

Effects of Mood and School Related Stress on Academic Performance: A Mood Induction Investigation

Aasma Aziz and Iram Batool

Bahuddin Zakariyya University

This experimental research has been designed to explore the impact of visual cues (visual clips) of school stress on student's mood and academic performance. It was aimed at investigating the relation between positive guided imagery and negative mood. Participants in the study included 90 boys and 95 girls ($N = 185$) with the age range of 10-14 years. The sample was randomly selected from different public and private schools of Multan and Bahawalpur. They were randomly assigned to two groups: Group 1 had negative Mood Induction Procedure (MIP) only; group 2 was treated with negative mood induction procedure which was followed by a Positive Guided Imagery (PGI). Students completed demographic sheet and School Situation Survey (Helms & Gablem, 1989) prior to experimentation. The results revealed that academic performance decreases after negative mood induction but not after positive guided imagery. Both groups showed insignificant difference at pre and post-induction 1 level, while a significant difference was found between both groups at post induction phase 2.

Keywords. Negative mood, positive mood, School stress, cognitive performance, mood induction study

From the past decade, educational researchers and cognitive psychologists are embedding their energy to understand the cognitive phenomena underlying academic performance. While focusing on academic performance, few social factors always catch our attention. One of them is school related stress that is proved to affect academic performance of the students negatively as indicated by many researchers (Kaplan et al., 2005; Kenny et al., 2002). Hence D'Mello and Graesser (2012), Pekrun (2005, 2009), Pekrun et al. (2011) and

Aasma Aziz and Iram Batool, Department of Applied Psychology, Bahauddin Zakariyya University, Multan, Pakistan.

Correspondence concerning this article should be addressed to Iram Batool, Department of Applied Psychology, Bahauddin Zakariyya University, Multan, Pakistan. Email: i.batool@bzu.edu.pk

Strain et al. (2013) put their energy in analyzing the interaction of mood, emotion and academic achievement.

Recently many researchers described that in the class room settings, students encounter positive and negative emotions for example, pleasure, pride, uneasiness, outrage, weakness, and fatigue (e.g., Dettmers et al., 2011; Goetz et al., 2007; Nett et al., 2011). Besides, this impact was accurately researched via experimental studies by Mitchell and Phillips (2007) and later by Nadler et al. (2010) through mood induction. Researches on negative mood induction demonstrate that subjects in a negative enthusiastic mindset perform altogether more awful than those investigated into positive mood states (Brand et al., 2007; Davis et al., 2007; Fredrickson, 2001; George & Zhou, 2007). We aim at researching whether such a passionate state decreases student's cognitive performance in a math assignment, as reported in previous literature (Eysenck, 2013).

It is theorized that the utilization of positive guided imagery (PGI) may alter disposition from negative to more positive and enhance student's performance in a psychological and cognitive errand (Sapp, 1994). Therefore, it can be hypothesized that positive mood facilitates learning process, memory and behavior, while negative mood has a negative effect.

School-Related Stress and Cognitive Performance

In a child's life, school is a most important yet critical part as it gives a setting in which academic as well as social execution demands are set on students. They were continually being assessed by their instructors, guardians, and associates. An immense literature by Gini and Pozzoli (2009) is present researching impacts of social communications at school-settings on mental and academic performance. However, in analyzing the impacts of accomplishment related stressors on student's subjective and enthusiastic prosperity, research data is still required. Kaplan et al. (2005) reported that school stress in early youth can effect scholarly execution in short as well as long run.

Among the many moderating factors, work done by Lazarus (1991) and Pfaff (2012) suggested mood as a factor affecting performance. A significant research on relationship between school stress and grades by Goldstein et al. (2015) declared that in students of middle schools, more level of stress anticipated low grades. Bachrach and Read (2012) and Schraml et al. (2012) studied similar phenomena but in students of high school and college, they declared that stress symptoms anticipate low final grades and poor academic achievement.

Talib and Zia-ur-Rehman (2012) researched on the main stress sources for undergraduate students that impact their performance academically. They conceptualized that course load, issues related to sleep, and social circumstances are proved to be major sources of stress that impede cognitive functioning.

Savage and Sharon (2005) speculated that stress is proved to be a main predictor of academic failure. Kaplan et al. (2005) concluded that with school stress, expectancy about performance in students of high school would impact their grades and performance during high school.

