



THE EFFECT OF ANGER ON EXPERIMENTALLY INDUCED PAIN

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ABSTRACT

The purpose of the present research is to find out the effect of anger on experimentally induced pain. Persons examined: 60 volunteers at the Trakia University, age between 19 and 61 years. Man – 21, female - 39. Methods: State-Trait Anger Expression Inventory (Spielberger); Cold Pressor Test. The results show that a reverse correlation exists between the anger as a personality trait and the pain tolerance ($r = -0,341$; $p = 0,03 < 0,05$). The anger as a behavior appears more to men and to individuals over 50 years old. Higher results of the anger as a personality trait imply less tolerance to experimentally induced pain.

Key words: cold pressor test, pain threshold, pain tolerance, anger-in, anger-out

INTRODUCTION

The term anger is used to designate an emotion which varies in its intensity from annoyance to rage. The anger is characterized with a physiological excitement, a typical facial expression and an impulse to aggression. It is generally accepted as a transitional state occurring in response to an attitude or damage perceived to be unfair. The reactions of anger could be adaptive, especially when expressed in a constructive manner, but the chronic ones are often non-adaptive because they result in interpersonal conflicts and chronic sympathetic excitement (1).

The two main strategies for regulating the emotions are suppression or direct expression (2). In the context of the emotion anger, these two regulating strategies are specified as: outwardly expressed anger and held-in anger (3). The expressed anger represents the trend to regulate anger through direct verbal or physical act and in more extreme cases it could include verbal aggression, sarcasm, dispute, physical act such as shutting or slamming doors and

generally “to lose your temper” (3). The outwardly expressed anger is related to the sensitivity of the person to severe and chronic pain (4).

When exploring pain, various authors point out that it is related to the emotional states, including depression, anxiety, fear and anger. The studies in most cases have found out that the higher levels of negative emotions are connected with more intensive, severe and chronic pain (10-12). The way to deal with anger is related to severe and chronic pain at the same time (13). Recent studies suggest that the way to deal with the outwardly expressed anger may influence the sensation of severe pain and that effect could be strongly seen with provoked anger (13).

During the review of the bibliography, it turned out that the trend to deal with anger through direct verbal or physical expression (outwardly expressed anger trait) is related to increased sensitivity to severe and chronic pain (14).

The effects of outwardly expressed anger trait on experimentally induced pain on healthy people were studied in few publications. The high results were related to the considerably lower pain tolerance during cold pressor test (15). In other studies, the examined people were not

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inclined to control the expression of anger (a characteristic correlated to the outwardly expressed anger) and they showed lower pain threshold and lower pain tolerance (16).

J.W.Burns et al. (17) reported that people with higher indicators of outwardly expressed anger trait showed lower pain tolerance during the cold pressor test but only those of them who had been made angry prior to the study.

Studies indicate that the connection between the higher values of the outwardly expressed anger and the intensified sensitivity to severe pain is stronger in the cases of intensive angry excitement, especially when the people who have this trait do not have the opportunity to express their anger (14).

PURPOSE

The purpose of the present research is to find out the effect of anger on experimentally induced pain.

PERSONS EXAMINED

60 volunteers at the Trakia University, age between 19 and 61 years. Male – 21, female – 39.

METHODS

1. State-Trait Anger Expression Inventory na Spielberger(18).
2. Cold Pressor Test (19, 20)

Pain Measurements.

Pain perception was tested by the **cold pressor test**. The dominant hand was immersed up to the wrist in ice-chilled water ($4 \pm 0.5^\circ\text{C}$). The water tub (4.5 l) was shaken manually by the experimenter every 30 s to prevent the water from warming up around the skin. The temperature in the tub was traced with a thermometer. The participants were instructed to hold their left hand in the ice water as long as possible.

Before each cold water immersion, the experimenter read a standartized script describing the procedures to the participant and measured blood pressure and heart rate. To determine pain threshold (PThr), each subject was instructed to say "painful" when the cold stimulus first became painful. The time (sec) until the participant first reported pain was used as the PThr-measure. To measure pain tolerance (PT), the subject was instructed to "try to hold his/her hand in the icy water as long as possible," but to lift it out when the pain became too

intensive. The time (sec) until the participant withdrew his/her hand from the water was used as the PT-measure. The time (sec) was measured by a Timer Stopwatch. 7 minutes was the maximum immersion duration, but participants were not informed of the 7-minute limit. Blood pressure and heart rate were measured before, during water immersion and immediately after removing the arm from the cold water. Latency to first feel pain (pain threshold, PThr) and latency to withdraw the arm from the cold water (pain tolerance, PT) were recorded.

