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COMPARATIVE ANALYSIS OF ATTENTION SPAN AND BURNOUT AMONG SECONDARY SCHOOL STUDENTS: A STUDY OF ENGAGEMENT IN ACADEMIC SUPPORT CENTRES VERSUS NON-ENGAGED PEERS

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Abstract: This research studies the comparison of attention span and burnout between secondary school students who attend after-school coaching (ASC) and non-engaging peers. The study seeks to ascertain if extra academic support affects cognitive stamina and stress levels. A questionnaire survey was conducted by purposive sampling with a sample of 60 students—30 in ASC and 30 counterparts not participating. Maslach Burnout Inventory for Students (MBI-SS) measured burnout on three dimensions, and attention span was tested using the Attention Control Test (ATTC). Differences between the two groups were analyzed through a t-test.

Results show that students in ASC reported increased burnout on two of three dimensions measured, contrary to the existing theoretical assumption that ASC might add to academic strain. Nonetheless, the attention span results were not found to differ between the groups. More research with large populations and varied education settings can help unveil more about this phenomenon.

Index Terms: Attention span, burnout, secondary school students, after-school coaching, academic support, student engagement

1. Introduction

After-school coaching classes have taken the education system in India by storm in the past few years. These supplementary education centers—best known as coaching or tuition—have mushroomed nationwide and become indispensable for many students. Once seen as a last-minute road for bad scholars, coaching has become another tackling the education system that gives competition to each mainstream school and educational institution in terms of time, focus, and finances.

As per DNA (2014), the number of these centers has grown by almost 35% in the last six years, while data from the Asian Development Bank (2012) estimates that about 83% of India's high school students currently attend school, extracurricular classes, and private tuition. This trend highlights the increasing tendency among learners to seek additional academic support from coaching classes.

The rapid growth of coaching classes has unintentionally added to the mounting academic pressure. Students face the ever-growing competition, stressing out to meet increasingly high standards. Social pressure compels parents to invest in these classes so their children can improve their studies and have a sound future. Such a change in perspective has resulted in a domino effect, which has increased academic expectations and

legitimized supplementary education. The combined stress from these two educational pathways is fostering an environment that is prone to stress, anxiety, and burnout.

Academic stress has become a widespread concern around the globe and is linked to various negative mental health outcomes. Studies have determined that persistent academic stress can result in a variety of mental illnesses, including depression, anxiety, and suicidal ideation (see, for instance, Kim & Kim, 2019; Lee et al., 2018). Additionally, academic stress has significant adverse effects on cognitive capacity alongside attention span and emotional well-being. Students' natural attention span seems to be eroding in the current digital world, when knowledge is acquired in short, fragmented bursts, especially among Generation Z. According to research, this generation's attention span is remarkably short on average; some studies suggest it may be as little as eight seconds (see Anderson, 2015). This loss of persistent attention inhibits the building of critical thinking and problem-solving skills, besides influencing academic achievement.

Against this backdrop, it is necessary to critically analyse the impact of coaching classes on students, particularly on attention span and burnout. Through a comparison of the experiences of students who undergo coaching classes with those who rely only on conventional educational practices, this study aims to elucidate how additional academic pressures affect mental health and cognitive abilities. Policymakers, educators, and parents must understand these dynamics. It can inform the development of more balanced educational policies that equally prioritize students' academic and mental well-being.

2. Operational Definitions

2.1 Burnout

A condition of emotional, physical, and mental exhaustion caused by ongoing academic stress is an epidemic as well as the problem of a declining attention span. Burnout students usually exhibit characteristics of compromised ability to learn, chronic fatigue, and lost interest. The probability of burnout is greatly raised when students are overwhelmed by the pressures of both extra coaching and formal schooling.

2.2 Attention span

A person's capacity to concentrate on a task or stimuli for an extended amount of time; this capacity is frequently quantified in terms of consistency and duration. In the context of classroom learning, it entails the elongated duration for which the student can actively listen and register information. Attention span can be reduced due to increased cognitive load.

3. Theoretical Framework

3.1 Theory of Flow

The Theory of Flow by Csikszentmihalyi states the role of attention in achieving complete immersion in an activity. The theory explains that “Flow occurs when there is a balance between the challenge of a task and the individual's skill level. This balance leads to a high level of attention and engagement because the individual is deeply focused, losing track of time and external distractions. High engagement is a result of the task capturing and maintaining attention, which aligns with optimal performance.”