Mood Induction Procedures and Cognitive Performance

Recent advances in research facilitate the researchers and enhance their interest in exploring the psychological impacts of mood. Hence inducing mood experimentally, either positive or negative, many techniques are used. While focusing on the relationship between mood induction procedure and its effect on academic achievement, there is a vast background of researches as discussed later. Febrilia, and Warokka (2011) speculated that positive mood has no significant effect on learning, while negative mood has a negative impact on learning. Further analysis revealed that learning process of students has significant influence on the academic performance.

A significant research by Monnier et al. (2016) confirmed that MIPs (mood induction procedures) are very effective in inducing mood. Hazlett (2012) evaluate the effectiveness of two mood induction procedures. The results showed no significant difference among picture MIP and vignette MIPs. However effectiveness increases when person relevant stimuli are used.

In the present study, we want to investigate that whether a video clip showing a school related stressor (e.g., teacher asking question in front of the class or being questioned by the judge in a competition) induces some negative feelings in students, and whether such negative feelings has negative impact on academic performance. Moreover, the study also seek to test that a positive guided imagery (PGI) introduced after a negative mood induction procedure (MIP) make students feel good and enhance their academic performance. Present study is a replication of the study done by Scrimin et al. (2014) on the topic. The present research aimed to use the phenomenon of academic achievement instead of cognitive performance and we use school-related stress as a control variable in the study. It examined the stress scores of students and eliminating stress in those having very high level of stress as it can affect the academic performance by itself.

Hypotheses

There were three main hypotheses made on the basis of previous literature.

1. A visual cue (film clip) about a school stressor will induce negative mood in control and experimental groups.
2. Negative mood induction will decrease academic performance of students.
3. A positive guided imagery can affect the mood positively and enhance the academic performance of experimental group subjects.

Method

Sample

The participants included 185 students in which there were 90 boys and 95 girls. They are from different schools of two cities i.e. Multan and Bahawalpur, Punjab, Pakistan. Their ages ranged from 10 years to 14 years, ($M = 12$ years, $SD = .994$ years). They belong to grade 6, 7 and 8. The age range in study was selected because its pre adolescence level and its different from earlier age (Perkins, 1974). Sample was selected through purposive sampling technique and after preliminary administration of questionnaires; subjects were randomly assigned into two groups by using online randomization software. The group 1 is control group named as MIP group ($n = 88$) receive negative mood induction, while group 2 is experimental group called PGI group ($n = 97$) receives negative mood induction followed by a positive guided imagery.

Experimental Manipulations

Negative Mood Induction

The negative mood induction procedure (MIP) is a procedure to induce negative mood (i.e. anger, sadness, shame) in subjects. In the present research, MIP involved watching 10-minute video clip from a 2002 American drama film “The Emperor’s Club” by Michael Hoffman (Scrimin et al., 2014). A small portion of the drama film was extracted that has two parts, showing “a student is unable to answer before class” and “a student lose a competition on peak level”. Gray (2001) and Gray and Braver (2002) has studied the same phenomena and showed that a small (5–10 minute) video clip is useful for eliciting mood. In present experimental study both control (MIP) and experimental group (PGI) undergo similar manipulation of negative mood induction at post 1 level. All the students were induced with negative mood by watching this 10 minute video clip. This clip is not

culturally based, it's a basic school performance and show competition stress therefore it is safe to use in this culture as well. Furthermore, this clip was rated by experts and pre-tested on a small sample to measure its cultural relevancy.

Positive Guided Imagery (PGI)

A positive guided imagery (PGI) is a type of mood induction procedure to induce positive mood (i.e. happiness, respect etc). In present research, after inducing negative mood in both MIP and PGI groups, another level of treatment was introduced in PGI group only. After negative mood induction, students were guided through a positive imagery that is comprised of a 10-minutes extended script (approximately 1000 words) specially written for the study purpose. Prior to experimentation, two different vignettes were written by the researcher. 50 Students other than study sample were asked to rate them on 10 point scale which one is best in eliciting a positive mood in them. The high rated one is selected for study purpose.

Prior to the induction of negative mood and after it, two mood measures (i.e. the Brunel Mood Scale and the Self-Assessment Manikin scale) administered to check whether there is any effect of induction on student's mood.