Systolic and diastolic blood pressure were measured on the non-dominant arm before, during and after each intervention. An aneroid sphygmomanometer (Microlife AG, Switzerland) was used for the determination of blood pressure. Heart rate was determined by the measuring the pulse in the ventral aspect of the wrist (radial artery) for 60 sec.

The study was approved by the local ethical committee at Trakia University and adheres to the principles of the Declaration of Helsinki. An informed consent was obtained from all participants before initiation of the experimental procedures. They were informed that they could discontinue the study whenever they wanted and without giving any reason for their decision. An informed consent was obtained from all participants before initiation of the experimental procedures. They were informed that they could discontinue the study whenever they wanted and without giving any reason for their decision.

RESULTS AND DISCUSSION

Figure 1 shows the results of the influence of the age on the anger. It can be clearly seen that younger people may get angry more easily as a result of the situation factors and are angrier as a trait. It is an interesting result that the anger behavior is shown mostly by persons over 50 years old. This could be because of the fact that younger people have less life experience and try to suppress anger more while elder people know that the denial of anger leads to lower self-evaluation, bitterness and hatred. It is possible people over 50 years old to have learnt how to express anger in a constructive manner, in a more socially acceptable way, as in this way they regulate their interpersonal relationships.

The results of the influence of the gender on the anger are shown on **Figure 2**. There aren't any considerable difference in the results of the anger state and the anger trait by the gender. However,

the anger behavior is shown more by men rather than women. The possible reason could be that the behavior may be influenced by social and cultural norms which are different for men and women in view of how and when to express their emotions. These data could be as a result of sex-

role stereotypes since in our society men's bursts of anger are more easily accepted while for the women it is accepted to hold the anger in themselves. Men more often resort to direct verbal or physical expression of anger.

