

## Article

# EFFECTS OF MOOD INDUCTION ON STATE ANXIETY AND RELATIONSHIP BETWEEN STATE ANXIETY, TRAIT ANXIETY AND PERSONALITY TRAITS

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**Abstract:** This research was conducted to study the effects of mood induction on state anxiety and to explore the relationship between state anxiety, trait anxiety and personality traits. According to existing literature, it was hypothesized in many studies, that level of state anxiety will be increased or decreased according to the nature of induced stimuli and state anxiety will be high among those who have high trait anxiety. A number of studies has also explored the relationship between personality traits and state and trait anxiety. In this study, a total of 246 students from Bahauddin Zakariya University, Multan participated. In class room settings, firstly state and trait anxiety were measured through State Trait Anxiety Inventory (STAI), personality traits were measured through Ten Item Personality Inventory (TIPI), Positive and Negative Affect Scale (PANAS) was used to measure mood before and after induction and then positive and negative stimuli were presented and immediately effects of induced stimuli were measured through PANAS and after that state anxiety was measured through state version of STAI. To test hypotheses, independent t-test, correlation and paired sample t-test techniques were used. Results revealed that nature of induced mood positive or negative can decrease or increase the anxiety level. Also, the study found a positive correlation between state and trait anxiety. Personality traits agreeableness and emotional stability negatively correlates with trait anxiety and conscientiousness positively correlates with state anxiety.

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## INTRODUCTION

Mood is a state of mind or feeling which is temporary and not permanent, such anger, irritable, sad etc. It can also be said that it is a person's frame of mind which can be caused by any external or internal stimuli and sometimes it is general without any stimuli. Mood is also a person's emotional frame of mind at a particular time. Mood can be changed with time and situations. Mood refers to certain feelings which are caused by any stimuli and temporary in kind. For example, if a man is having a bad office day and in the end of the day, he feels angry and exhausted because of his bad day, then he'll say I'm in a bad mood. But this state of mind of his is temporary and may be next morning he'll feel fresh and good. Emotions are more intense than mood and traits and personality are more likely

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to longer lasting than mood. Mood is temporary, sometimes it can last for few minutes or sometimes weeks. Sometimes we can't understand the cause of our mood. It is often general and sometimes unclear. For example, we often say I'm not in a good mood and sad but don't know the reason. We experience different types of emotions in our daily life that can be temporary as well as permanently affect our state of mind and it can even affect our daily routine how we'll perceive things and then process data and interact with others (Blanchette and Richards, 2010).

### LITERATURE REVIEW

Studies have been shown that emotions may have influence on our working memory or cognitive abilities and sometimes storage or retrieval of any memory can be affected by emotions (Gotoh, 2008; Oaksford et al., 1996; Phillips et al., 2002; Spies et al., 1996). Mood affects a person in many ways how a person will act or think or perceive, for example when a person is in a happy mood, he'll act in good way or think of happy events or things. But if a person in a bad mood, he'll not be able to do any task well. Mood also influences cognitive processing like memory, attention, decision making. According to a study we can say there are three aspects of mood. First one is "mood state" which can be described as variation in mood within a person over time (Spielberger et al., 1983). Second one is "mood trait" which can be described as stable mood components within a person but vary between other persons (Spielberger et al., 1983). Third one is experimental mood which can be described as induction of mood in a person through experiments. Induced mood can interact with state or trait mood (Farach et al., 2014)

Anxiety is a kind of human's emotion in which he feels unease, nervousness and tensed about anything (thing, event etc.) with an uncertain outcome. It has a negative effect on our daily life. Human can face anxiety in their daily life like before giving any test, interview or decision making. Sometimes people become anxious and nervous before taking any big step of life. Anxiety is a normal emotion of human beings within limits. But when a person feels more anxious and unease that he can't cope with daily routine it'll be consider as anxiety disorder (Seligman et al., 2001). It is difficult to identify or know the reason of feelings of unease and nervousness or nature of awaited event or disaster, whenever a person feels anxious. The feeling of unease and nervousness is sometimes like a puzzle for a person who is going through it. Anxiety is without any object, discomfort and constant in its purest form. Anxiety happens without any control and prediction and is subjective and elevated arousal. Anxiety is subjectively aroused for any anticipated event or disaster. Anxiety is more like the feelings for future threat and also results in feelings of unease, nervousness, tension in muscle, restlessness and difficulty in concentration. Sometimes anxiety is important to our survival. It is our automated normal response in danger. Sometimes it is healthy for example if a student has important test coming and he is nervous and anxious, then he'll try harder to get it through. But if it exceeds from normal to high level then it'll be concerning. Like because of anxiety that student won't be able to attend the test because of fear (Davison and Gerald 2008). Trait anxiety as a person's inclination to react. State anxiety as a short-lived feeling described by body arousal and consciously or deliberately perceive feelings of fear and pressure when faced with specific circumstances, requests or an occasion. (Spielberger, 1966)