The theory established a relationship between sustained attention and engagement and implies that increased attention span ensures engagement

3.2 The Conservation of Resources (COR) Theory:

(COR) developed by Steven Hobfoll. COR theory suggests that people are motivated to preserve their resources (such as energy, time, and mental focus) because these resources are finite. If people experience constant demands on their attention and cognitive resources (such as multitasking, working long hours, or dealing with high-pressure environments), they may feel depleted over time. This depletion can affect their ability to focus and lead to burnout. The more resources people lose without adequate recovery or replenishment, the greater the risk of burnout.

3.3 Cognitive Load Theory

This theory suggests that "individuals have a limited cognitive capacity for processing information. When the amount of information to be processed exceeds this capacity, it leads to cognitive overload. This overload can result in feelings of frustration, exhaustion, and eventually burnout if sustained over time. The theory emphasizes the importance of structuring learning material to avoid overwhelming the learner's cognitive resources, which can mitigate the risk of burnout."

The theory implies that study sessions at coaching centres in addition to Schools may increase cognitive load and hence burnout.

4. Review of Literature

Betts J et al (2006) conducted a comprehensive study titled "The Development of Sustained attention in children: The effect of age and task load" which explained how youngsters acquire sustained attention and how modifying task settings affects it. 57 youngsters (5-12 years old) completed the CogState and Score! (Test of Everyday Attention for youngsters). Novel variability and traditional indices revealed rapid development from 5-6 to 8-9 years on all measures, followed by a developmental plateau from 8-9 to 11-12 years, with growth visible on some measures. The findings imply that sustained attention improves until age 10, after which it plateaus with relatively slight improvements. Furthermore, performance was often worse on high-load activities than on low-load tasks, revealing the same developing tendency.

Another study by Bradbury N (2016) called " Attention span during lectures: 8 seconds, 10 minutes or more" explained that in today's context of curriculum reform, the traditional lecture has come under scrutiny for its perceived ineffectiveness. Indeed, numerous schools have cut their lectures to 15 minutes in duration based on the "common knowledge" and "consensus" that students' attention begins to wane 10-15 minutes into the presentation. A review of the literature on this topic reveals numerous discussions relating to previous studies, but few primary investigations. Alarmingly, the most frequently reported cause of a quick fall in student attention during a presentation scarcely mentions student attention at all. Many studies attempting to assess attention include methodological issues and subjectivity in data gathering.

Similarly, Fiorilli C et al. (2017) conducted a comprehensive study titled "School burnout, depressive symptoms and engagement: Their combined effect on student achievement," which explained that student burnout increases during adolescence and is linked to both depressive symptoms and school participation. Little is known about how burnout, engagement, and depressive symptoms interact to influence students' academic performance in terms of grades and class attendance. The current study's major goal was to analyze these variables inside a comprehensive model to investigate the direct and indirect effects of burnout, engagement, and depression on student accomplishment while adjusting for gender and age. There were 210 Italian high school students ranging in age from 14 to 16. Student burnout was found to have the greatest impact on academic performance, both directly and indirectly, through depression symptoms and school involvement.

As late as 2021, P Aditya conducted another research, which explained that the introduction of the coronavirus has fundamentally changed the educational system. This was published in a study titled "A study on Automatic Attention Span Detection of Students". Schools and institutions have authorized online classes to ensure students' safety while also addressing academic concerns. The teacher cannot track the pupils' attentiveness in online lectures. Academic institutions may not have enough resources or time to assess each student's video feed. Using Computer Vision and Machine Learning, an application can measure each student's attention levels, reducing the need for manual analysis. Automated solutions are more cost-effective and easier to implement, with the potential for future expansion.