Measures

After filling demographic sheet and consent form, following measures were used in present study

School Situation Survey (SSS; Helms & Gable (1989)

The school stress as measured by the School Situation Survey (SSS) developed by Helms and Gable (1989). It has 34 items combined to form 6 sub-scales: Three subscales measure children's stress sources in school (i.e., teacher interaction, interaction with peer group, stress and self-concept related to academics), while other three deals with manifestation of stress (i.e., behavioral, emotional, and physiological manifestation). Students have to respond to statements by indicating how much every item relates to their feelings on a five-point Likert-type scale. The response categories of test ranged from "never" to "always" (1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = always). Items 1, 7, 12, 18, 23, 24, 29, 30 and 34 are reverse scored. Present study aimed to assess the overall ratio of stress in school so we use the composite score of the test not the individual subscale scores. A high score on test represents high stress levels. The reliability of the scale was $\alpha = .52$ for the sample of study.

The Brunel Mood Scale (BRUMS; Terry & Lane, 2010)

The version of the scale used in present research was developed by Terry and Lane (2010); each child was instructed to indicate to what extent every word from these 24 adjectives explained her/his present mood state (e.g., “exhausted”, “happy”) on a 5-point scale from “not at all” to “extremely” (0 = not at all, 1 = a little, 2 = moderately, 3 = quite a bit and 4 = extremely). Six dimensions were found (i.e., anger, depression, confusion, fatigue, tension, and vigor). The total mood score was calculated by summing up all 5-subscale score minus the vigor score. Lower score describe good mood while high score describes low mood. The reliability of the scale was $\alpha = .73$ for the sample of present study.

The Self-Assessment Manikin (SAM) Scale (Lang, 1980)

This scale was developed by Lang (1980), it measures three dimensions of mood that are; pleasure, arousal, and dominance through a figure. The rating scale used is 5-point scale depicting values from “low” to “high”. Students were asked to circle anyone of these figures according to the emotion they feel now. The reliability of the scale was $\alpha = .90$ for the sample of present study. Geethanjali et al. (2016) and Handayani et al. (2015) argued that SAM is an effective scale for children and adolescents.

Academic Performance

Academic performance of the students was measured through a series of arithmetic questions that include additions of two digits, three digits, four and five digits. The questions were arranged from least to highest difficulty level. A simple task was made because we want to check that how mood effects speed of solving mathematical questions right rather than any percentage of performance. There was a fixed time (120 seconds) given to students. A fixed time limit can best scrutinize the effect of mood induction, since in a research, Brenner (2000) identified that the fixed time limit is a best way to analyze the effects of mood induction. All the participants from MIP and PGI groups were instructed to complete the task prior to induction phase and later after the both mood induction sessions (post 1 and post 2 levels).

Procedure

The data was collected at the beginning of the academic year 2016 in schools after officially taking permissions from school administration. Students were asked to fill out research questionnaires

during regular class time. The data was collected in two parts. In the first setting the consent form and demographic sheets along with self-report measure of school stress is given. After analyzing composite stress scores and eliminating high stress prone students, one week after the first, students were randomly assigned into two groups through online randomization software. Both the groups were separately analyzed. The group 1 was tested for mood measures and basic math's speed test prior (pre-level) and after the negative MIP (post-level 1). The group 2 was tested for mood measure and basic math's speed test before (pre-level) and after the negative MIP (post-level 1) and later after positive guided imagery (PGI) procedure (post-level 2). In post-level 2 of the manipulation, students were guided through the vignette describing a basketball game scene with scoring a goal; he/she was cheered by peers. After presenting the script, the participants were asked to imagine a positive experience related to school that she/he had recently faced. Utay and Miller (2006) described that in order to change the mood of the subjects, make them imagine being in their favorite place.

Results

Psychometric Properties of the Major Study Variables

Table 1

Psychometric Properties of the Major Study Variables (N=185)

Scales	Items	<i>M</i>	<i>SD</i>	<i>α</i>	Range		Skewness	Kurtosis
					Actual	Potential		
SSS	34	98.28	12.23	.52	34-170	63-126	-.30	.11
MOOD	24	21.44	.55	.73	1-96	4-91	.48	.31
BAP	44	14.32	3.57	.90	1-44	8-24	.38	-.57

Note. SSS = the school situation survey; MOOD = Brunel mood scale; BAP = Basic Academic Performance.

Table 1 shows the psychometric properties of the major study variables. Skewness and kurtosis values show that data is normally distributed. All the measures show moderate to high reliability scores.

After checking psychometric properties of our study variables, we analyze that whether the two mood induction groups (group 1 and group 2) differed in basic academic performance and mood measures before any mood induction. Preliminary analysis revealed no significant difference in both groups. Pre induction level mood was accessed to make sure that there is no difference in both groups in terms of mood. School stress was measured to identify any participant

with high level of stress before any type of induction. No such case was observed as shown in Table 2.