Areas of cognitive processing which includes attention, memory (Bower, 1981), appraisal (Wilson et al., 2006) and decision making (Loewenstein et al., 2001) are the continuous states called moods and these domains of cognitive processing are being affected by moods (Derryberry and Tucker, 1994). People who show high trait anxiety (a tendency to experience anxious mood) (Spielberger et al., 1983), are more likely to pay attention to each and every aspect of threatening situation against neutral information as compared to people with low trait anxiety (Bar-Haim et al., 2007). An aim to incite a temporary emotional state created in a person in a non-natural environment but in a controlled manner, this process is called mood induction procedure (García-Palacios and Baños 1999)

Information is being processed in a more comprehensive and heuristic manner by the people when they are in a happy, positive mood (Bless et al., 90; Isen, 1987; Mackie and Worth, 1989). The processing style of these type of people is being paired with abstract knowledge, dependence on generic and global focus (Bless, 2001; Clore, Gasper et al., 2001a; Clore et al., 2001b; Fiedler, 2001; Gasper and Clore, 2002; Schwarz and Skurnik, 2003). Information processing style is very cautious, detail oriented, effortful and organized by the people with negative, and sad mood (Bless et al., 1990; Mackie and Worth, 1989). Processing style of these type of people is that they have low level of abstract knowledge, and a narrowed level of focus of attention (Bless, 2001; Clore et al., 2001a, 2001b; Gasper and Clore, 2002; Fiedler, 2001; Schwarz and Skurnik, 2003).

As mentioned above, earlier people with positive mood more likely to have focus on comprehensive knowledge, dependence on generic and abstract knowledge. The processing style of these people interpret information of the stimuli in more way where their attention is very low. Thus, a happy individual when thinking about an act of behavior is more likely to access overall information and meanings to the specific act. This is equal to producing thoughts about *why* an act is done. Where on the other hand information is being processed by peoples in more detail

and analytic way. For example, when a person is in negative mood, he interprets a certain behavior in a more specific and in a detail way rather than interpreting the behavior in general terms, which is equal to thinking of *how* an act is done (Bless, 2000, 2001).

A study was conducted in order to check that if positive emotions are induced continuously what would be the effect on life satisfaction and on optimism. A sample consisted of participants which score high on subclinical scales for anxiety and depression. These participants were continuously induced with the positive moods such as joy and calm. In this way, their state of mood and life satisfaction was measured (Banos et al., 2009). In another research, different type of moods like angry, fear and sad were induced in individuals by using blind experimental technique. In order to induce sad mood emotional clips were shown to respondents, for induction of angry mood respondents were interacted with confederate and for induction of fear a real examination situation was created. Emotional changes that cause change in behavior and personality of respondents were analyzed by self-descriptive scales (Kučera, and Haviger, 2012).

This study was planned and conducted with an aim to find out the effects of different mood states on state and trait anxiety, and explored the relation between state, trait anxiety and personality traits. So, nature of this research was experimental. In this study, effects on mood induction on different phenomena have been done in other cultures and a few experimental researches have been done in Pakistan. So, this study is an attempt to fill this gap in literature.

## METHODOLOGY

### Participants

The sample was taken from Bahauddin Zakariya University, Multan for this study. Students who just appeared in the final examination of their first semester were selected as per demand of this experiment. The sample size of this study was 246 students which were further divided in two groups (positive and negative). The students who scored good marks in mid-term examinations were in the negative group and students with less marks were in positive group. In this study, a purposive sampling technique was used. The ages of participants were between 18 to 25. Both male and female students participated in the experiment.

### Materials and Questionnaires

In this study, the following three scales were used:

**a. Positive and Negative Affect Scale (PANAS):**

To measure participants' mood states, PANAS was used. This scale is a self-report measure. Different emotions or feelings are described by a number of words. Participants must rate on a 5-point scale ranging from "not at all" to "extremely applicable". The sum of scores can be from 10 to 50.