Barnabas O et al. (2019) conducted a comprehensive study titled " Problem-Solving Skills as Correlates of Attention Span and Working Memory of Low Ability Level Students in Senior Secondary Schools," which intended to establish a link between problem-solving abilities and measures of working memory and attention span in science students of low ability level. The study's research design was a correlational survey. The study's population included all Secondary School I (SSI) students who took physics, chemistry, and biology as school subjects in all public senior secondary schools in the study area during the 2017/2018 academic year, with a sample size of 450 science students from 24 Senior Secondary Schools. The Wechsler Adult

Intelligence Scale (WAIS) backward digit span task and Attention Lapses Clicker (ALC) were employed to collect data. Multiple regression analysis was performed to analyze the data utilized to answer the study questions and test null hypotheses at a significance level of 0.05.

Altarriba C et al (2022) concluded through the study titled "Psychological Distress, Burnout, and Academic Performance in First-Year College Students." Students face plenty of obstacles in their initial years of university. Burnout and psychological distress in medical students. Previous studies have examined the prevalence of burnout and psychological distress in medical students. This study aimed to examine the prevalence and associations of psychological symptoms and burnout in first-year students to academic performance, and differences between students of health versus non-health sciences. Methods: A cross-sectional observational study was conducted. Undergraduate students of health sciences (medicine, nursing, physiotherapy, psychology) and non-health sciences (biology, social sciences, business management and engineering) programs filled the Brief Symptom Inventory (BSI-18) and the Maslach Burnout Inventory-Student Survey (MBI-SS). Grades for the first semester of students were aggregated

Madigan D et al (2023) published an article titled "Interventions to reduce burnout in students: A systematic review and meta-analysis." Burnout is prevalent amongst students, and can be detrimental to their motivation, performance, and wellbeing. But there is little agreement right now on how to intervene. Therefore, we present the first systematic review and meta-analysis of studies investigating the effectiveness of interventions to reduce students' burnout. The search yielded 17 studies (10 randomized controlled trials and 7 quasi-experimental trials) that involved 2,462 students from secondary and tertiary schools of education. These studies employed diverse interventions (e.g., mindfulness, rational emotive behaviour therapy, cognitive behavioral therapy). Across interventions, the evidence for their reduction of total burnout was $g^{+} = 0.90$, $p = .02$, 95% CI: [0.04, 1.75], $k = 14$).

Chong L et al (2025) conducted a detailed study on topic " Student Burnout: A review on factors Contributing to Burnout Across Different Student Population" Burnout is a process of chronic response to stress to life. Burnout is caused by the stress linked to study for students. There are many aspects leading to burnout in the different students' populations, The aim of this paper is to provide a review of ancient studies focusing on reasons of burnout among different student groups. We selected 38 recent studies, published between 2019 and 2024, according to the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses. This review's results detail the study designs, burnout questionnaires, factors explored, and analysis methods used in the literature. After discussing the major causes of student burnout, we will propose solutions to this problem.

Koropets O et al. (2019) published an article titled " Emotional and Academic Burnout of Students Combining Education and Work." The article addresses the issue of emotional and academic burnout among working students in higher education institutions. Both theoretical and empirical investigations have shown that academic burnout, a specific form of emotional burnout, manifests as emotional and physical fatigue, diminished motivation for academic pursuits, negative perceptions of instructors and peers, and ultimately, poor academic performance. The emotional burnout syndrome was assessed using a psychological questionnaire tailored for working students. This research was conducted over two years (2017-2018) at a state university in the Russian Federation. A comparative analysis was performed to examine the progression of academic burnout phases about the duration of students' work-study combinations. The findings indicate significant causal links between the intensity of burnout symptoms and the length of time spent balancing work and studies. Additionally, the study identified specific life aspects within the "work-study" continuum that are of particular concern to working students. However, the study's limitations are noted due to the small sample size of respondents. Future research will focus on developing a model for academic burnout in working students, along with creating and adapting diagnostic tools and preventive strategies.

Xu J et al (2022) published a comprehensive study on "Coping With Students' Stress and Burnout: Learner's Ambiguity of Toleran Academic stress has been identified as one of the most important problems in both general education and language learning in particular, and it is considered the most prevalent mental health condition that students face during their educational journey. Similarly, in this case, burnout has been the key issue. The literature has identified the main causes of stress and burnout, so recognizing how they relate to other elements like coping mechanisms—specifically, the ability to tolerate uncertainty—is crucial because it may lessen stress and burnout.

