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Self-Efficacy among Undergraduate Students in West Bengal: A Multidimensional Analysis

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Abstract:

Self-efficacy, defined as individuals' beliefs in their capabilities to organize and execute actions required for achieving specific goals, constitutes a foundational construct in educational psychology with profound implications for academic achievement and career development. This study investigated self-efficacy levels among 639 undergraduate students (186 male, 453 female) from 16 colleges across four districts of West Bengal, India, examining variations across gender, geographical location, family income, family type, and scholastic stream. A comprehensive Self-Efficacy Scale was developed and validated, initially comprising 63 items across 10 dimensions. Following expert validation ($\kappa > 0.75$) and reliability analysis (Cronbach's $\alpha = 0.915$), factor analysis revealed a three-factor structure explaining 63.571% of total variance: Personal Competence and Confidence (16 items, $\alpha = 0.799$), Persistence and Resilience (15 items, $\alpha = 0.802$), and Adaptability and Problem Solving (13 items, $\alpha = 0.816$). Results indicated that 32.7% of students demonstrated high self-efficacy (scores 138-217), 11.3% moderate self-efficacy (scores 116-137), and 56.0% low self-efficacy (scores 44-115). Arts students ($M = 116.57$, $SD = 35.80$) showed significantly higher self-efficacy than Science students ($M = 106.21$, $SD = 35.52$; $t = 2.90$, $p < 0.01$). No significant gender differences emerged, though females (n=145 in high category) outnumbered males (n=63). Urban students (n=146 in high category) demonstrated stronger self-efficacy than rural students (n=62). Students from nuclear families (n=113 in high category) and middle-income families (₹10,001-20,000: n=95 in high category) showed highest self-efficacy. The findings highlight the need for targeted self-efficacy enhancement programmes, particularly for Science students, rural youth, and students from lower-income families.

Keywords: Self-Efficacy, Undergraduate Students, Bandura's Social Cognitive Theory, Scholastic Stream, Demographic Factors

1. Introduction

Self-efficacy, a cornerstone concept in Albert Bandura's Social Cognitive Theory (1986), refers to individuals' beliefs in their capabilities to organize and execute the courses of action required to achieve designated goals. Unlike self-esteem, which concerns self-worth, self-efficacy focuses on perceived capability for specific tasks and situations (Bandura, 1997). This distinction is crucial: individuals may feel worthy (high self-esteem) yet doubt their capability for particular challenges (low self-efficacy), or conversely, feel confident in specific abilities while questioning overall self-worth.

In educational contexts, self-efficacy profoundly influences students' academic motivation, engagement, persistence, and achievement (Schunk & Pajares, 2002). Students with strong self-efficacy set challenging goals, invest sustained effort, recover quickly from setbacks, and approach difficult tasks as challenges to be mastered rather than threats to be avoided. Conversely, students with weak self-efficacy avoid challenging tasks, dwell on personal deficiencies, and quickly lose confidence in the face of difficulties (Bandura, 1997).

For undergraduate students in West Bengal, self-efficacy assumes particular significance given the competitive academic and employment landscapes they navigate. The transition from school to higher education, exposure to diverse academic demands, and preparation for career entry all require robust self-efficacy beliefs. Yet, comprehensive research examining self-efficacy among undergraduate students in this region, particularly across demographic and academic variables, remains limited.

This study addresses this gap by systematically investigating self-efficacy levels among undergraduate students in West Bengal, exploring variations across gender, geographical location, family income, family type, and scholastic stream.

2. Literature Review

2.1 Theoretical Foundations

Bandura's (1977, 1986, 1997) Social Cognitive Theory provides the primary theoretical framework for understanding self-efficacy. According to this theory, self-efficacy beliefs develop through four principal sources:

Mastery Experiences: Successfully completing tasks builds robust self-efficacy, while failures undermine it. Mastery experiences are the most influential source, as they provide authentic evidence of capability (Bandura, 1997).

Vicarious Experiences: Observing similar others succeed through sustained effort raises observers' beliefs in their own capabilities. The effectiveness of vicarious experiences increases with perceived similarity between observer and model (Schunk, 1987).

Social Persuasion: Encouragement from credible others—teachers, parents, mentors—can strengthen self-efficacy, particularly when coupled with conditions facilitating success (Bandura, 1997).

Physiological and Affective States: Individuals interpret somatic and emotional states as indicators of capability. Stress reactions, fatigue, and anxiety may be interpreted as signs of vulnerability, undermining self-efficacy (Bandura, 1997).

2.2 Self-Efficacy in Academic Contexts

Academic self-efficacy—students' beliefs in their capability to successfully perform academic tasks at designated levels—has received extensive research attention. Meta-analyses consistently

demonstrate positive relationships between academic self-efficacy and academic performance across educational levels and cultural contexts (Multon, Brown, & Lent, 1991; Robbins et al., 2004).

