

Academic Motivation among College Students in Urban India in Relation to Commuting Stress and Social Mobility Beliefs

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Research Article

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Abstract

The daily commute significantly impacts students' educational experiences in contexts like India. Existing research links commuting stress (safety, infrastructure, congestion, long travel) to adverse psychological and physical outcomes. Simultaneously, students' social mobility beliefs (upward or downward) influence their perceptions of effort and academic engagement. This cross-sectional study of 152 college students across 5 Indian metropolitan cities investigates how commuting stress and social mobility beliefs jointly and independently affect academic motivation. Findings show commuting stress negatively associated with motivation, while upward mobility beliefs act as a buffer and downward mobility beliefs exacerbate the demotivating effect. These results underscore the importance of structural (commuting) and psychological (mobility beliefs) factors in educational outcomes, offering implications for institutional support, urban planning, and policy interventions aimed at improving students' learning environments.

Introduction

Education is often regarded as the most reliable avenue for upward mobility, offering individuals the opportunity to improve their life circumstances through academic achievement and career success. However, the path to such achievement is far from uniform, with students' educational experiences shaped by a variety of structural, personal, and contextual factors. One factor that remains relatively underexplored, particularly within the Indian higher education landscape, is the role of commuting stress in influencing academic motivation. With a significant proportion of Indian college students relying on public transportation or enduring long commutes, it becomes crucial to examine how stressors associated with daily travel, such as congestion, lack of safety, and limited convenience, interact with students' psychological processes and social beliefs [23, 40].

Commuting stress, broadly defined as the strain experienced during the journey between home and institution, has been consistently associated with both psychological and physical outcomes. Previous studies have documented links between long or stressful commutes and elevated levels of fatigue, stress, and reduced well-being [16, 18]. More recently, evidence suggests that commuting strain extends into academic domains, with students reporting reduced concentration, lower energy levels, and diminished motivation following prolonged or difficult commutes [19, 40]. Given that motivation is a central determinant of academic performance and persistence [37, 39], exploring the specific mechanisms through which commuting-related stress undermines motivation is critical.

Another relevant layer in this relationship is the role of social mobility beliefs. Beliefs about the possibility of moving upward or downward in society, whether grounded in structural realities or personal optimism, are central to shaping students' academic engagement. When students hold strong upward mobility beliefs, they are more likely to view educational efforts as meaningful investments that can yield long-term benefits [26, 38]. Conversely, downward mobility concerns or skepticism about upward mobility opportunities may foster disillusionment, reducing academic drive [14, 20]. In India, where social

mobility is tightly interwoven with caste, class, and urban-rural divides, such beliefs can significantly moderate the way students interpret and respond to structural stressors such as commuting [13, 31].

Understanding the interplay between commuting stress and social mobility beliefs offers valuable insight into the psychological processes shaping student motivation. For instance, commuting strain may amplify downward mobility anxieties, as students from marginalized backgrounds could perceive these stressors as additional evidence of systemic barriers. Alternatively, students with strong upward mobility beliefs may be more resilient to commuting stress, framing it as a temporary challenge en route to greater success [14]. These dynamics highlight the importance of studying how external structural constraints (transportation systems, infrastructure) interact with internalized socio-psychological beliefs (mobility expectations, aspirations) to shape motivation and academic persistence.

Despite the significance of this intersection, empirical literature remains sparse, particularly in the Indian context. While there is growing scholarship on commuting and its impact on health and productivity in general [33], limited research directly examines student populations, whose developmental stage makes them especially vulnerable to stressors. Moreover, most existing studies treat commuting and social mobility as separate lines of inquiry rather than interdependent phenomena. This lack of integration creates a gap in understanding the full spectrum of challenges faced by students in India, where access to safe and efficient transportation remains uneven, and educational aspirations are often heavily tied to beliefs about changing one's socio-economic status [13, 23].

The broader consequences of this gap are noteworthy. Educational motivation is not merely an individual psychological construct; it is tied to structural inequalities. When students from disadvantaged backgrounds experience disproportionately high commuting stress alongside fragile beliefs in mobility, the outcome may be disengagement or attrition. Such outcomes risk perpetuating cycles of inequality, undermining the transformative role education is often expected to play [20, 26]. In this regard, examining the combined influence of commuting stress and mobility beliefs is not only academically important but also has direct implications for educational equity and policy interventions.

