

The Similarity between Personality Traits and Basic Emotions

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Contributor: Jie Dong, Tingwei Xiao, Qiuyue Xu, Fei Liang, Simeng Gu, Fushun Wang, Jason H. Huang

A great deal of evidence suggests that personality and emotions are linked via coping behaviors and that emotional features can be viewed as an emergent attribute for personality. Personality traits are the building blocks of personality, and psychologists have made many efforts to define and organize personality traits. They are often bundled together based on broad personality factors, such as the dimensions or the Big Five trait taxonomy. These personality traits are closely related to emotional characteristics and reflect emotional types and intensity in certain situations, as well as how individuals learn to cope with these emotions. Personality traits can in turn influence how people feel emotionally when things come up.

Keywords: personality traits ; neurotransmitter ; emotion

1. Basic Emotional Theory and Personality Traits

Basic emotional theory, which suggests that there exists a limited number of basic emotions, has been a prevalent theory in past decades [1][2][3][4]. The basic emotions were evolved to handle fundamental life tasks, such as finding something to eat (joy), avoiding being eaten (fear) or avoiding toxic food (disgust) [5]. They can activate the body to deal with prototypical situations that have significant implications for survival. In addition, they are fairly common to all animal species in their interactions with their external environment, conspecifics and members of other species [4]. However, these basic emotions cannot be broken down further into more basic psychological components. In recent years, basic emotion theory has stimulated a number of empirical studies. Thus far, the accepted basic emotions are *fear*, *anger*, *joy*, *sadness* and *disgust* [6][7]. However, some psychologists are still debating whether to choose dimensional theory or basic emotional theory.

In the previous paper, it was integrated basic emotion theory with dimensional emotions and suggested that basic emotion theory and dimensional theory are not contrary to each other [8]. The integrative approach proposes that “basic emotions”, like all emotions, are also constructed by “core affects”, and their locations can also be found on the circumplex [9]. Therefore, the integrative theory proposes that: The reason for the basic emotions to be “basic” is that they are located on the axis on the circumplex (dimension). Happiness resides on the positive pole of the hedonic dimension, sadness is found on the negative pole of the hedonic dimension, and fear and anger reside at the top of the arousal axis (**Figure 1**). Next, the relationships between basic emotions and personality traits will be investigated.

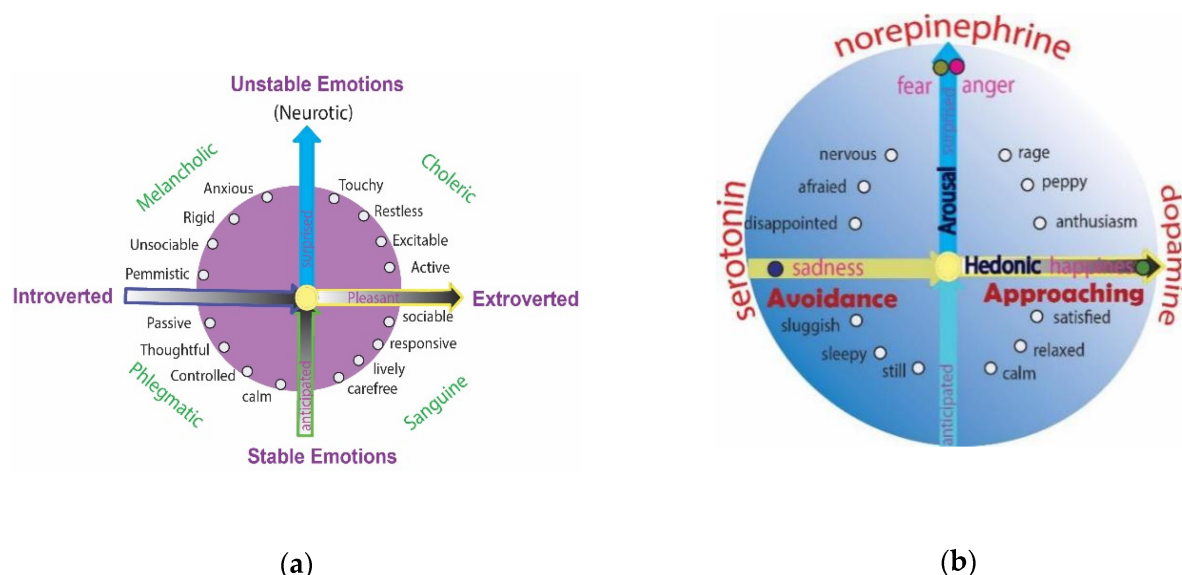


Figure 1. Similarity between Eysenck's dimension and emotional dimensions. **(a)** Eysenck described two factors to account for variations in our personalities: extroversion/introversion and emotional stability/instability ^[10]. **(b)** Dimensional theories about emotions and basic emotions with monoamine neurotransmitters ^[9].

