



## Correlation between personality traits and reported pain perception

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### Brief Communication

#### Abstract

**BACKGROUND:** The pain experience is the main reason for individuals who refer to medical centers. There is a difference among individuals in terms of their pain perception and pain report. Psychological factors are the key reasons leading to differences between people in terms of pain perception reported by them. Personality differences is one of the significant psychological factors. This study assessed the correlation between personality traits and reported pain perception.

**METHODS:** This was an experimental study aimed at examining the correlation between personality traits and perceived pain. 100 participants were tested in Iran University of Medical Sciences in Tehran, Iran, in 2019, using the Millon Clinical Multiaxial Inventory-III (MCMI-III) and cold pressor test (CPT) to address the correlation between these factors.

**RESULTS:** Data analysis indicated a significant association between five traits including narcissistic ( $r = -0.23$ ), paranoid ( $r = 0.25$ ), histrionic ( $r = -0.24$ ), borderline ( $r = -0.25$ ), and compulsive personality ( $r = -0.32$ ) traits and reported pain perception rate ( $P < 0.05$ ).

**CONCLUSION:** Research results showed a correlation between personality traits and pain reported by patients; therefore, therapists and researchers should pay attention to the effect of personality factors when interpreting and treating the pain reported by patients.

**KEYWORDS:** Pain Perception; Personality; Millon Clinical Multiaxial Inventory

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### Introduction

Pain is the main reason expressed by many people who refer to medical centers. The study of pain and its treatment requires a good identification of its dimensions. One dimension of pain is the effect of psychological factors on the reported and perceived pain rate by patient. There have been many studies on pain perception and psychological factors over the recent decades assuming that psychological factors can affect the pain rate

reported by the patient; such effects have been measured and addressed in different studies.<sup>1</sup> For instance, a study proved a significant association between pain perceptions in dental patients and psychological factors;<sup>2</sup> moreover, many studies showed that pain expectation, as a psychological factor, had an effect on pain perception.<sup>3</sup>

Chronic pain is one of the problems leading to a considerable decline in patient's performance. The psychological factor is one of the most effective causes in this disease;<sup>4</sup> hence, numerous studies have been conducted to identify psychological factors affecting chronic pain, so that it has been assumed that there could be a significant relationship

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between personality profiles and chronic pain.<sup>5</sup> In terms of chronic pain, a study was conducted on 96 patients and found that neuroticism was one of the personality traits that affected the pain experience;<sup>6</sup> besides, researches indicated that extroversion might lead to better adaptation in patients, so that extroverted patients could experience less pain.<sup>7</sup>

As the abovementioned results indicated, personality is a psychological factor with a substantial impact on the perceived pain rate. It should be noted that personality traits can be addressed based on different viewpoints in studies about the effect of the personality on reported pain perception. Different results might be found when studying the effect of diverse personality traits on pain perception. For example, a study tested 200 dental patients and 200 individuals as control group considering personality properties and other characteristics on pain perception.<sup>8</sup>

Neuroticism-Extraversion-Openness Five-Factor Inventory (NEO-FFI) was used as measurement tool, which was designed based on the five-factor theory in this research. There was not any relationship between personality and pain perception; however, it should be noted that five-factor theory is an approach toward personality and results may be different in other approaches.

Nonsuicidal self-injury (NSSI) is highly prevalent among individuals with borderline personality disorder (BPD).<sup>9</sup> One of the questions raised in such studies associates with pain perception in such patients, and whether these patients perceive the pain less than other people do or not. Another study compared a normal population with patients with BPD in case of their pain perception when there was a stressful or calming situation. The obtained results showed that individuals with BPD experienced less pain rate compared with normal people.<sup>10</sup> Such studies strengthen this hypothesis that personality traits and disorders may affect the pain perception in patients.<sup>11</sup>

In another research, pain perception rates in three groups (patients with BPD, patients with personality disorders except for BPD, and random group) were compared. It was found that patients with BPD perceived less pain rate, while there was not any difference between random groups and patients with personality disorders except for BPD. In this research, participants were assigned to three groups based on the Millon's test and interviews and inclusion criteria for the classification of patients with personality disorders included both test and interview factors.

The present paper addressed the correlation between participants' scores of personality traits and pain perception considering the assumed effect of personality traits and disorders on pain perception reported by the patient regardless of personality disorder indicators in the patients.

## Methods

The statistical population included students of Iran University of Medical Sciences in Tehran, Iran. As this study examined the correlation between 10 subscales, 100 participants (10 participants per each subscale) were entered in the study. Sampling was done using an announcement in the university to invite the volunteers. Inclusion criteria included an age range of 18-35 and lack of any medical pain-related disease. Those participants who had regularly used sedatives and analgesics for 6 months and those who had taken the psychological test of Millon over the past 6 months were removed from the study. The average age of participants was 24.3; 43% were men and 57% were women.