Commuting Stress: Psychological and Physical Dimensions

Commuting stress encompasses more than the time spent traveling. It involves a set of factors that include congestion, crowding, unpredictability, exposure to unsafe environments, and the physical toll of daily travel. In urban India, where infrastructural inadequacies and overburdened public transport are commonplace, these stressors can be particularly acute [40]. Prior research has shown that such stress is linked to reduced psychological well-being, with effects such as irritability, fatigue, and even increased risk of depressive symptoms [41]. On a physiological level, commuting strain has been associated with elevated cortisol levels, poorer cardiovascular outcomes, and increased somatic complaints [33].

For students, the implications of these effects are amplified. Commuting consumes not only time but also energy resources that might otherwise be directed toward academic engagement. Repeated daily

exposure to congestion or unsafe travel conditions may also erode students' sense of security and control, both of which are crucial for sustaining motivation [37].

Social Mobility Beliefs and Educational Motivation

Parallel to commuting stress, beliefs about mobility significantly shape how students approach education. Students who perceive education as a reliable pathway to upward mobility are more likely to persist despite obstacles [38]. In contrast, when mobility is perceived as unattainable or downward mobility looms large, students may disengage, seeing limited value in academic investment [14]. Importantly, beliefs about mobility are not formed in isolation but are influenced by broader socio-demographic factors, such as caste, income, and parental education [13, 26].

In India, where higher education is often seen as both an aspiration and a burden, the salience of mobility beliefs is particularly high. Students from disadvantaged groups may cling to education as one of the few available avenues for advancement, even as structural barriers complicate their journeys [31]. This tension makes it important to consider how commuting stress interacts with mobility beliefs, potentially amplifying or undermining their impact on motivation.

Towards an Integrated Perspective

Taken together, commuting stress and mobility beliefs offer a layered understanding of academic motivation. Rather than treating stress and beliefs as separate predictors, this study posits that they may interact in meaningful ways, shaping both the intensity and quality of motivation. For instance, a student who faces daily commuting stress yet believes strongly in upward mobility may adopt a resilient, goal-oriented stance. Another, who experiences the same stress but fears downward mobility, may respond with disengagement or cynicism. The interaction between these variables could thus account for heterogeneity in motivational outcomes that is not explained by either variable alone.

Furthermore, socio-demographic variables (gender, caste, socio-economic status, residential location) may play critical moderating roles. For example, female students often face additional safety concerns during commuting, which may amplify stress levels relative to male peers [23]. Similarly, students from lower socio-economic backgrounds may have fewer alternatives (e.g., private transport), making them more vulnerable to systemic inadequacies. These contextual factors are vital for understanding not only individual variation but also the broader patterns of inequality embedded in educational experiences.

The Present Study

The present study aims to address this critical gap by examining how commuting stress and social mobility beliefs, both independently and interactively, shape academic motivation among college students in India. Specifically, it investigates: (1) the psychological and physical dimensions of commuting stress, (2) the role of upward and downward mobility beliefs, (3) the independent and combined influence of these factors on academic motivation and (4) the moderating role of socio-demographic variables. By doing so, the study seeks to advance understanding of how structural and

psychological factors intersect to influence educational experiences, thereby contributing to the sparse but growing body of literature in this area.

Ultimately, the findings aim to inform educational policy and practice, highlighting the need for interventions that not only improve transportation infrastructure but also address students' socio-psychological needs. In a context where education is closely tied to aspirations of mobility, understanding these dynamics is essential for fostering equitable and sustainable academic engagement.

Objectives

In line with the research questions, the primary objective of this study is to deepen the understanding of how commuting stress and social mobility beliefs shape the academic motivation of college students in metropolitan India. More specifically, the study seeks to:

1. Examine the predictive influence of commuting stress, including inefficiency, congestion, unsafety, and psychophysical strain, on academic motivation.
2. Investigate the predictive role of upward and downward social mobility beliefs in shaping academic motivation.
3. Explore whether socio-demographic factors (gender, perceived socio-economic status, time spent commuting, frequency, and mode of commuting) exert independent or moderating effects on academic motivation.

Together, these objectives aim to provide an integrated account of how structural, psychological, and socio-demographic dimensions interact to influence educational outcomes.

Hypotheses

Drawing upon prior work on commuting strain [33, 42], social mobility beliefs [14, 29], and student motivation [25, 37], the following hypotheses were formulated:

H1: Commuting stress will significantly predict academic motivation among college students.