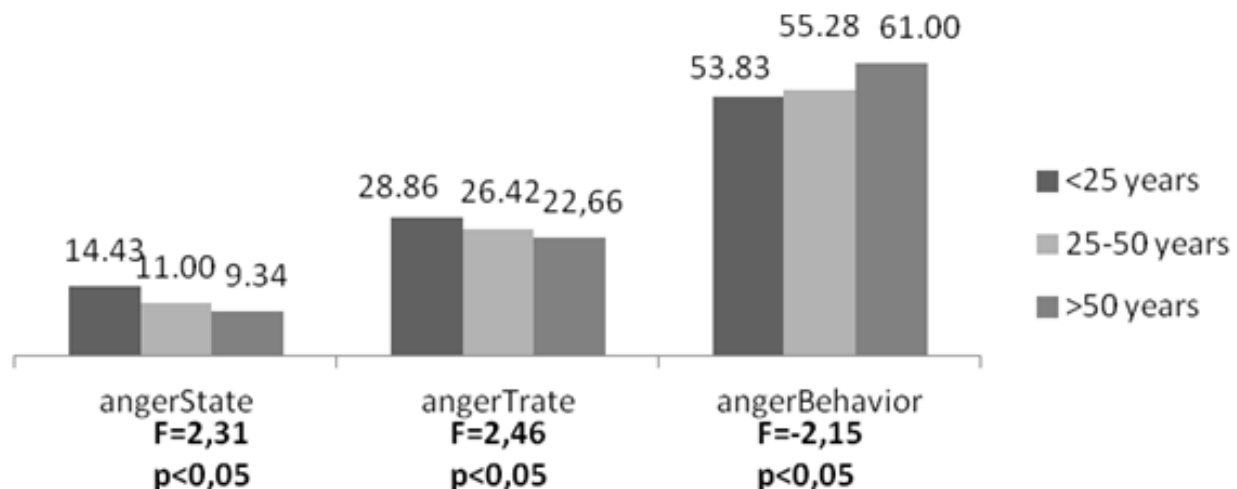


Figure 1. The effect of the age on the anger state, anger trait, anger behavior

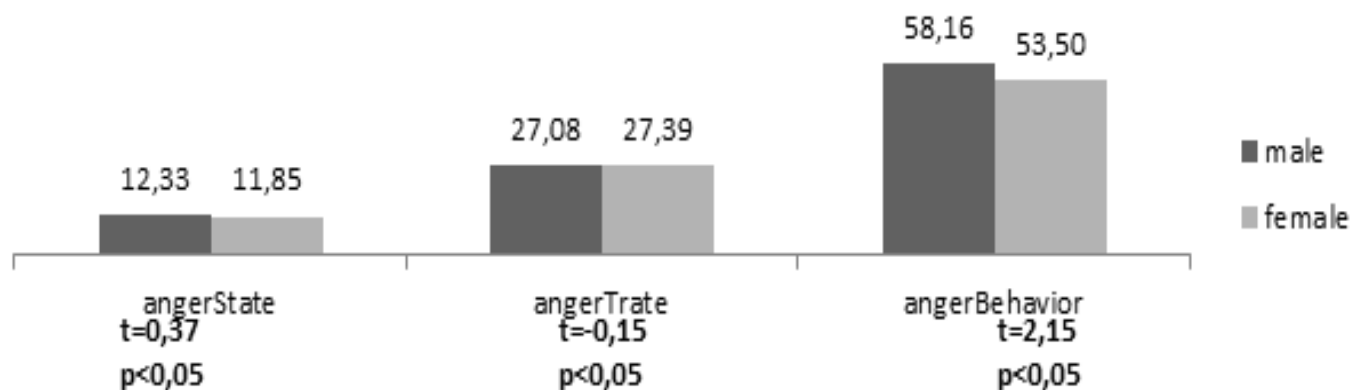


Figure 2. The effect of the gender on the anger state, anger trait, anger behavior

Calculating of Pearson correlation coefficient turns into statistically significant correlation between the anger trait and pain tolerance ($r = -0.341$; $p = 0.03 < 0.05$). Other statistically significant correlations were not present. As could be seen from the results, there is a reverse correlation between the anger trait and the pain tolerance.

Figure 3 presents the scatter graph. There is a moderate dependence between the anger trait and the pain tolerance.

The results show that the higher the results of the anger trait are, the lower the tolerance to experimentally induced pain is.

Numerous psychological studies show that the increased levels of anger influence unfavorably on pain (4,21). The studies indicate that both anger variants (state/trait) and the established style of acting (hold in/ express) increase the sensation of pain (4, 21-23).

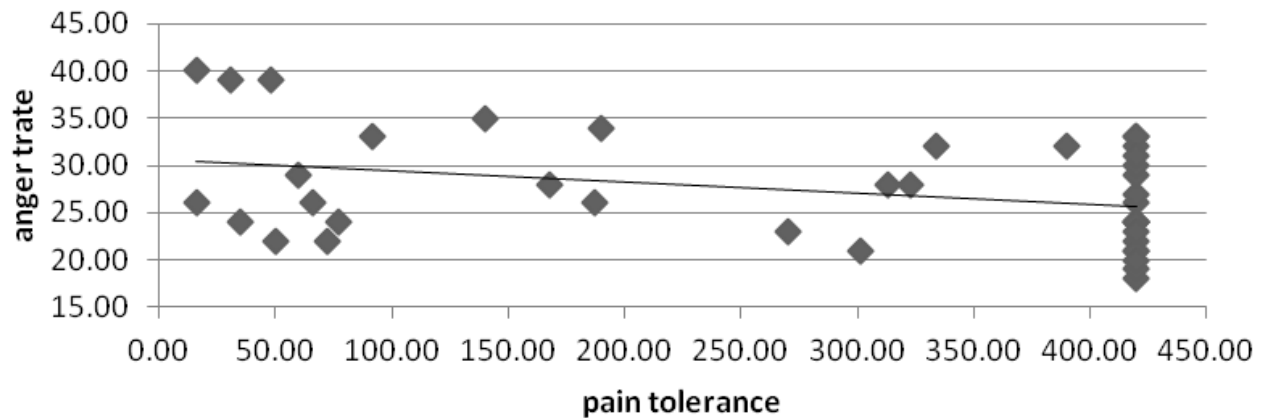


Figure 3. Scatter graph.

The delimitation between trait and state is of main significance in personality psychology. (24). The traits are stable and enduring individual characteristics or behavior models, which are thought to be able to foresee acts (phenomena) in a situation. The states are behaviors, cognitions or affects which result from the influence of the personality traits and the situation impact and could be manipulated and changed (25).

Previous psychodynamically directed studies suggest that the usually suppressed anger may increase the pain sensibility (10,26-30), but our study had the purpose only to find out if there was influence between anger and experimentally induced pain not to clarify strategies for dealing with anger.

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CONCLUSIONS

1. The anger behavior appears more often to men and to individuals over 50 years old.
2. The higher results of the anger trait imply less tolerance to experimentally induced pain.

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