in cardiac output,
- hyperglycemia,
- spleen contraction
- pupillary mydriasis,
- goosebumps, etc.

These changes enable the rapid release of body energy during fight or flight, and the organism is also simultaneously set to have a reduced susceptibility to pain. Selye described the so-called general adaptation syndrome, by which he characterized the biological response of the organism to suffering and lasting physical pressure (stress). According to Selye (in Mohapl, 1990), the general adaptation syndrome has three phases:

1. Alarm response – when the autonomic nervous system is activated.

2. Resistance – the organism tries to cope with the persistent stress by available means and, if possible, adapts to the stress.

3. Exhaustion – the stress stimulus (stressor) persists, or the organism is no longer able to respond effectively to the stressor. Exhaustion follows and the organism dies or is irreversibly damaged.

Selye (1971, in Baštecký, Šavlík, Šimek, 1993) defines stress as a non-specific reaction of an organism to any requirement of the environment, for example to its change. It is a stereotypical, phylogenetically ancient adaptation reaction, originally preparing the organism for physical activity, such as fighting or escaping. Lazarus (1966, in Baštecká, Goldmann, 2001) argues that stress cannot be defined objectively. According to him, the presence of stress is determined by the way we perceive or evaluate the situation. We experience stress when we evaluate the situation as exceeding our personal sources of adaptation (Baštecká, Goldmann, 2001). We first try to answer the question of whether the given stimulus threatens us or not. Subsequently, we try to answer the question of whether we can handle the situation and how.

Today, another component is inserted between emotions and behavior – or even before emotions and behavior – and that is cognition (evaluation). In his work, Selye focused mainly on hormonal reactions, while Lazarus was interested in cognitive evaluation and interpretation processes. A person reacts to a threat when he evaluates the situation as stressful (Baštecká, Goldmann, 2001). Selye originally spoke of stress as the body's response to an environmental stimulus. Stress is therefore the body's overall response to a stimulus that is considered threatening. We can assess the stimuli that constantly affect us in terms of the strength of action and the importance they have for a given person, as well as in terms of their time course. Thus, an appropriate level of adequate stimuli is not stressful or is stressful reasonably. The stimulus becomes a stressor when it causes a stress response of the organism (Baštecký, Šavlík, Šimek, 1993). All effects that lead to increased secretion of

ACTH (adrenocorticotrophic hormone) in normal individuals can be considered stressful (Mohapl, 1990).

## Stress profile

When measuring the stress profile, we observe how the patient subjectively experiences stress and relaxation (Nestorius, Martin, Rief, Andrasik, 2008; Bujnakova, Ondrejka, Mestanik, Tonhajzerova, 2015). We are also interested in the basic level of physiological activation of the patient. We monitor the patient's reactivity during the measurement, whether it is not for example exaggerated, and the patient's recovery after stress, i.e., whether the patient is able to relax after the stress stimulus and the physiological values return to normal, or whether he accumulates the stress in himself. When measuring the stress profile, we proceed by measuring several psychophysiological data simultaneously during various activities, most often during stress and rest. We induce stress by a test situation or by exposing the patient to a mental strain situation by imagining it. We usually measure the following physiological quantities (Peper, Gibney, Harvey, Combatalade, 2008):

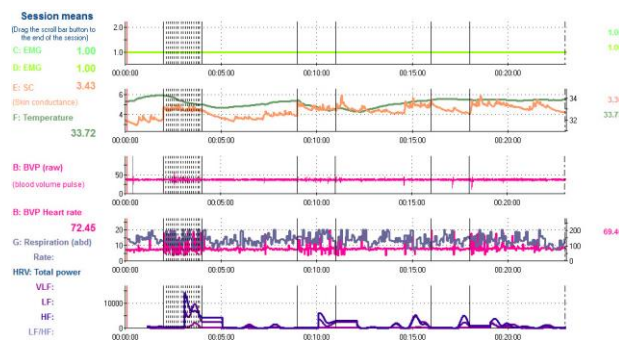
- heart rate (number of beats per minute),
- frequency and depth of breathing (number of breaths per minute),
- ratio of chest and abdominal breathing,
- muscle tension in  $\mu V$ ,
- peripheral temperature in  $^{\circ}C$ ,
- skin conductivity in  $\mu S$ ,
- peripheral blood flow.

Indirectly, the degree of activation of the autonomic nervous system can be monitored. We are especially interested in the so-called stereotyped response, which is a relatively stable physiological pattern of response to various stimuli (Yucha, Montgomery, 2008; Hye-Geum, Eun-Jin, Dai-Seg, Young, Bon-Hoon, 2018). Each person responds to stress in a specific way. Some people respond by increased blood pressure, others by muscle tension, etc. There are many ways to measure the stress profile, see for example the following procedure:

- rest phase (5 min),
- Stroop test (2 min),
- rest phase (5 min),
- numerical task consisting in repeated subtraction of the number 7 from initial number (2 minutes),
- rest phase (5 min),
- imagining a subjectively unpleasant situation or experience (2 min),
- rest phase (5 min).

The whole measurement takes about 25 to 30 minutes and we obtain both the basic psychophysiological values of the patient and also their typical patterns and changes during stress and in the rest phases.

Picture 1 Example of a patient's stress profile



## Stress profile and CBT

The stress profile can be used in neurotic disorders (most often in panic disorder, generalized anxious disorder and phobic disorders). Furthermore, the stress profile can be well used for non-specific somatic problems (pain of various types, hot flashes, seizure problems, etc.). In a narrower sense, there is a difference between a stress response and neurotic reaction. In the latter, a somatic damage or disorder can be avoided by means of escape mechanisms. Since similar physiological manifestations can be observed in both cases, we will mention stress in connection with both of them in the following text. In the diagnostic phase of CBT, the stress profile helps us to get a better picture of the patient's functioning. We see how the patient copes with stress, whether he is able to relax effectively, or whether these skills have yet to be learned. Furthermore, the stress profile provides us with information about the resources that the patient has. We can also use it to predict how easy or difficult the therapy is going to be. In the educational phase of CBT, we can use the stress profile to explain to the patient how his body works, describe the physiological laws and relationships that occur, e.g., during panic attacks, etc. In the training phase of CBT, we can teach the patient – based on the stress profile – to breathe properly, correct his bad breathing pattern, or focus on other psychophysiological modalities that we find problematic in the patient.

## Conclusion

The stress profile helps to better understand what is happening in the patient's body when exposed to stress and allows us to know if the patient is able to relax and regenerate after the stressful stimulus has passed. In the case of non-specific somatic problems caused by stress, we can discover their nature more easily. The stress profile allows us to adapt the therapy to the individual situation and needs of the patient. Measuring the stress profile can be a supplement to psychotherapy, but also the basis for subsequent training based on biological feedback (biofeedback).



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