**b. State-Trait Anxiety Inventory:**

It is a self-evaluative questionnaire and was developed by Spielberger in 1983. It consists of 40 items, of which 20 items relate to State Anxiety (X Form) and the other 20 items relate to Trait Anxiety (Y Form). It is based on four-point scale ranging from "not at all" to "very much so". This scale has good reliability and validity.

**c. Ten Items Personality Inventory (TIPI):**

TIPI was used to measure five big personality dimensions and consists of ten items. It was developed by Gosling et al., in 2003. It is also called brief inventory to measure personality domains. Each item consists of two descriptors for example "Extraverted, Enthusiastic". It is based on seven-point scale ranging from "strongly disagree" to "strongly agree".

### Procedure

In this study, consent was taken from the participants, however, they were not aware of entire purpose of the study. Deception as Asch (1956) used in his conformity experiments) was applied with the permission of higher authorities. After the study students were debriefed about the whole purpose of the study and after debriefing, students practiced different anxiety relief exercises like deep breathing, muscle relaxation etc. and they were also shown funny videos. In this experiment, manipulation of result of students and feedback technique was used as a mood induction stimulus. Those students who obtained good marks in mid-term examinations, were informed that they obtained very low marks in the final examination (negative stimuli) and those who obtained average marks in mid-terms, were informed that they obtained good marks (positive stimuli). They all have passed the semester. In negative group 126 students participated and in positive group 120 students participated. As mentioned earlier three scales were used in this research PANAS, STAI (X, Y- Form) and TIPI. Firstly, before intervention researcher applied PANAS and STAI (state version, X form) on both groups to measure the current mood state and anxiety level of participants. Then researcher induced mood through feedback and false results and again measure PANAS and STAI (state

version). After that researcher debriefed the participants about the experiment and after some time measure their trait anxiety and personality traits. After the data collection results were analyzed.

## RESULTS

Table 1 shows the Cronbach's Alpha of scales which represents the reliability of scales as shown in the table PANAS alpha value were .824 which means that PANAS is reliable. Similarly, both other scales were also reliable.

Scales	Cronbach's Alpha	No. of Items
Positive and Negative Affect Scale (PANAS)	.824	20
State Trait Anxiety Inventory	.676	40
Ten Item Personality Inventory	.701	10

Table 1: Reliability Test or Cronbach's Alpha of Measurement Scale

Table 2 and Table 3 show the results of before and after induction affects According to the Table 2 results are significant before and after induction which shows that positive mood was correctly induced in group 1.

Group	Phase	Affect	M	SD	T	P	Cohens' d
Group 1 (Positive)	Before Induction	Positive Mood	18.900	4.80	-5.36	.000**	-0.97
	After Induction	Positive Mood	24.642	6.02			
	Before Induction	Negative Mood	35.1500	3.95	6.65	.000**	0.61
	After Induction	Negative Mood	29.0500	3.82			

Table 2: Paired Sample T-test Analysis on Mood for Positive Group (N=120)

M= Mean, S.D= Standard Deviation,  $p < 0.001^{**}$

Group	Phase	Affect	M	SD	T	P	Cohens' d
Group 2 (Negative)	Before Induction	Positive Mood	33.000	6.75	7.10	.001**	0.63
	After Induction	Positive Mood	18.050	3.44			
	Before Induction	Negative Mood	18.730	5.97	-6.35	.001**	0.56
	After Induction	Negative Mood	25.314	7.23			

Table 3: Paired sample T-test analysis on Mood for Negative group (N=126)

Note. M= Mean, S.D= Standard Deviation,  $p < 0.001^{**}$

According to the Table 3, results are significant before and after induction in group 2, which shows negative mood was correctly induced. There is significant difference of state anxiety between before and after induction in positive group because p-value is less than the level of significance. The mean difference indicates that before induction participants had more state anxiety (M= 40.992, SD=8.735) as compared to after induction (M=33.191, SD=3.391,  $p < 0.01$ ). When state anxiety is checked in negative group, there is a significant difference between before

( $M=42.325$ ,  $SD=7.04$ ) and after mood ( $M=46.633$ ,  $SD=7.77$ ,  $p<0.01$ ) because  $p$ -value is less than level of significance.