- H1a: Unsafety and insecurity during commuting will negatively predict academic motivation.
- H1b: Psychophysical strain experienced during commuting will negatively predict academic motivation.
- H1c: Inefficiencies and inconveniences will negatively predict academic motivation.
- H1d: Congestion and crowding will negatively predict academic motivation.

H2: Social mobility beliefs will significantly predict academic motivation.

- H2a: Stronger beliefs in upward social mobility will positively predict academic motivation.
- H2b: Stronger beliefs in downward social mobility will negatively predict academic motivation.

H3: Socio-demographic variables will significantly predict academic motivation.

- H3a: Gender will serve as a predictor of academic motivation.
- H3b: Perceived socio-economic status will predict academic motivation.
- H3c: Frequency of commuting will predict academic motivation.
- H3d: Mode of commuting will predict academic motivation.
- H3e: Time spent commuting will predict academic motivation.

Method

Participants

The study focused on college students enrolled in full-time, in-person courses at higher education institutions located in five major metropolitan regions of India: Delhi-NCR, Bengaluru, Hyderabad, Mumbai, and Pune. Participants were day-scholars aged 18–28 years who commuted daily to their institutions.

Non-probability sampling methods were employed to recruit participants. A combination of purposive and snowball sampling was used, relying on digital outreach (LinkedIn, WhatsApp, and other student/professional platforms) and in-person recruitment at select institutions.

A total of 158 responses were collected. After applying the inclusion criteria, 152 valid responses were retained, comprising 76 male and 76 female students.

According to the a priori power analysis, conducted using G*Power 3 [15], to determine the minimum sample size required for the planned analyses, the sample size was deemed to be appropriate. For hierarchical multiple regression with seven predictors, a medium effect size ($f^2 = .15$), $\alpha = .05$, and desired power of .80 indicated a minimum required sample of $N = 103$. For the one-way ANOVA, assuming a medium effect size ($f = .25$) and $\alpha = .05$, the required minimum sample was $N = 128$ (for two groups), $N = 159$ (for three groups), $N = 180$ (for four groups) and $N = 200$ (for five groups). The obtained sample ($N = 152$) therefore exceeded the requirement for both regression analyses and ANOVA (for two groups).

Measures

To address the study's aims, three validated scales were employed. All scales were reviewed for suitability with Indian student populations and adapted linguistically where necessary.

1. Multimodal Commuting Stress Scale (MCSS) [42].

The MCSS is a 21-item self-report instrument designed to capture commuting-related

stress across different modes of transportation. It evaluates four domains:

- Unsafety and insecurity,
- Inefficiency and inconvenience,
- Congestion and crowding,
- Psychophysical strain.

Items are rated on a 5-point Likert scale (0 = hardly ever/never to 4 = almost

always/always). Prior validation in Spain reported strong psychometric properties (Composite Reliability = .979-.990; α = .846-.913).

2. Bi-dimensional Social Mobility Beliefs Scale (BSMBS) [29].

The BSMBS consists of 8 items, split into two 4-item subscales assessing beliefs in

upward and downward mobility. Items are rated on a 7-point Likert scale (1 = totally disagree to 7 = totally agree). To suit the Indian context, references to “Spain” were replaced with “India.” Validation studies reported good internal consistency (α = .84 for upward; α = .81 for downward).

3. Short Academic Motivation Scale (SAMS) [25].

This 14-item measure is a validated short form of the Academic Motivation Scale [43], rooted in Self-Determination Theory [12]. It captures seven motivational dimensions: three types of intrinsic motivation, three forms of extrinsic regulation, and amotivation. Items are rated on a 5-point Likert scale (1 = does not correspond at all to 5 = corresponds exactly). Reliability coefficients range from .60 to .80.

Procedure

The questionnaire was administered online using Qualtrics. The questionnaire was structured into five sections:

1. Consent Form - Participants were briefed on the study objectives, assured of confidentiality, and informed of their right to withdraw at any stage. No identifying details were collected.
2. Demographics - Information on age, gender, socio-economic status, city, course of study, marital status, commuting frequency, mode, average time, and income sources was collected [9, 5].
3. Multimodal Commuting Stress Scale (MCSS).
4. Social Mobility Beliefs Scale (BSMBS).

5. Short Academic Motivation Scale (SAMS).

A debrief and gratitude note concluded the survey. Data collection was stopped at 158 responses, with filtering leaving 152 valid cases.