Table 2

Difference in mean, Standard deviation, and t-value for scores of mood and academic performance in MIP and PGI groups (independent sample t-test) in pre induction phase (N=185)

Variables	Pre induction phase				<i>t</i>	<i>p</i>
	MIP		PGI			
	(n = 88)		(n = 97)			
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Mood (BRUMS)						
Anger	2.52	2.496	2.75	2.345	-.646	.519
Confusion	3.17	2.627	2.94	2.086	.669	.504
Depression	2.75	2.649	2.40	2.454	.925	.356
Fatigue	3.35	2.644	2.67	2.045	1.973	.050
Tension	2.93	2.947	3.03	2.369	-.253	.800
Vigour	7.83	4.356	6.64	3.348	2.095	.038
Mood (SAM)						
Pleasure	4.40	.720	4.38	.636	.163	.870
Arousal	4.01	.766	4.06	.744	-.454	.651
Dominance	3.92	.746	4.15	.741	-2.140	.034
BAP	14.31	3.567	14.33	3.567	-.044	.965

Note. MIP = Mood Induction Procedure; PGI = Positive Guided Imagery.

ANOVA along Student Grades and Study Variables

One-way ANOVA was conducted among different classes and study variables to assess whether there would be a difference among different grades and their performance in different tasks. ANOVA is a kind of comparison based on mean and standard deviation.

Table 3

ANOVA for Student Grades and Study Variables (N=185)

Scale	1		2		3		<i>F</i>	<i>p</i>	I-J	MD	95% CI		
	Grade 6		Grade 7		Grade 8						<i>SE</i>	<i>LL</i>	<i>UL</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>							
SSS	103.15	11.39	91.28	2.0	101.65	10.42	19.44	.00	1>2	11.87	2.56	6.81	16.92
									1>3	1.50	2.44	-3.31	6.31
									2<3	-10.37	1.81	-13.94	-6.80
Mood	16.81	5.07	22.67	7.54	21.94	7.68	6.52	.00	1<2	-5.87	1.68	-9.17	-2.55
									1<3	-5.12	1.60	-8.27	-1.97
									2>3	.74	1.19	-1.60	3.07
BAP	13.67	3.46	14.89	.11	14.12	3.86	1.43	.24	-	-	-	-	-

Note. SSS= the school situation survey; Mood = Brunel mood scale; BAP= Basic Academic Performance.

It indicates that there is a significant difference of scores of School Situation Survey (SSS) ($p \leq .001$) and mood scale scores ($p \leq .02$) among different classes. Basic academic performance show non-significant difference among different classes ($p \geq .24$). Post hoc analysis for SSS and Mood measures reveals the exact difference found in student's grades and study variables. These findings are observed in Table 3.

Effect of Negative Mood Induction and Positive Guided Imagery

To measure the effect of different mood induction procedures on student's mood and academic performance, independent sample *t*-test was conducted at pre induction, post-induction 1 phase and post-induction 2 phase.

Table 4

Mean difference, standard deviation, and t-value for scores of mood and academic performance in control and experimental groups in pre induction phase (N=185)

Variable	Pre induction phase				<i>t</i> (<i>df</i>)	<i>p</i>	95% CI		Cohen's <i>d</i>
	Group 1 (<i>n</i> = 88)		Group 2 (<i>n</i> = 97)				LL	UL	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>					
Mood (BRUMS)									
Anger	2.52	2.50	2.75	2.34	-.65	.52	-.93	.47	-.09
Confusion	3.17	2.63	2.94	2.09	.67	.50	-.45	.92	.10
Depression	2.75	2.65	2.40	2.45	.93	.36	-.39	1.09	.14
Fatigue	3.35	2.64	2.67	2.04	1.97	.05	.001	1.36	.29
Tension	2.93	2.95	3.03	2.37	-.25	.80	-.87	.67	-.04
Vigour	7.83	4.36	6.64	3.35	2.10	.04	.07	2.31	.31
Mood (SAM)									
Pleasure	4.40	.72	4.38	.64	.16	.87	-.18	.21	.03
Arousal	4.01	.77	4.06	.74	-.45	.65	-.27	.17	-.07
Dominance	3.92	.75	4.15	.74	-2.14	.03	-.45	-.02	-.31
BAP	14.31	3.57	14.33	3.57	-.04	.97	-1.06	1.02	-.01

Note. Mood BRUMS = Brunel mood scale; Mood SAM = Self Assessment Manikin; BAP = Basic Academic Performance.