5. Research Problem

To find the attention span and burnout levels of secondary school students and compare them between students attending after-school coaching and non-engaging peers

6. Aim

To find how after-school coaching is related to attention span and burnout in students

7. Objectives

To measure burnout and attention span of secondary school students engaging in ASC

To measure burnout and attention span of their non-engaging peers

To present a comparative analysis between ASC students and non-engaging peers using a t-test.

8. Methodology

8.1 Research Design

A questionnaire-based study was conducted with purposive sampling among secondary school students: those who attend after-school coaching and non-engaging peers. A sample size of 30 was taken in each category.

8.2 Tools

8.2.1 MBI SS (The Maslach Burnout Inventory)

The Maslach Burnout Inventory for Counsellors (MBIC) is a specialized assessment tool designed to measure burnout levels, specifically among counselling professionals. Building on the foundation of the original Maslach Burnout Inventory, this adaptation focuses on the unique stressors and challenges faced by mental health counsellors.

8.2.2 ATTC

The Attention Control Test (ATTC) is a self-report assessment tool designed to measure an individual's perceived ability to control and direct their attention across various situations. This questionnaire evaluates several key aspects of attention regulation.

8.3 Data Collection and Analysis Process

Standardised tools, namely ATTC and MBI SS (an adapted version of the original MBI), were selected for data collection. The data collection process then commenced with the two tools being shared in the form of a Google form and distributed among secondary school students uniformly.

Post data collection, a T-test was run to draw a comparative analysis between attention span and burnout levels of students in coaching centres and non-engaging peers.

The results acquired from the data collection and analysis were then inferred.

8.4 Ethical Considerations

8.4.1 Informed consent

The participants were all informed of the details pertaining to the study and the tools prior to the data collection. It was after fully informing the participants that their consent was taken and recorded.

8.4.2 Confidentiality

The details of the participants and their responses were kept confidential and was promised to not be revealed.

9. Results and Discussion

T-Test

Group Statistics

	ATTC_gps	N	Mean	Std. Deviation	Std. Error Mean
ATTC_T_scores	1,00	30	51,4333	9,20151	1,67996
	2,00	30	51,4000	5,27584	,96323

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						95%
		F	Sig.	t	df	Significance One-Sided p	Significance Two-Sided p	Mean Difference	Std. Error Difference	L
ATTC_T_scores	Equal variances assumed	1,807	,184	,017	58	,493	,986	,03333	1,93651	
	Equal variances not assumed			,017	46,208	,493	,986	,03333	1,93651	

Independent Samples Effect Sizes

		Standardizer[a]	Point Estimate	95% Confidence Interval Lower	95% Confidence Interval Upper
ATTC_T_scores	Cohen's d	7,50008	,004	-,502	,510
	Hedges' correction	7,59883	,004	-,495	,504
	Glass's delta	5,27584	,006	-,500	,512

a. The denominator used in estimating the effect sizes.
Cohen's d uses the pooled standard deviation.
Hedges' correction uses the pooled standard deviation, plus a correction factor.
Glass's delta uses the sample standard deviation of the control group.

ATTC Results

The mean value acquired between the two groups is identical. The P-value as per Leven's test indicates low significance in variance. The collective results don't establish a statistically significant difference in attention between the two groups.

T-Test

Group Statistics

	gps	N	Mean	Std. Deviation	Std. Error Mean
MBI_A	1,00	30	16,4333	10,16310	1,85552
	2,00	30	20,5667	10,00580	1,82680

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Significance One-Sided p	Significance Two-Sided p	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower	95% Confidence Interval of the Difference Upper
MBI_A	Equal variances assumed	,064	,802	-1,587	58	,059	,118	-4,13333	2,60387	-9,34555	1,07888
	Equal variances not assumed			-1,587	57,986	,059	,118	-4,13333	2,60387	-9,34558	1,07891

Independent Samples Effect Sizes

		Standardizer[a]	Point Estimate	95% Confidence Interval Lower	95% Confidence Interval Upper
MBI_A	Cohen's d	10,08476	-,410	-,920	,103
	Hedges' correction	10,21755	-,405	-,908	,102
	Glass's delta	10,00580	-,413	-,927	,107

a. The denominator used in estimating the effect sizes.
Cohen's d uses the pooled standard deviation.
Hedges' correction uses the pooled standard deviation, plus a correction factor.
Glass's delta uses the sample standard deviation of the control group.