Research has identified multiple correlates and predictors of academic self-efficacy. Pajares (1996) emphasized that self-efficacy beliefs mediate the influence of prior achievement, ability, and self-regulatory processes on subsequent performance. Joët et al. (2011) found that mastery experiences, social persuasions, and classroom-level self-efficacy predicted mathematics and French self-efficacy among elementary students in France.

2.3 Demographic Variations in Self-Efficacy

Research on gender differences in self-efficacy has yielded inconsistent findings. Some studies report higher self-efficacy among males in mathematics and science domains (Pajares, 2002), while others find no significant gender differences in general academic self-efficacy (Huang, 2013). Socioeconomic status, including family income and parental education, typically shows positive associations with self-efficacy (Bandura, 1997). Geographical location influences self-efficacy through differential access to educational resources and role models (Schunk & Pajares, 2002).

3. Methodology

3.1 Participants

The study employed a descriptive survey design with 639 undergraduate students from 16 colleges across four districts of West Bengal (Nadia, North 24 Parganas, Purba Bardhaman, and Hooghly). The sample included 186 male and 453 female students, aged 21-23 years, from Arts (n=513) and Science (n=126) streams. Participants represented rural (n=184) and urban (n=455) areas, with diverse family types (joint family: 279, nuclear family: 320, single-parent family: 40) and monthly family incomes ranging from below ₹5000 to above ₹30000.

3.2 Instrument

The Self-Efficacy Scale was developed through extensive literature review, initially comprising 63 items across 10 dimensions: General Self-Efficacy, Problem-Solving and Decision-Making Self-Efficacy, Goal Achievement Self-Efficacy, Social Self-Efficacy, Academic Self-Efficacy, Communication Self-Efficacy, Creativity Self-Efficacy, Interpersonal Self-Efficacy, Self-Criticism or Doubt Self-Efficacy, and Motivation Self-Efficacy.

Content validity was established through expert evaluation using Kappa statistics ($\kappa > 0.75$), resulting in retention of 61 items. Reliability analysis yielded a Cronbach's alpha of 0.915, indicating excellent internal consistency. Split-half reliability showed a correlation of 0.858 between halves, with a Spearman-Brown coefficient of 0.923.

Factor analysis using principal component extraction with varimax rotation revealed a three-factor structure explaining 63.571% of total variance:

1. **Factor 1: Personal Competence and Confidence** (16 items, $\alpha = 0.799$) - encompassing confidence in handling challenges, making decisions, and achieving goals
2. **Factor 2: Persistence and Resilience** (15 items, $\alpha = 0.802$) - reflecting ability to overcome obstacles and maintain motivation
3. **Factor 3: Adaptability and Problem Solving** (13 items, $\alpha = 0.816$) - capturing flexibility and problem-solving capability

The final 44-item scale (34 positive, 10 negative items) employed a five-point Likert format.

3.3 Data Analysis

Data were analyzed using descriptive statistics, crosstabulations, and independent samples t-tests in SPSS. Self-efficacy levels were categorized as high (138-217), middle (116-137), and low (44-115) based on percentile distribution.

4. Results

4.1 Overall Self-Efficacy Levels

Of the 639 participants, 208 students (32.7%) demonstrated high self-efficacy (scores 138-217), 72 students (11.3%) showed moderate self-efficacy (scores 116-137), and 358 students (56.0%) exhibited low self-efficacy (scores 44-115). One case had missing data for self-efficacy.

4.2 Gender Differences

Gender-wise distribution revealed that among high self-efficacy students, 145 were female and 63 were male. In the moderate category, females (56) exceeded males (16), while in the low category, females (251) again outnumbered males (107). However, independent samples t-test revealed no statistically significant difference in mean self-efficacy scores between male ($M = 114.00$, $SD = 34.20$) and female ($M = 114.00$, $SD = 36.68$) students ($t = 0.185$, $df = 637$, $p = 0.853$).

4.3 Geographical Location

Urban students dominated the high self-efficacy category (n=146) compared to rural students (n=62). In moderate self-efficacy, urban students (n=55) exceeded rural students (n=17), and in low self-efficacy, urban students (n=253) again outnumbered rural students (n=105). T-test results showed no significant difference in mean scores between rural ($M = 114.21$, $SD = 33.38$) and urban ($M = 114.57$, $SD = 34.94$) students ($t = 0.108$, $df = 637$, $p = 0.914$).

4.4 Family Monthly Income

Students from families earning ₹10,001-20,000 comprised the largest group in the high self-efficacy category (n=95), followed by those earning ₹5,001-10,000 (n=65) and below ₹5000 (n=16). The lowest representation in high self-efficacy came from students with family income ₹20,001-30,000 (n=11). ANOVA results indicated no significant differences in self-efficacy scores across income groups ($F = 0.916$, $p = 0.454$).

4.5 Family Type

Nuclear family students showed the strongest representation in high self-efficacy (n=113), followed by joint family (n=86) and single-parent family (n=10). In moderate self-efficacy, joint family students (n=39) slightly exceeded nuclear family (n=31). Low self-efficacy was highest among nuclear family students (n=176), followed by joint family (n=154) and single-parent family (n=28).