Table 4 describes the result of independent sample *t*-test in pre-induction phase. Before any mood induction, group 1 and group 2 were assessed for two mood scales and one academic performance test. All the 5-subscales of BRUMS, Anger, Confusion, Depression, Fatigue, and Tension show non-significant difference in mean for both groups, only the vigor sub-scale of BRUMS show significant difference. The second scale, measuring mood is SAM, which has three sub scales. The first two scales showed no significant difference among both groups while third one made significant difference among both groups. There is no significant difference in basic academic performance among both groups in pre-induction phase. Cohen's *d* values shows effect size is small.

Table 5

Mean difference, Standard deviation, and t-value for scores of mood and academic performance in group 1 and group 2 in post induction 1 phase (N=185)

Variables	Post-induction phase 1				<i>t</i> (<i>df</i>)	<i>p</i>	95% CI		Cohen's <i>d</i>
	Group 1 (<i>n</i> = 88)		Group 2 (<i>n</i> = 97)				LL	UL	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>					
Mood (BRUMS)									
Anger	12.61	3.14	12.48	2.35	.32	.75	-.67	.93	.05
Confusion	12.07	2.34	12.16	2.41	-.28	.78	-.79	.59	-.04
Depression	12.18	2.41	12.06	2.57	.33	.74	-.60	.84	.05
Fatigue	11.41	2.58	11.39	2.74	.04	.96	-.76	.79	.01
Tension	11.41	2.79	11.29	2.77	.29	.77	-.69	.93	.04
Vigour	10.53	2.91	10.76	3.11	-.52	.61	-1.10	.646	-.08
Mood (SAM)									
Pleasure	1.84	.71	1.58	.59	2.75	.01	.07	.45	.40
Arousal	1.75	.63	1.70	.60	.54	.59	-.13	.23	.08
Dominance	1.90	.64	1.86	.71	.42	.67	-.15	.24	.06
BAP	9.13	2.20	9.68	2.42	-1.63	.10	-1.23	.12	.24

Note. Mood BRUMS = Brunel mood scale, Mood SAM = Self Assessment Manikin, BAP= Basic Academic Performance.

In post induction phase 1, after induction of negative mood in both groups, analysis of independent sample *t*-test show that all subscales of BRUMS and SAM has non-significant difference among both groups. In post induction phase 1, after inducing negative mood

in both groups, there is no significant difference found among students of both groups in scores of basic academic performance ($t = -1.63, p \geq .10$). Cohen's d shows small effect size.

Table 6

Mean difference, Standard deviation, and t-value for scores of mood and academic performance in group 1 and group 2 in post induction 2 phase (N=185)

Variable	Post-induction phase 2									
	Group 1 (n=88)		Group 2 (n=97)		$t(df)$	p	95% CI		Cohen's d	
	M	SD	M	SD			LL	UL		
Mood (BRUMS)										
Anger	7.24	2.94	2.19	2.03	13.71	.001	4.33	5.78	1.42	
Confusion	7.33	2.45	2.54	2.14	14.19	.001	4.13	5.46	1.44	
Depression	6.84	2.96	2.52	2.34	11.08	.001	3.55	5.09	1.26	
Fatigue	6.55	2.46	2.56	2.23	11.64	.001	3.43	4.73	1.35	
Tension	6.57	2.46	2.56	2.23	11.64	.001	3.33	4.69	1.30	
Vigour	7.94	2.77	6.73	3.78	2.47	.01	.24	2.18	.36	
Mood (SAM)										
Pleasure	2.94	.89	4.60	.51	-15.68	.001	-1.86	-1.45	-1.51	
Arousal	2.72	.97	4.48	.58	-15.21	.001	-2.00	-1.54	-1.49	
Dominance	2.86	.70	4.53	.60	-17.46	.001	-1.85	-1.47	-1.58	
BAP	11.48	2.25	16.45	3.71	-10.89	.001	-5.88	-4.07	-1.25	

Note. Mood BRUMS = Brunel mood scale, Mood SAM = Self-Assessment Manikin, BAP = Basic Academic Performance.

In post induction phase 2, after inducing positive mood in group 2 only, both the groups show significant difference among scores on both scales measuring mood and in basic academic performance. All 6 sub-scales of BRUMS and SAM has $p < 0.05$. Scores of basic academic performance also differ in both group 1 and group 2 ($t = -10.89, p \leq .001$). A large effect size was shown by Cohen's d values.