2. Extroverted—Joy

Both extroverted personalities and joy represent the positive pole of the horizontal dimension (**Figure 1**). So, is there any connection between extroversion and joy? Indeed, it has been found that extroverts are happier than introverts, as has been demonstrated by many reliable observations in the literature ^[11]. This might be due the fact that all of the things that satisfy our needs are from the outside, and we have to be extroverted to get what we need. Indeed, Canli suggested that brain activation in positive emotion scenarios was related to extroversion traits, and their experimental results showed that brain activation for the happy emotion was significantly and positively correlated with the degree of extroversion and that extroversion was not significantly correlated with activation for other emotions (anger, fear and sadness) ^[12]. The correlation between personality traits and happiness suggests that certain types of people tend to experience higher levels of happiness than others ^[13], and that positive emotions are an important component of happiness. Spinhoven studied whether extroversion could predict future happiness and emotional well-being ^[14]. It was found that extroversion was positively correlated with well-being, and extroversion had a unique contribution to the overall emotional evaluation of happiness and emotional well-being, exceeding the influence of emotional disorders or the severity of their symptoms. It was further suggested that hope and social support play a mediating role between extroversion and well-being ^[15]; specifically, the mediating role of social support suggests that extroverts are more likely to believe that they can get help from family, friends and others when necessary, and that their subjective perceptions of social support in turn increase their well-being. However, it has also been suggested that the link between extroversion and well-being should be attributed to energy levels and cannot be generalized to the trait level as a whole; energy levels include items reflecting general energy ("full of energy" and "less active than others"), as well as items related to positive expectations ("shows great enthusiasm" and "rarely feels excited or eager") ^[16].

In conclusion, extroverted personalities are more likely to feel happy emotions and thus have a strong sense of well-being; however, it has also been suggested that the association between extroverted personality traits and happiness cannot be attributed solely to the level of the trait as a whole, and that this link needs to be further studied at different levels.

3. Introverted—Disgust (Sadness)

Contrary to extroversion and happiness on the right side of the hedonic dimension, introversion and disgust (sad) are found on the left side of the hedonic dimension. Is there a correlation between introversion and disgust? Indeed, it has been found that people who are overly egotistical and introverted are prone to becoming disgusted or depressed. In their experiment, Clarke found that subjects reported experiencing a generalized, persistent sense of self-loathing, which became more intense when it was necessary to focus on an aspect of oneself, as well as severe psychological and behavioral reactions to self-loathing ^[17]. Introversion is a major and important core personality trait in patients with major depression ^[18], and disgust is also strongly associated with depression; even self-loathing predicts suicide risk in PTSD patients ^[19]. The personality trait of introversion focuses attention to oneself and thus increases the likelihood of becoming disgusted, as disgust occurs due to our own excretions (such as feces or saliva). If we are introverted, we are more likely to feel these excretions and more likely to be disgusted. Thus, the hedonic axis also represents openness to the outside, extroversion, or an approaching manner.

Currently, most studies focus on extroverted personality traits and fewer studies have been conducted on introverted personality traits, and even fewer have explored their correlation with disgust. Future research could focus on whether introverted personalities are more likely to develop disgust or sadness, which can lead to psychiatric disorders such as depression and anxiety. Both disgust and sadness are basic emotions and are located on the left pole of the hedonic axis; however, few studies have probed the difference between them. It might be that disgust is related to disliked things, while sadness is related to the loss of loved ones. Many studies have probed the role of sadness in depression, while disgust as a basic emotion has been investigated in few studies ^[6]. However, it was recently found to be the major basic emotion related to most mental disorders, such as Obsessive-compulsive disorder, anxiety or depression ^[20]. There is increasing evidence implicating disgust in the etiology and maintenance of various types of anxiety disorders ^{[21][22][23]}. Consistent with this, Bosman suggested that disgust often complements fear as a common feature of specific phobias, such as spider phobia, and a contamination-based obsessive-compulsive disorders ^[24].

4. Neuroticism (Instability)—Anger/Fear

Neuroticism represents emotional instability or emotional arousal, which are located on the top of the vertical dimension. It has been found that neurotic individuals—who have low activation thresholds, cannot inhibit or control their emotional responses and experience high emotional arousal (fight or flight, or fear and anger emotions) in the face of small stressors—are easily stressed or frustrated [25]. Fight or flight corresponds to the emotions of anger and fear [8], and it was shown in a study conducted on Turkish university students that high neuroticism was only associated with “fear/anxiety”. Freud referred to the tendency to frequently respond to fear or experience generalized anxiety as neuroticism [26]. Park found that a highly neurotic person is more likely to experience fear and anger [27]. Moshirian Farahi explored the relationship between neuroticism and emotional face processing valence in adolescents [28]. A relationship between neuroticism and fearful emotions was shown and the interaction of neuroticism and mid-frontal EEG asymmetry significantly affected fear valence. In addition to studies with adolescents, cross-sectional studies have been carried out with women over the age of 70 on whether the core personality trait dimension of neuroticism predicts a fear of falling, showing that women with higher neuroticism scores are more likely to experience a fear of falling [29].

In the previous studies, it was suggested that the vertical dimension, called arousal, is due to un-expectancy and affects our safety needs [8]. It was proposed that the two dimensions of emotions represent physiological needs (hedonic value) and safety needs (arousal). Everything that happens to us has two features: (a) whether it fits our physiological needs and (b) whether it was expected [8]. If it was expected we feel safe; if it was not expected, we feel threatened and the sympathetic response is activated, which is called “fight-or-flight” behavior. Fight or flight is actually fear and anger emotions.

The reason for associating both fear and anger with the dimension of neuroticism (emotional instability) (**Figure 1**) is that anger and fear (fight or flight) are perhaps the same emotion, like two sides of the same coin; thus, anger and fear can be placed in the same position on the axis [9]. However, it has also been found that broad personality traits (i.e., the “Big Five”) are less related to angry experiences in everyday life [30]. The correspondence between neuroticism and anger needs to be further explored. Nevertheless, it is certain that neuroticism is associated with fearful emotions. Thus personality can be divided into three kinds: stressful-neuroticism-easy to have fearful or anxious emotions; joy-ful-extroverted and relaxed-easy to be happy and agreeable; depressed-introverted and conscious-easy to be sad and disgusted at the things around.

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