Data Analysis

Data were analyzed using IBM SPSS Version 29.

- Hierarchical multiple linear regression was conducted to examine the predictive effects of commuting stress and social mobility beliefs on academic motivation.
- One-way ANOVA was employed to test the effects of gender, socio-economic status, commuting time, frequency, and mode.
- Statistical assumptions of normality, homoscedasticity, and multicollinearity were checked before running analyses.
- An a priori analysis for sample size estimation as well as post hoc power and sensitivity analysis were carried out using G*Power 3 [15]. The results demonstrated that the sample, although modest in size, was adequately powered to detect effects within the targeted range.

Ethical Considerations

The study followed APA 7 ethical standards. Participants gave informed consent before participation. Anonymity and confidentiality were ensured by avoiding collection of personally identifiable information. No deception was used, and integrity was maintained in data reporting and interpretation.

Results

Table 1
Participant Demographics

Category	Sub-Category	Number of Participants
Gender	Female	76
	Male	76
Age	18 to 21 Years Old	89
	22 to 24 Years Old	48
	Above 24 Years Old	15
Perceived Socioeconomic Status	Working Class	13
	Middle Class	95
	Upper Class	44
Educational Programme Currently Pursuing	Graduate/ Postgraduate (Master's Degree, PhD, etc.)	61
	Undergraduate	91
Personal Income	Yes	16
	No	111
	Sometimes	25
Frequency of Commuting (for education only)	Less than twice a week	15
	Thrice a week	14
	Four times a week	49
	Over four times a week	74
Average Time of the Commute (round-trip)	Less than 1 hour	57
	1–2 hours	43
	2–3 hours	28
	Over 3 hours	24
Medium of Transport	Private Transport (Personal Car, Personal Two-wheeler, Cab)	19
	Tertiary Public Transport (Auto, Walking and Rickshaw)	56
	Public Transport (Metro and Public Bus)	77

Category	Sub-Category	Number of Participants
Company while Commuting	Alone/With co-passengers you don't know	104
	With friends/family	48
Total		152

Table 2

Descriptive Statistics and Correlations for Commuting Stress, Social Mobility Beliefs and Academic Motivation

Variable	M	SD	1	2	3	4	5	6	7
1. Self Determination Index	4.18	6.792	-						
2. Inefficiency and Inconvenience	7.65	4.017	-.126	-					
3. Unsafety and Insecurity	3.83	2.720	-.283**	.350**	-				
4. Congestion and Crowding	4.79	2.730	-.195*	.447**	.483**	-			
5. Psychophysical Strain	6.64	3.642	-.170*	.608**	.424**	.560**	-		
6. Downward Social Mobility	13.67	4.208	-.191*	.071	-.132	.011	.053	-	
7. Upward Social Mobility	17	4.999	-.201*	.128	.147	.082	.042	-.147	-
Note. * $p \leq 0.05$, ** $p \leq 0.01$.									

Table 3
Hierarchical Multiple Regression between Commuting Stress, Social Mobility Beliefs and Academic Motivation

Variable	Unstandardized B	Coefficients SE	Standardized Coefficients Beta	t	Sig.
Model 1					
Constant	8.394	1.850		4.538	.000
Downward Social Mobility Beliefs	– .309	.129	– .191	-2.386	.018*
F(1,150) = 5.691, p = .018, R2 = .037, Adjusted R2 = 0.30					
Model 2					
Constant	3.738	2.788		1.340	.182
Downward Social Mobility Beliefs	– .267	.129	– .165	-2.065	.041*
Upward Social Mobility Beliefs	.240	.109	.177	2.210	.029*
F(2,149) = 5.362, p = .006, R2=.067, Adjusted R2 = .055					
Model 3					
Constant	5.452	2.858		1.907	.058
Downward Social Mobility Beliefs	– .252	.128	– .156	-1.978	.050
Upward Social Mobility Beliefs	.254	.107	.187	2.368	.019*
Psychophysical Strain	– .324	.146	– .174	-2.220	.028*
F(3,148) = 5.312, p = .002, R2=.097, Adjusted R2 = 0.79					
Model 4					
Constant	6.493	2.849		2.279	.024
Downward Social Mobility Beliefs	– .216	.127	– .134	-1.709	.090
Upward Social Mobility Beliefs	.216	.107	.159	2.016	.046*
Psychophysical Strain	– .161	.160	– .086	-1.007	.315
F(7,144) = 5.288, p = .000, R2 = .204, Adjusted R2 = .166					