Group	State Anxiety	M	SD	95% Confidence Interval of the difference		T	P	Cohens' d
				Lower	Upper			
Positive Group	Before	40.92	8.735	14.087	19.015	7.015	.000**	0.64
	After	33.191	3.391					
Negative Group	Before	42.325	7.04	-1.877	-0.738	-4.566	.000**	-0.41
	After	46.633	7.77					

Table 4: Paired Sample T-test for State Anxiety in Positive (N=120) and Negative Group (N=126)

Note. M= Mean, S.D= Standard Deviation,  $p<0.001$ \*\*

State Anxiety (After Induction)	N	M	SD	95% Confidence Interval of the difference		T	P	Cohens' d
				Lower	Upper			
Positive Group	120	39.38	9.46	-5.993	-.8602	-2.630	.009**	-0.44
Negative Group	126	42.80	9.21	-5.959	-.8946			

Table 5: Independent Sample T-Test Analysis on State Anxiety After Induction

\*\* $p<0.001$ , M= Mean, SD= Standard Deviation

Table 5 shows the comparison between positive and negative group's state anxiety after induction. Looking at the mean and SD column, there is a difference in the score of state anxiety in positive group ( $M=39.38$ ,  $SD=9.46$ ) than after intervention state anxiety ( $M=42.80$ ,  $SD=9.21$ ) ( $*p<0.01$ ). Table 6 and Table 7 shows correlation between personality traits and state, trait anxiety. There was no association between extraversion and trait anxiety and also showed no association with state anxiety respectively. There was a negative association between agreeableness and trait anxiety (-.230) where it showed no association with state anxiety respectively. There was a no association between conscientiousness and trait anxiety where there is a positive association between conscientiousness and state anxiety (.164) respectively.

Personality Traits		Trait Anxiety	State Anxiety
Openness	Pearson Correlation	.003	.095
	Sig. (2-tailed)	.960	.137
Emotional Stability	Pearson Correlation	-.220**	.019
	Sig. (2-tailed)	.001	.762
Extraversion	Pearson Correlation	-.108	-.089
	Sig. (2-tailed)	.092	.164
Agreeableness	Pearson Correlation	-.230**	.016
	Sig. (2-tailed)	.000	.806
Conscientiousness	Pearson Correlation	-.089	.164*
	Sig. (2-tailed)	.165	.010

Table 6: Correlation Between State, Trait Anxiety and Personality Traits in Negative Group (N=126)

State Anxiety	Trait Anxiety	
	Pearson Correlation	.216**
	Sig. (2-tailed)	.001

Table 7: Correlation Between State and Trait Anxiety in Negative Group (N=126)

As Table 7 shows, there was a positive correlation between trait anxiety and state anxiety (.216,  $p<0.01$ ).

CONCLUSION

Researchers have observed the influence of induced mood on “Temporal allocation of attention to emotional information (Farach et al., 2014)”, “Informational Processing (Armitage et al., 1999)”, Phonological Working Memory (Fartoukh et al., 2014) and more. In current study, we examined how induced negative and positive mood states can influence the current natural mood state and one can develop state anxiety. Another purpose was to explore the correlation between state, trait anxiety and personality traits.

As we can see from the results, there is a clear difference in negative and positive affect after and before mood induction. When we measure state anxiety of positive group before and after intervention, we can see the difference because the p value is less than 0.001 that’s mean state anxiety was low after positive mood induction as we can see in results. Similarly, state anxiety was found to be high among negative group because of negative mood induction. As shown in results, state anxiety is higher in negative group than positive group. There is significant difference between negative group and positive group because p-value is 0.01. It indicates that nature of induced mood can affect the current mood state and develop or diminish the state anxiety. In conclusion we can say induced mood has significant influence on state anxiety. So, it proves that nature of induced mood did have an effect on subjects’ anxiety level, as previous researches shows that mood affects a person in many ways how a person will act, think or perceive (Farach et. al., 2014; Bouhuys et al., 1995; Mrazek et al., 2012).

We also explore the relation between state, trait anxiety and personality traits. As we can see in Table 6 and Table 7, agreeableness and conscientiousness has positive association with state anxiety. It shows that people who have Agreeableness and Conscientiousness trait are more likely develop state anxiety. So according to results, we can say People who are careful and vigilant are more prone to develop state anxiety. There is also positive relationship between state anxiety and trait anxiety according to results people who have high trait anxiety tend to have more state anxiety as we can find prove in previous studies, people who show high trait anxiety (Spielberger et al., 1983), are more likely to pay attention to each and every aspect of threatening situation against neutral information as compared to people with low trait anxiety (Bar-Haim et al., 2007).

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