Discussion

Present study aims to explore that how mood induction procedure can induce specific mood and later affect their academic performance in 10-14 year students. In negative mood induction, a school related stressor was introduced through a film clip that would deliberately affect performance of students. Kidger et al. (2012) studied that there is a strong association found between school related stress and psychological problems and pre adolescents are more affected by

them. Later a positive guided imagery was introduced through vignette to explore its effect on mood and academic performance. Randomization was done in order to rule out any difference in subjects related to their stress level, mood and basic academic performance.

It was hypothesized that school related stress would be different among classes. Results supported this assumption as school related stress differ significantly ($p \leq .001$) among 6th and 7th class ($p \leq .001$) and seventh and eighth class ($p \leq .001$). There are very rare investigations which talk about this difference and this study might be able to bridge this gape.

It was assumed that moods score will be different amongst different classes. Results of one way analysis of variance supported this assumption ($p \leq .002$). It is further analyze that 6th and 7th classes ($p \leq .001$) 6th and 8th classes ($p \leq .002$) has significant difference in mood score. Literature showed very rare investigations in this scenario, so this research might be a guiding line for future researches focusing on the difference in mood qualities among different classes.

It was assumed that basic academic performance differs amongst different classes but the results of the study rejected this assumption. It was analyzed that basic academic performance does not differ significantly amongst different classes ($p \geq 0.24$). Scrimin et al., in 2014 show similar results as they also find no significant difference among classes and student's basic academic performance in a math task.

Results supported previous studies as school related stress is different among male and female students ($p \leq .007$). The results of present study supported the hypothesis that mood score is different in male and female student ($p \leq .003$). Similar findings have emerged from study of Kucera and Haviger in 2012 as mood induction was significantly different among male and female in their study.

The results of present study supported the assumption that mood score is different in male and female student ($p \leq 0.04$). Similar results were obtained from Scrimin et al. in 2014 as they also find significant difference among gender and student's mood score.

In the experimental part of the study, it was assumed that without any mood induction (at pre-induction phase) there would be no difference in mood scores and basic academic performance in group 1 and group 2. Analysis of independent sample t-test supports the hypothesis as students from both groups have no difference in mood scores and math task prior to any mood induction ($p > .05$). This finding also strengthens the use of randomization for both groups.

After inducing negative mood in both group 1 and group 2 (at post induction 1 phase), it was hypothesized that there would be no difference among mood scores and basic academic performance in both groups. Results supported this hypothesis as no significant difference was found in mood scores and math task scores among both groups ($p > 0.05$). It showed that both the groups receive negative mood induction that affects them equally.

After inducing positive mood in group 2 only (at post induction 2 phase), it was hypothesized that there would be a difference among mood scores and basic academic performance in group 1 and group 2. Results supported this hypothesis as a significant difference ($p < 0.05$) was found among all subscales of both mood measures (BRUMS and SAM) as well as basic academic performance ($p \leq .001$). It was analyzed that positive guided imagery help the students boost their mood that ultimately affect their academic performance positively. Cohen's *d* values in both the groups at post induction 2 phase show large effect size that also supported this hypothesis.

Conclusion

The present study concluded that mood induction has a significant impact on student's mood as well as academic performance. Negative mood induction is proved to impede academic performance while a positive guided imagery can enhance it. However school related stress has a negative relationship with academic performance but the results did not show it strongly. Moreover school related stress acts as a control variable in study.

Limitation and Suggestions

There are few limitations of the study. Firstly, the efficacy of MIP should be assessed by a direct measure of any physiological activity rather than relying on self-report measures of subjects. Measure of autonomic activity should be included in future studies before and after all mood inductions. A more difficult task should be used to better see the effect of stress and mood induction as in this research we used basic math speed test.