Variable	Unstandardized B	Coefficients SE	Standardized Coefficients Beta	t	Sig.
Unsafety and Insecurity	– .512	.217	– .205	-2.364	.019*
F(4,147) = 5.504, p = .000, R2 = .130, Adjusted R2 = .107					
Model 5					
Constant	6.647	2.865		2.320	.022
Downward Social Mobility Beliefs	– .214	.127	– .132	-1.685	.094
Upward Social Mobility Beliefs	.219	.107	.161	2.035	.044*
Psychophysical Strain	– .110	.178	– .059	– .619	.537
Unsafety and Insecurity	– .465	.230	– .186	-2.027	.045*
Congestion and Crowding	– .156	.245	– .063	– .638	.524
F(5,146) = 4.467, p = .001, R2 = .133, Adjusted R2 = .103					
Model 6					
Constant	6.634	2.877		2.306	.023
Downward Social Mobility Beliefs	– .216	.128	– .134	-1.685	.094
Upward Social Mobility Beliefs	.217	.108	.160	2.008	.046*
Psychophysical Strain	– .124	.202	– .067	– .616	.539
Unsafety and Insecurity	– .468	.231	– .187	-2.025	.045*
Congestion and Crowding	– .161	.248	– .065	– .649	.517
Inefficiency and Inconvenience	.025	.169	.015	.150	.881
F(6,145) = 3.701, p = .002, R2 = .133, Adjusted R2 = .097					
Model 7					
Constant	7.231	2.770		2.611	.010
F(7,144) = 5.288, p = .000, R2 = .204, Adjusted R2 = .166					

Variable	Unstandardized B	Coefficients SE	Standardized Coefficients Beta	t	Sig.
Downward Social Mobility Beliefs	– .171	.124	– .106	-1.376	.171
Upward Social Mobility Beliefs	.142	.106	.104	1.335	.184
Psychophysical Strain	– .296	.200	– .159	-1.481	.141
Unsafety and Insecurity	– .568	.224	– .228	-2.540	.012*
Congestion and Crowding	.071	.247	.029	.289	.773
Inefficiency and Inconvenience	.087	.163	.052	.534	.594
Gender	1.958	.544	.289	3.602	.000**
F(7,144) = 5.288, p = .000, R2 = .204, Adjusted R2 = .166					

Note

* $p \leq 0.05$, ** $p \leq 0.01$.

Table 4
ANOVA between Categorical Variables and Academic Motivation

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1209.185 ^a	19	63.641	1.459	.111
Intercept	166.802	1	166.802	3.825	.053
Age	175.418	2	87.709	2.011	.138
Gender	439.205	1	439.205	10.072	.002**
Perceived Socioeconomic Status	96.254	3	32.085	.736	.532
Personal Income	46.335	2	23.167	.531	.589
Educational Programme Currently Pursuing	7.655	1	7.655	.176	.676
Frequency of Commuting (Weekly)	296.544	4	74.136	1.700	.154
Average Commuting Time (Daily Round Trip)	44.128	3	14.709	.337	.798
Commuting Company	15.453	1	15.453	.354	.553
Medium of Commute	42.510	2	21.255	.487	.615
Error	5755.914	132	43.605		
Total	9615.111	152			
Corrected Total	6965.099	151			

Note. ** $p \leq 0.01$. a. R Squared = .174 (Adjusted R Squared = .055).

Discussion

The present study set out to investigate the impact of commuting stress and social mobility beliefs on the academic motivation of college students in metropolitan India, with a particular focus on gender, socio-economic status, commuting mode, and commuting frequency (sociodemographic profile of the participants is in Table 1). The findings offer several meaningful insights into how daily stressors, broader socio-economic perceptions, and demographic variables intersect to shape students' engagement with education (descriptive statistics given in Table 2).

Along with Hierarchical Multiple Linear Regression and ANOVA, post hoc power and sensitivity analysis were also conducted. For hierarchical multiple regression with seven predictors, the achieved statistical power was .94 to detect a medium effect size ($f^2 = .15$) at $\alpha = .05$. Sensitivity analysis indicated that the sample was sufficiently powered ($1 - \beta = .80$) to detect effects of $f^2 = .09$ or larger. For the one-way ANOVA (two groups), the achieved power was .86 to detect a medium effect ($f = .25$) at $\alpha = .05$.