In this study, participants were asked to be present in the test room at certain hours. The temperature of test room was about  $25 \pm 2$  °C and the examiner and participants were there. The participant was asked to fill out the Millon's test, then a cold-water container was placed in front of the participant. When the

participant put his/her hand in water, he/she was asked to point to the score paper to determine the pain experience. This research was conducted with the ethics code of IR.IUMS.REC 1396.30711.

**Millon's test:** Millon Clinical Multiaxial Inventory-III (MCMI-III) was used to measure personality trait's properties. MCMI-III is a self-assessment standardized inventory, which measures a wide range of information about personality, emotional adaptation, and clients' attitude toward the questionnaire. Users of this inventory should be older than 18 with at least secondary school literacy.<sup>12</sup> Millon's inventory is a unique questionnaire, which emphasizes personality disorders and relevant clinical syndromes.

**Cold pressor test (CPT):** CPT was used to measure the pain rate perceived by the patient. CPT has been commonly used in different forms to assess various options. The main specifications of this low-risk test include low cost and simple applicability. In this method, a respondent sits on a chair, then his/her right hand to just above the wrist is immersed in cold water with a certain temperature and after a certain duration, respondent is asked about his/her pain experience. Ludascher et al. used this method to measure the pain perception of the patient with a BPD.<sup>13</sup> In this research, respondents immersed their hands just to their wrist in a  $7.0 \pm 0.5$  °C water for 2 minutes, then chose pain perception signs based on their pain experience.<sup>14</sup>

## Results

Due to the non-normal distribution of pain perception reported by participants, Spearman correlation test was used. As it is seen in table 1, results showed that among 10 studied personality traits, five traits including narcissistic, paranoid, histrionic, borderline, and compulsive personality traits had a significant relationship with reported pain perception. The correlation coefficient

indicated that there was a close relationship between paranoid personality traits and pain perception, while the rest of the 4 traits were less correlated with pain perception. There was the highest correlation between obsessive-compulsive personality trait and reported pain perception. Correlation coefficient of all studied traits did not imply a robust and substantial correlation.

**Table 1. Correlation between each personality trait and reported pain perception**

	Spearman's $\rho$	P
Paranoid	0.25	0.010
Schizoid	0.26	0.217
Schizotypal	0.22	0.218
Antisocial	0.15	0.879
Narcissistic	-0.23	0.013
Histrionic	-0.24	0.013
Borderline	-0.25	0.011
Avoidant	0.20	0.414
Dependent	0.18	0.063
Compulsive	-0.32	0.001

## Discussion

This study was conducted to examine the correlation between personality traits and pain rate perceived by patients. To this end, MCMI-III and CPT were used to test 100 participants in a suitable environment. Research results showed a significant correlation between schizoid, narcissistic, histrionic, borderline, and obsessive personality traits and reported pain perception. However, this was a low to moderate correlation. The obtained results are in line with previous studies proving the relationship between borderline personality traits and pain perception.<sup>13</sup> Moreover, there was a higher correlation between obsessive personality traits and perceived pain relative to the correlation between borderline personality traits and pain, so that patients who suffered from obsessive personality traits reported and perceived a lower pain rate.

According to the research results that showed a relationship between some personality traits and reported pain

perception, it can be stated that personality traits of patients who suffer from pain should be considered when testing and treating such patients in pain perception analysis. It should be noted that personality disorders are divided into three main categories and the obtained results indicate that we should be careful when testing the pain rate of patients whose personality traits are similar to cluster B personality traits.<sup>15</sup>

This study also faced some limitations because the participants were from a limited population of students at a certain age range and academic level. Moreover, CPT test was used to induce the pain and it might be a different feeling from other pain experiences. Besides, the simultaneous implementation of personality and CPT tests may affect the response of participants.

It is recommended to do this test on different age groups and various socioeconomic classes in further studies. As there was a significant correlation between obsessive personality traits and reported pain perception, it is recommended for further studies to examine more dimensions and details of the relationship between personality trait and pain report more precisely.

### Conclusion

Many studies have proved the effect of psychological factors on the pain rate reported and perceived by individuals; personality traits and disorders are the main effective psychological factors. As previous studies have proved the association between BPD and perceived pain, this study was conducted to examine the effect of other personality traits and disorders on reported pain rate through testing 100 participants.

The obtained results showed a correlation between other personality traits and pain perception. Research findings recommend therapists and researchers to pay attention to the personality factors of patients when treating

or studying pain experience reported by them.

### Conflict of Interests

Authors have no conflict of interests.

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