References

- Bachrach, R. L., & Read, J. P. (2012). The role of posttraumatic stress and problem alcohol involvement in university academic performance. *Journal of Clinical Psychology, 68*(7), 843-859. doi.10.1002/jclp.21874
- Brand, S., Reimer, T., & Opwis, K. (2007). How do we learn in a negative mood? Effects of a negative mood on transfer and learning. *Learning and Instruction, 17*(1), 1-16. doi.10.1016/j.learninstruc.2006.11.002
- Brenner, E. (2000). Mood induction in children: Methodological issues and clinical implications. *Review of General Psychology, 4*(3), 264-283. doi.10.1037/1089-2680.4.3.264
- D'Mello, S., & Graesser, A. (2012). Dynamics of affective states during complex learning. *Learning and Instruction, 22*(2), 145-157. doi.org/10.1016/j.learninstruc.2011.10.001
- Davis, M. A., Kirby, S. L., & Curtis, M. B. (2007). The influence of affect on goal choice and task performance. *Journal of Applied Social Psychology, 37*(1), 14-42. doi.org/10.1111/j.0021-9029.2007.00144.x
- Dettmers, S., Trautwein, U., Lüdtke, O., Goetz, T., Frenzel, A. C., & Pekrun, R. (2011). Students' emotions during homework in mathematics: Testing a theoretical model of antecedents and achievement outcomes. *Contemporary Educational Psychology, 36*(1), 25-35. doi.org/10.1016/j.cedpsych.2010.10.001
- Eysenck, M. W. (2013). *Anxiety: The cognitive perspective*. Psychology Press.
- Febrilla, I., & Warroka, A. (2011). University student's emotional states and academic performance: New insights of managing complex cognitive. *Journal of E-Learning and Higher Education, 2*, 31-38. doi:10.5171/2011.879553
- Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist, 56*(3), 218-230. doi.10.1037//0003-066x.56.3.218.
- Geethanjali, B., Adalarasu, K., Hemapraba, A., Kumar, S. P., & Rajasekeran, R. (2017). Emotion analysis using SAM (Self-Assessment Manikin) scale. *Biomedical Research, 22*(2), 211-228.
- George, J. M., & Zhou, J. (2007). Dual tuning in a supportive context: Joint contributions of positive mood, negative mood, and supervisory behaviors to employee creativity. *Academy of Management Journal, 50*(3), 605-622. doi.org/10.5465/amj.2007.25525934
- Gini, G., & Pozzoli, T. (2009). Association between bullying and psychosomatic problems: A meta-analysis. *Pediatrics, 123*(3), 1059-1065. doi.10.1542/peds.2008-1215
- Goetz, T., Frenzel, A. C., Pekrun, R., Hall, N. C., & Lüdtke, O. (2007). Between-and within-domain relations of students' academic emotions.

Journal of Educational Psychology, 99(4), 715-731. doi.10.1037/0022-0663.99.4.715

- Goldstein, S. E., Boxer, P., & Rudolph, E. (2015). Middle school transition stress: Links with academic performance, motivation, and school experiences. *Contemporary School Psychology*, 19(1), 21-29.
- Gray, J. R. (2001). Emotional modulation of cognitive control: approach-withdrawal states double-dissociate spatial from verbal two-back performance. *Journal of Experimental Psychology*, 130(3), 436-452. doi.org/10.1037/0096-3445.130.3.436
- Gray, J. R., & Braver, T. S. (2002). Personality predicts working memory related activation in the caudal anterior cingulate cortex. *Cognitive, Affective and Behavioral Neuroscience*, 2(1), 64-75. doi.org/10.3758/CA.2.1.64
- Handayani, D., Wahab, A., & Yaacob, H. (2015). Recognition of emotions in video clips: The Self-Assessment Manikin validation. *TELKOMNIKA (Telecommunication Computing Electronics and Control)*, 13(4), 1343-1351. doi.10.12928/telkomnika.v13i4.2735
- Havighurst, R. J. (1953). *Human development and education*. New York: David McKay Company.
- Hazlett, K. E. (2012). *Evaluating the effectiveness of standardized and personally relevant stimuli in two mood induction procedures* (Master's Theses). Marquette University, Milwaukee, Wisconsin, USA.
- Helms, B. J., & Gable, R. K. (1989). *The School Situation Survey*. Consulting Psychologists Press.
- Kaplan, D. S., Liu, R. X., & Kaplan, H. B. (2005). School related stress in early adolescence and academic performance three years later: The conditional influence of self-expectations. *Social Psychology of Education*, 8(1), 3-17. doi.org/10.1007/s11218-004-3129-5
- Kenny, M. E., Gallagher, L. A., Alvarez-Salvat, R., & Silsby, J. (2002). Sources of support and psychological distress among academically successful inner-city youth. *Adolescence*, 37(145), 161-180.
- Kidger, J., Araya, R., Donovan, J., & Gunnell, D. (2012). The effect of the school environment on the emotional health of adolescents: A systematic review. *Pediatrics*, 129(5), 925-949. doi.org/10.1542/peds.2011-2248
- Kucera, D., & Haviger, J. (2012). Using mood induction procedures in psychological research. *Social and Behavioral Sciences*, 69, 31-40. doi.org/10.1016/j.sbspro.2012.11.380
- Lang, P. J. (1980). *Behavioral treatment and bio behavioral assessment technology in mental health care delivery*. Norwood, N. J.: Ablex.
- Lazarus, R. S. (1991). Cognition and motivation in emotion. *American psychologist*, 46(4), 352. doi.org/10.1037/0003-066X.46.4.352