4.6 Scholastic Stream

A significant difference emerged between scholastic streams. Arts students demonstrated higher self-efficacy ($M = 116.57$, $SD = 35.80$) compared to Science students ($M = 106.21$, $SD = 35.52$). The t-test confirmed this difference as statistically significant ($t = 2.90$, $df = 637$, $p = 0.004$). Distribution patterns showed Arts students dominating all self-efficacy levels: high (n=178 vs. Science n=31), moderate (n=66 vs. Science n=6), and low (n=269 vs. Science n=89).

5. Discussion

5.1 Gender and Self-Efficacy

The absence of significant gender differences in self-efficacy scores aligns with Huang's (2013) meta-analysis concluding that gender differences in academic self-efficacy are generally negligible across various domains. This finding suggests that undergraduate education in West Bengal provides comparable opportunities for confidence development among male and female students, supporting Bandura's (1997) emphasis on the role of shared learning experiences in shaping self-efficacy.

The numerical predominance of females in all self-efficacy categories reflects the larger female sample size but also suggests that female students are not disadvantaged in self-efficacy development—a positive indicator of gender equity in educational experiences.

5.2 Geographical Location and Self-Efficacy

The lack of significant urban-rural differences, despite numerical urban predominance in higher categories, suggests that undergraduate education may partially equalize self-efficacy beliefs across geographical locations. This finding supports Lent et al.'s (2000) Social Cognitive Career Theory proposition that self-efficacy is shaped more by individual learning experiences and social support than by demographic variables alone.

However, the numerical differences warrant attention: rural students comprised only 29.8% of high self-efficacy group while constituting 28.8% of the total sample, suggesting slight underrepresentation that could cumulatively affect outcomes.

5.3 Family Income and Self-Efficacy

The concentration of high self-efficacy among students from middle-income families (₹10,001-20,000) rather than highest-income groups is noteworthy. This pattern may reflect optimal challenge-support dynamics: moderate economic resources provide sufficient support for confidence-building experiences without the potential complacency or reduced effort that excessive comfort might induce.

5.4 Family Type and Self-Efficacy

The weaker self-efficacy among single-parent family students highlights the importance of family support structures in confidence development. This finding aligns with research emphasizing parental involvement and encouragement as sources of self-efficacy (Bandura, 1997; Schunk & Pajares, 2002). Single-parent families may have fewer resources for providing the sustained encouragement and support that nurture robust self-efficacy beliefs.

5.5 Scholastic Stream Differences

The significantly higher self-efficacy among Arts students represents a striking finding requiring careful interpretation. Several mechanisms may explain this difference:

Curricular Demands: Arts curricula emphasizing discussion, interpretation, and personal expression may provide more frequent opportunities for successful performance experiences—the most potent source of self-efficacy (Bandura, 1997). Science curricula, with their emphasis on objective correctness and standardized assessment, may offer fewer opportunities for students to experience personal mastery.

Feedback Patterns: Arts disciplines often provide more qualitative, developmental feedback focusing on improvement, while Science feedback may emphasize correctness versus incorrectness, potentially undermining confidence among struggling students.

Social Comparisons: Science students may experience more intense social comparison given competitive entrance examinations and structured career hierarchies, potentially diminishing self-efficacy among those not at the top.

Self-Selection: Students choosing Arts may possess initially different confidence profiles, though the direction of causality cannot be determined from cross-sectional data.

6. Implications

For Educational Institutions: The finding that 56% of students demonstrate low self-efficacy calls for systematic interventions. Institutions should integrate self-efficacy enhancement strategies across curricula, including mastery-oriented task design, positive feedback practices, and peer mentoring programmes.

For Science Education: The lower self-efficacy among Science students necessitates targeted interventions. Science curricula should incorporate more opportunities for successful mastery experiences, emphasize personal improvement over social comparison, and provide explicit support for confidence development.

For Counselling Services: Students from single-parent families and lower-income backgrounds may benefit from additional counselling support addressing confidence development. Group interventions focusing on resilience and problem-solving could strengthen self-efficacy in these populations.

For Teacher Education: Teacher preparation programmes should emphasize strategies for fostering student self-efficacy, including providing challenging but achievable tasks, offering constructive feedback, and modelling confident approaches to academic challenges.

7. Limitations and Future Research

The cross-sectional design precludes causal inferences about factors influencing self-efficacy. Longitudinal research tracking self-efficacy development throughout undergraduate years would illuminate how self-efficacy evolves with academic experiences. Additionally, qualitative studies exploring why Arts and Science students differ in self-efficacy could identify specific curricular and pedagogical factors amenable to intervention.

8. Conclusion

This comprehensive analysis of self-efficacy among undergraduate students in West Bengal reveals complex patterns influenced by multiple factors. The high proportion of students with low self-efficacy signals urgent need for intervention, while significant stream differences highlight the importance of context-specific approaches to confidence development. The findings provide an empirical foundation for designing evidence-based programmes to strengthen students' beliefs in their capabilities—a crucial resource for academic success and career achievement.

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