

Research Paper

## Mediation Effect of Emotional Intelligence on the Effectiveness of TA Therapy in Controlling Academic Stress

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### ABSTRACT

The present study examined whether emotional intelligence (EI) mediates the effectiveness of Transactional Analysis-Based Group Therapy (TAGT) in reducing academic stress among secondary school students. A quasi-experimental pre-test post-test control group design was employed with 158 ninth-grade students (aged 14–16) from a government-aided school in Kerala, India. Participants were divided into three treatment groups and one waitlist control group. Academic stress was measured using the *Instrument for Measuring Academic Stress (I-MAS)*, and EI was assessed using the *Student Emotional Intelligence Scale (SEIS)*. The intervention consisted of 14 sessions of the Transactional Analysis-based Psycho-Pedagogic Programme (TAP-3). Mediation analysis was conducted using Jamovi. Results demonstrated that TAGT significantly enhanced EI ( $\beta = 0.172, p < .001$ ) and reduced academic stress ( $\beta = -0.197, p < .001$ ). The indirect pathway indicated that EI partially mediated this relationship (Estimate =  $-2.4388, p < .001$ ), suggesting that TAGT reduced academic stress partly by improving EI. However, pre-intervention stress levels did not significantly predict EI or influence stress reduction. Students with higher baseline EI showed greater gains in EI, which further contributed to stress reduction. Overall, findings highlight that TAGT effectively reduces academic stress, with EI serving as a significant but partial mediator, and suggest its potential for school-based mental health interventions.

**Keywords:** *Academic Stress, Emotional Intelligence, Mediation Effect, Transactional Analysis Based Group Therapy*

Academic stress among secondary school students is a well-established risk factor for anxiety, depression, and impaired learning, and recent syntheses emphasize the need for scalable, school-based psychosocial interventions tailored to adolescents' developmental needs (Jagiello et al., 2024). Transactional Analysis-based Group Therapy (TAGT) is promising in this context because it explicitly targets ego states, dysfunctional scripts, and interpersonal transactions that sustain stress-eliciting appraisals. Emerging trials in educational settings indicate that group-delivered, skills-focused programs can improve students' mental health and coping (Kortsch et al., 2025), while TA-oriented trainings have shown benefits for adolescents' coping with divisive situations (Roikom et al., 2024) and for

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emotional competencies and mood (Talebi et al., 2025). Complementing these outcome data, comparative evidence suggests TA-based group therapy can be at least as effective as other psychoeducational approaches in improving stress-related outcomes (Jamalzadeh et al., 2025).

A plausible mechanism linking TAGT to lower academic stress is enhancement of Emotional Intelligence (EI) (Sethi, 2023; Khorasani et al., 2023). Contemporary mediation studies with youth samples show EI is inversely related to perceived stress and positively linked to resilience and well-being; importantly, EI often functions as a mediator that transmits the effects of psychological resources or training to mental-health outcomes (Çelik et al., 2024; Zhang, et al., 2024). Within schools, TAGT's emphasis on recognizing transactional patterns, reframing internal dialogue, and practicing adult-ego regulation may directly cultivate EI subskills (emotion awareness, regulation, and empathic communication), which in turn reduce stress reactivity in academic contexts marked by evaluation, time pressure, and peer dynamics (Seow et al., 2022; Mathew, 2023; Ullah, 2023). Accordingly, the present study tests a mediation model in which EI accounts for part of TAGT's effect on academic stress among secondary school students. Establishing mediation would sharpen theory on how TA works in adolescent groups and inform the design of briefer, mechanism-focused modules for school mental-health programs.

### Objective

- To find out the mediation effect of emotional intelligence on the effectiveness of Transactional Analysis Based Group Therapy (TAGT) on academic stress of secondary school students.

### Hypothesis

- Emotional intelligence does not significantly mediate the effect of Transactional Analysis Based Group Therapy on academic stress of secondary school students.

## METHODOLOGY

The quasi-experimental study adopted pre-test post-test control group design. The population of the study is students in the age range 14-16 years, studying in grade levels eight, nine and ten in schools affiliated to the Kerala Board of Public Examinations, Government of Kerala (India). The estimated size of the population is 12,65,348 deployed in 2936 secondary schools spread over 14 revenue districts. The participants of the study were four intact classes of ninth grade students (n = 158), selected from St. Philomena's Higher Secondary School, Koonammavu, P. O., North Parur, under the authority of the District Educational Office, Aluva, Ernakulam Revenue District (Kerala, India). One of the class divisions was randomly fixed as waitlist control and the remaining three divisions as treatment groups. The study used two psychometric instruments:

1. *Instrument for Measuring Academic Stress (I-MAS)*: The I-MAS is a 50 item five-point rating scale covering six dimensions of academic stress, viz., Physical-, Cognitive-, Affective-, Motivational-, Behavioural- and Interpersonal dimensions. The tool has a criterion validity of 0.78 and test re-test reliability (four-weeks interval) of 0.86.
2. *Student Emotional Intelligence Scale (SEIS)*: The SEIS is a 40-item five-point (Strongly agree, Agree, Not sure, Disagree, and Strongly disagree) Likert-scale. It was developed by basing Daniel Goleman's Trait Model of Emotional Intelligence and covers five dimensions viz., *Self-awareness, Self-regulation, Motivation,*

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*Empathy and Social skills.* The SEIS has a criterion validity of 0.81 and test re-test reliability of 0.88

The Transactional Analysis based group therapeutic intervention was done with the help of psycho-educational package named Transactional Analysis based Psycho-Pedagogic Programme (TAP-3) developed by the investigator. The baseline measurement of the variables (academic stress and emotional intelligence) in control group and treatment group was followed by 14 sessions of psycho-educational intervention, each of approximately 40 minutes duration, and then by the post-testing of the variables on the next day. The mediation analysis was performed in Jamovi, an open-source statistical platform for data analysis to test the hypothesis.

### RESULTS AND DISCUSSIONS

The GLM Mediation Model (medmodel) was used for examining the mediation effect of EI on the effectiveness of TA-based Group Therapy on academic stress. The General Linear Model (GLM) explains how and why the predictor (TAGT) influences the outcome variable (Post-test Academic Stress) through the mediator (Post-test EI), while allowing for the effects of covariates. The Mediation Model Setup for the study is:

- Predictor (X): GRP (Control vs. TAP-3 Intervention)
- Mediator (M): EI<sub>2</sub> (Post-test Emotional Intelligence)
- Outcome (Y): AS<sub>2</sub> (Post-test Academic Stress)
- Covariates: AS<sub>1</sub> (Pre-test Academic Stress), EI<sub>1</sub> (Pre-test Emotional Intelligence)

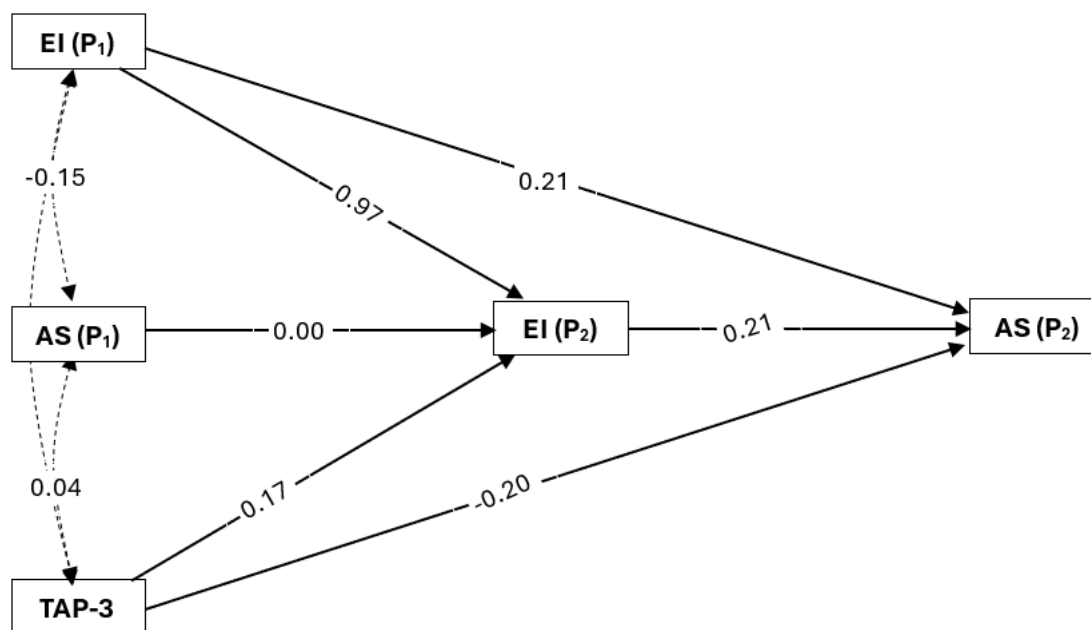
The GLM Mediation Model showing mediators models (m1 and m2) and Full Model and Indirect Effects are illustrated as follows:

#### Models Info

Mediators Models		
Full Model	m1	$EI_2 \sim GRP + AS_1 + EI_1$
	m2	$AS_2 \sim EI_2 + GRP + AS_1 + EI_1$
Indirect Effects (IE)	IE-1	$GRP \Rightarrow EI_2 \Rightarrow AS_2$
	IE-2	$AS_1 \Rightarrow EI_2 \Rightarrow AS_2$
	IE-3	$EI_1 \Rightarrow EI_2 \Rightarrow AS_2$
Sample size	N	158

The Path Model revealing the direct effect of TA-based Group Therapy on academic stress and the EI mediated effect of the treatment on the outcome variable (academic stress) are shown in Figure 1.