- Mitchell, R. L., & Phillips, L. H. (2007). The psychological, neurochemical and functional neuroanatomical mediators of the effects of positive and negative mood on executive functions. *Neuropsychologia*, *45*(4), 617-629. doi.10.1016/j.neuropsychologia.2006.06.030
- Monnier, C., Syssau, A., Blanc, N., & Brechet, C. (2016). Assessing the effectiveness of drawing an autobiographical memory as a mood induction procedure in children. *The Journal of Positive Psychology*, *2*, 1-7. doi.10.1080/17439760.2016.1257048
- Nadler, R. T., Rabi, R., & Minda, J. P. (2010). Better mood and better performance learning rule-described categories is enhanced by positive mood. *Psychological Science*, *21*(12), 1770-1776. doi.10.1177/0956797610387441.
- Nett, U. E., Goetz, T., & Hall, N. C. (2011). Coping with boredom in school: An experience sampling perspective. *Contemporary Educational Psychology*, *36*(1), 49-59. doi.org/10.1016/j.cedpsych.2010.10.003
- Pekrun, R. (2005). Progress and open problems in educational emotion research. *Learning and Instruction*, *15*(5), 497-506. doi.10.1016/j.learninstruc.2005.07.014
- Pekrun, R. (2009). Emotions at school. In K. R. Wentzel, & A. Wigfield (Eds.), *Handbook of Motivation at School*, New York: Routledge.
- Pekrun, R., Goetz, T., Frenzel, A. C., Barchfeld, P., & Raymond, P. P. (2011). Measuring emotions in students' learning and performance: The Achievement Emotions Questionnaire (AEQ). *Contemporary Educational Psychology*, *36*(1), 36-48. doi.10.1016/j.cedpsych.2010.10.002
- Perkins, H. V. (1974). *Human development and learning*. Belmont, CA: Wadsworth Publishing.
- Pfaff, M. S. (2012). Negative affect reduces team awareness: The effects of mood and stress on computer-mediated team communication. *Human factors*. *The Journal of the Human Factors and Ergonomics Society*, *54*(4), 560-571. doi.org/10.1177/0018720811432307
- Sapp, M. (1994). The effects of guided imagery on reducing the worry and emotionality components of test anxiety. *Journal of Mental Imagery*, *18*, 165-180.
- Savage, S. & Sharon, H., M. (2005). *The impact of stress on academic success of college students* (Unpublished medical desertion). Retrieved from http://www.redorbit.com/news/health/391477/the_impact_of_stress_on_academic_success_in_college_students/ retrieved on june,11, 2017.
- Schraml, K., Perski, A., Grossi, G., & Makower, I. (2012). Chronic stress and its consequences on subsequent academic achievement among adolescents. *Journal of Educational and Developmental Psychology*, *2*, 69-79. doi.10.5539/jedp.v2n1p69
- Scrimin, S., Mason, L., & Moscardino, U. (2014). School-related stress and cognitive performance: A mood induction study. *Contemporary*

Educational Psychology, 39, 359-368. doi.org/10.1016/j.cedpsych.2014.09.002

- Strain, A. C., Azevedo, R., & D'Mello, S. K. (2013). Using a false biofeedback methodology to explore relationships between learners' affect, metacognition, and performance. *Contemporary Educational Psychology*, 38(1), 22-39. doi.org/10.1016/j.cedpsych.2012.08.001
- Talib, N., & Zia-ur-Rehman, M. (2012). Academic performance and perceived stress among university students. *Educational Research and Reviews*, 7, 127-132. doi.10.12691/ajphr-3-6-3
- Terry, P. C., & Lane, A. M. (2010). Development and validation of a mood measure for adolescents. *Journal of Sports Science*, 26, 30-36. doi.org/10.1080/026404199365425
- Utay, J., & Miller, M. (2006). Guided Imagery as an effective therapeutic technique: A brief review of its history and efficacy research. *Journal of Instructional Psychology*, 33(1), 40-43.

Received 29 August 2019

Revision received 29 August 2022