Sensitivity analysis indicated that the sample could detect effects of $f = .22$ or larger with a power of 0.80. The results demonstrated that the sample, although modest in size, was adequately powered to detect effects within the targeted range.

One of the central findings was that psychophysical strain during commuting significantly was associated with lower levels of academic motivation ($r(150) = -.170, p = 0.05$) ($b = -.174, t = -2.220, p = .028$) (Table 3). Students who reported greater discomfort, fatigue, and strain during their daily commute were less likely to be motivated to engage in academic pursuits. This aligns with prior research demonstrating that commuting is not a neutral activity but one that consumes both physical and cognitive resources, leaving fewer reserves available for learning-related tasks [5, 9, 28]. Conceptually, this also resonates with the job demands-resources (JD-R) model [2], in which excessive demands such as stressful commutes deplete the resources needed for motivation and performance.

Further, the negative correlation between congestion and crowding during commutes and academic motivation ($r(150) = -.195, p = 0.05$) underscores the role of environmental predictability in shaping academic experiences. Public transport delays, overcrowded spaces, and noise create a backdrop of uncertainty and frustration, discouraging students from devoting themselves fully to academic tasks [11, 22]. That these factors emerged as significant even in metropolitan India, where public transport infrastructure is relatively advanced compared to smaller cities, highlights how pervasive these stressors are in shaping the daily experiences of students.

It was also found that perceptions of unsafety and insecurity during commuting were negatively associated with academic motivation ($r(150) = -.283, p = 0.01$) ($b = -.205, t = -2.364, p = .019$). This indicates that students' daily journeys are not merely stressful but, in many cases, actively threatening to their sense of safety and well-being. This resonates with prior research on urban commuting and student safety [6, 30] and highlights how safety concerns compound with academic pressures to demotivate students. The psychological costs of vigilance, fear, or exposure to unsafe environments redirect cognitive resources away from academic investment, echoing findings from previous research [24, 42].

Findings on social mobility beliefs provide critical nuance (Table 3). Upward mobility beliefs were positively correlated with academic motivation and showed significant associations in regression analyses ($r(150) = .201, p = 0.05$) ($b = .177, t = 2.210, p = .029$). Students who believed in the possibility of improving their socio-economic status through education were more likely to remain motivated despite commuting stress. This highlights the protective role of optimism and perceived agency in sustaining engagement, echoing earlier work [10, 21, 34]. In the Indian context, where upward social mobility beliefs remain relatively high despite structural barriers [36], these findings illustrate how hope for a better future can act as a motivational resource in the face of adversity.

Conversely, downward social mobility beliefs were associated with lower academic motivation ($r(150) = -.191, p = 0.05$) ($b = -.191, t = -2.386, p = .018$). Students who feared that their socio-economic prospects might decline over time reported diminished academic engagement. This finding is consistent with prior research suggesting that perceived futility or disillusionment about education undermines

motivation [17, 32]. Importantly, this suggests that the interplay of beliefs and stressors is not merely linear but dialectical: hope can buffer stress, while hopelessness exacerbates it. The dual pathways underscore the importance of addressing both structural barriers to mobility and the psychosocial narratives students construct about their futures.

The finding that there is a significant relationship between gender and academic motivation and that female students reported higher levels of academic motivation than males challenge the longstanding stereotypes about gender and achievement in higher education ($b = .289$, $t = 3.602$, $p = .000$) ($M_{Females} = 6.14$ and $M_{Males} = 2.2$) (Tables 3 and 4). While past studies have often highlighted male advantage in STEM fields [8, 45], the present results suggest that female students in metropolitan India are demonstrating greater motivational investment in higher education. This can be understood in multiple ways.

First, women in India have historically had to overcome greater structural and cultural

barriers to access higher education [1, 3]. As a result, those who are able to attend may perceive education as particularly valuable, leading to heightened motivation. Second, increased visibility of women's academic and professional achievements, amplified by feminist movements and social media, may provide relatable role models that foster motivation among female students [7, 44]. Finally, gender socialization processes may contribute to differences in how education is framed: while males may prioritize education as a path to financial independence, females may also view it as a route to personal growth and societal participation, leading to broader motivational investments [4, 35].

These findings thus invite a re-examination of motivational dynamics in gendered terms.

Rather than assuming male dominance in educational motivation, the results suggest that female students are demonstrating resilience, persistence, and heightened commitment despite the unique challenges they face, commuting unsafety being one of them.