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**Figure 1: Mediation Path Model of Emotional Intelligence in the Effectiveness of TA-based Group Therapy on Academic Stress**

**Table 1: Indirect and Total Effects of Emotional Intelligence in Mediation Model**

Type	Effect	Estimate	SE	95% CI		$\beta$	z	p
				Lower	Upper			
Indirect	GRP ⇒ EI <sub>2</sub> ⇒ AS <sub>2</sub>	-2.4388	0.764	-3.94	-0.94	-0.036	-3.193	0.001
	AS <sub>1</sub> ⇒ EI <sub>2</sub> ⇒ AS <sub>2</sub>	-0.0001	0.002	-0.01	0.00	-0.001	-0.351	0.725
	EI <sub>1</sub> ⇒ EI <sub>2</sub> ⇒ AS <sub>2</sub>	-0.3083	0.095	-0.49	-0.12	-0.206	-3.255	0.001
Component	GRP ⇒ EI <sub>2</sub>	7.6761	0.474	6.75	8.60	0.172	16.204	<.001
	EI <sub>2</sub> ⇒ AS <sub>2</sub>	-0.3177	0.098	-0.51	-0.13	-0.211	-3.257	0.001
	AS <sub>1</sub> ⇒ EI <sub>2</sub>	0.0025	0.007	-0.01	0.02	0.004	0.353	0.724
	EI <sub>1</sub> ⇒ EI <sub>2</sub>	0.9705	0.011	0.95	0.99	0.974	90.557	<.001
Direct	GRP ⇒ AS <sub>2</sub>	-13.1935	0.948	-15.05	-11.34	-0.197	-13.923	<.001
	AS <sub>1</sub> ⇒ AS <sub>2</sub>	0.9729	0.009	0.96	0.99	0.976	111.254	<.001
	EI <sub>1</sub> ⇒ AS <sub>2</sub>	0.3216	0.096	0.13	0.51	0.215	3.365	<.001
Total	GRP ⇒ AS <sub>2</sub>	-15.6322	0.602	-16.81	-14.45	-0.233	-25.971	<.001
	AS <sub>1</sub> ⇒ AS <sub>2</sub>	0.9721	0.009	0.95	0.99	0.976	107.309	<.001
	EI <sub>1</sub> ⇒ AS <sub>2</sub>	0.0133	0.014	-0.01	0.04	0.009	0.974	0.33

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The results of the mediation analysis, given in Table 1, exposes the following:

The estimate for the path  $GRP \Rightarrow EI_2 \Rightarrow AS_2$  is negative and significant (Estimate = -2.4388;  $\beta = -0.036$ ;  $p < .001$ ), revealing that TA-based Group Therapy (TAGT) exert a negative but significant indirect effect (on academic stress) mediated through emotional intelligence. Putting differently, TA-based group therapy helps to reduce academic stress because it enhances emotional intelligence, which then reduces academic stress. This suggests that the reduction in academic stress observed among students who received TA-Therapy can be partly attributed to improvements in their emotional intelligence.

The estimated for the path  $AS_1 \Rightarrow EI_2 \Rightarrow AS_2$  is not significant (Estimate = 0.0001;  $\beta = -0.001$ ;  $p > .05$ ), indicating that the pre-intervention academic stress does not significantly influence the post-intervention academic stress indirectly through post-test scores of EI. The mediation pathway linking baseline academic stress to post-test academic stress through emotional intelligence measured after the intervention was found to be non-significant. This suggests that the starting level of stress among students did not influence how TA-based group therapy worked. In other words, the program reduced stress effectively for students, irrespective of how high or low their initial stress levels were.

The estimate for the path  $EI_1 \Rightarrow EI_2 \Rightarrow AS_2$  is significant (Estimate = -0.3083;  $\beta = -0.206$ ;  $p < .001$ ), exposing that pre-intervention EI exert a significant influence on post-intervention academic stress indirectly through post-intervention EI. Putting differently, students having higher initial EI are more likely to develop higher EI because of TA-Therapy, which contributes to lower post-intervention academic stress. TA-based group therapy is more effective with participants having greater initial EI in reducing their academic stress.