MBI A: Emotional exhaustion

The independent-samples t-test reveals that there is no statistically significant difference in MBI_A scores between the two groups (t(58) = -1.587, p = 0.118). Although there was a trend of higher burnout in non-attending peers than those participating in ASC.

T-Test

Group Statistics

	gps	N	Mean	Std. Deviation	Std. Error Mean
MBI_B	1,00	30	14,2667	10,08561	1,84137
	2,00	30	22,6000	7,96371	1,45397

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
						Significance				95% Confidence In Differenc
		F	Sig.	t	df	One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference	Lower
MBI_B	Equal variances assumed	1,169	,284	-3,552	58	<,001	<,001	-8,33333	2,34620	-13,02977
	Equal variances not assumed			-3,552	55,040	<,001	<,001	-8,33333	2,34620	-13,03516

Independent Samples Effect Sizes

				95% Confidence Interval	
		Standardizer[a]	Point Estimate	Lower	Upper
MBI_B	Cohen's d	9,08681	-,917	-1,446	-,381
	Hedges' correction	9,20646	-,905	-1,427	-,376
	Glass's delta	7,96371	-1,046	-1,612	-,467

a. The denominator used in estimating the effect sizes.
Cohen's d uses the pooled standard deviation.
Hedges' correction uses the pooled standard deviation, plus a correction factor.
Glass's delta uses the sample standard deviation of the control group.

MBI B : Depersonalisation

Levene's test for equality of variances was non-significant (F = 1.169, p = 0.284), indicating that the assumption of homogeneity of variance was met. The t-test results showed a significant difference between the groups, t(58) = -3.552, p < 0.001. The mean difference was -8.33 (95% CI [-13.03, -3.64]), indicating that Group 1 scored significantly lower than Group 2. A large effect size was observed (Cohen's d = -0.917), suggesting that the difference is substantial.

T-Test

Group Statistics

	gps	N	Mean	Std. Deviation	Std. Error Mean
MBI_C	1,00	30	31,8667	16,56072	3,02356
	2,00	30	28,0333	7,36948	1,34548

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
						Significance				95% Confidence Interval of the Difference	
		F	Sig.	t	df	One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
MBI_C	Equal variances assumed	17,381	<,001	1,158	58	,126	,251	3,83333	3,30941	-2,79118	10,4578
	Equal variances not assumed			1,158	40,052	,127	,254	3,83333	3,30941	-2,85497	10,5216

Independent Samples Effect Sizes

				95% Confidence Interval	
		Standardizer[a]	Point Estimate	Lower	Upper
MBI_C	Cohen's d	12,81731	,299	-,211	,807
	Hedges' correction	12,98608	,295	-,208	,796
	Glass's delta	7,36948	,520	-,007	1,039

a. The denominator used in estimating the effect sizes.
Cohen's d uses the pooled standard deviation.
Hedges' correction uses the pooled standard deviation, plus a correction factor.
Glass's delta uses the sample standard deviation of the control group.

MBI C: Reduced personal accomplishments

The analysis revealed no statistically significant difference between the groups, t(40.052) = 1.158, p = 0.254. The mean difference was 3.83 (95% CI [-2.85, 10.52]), with a small effect size (Cohen's d = 0.299). These results suggest that the groups do not significantly differ. However, a trend of higher burnout was observed among engaging peers

There is no statistically significant difference in the attention (ATTC scores) between the two groups. There wasn't a significant difference between MBIC scores about emotional exhaustion, either; however, a trend of increased burnout was observed in non-engaging peers. A significant difference was observed in Depersonalisation, with non-engaging peers scoring higher than those engaging in ASC. A trend of higher scores was observed among students engaging in ASC in terms of reduced personal accomplishment.

Future research with a larger sample size or improved methodological sensitivity may help clarify whether this trend represents a meaningful difference.

10. Conclusion

The results acquired posed somewhat contradiction to the previously existing theoretical Framework, which implied that ASC can cause further load thereby potentially leading to burnout. The results of the study, however, counter that non-engaging peers scored lower in burnout in two of the three dimensions.

The results indicate that ASC might be a potential perpetrator of burnout levels among secondary students. Further research on this topic can provide Promising insights.

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