Theoretical, Educational Institutions and Policy Implications

Given the employment of a cross-sectional design, the results would be better understood

as correlational indicators rather than causal mechanisms. Commuting stress and mobility beliefs appear to function as psychological and structural correlates of academic motivation, which does agree with several existing and well-established theoretical frameworks.

First, they support the transactional model of stress and coping [27] by highlighting commuting as a context in which daily appraisals directly shape academic motivation. Second, they enrich self-determination theory [12] by demonstrating how external stressors like commuting can undermine autonomy and competence while social mobility beliefs can buffer these effects by restoring a sense of

agency. Third, they reinforce the JD-R model's applicability to educational contexts, showing how commuting functions as a demand that interacts with motivational resources in complex ways.

The findings also carry implications for policymakers and educational institutions. At the policy level, improving the safety, reliability, and comfort of public transport systems can be a crucial step towards mitigating the negative impact of commuting stress on students. Investments in metro networks, dedicated student buses, and gender-sensitive safety measures could also enhance academic motivation by reducing daily strain.

For educational institutions, acknowledging commuting as part of the academic ecosystem could be beneficial for enhancing academic motivation and gains. Flexible class schedules, remote learning opportunities, and campus-hostel facilities could mitigate the stress associated with long or unsafe commutes. At a psychosocial level, institutions could also incorporate workshops and mentoring programs to strengthen upward mobility beliefs among students, particularly those from marginalized or disadvantaged backgrounds.

Further intervention based research would be fruitful to understand the causal mechanisms of the same.

Limitations and Future Research

The study is not without limitations. The cross-sectional design, while appropriate for establishing associations between commuting stress, social mobility beliefs, and academic motivation, limits the ability to determine causal direction. The use of purposive and snowball sampling limits the generalizability of findings, and reliance on self-report measures raises concerns of social desirability bias. Moreover, the study focused exclusively on metropolitan students, potentially overlooking unique challenges in rural areas. Future research could adopt mixed-methods designs, comparing commuting students with hostel-residing peers, or extend the inquiry cross-nationally to capture cultural variations in commuting stress and mobility beliefs. While the study was adequately powered to detect medium effects, it may have been underpowered for very small effects, leaving them to go undetected.

Additionally, longitudinal studies would be valuable to track whether commuting stress

and mobility beliefs predict long-term academic outcomes such as persistence, performance, or dropout rates. Experimental or intervention-based research could also test whether bolstering upward mobility beliefs or providing safe commuting alternatives leads to measurable improvements in academic motivation.

Conclusion

Taken together, the findings suggest that commuting stress is far more than a logistical

inconvenience, it is a critical psychosocial determinant of academic motivation. Social mobility beliefs emerge as powerful moderators of this relationship, with optimism sustaining motivation and pessimism

eroding it. Gender differences point to the resilience and heightened motivation of female students, while broader socio-demographic dynamics underscore the role of inequality in shaping academic trajectories.

By situating academic motivation within the daily lived experience of commuting and the

broader socio-economic narratives students hold, this study contributes to a more holistic understanding of education in India's metropolitan contexts. It underscores the urgency of structural and institutional interventions to reduce commuting stress while strengthening students' beliefs in their ability to shape their futures. Only by addressing both the physical and psychological dimensions of commuting can we hope to create truly equitable educational systems where motivation thrives.

Declarations

Author Contribution

Ms. Dilpreet Kaur, Dr. Sushma Suri, Ms. Ananya Praveen and Mr. Manu Singh played instrumental roles in the conceptualization and design of the study. Ms. Dilpreet Kaur collected the data, performed the analyses and drafted the manuscript. All authors reviewed and approved the final version of the manuscript.

Ethics Approval

This study's formal ethics approval was waived by Jamia Millia Islamia, New Delhi, India as this study involved non-invasive, anonymous survey-based research with adult participants and did not involve any experimental manipulation. The study was conducted in accordance with the ethical principles of the American Psychological Association 7th version (APA) and the Declaration of Helsinki (1964) and its later amendments.

Consent to Participate

Informed consent was obtained from all individual participants included in the study prior to participation.

Consent to Publish

Participants were informed that results would be reported in aggregate form for academic publication, with no identifying information disclosed. Consent for publication was obtained as part of the informed consent process.

Competing Interests

The authors declare that they have no relevant financial or non-financial interests conflicts to disclose.

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Data Availability

The datasets generated and analyzed during the current study are available from the corresponding author upon request.

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