The component path  $GRP \Rightarrow EI_2$  (path a) is significant and positive (Estimate = 7.6761;  $\beta = 0.172$ ;  $p < .001$ ), revealing that the TA-Therapy significantly enhances emotional intelligence of participants. The estimate for the path (path b)  $EI_2 \Rightarrow AS_2$  is negative and significant (Estimate = -0.3177;  $\beta = -0.211$ ;  $p < .001$ ), indicating that higher post-intervention EI is helpful in reducing post-intervention academic stress. The estimate for  $AS_1 \Rightarrow EI_2$  is negligible and insignificant (Estimate = 0.0025;  $\beta = 0.004$ ;  $p > .05$ ), revealing that pre-intervention academic stress does not influence post-intervention emotional intelligence. The estimated for  $EI_1 \Rightarrow EI_2$  is significant (Estimate = 0.9705;  $\beta = 0.974$ ;  $p < .001$ ), underscoring that pre-intervention EI influences post-intervention EI when treated with TAGT.

The estimate obtained for the path  $GRP \Rightarrow AS_2$  (path c) is negative and significant (Estimate = -13.1935;  $\beta = -0.197$ ;  $p < .001$ ), demonstrating the curative effect of TA-Therapy on academic stress even after controlling EI. The magnitude of the effect for path  $AS_1 \Rightarrow AS_2$  is positive and significant (Estimate = 0.9729;  $\beta = 0.976$ ;  $p < .001$ ), revealing that the post-intervention academic stress of the students is a strong positive function of their pre-intervention academic stress even when exposed to TA-based group therapy. The size of the effect estimated for the path  $EI_1 \Rightarrow AS_2$  is positive and significant (Estimate = 0.3216;  $\beta = 0.215$ ;  $p < .001$ ), demonstrating that higher pre-intervention EI contributes higher post-intervention academic stress.

The overall effect of the TA-based group therapy (independent variable) on the outcome variable, before separating into direct and indirect components, is denoted in the analysis by the total effects. The magnitude of the effect estimated for the path  $GRP \Rightarrow AS_2$  (path c) is

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negative and significant (Estimate = -15.6322;  $\beta = -0.233$ ;  $p < .001$ ), exposing the significant effect of TA-based group therapy in reducing academic stress considerably. The estimate for the path  $AS_1 \Rightarrow AS_2$  is also large, positive and significant revealing that pre-intervention academic stress of the students has a strong positive effect on post-intervention academic stress when treated with TA-Therapy (Estimate = 0.9721;  $\beta = 0.976$ ;  $p < .001$ ). The magnitude of the effect of pre-intervention EI on post-intervention academic stress is negligible and not significant ( $EI_1 \Rightarrow AS_2$ ; Estimate = 0.0133;  $\beta = 0.009$ ;  $p > .05$ ).

To sum up, TA-based Group Therapy has a powerful total effect on controlling academic stress ( $\beta = -0.233$ ,  $p < .001$ ). This effect is partly mediated by emotional intelligence: The TA-Therapy increases EI (a-path), and higher EI decreases stress (b-path). The indirect effect via EI is significant (Estimate = -2.4388,  $p < .001$ ), showing partial mediation. The direct effect remains significant (Estimate = -13.1935,  $p < .001$ ), revealing TA-based group therapy also reduces stress through other mechanisms beyond EI. Pre-test EI strongly predicts post-test EI, and through this pathway also helps reduce stress.

### CONCLUSION

TA-based Group Therapy exert a negative but significant indirect effect on academic stress of secondary school students, mediated through emotional intelligence ( $GRP \Rightarrow EI_2 \Rightarrow AS_2$ : Estimate = -2.4388;  $\beta = -0.036$ ;  $p < .001$ ). The pre-intervention academic stress does not significantly influence the post-intervention academic stress indirectly through post-test scores of EI ( $AS_1 \Rightarrow EI_2 \Rightarrow AS_2$ : Estimate = -0.0001;  $\beta = -0.001$ ;  $p > .05$ ). The pre-intervention EI exerts a significant influence on post-intervention academic stress indirectly through post-intervention EI ( $EI_1 \Rightarrow EI_2 \Rightarrow AS_2$ : Estimate = -0.3083;  $\beta = -0.206$ ;  $p < .001$ ). TA-based Group Therapy has a powerful total effect on controlling academic stress of secondary school students ( $\beta = -0.233$ ,  $p < .001$ ), which is partly mediated by their emotional intelligence (Estimate = -2.4388,  $p < .001$ ). The mediation analysis carried out revealed that TA-based Group Therapy significantly reduced academic stress. The indirect effect of TA-Therapy on academic stress through emotional intelligence was significant, showing that improvements in emotional intelligence partially mediated the effect of TA-based group therapy on reducing stress. The hypothesis formulated in this context (*emotional intelligence does not significantly mediate the effect of TA-based group therapy on academic stress of secondary school students*) is, therefore, rejected.

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### **Conflict of Interest**

The author(s) declared no conflict of interest.

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