

Academic Motivation Related to Sibling Size and Gender in Family Among Higher Secondary Students of Manipur

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<https://doi.org/10.47509/SAA.2026.v26i01.09>

KEYWORDS: Academic motivation. Gender differences. Sibling size. Higher secondary students. Manipur.

ABSTRACT: This study examines the relationship between gender and sibling size in family, in conformity to academic motivation of higher secondary students in Manipur, a North-Eastern state of India wherein patriarchal, patrilineal, and patronymic social system prevails. Given the stereotypic preference of son in patrilineal societies and lower educational achievements in larger families of India, the present study attempts such a study in Manipur scenario. A randomly selected sample of 500 students (200 males and 300 females) from 11 higher secondary schools in the Imphal East and Imphal West districts was surveyed using a questionnaire while academic motivation was measured using Vallerand's Academic Motivation Scale (AMS), 1992. As normality assumptions were violated ($p < .001$), non-parametric statistical analyses were employed. Spearman's correlation revealed a weak but statistically significant positive relationship between sibling size and academic motivation ($\rho = 0.220$, $p < .001$). Female students demonstrated significantly higher academic motivation than male students; however, the strength of the association was weak ($\rho = .215$, $p < .001$). Differences across sibling-number categories were significant (Kruskal–Wallis $H = 23.99$, $p < .001$), with students having two or more siblings demonstrating higher motivation than those with no or one sibling. Gender differences were further confirmed by the Mann–Whitney U test ($U = 22,436.50$, $p < .001$), though the effective size was small ($r = 0.214$). Overall, the findings suggest that though the gender and sibling size are significantly associated with academic motivation, their effects are modest.

INTRODUCTION

Academic motivation refers to the various factors that influence a person's initiation, intensity, direction, and determination toward his or her academic behaviour (Koyuncuoglu, 2021). It consists of both external and internal factors that drive the individual in learning and pursuing academic goals.

It has been seen that academic motivation plays an important role in students' academic

success, especially in the highly competitive modern educational environment (Akpan and Umobong, 2013; Koyuncuoglu, 2021; Oyekola *et al.*, 2020). Therefore, understanding which family-related factors influence students' academic motivation is essential. Academic motivation in the present study was assessed using the Academic Motivation Scale (AMS) developed by Vallerand *et al.* (1992). The scale differentiates between intrinsic motivation, extrinsic motivation, and amotivation among students and is widely used to examine levels of self-determination in educational contexts. It allows the classification of

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students based on the degree to which their academic engagement is driven by intrinsic interest or external contingencies.

Previous research on gender differences in motivation has produced mixed findings, suggesting that motivational tendencies may vary across contexts and educational settings (Krejčová *et al.*, 2019). Similarly, sibling size, which is an indicator of family structure, may influence motivation through differences in parental attention, resource distribution, and intra-family interactions, which may eventually affect students' psychological orientation and academic mindset (McHale *et al.*, 2012; Dunifon *et al.*, 2017; McAlister & Peterson, 2013). The present study therefore aims to empirically investigate the relationship between gender, sibling size, and motivation, thereby contributing context-specific evidence to the existing literature.

REVIEW OF LITERATURE

In many cases, it has been seen that the academic motivation of a child has an impact on the academic performances of students. Students with low academic performances has been linked to low academic motivation (Scheel *et al.*, 2009). To perform a task to the fullest, a motivation is required which will be the driving force (Mahato and Barman, 2019) and which will determine the student's intensity and determination along with the direction of his aim (Koyuncuoglu, 2021). Hence, the motivation is a driving force which to an extent determines academic achievement (Akpan and Umobong, 2013). The academic motivation pushes a child to learn and participate in school activities (Hulleman *et al.*, 2016) which is the key to persistence and learning (Chickering and Kuh, 2005). Motivation is of utmost importance in every area of life and its effect has been seen in areas such as academic performance (Koyuncuoglu, 2021; Oyekola *et al.*, 2020; Dramanu and Mohammed, 2018; Akomolafe *et al.*, 2013; Goodman *et al.*, 2011), academic engagement (Akpan and Umobong, 2013), career decisions (Koyuncuoglu, 2021), and time management (Ghiasvand *et al.*, 2016). Conversely, low levels of motivation can lead to a series of fallouts like non-responsive to school and

its activities, underachievement and even ultimately dropout (Scheel *et al.*, 2009). Thus, motivation plays a crucial role in students' academic achievement and their desire to learn. It is therefore important to examine whether, and to what extent, sibling size and gender influence this motivation

Familial relationships play an important role in nurturing academic motivation, and students with successful siblings may become more motivated (Scheel *et al.*, 2009). Thus, an individual's family position, particularly the presence and role of siblings, has the potential to influence academic motivation, and studying siblings offers insight into families as social and socializing systems (McHale *et al.*, 2012). Research indicates that the presence or absence of siblings and sibling constellation are linked to children's development and education; siblings influence one another through shared time, whereas only children spend more time with parents and less in unstructured play (Dunifon *et al.*, 2017). Having child-aged siblings supports the development of theory of mind through frequent playful interaction (McAlister and Peterson, 2013). Sibling constellation has also been associated with self-efficacy and perceptions of education, with first-borns reporting higher career ambitions than later-borns and gender differences (Krejčová *et al.*, 2019). Family support influences school engagement directly and indirectly through self-concept (Ramos-Díaz *et al.*, 2016), while additional studies highlight the roles of social support, sibling warmth, and gender structure of siblings (Voorpostel and Van Der Lippe, 2007; Gondal, 2012; Waite *et al.*, 2011; Lei *et al.*, 2017).

Gender can create inequality in how families allocate educational resources. Globally, it has been reported that students were provided with more supplementary education investments (Enrich and Lauterbach, 2020; Nath, 2008; Tansel, 2013). Also, in Germany, boys from poor families are likely provided supplementary education by their care takers (Enrich and Lauterbach, 2020).

In view of the above, the present study aims to find a relationship, if it exists to a significant level between sibling size and gender in providing academic motivation to the students in context of Manipur.

OBJECTIVES

- To examine the relationship between sibling size, gender and academic motivation among Higher secondary students of Manipur (CLASS XI standard).
- To determine whether academic motivation differs among students with different sibling size.
- To determine whether academic motivation differs between male and female students.

MATERIALS & METHODS

A randomly selected sample of 500 higher secondary students (200 males and 300 females) drawn from 11 schools in the Imphal East and Imphal West districts of Manipur was included in the study. Data were collected in 2025 using a structured questionnaire.

Students' motivation was assessed using Vallerand's Academic Motivation Scale (AMS), 1992, which comprises 28 items rated on a 7-point Likert scale. Academic motivation was measured using the Academic Motivation Scale (AMS). The AMS consists of items ranging from 1 (strongly disagree) to 7 (strongly agree).

Statistical analyses, including tests of normality and non-parametric procedures (Spearman's correlation, Kruskal Wallis test, Mann-Whitney U test), were conducted using Microsoft Excel and IBM SPSS software (Trial version).

RESULTS & INTERPRETATIONS

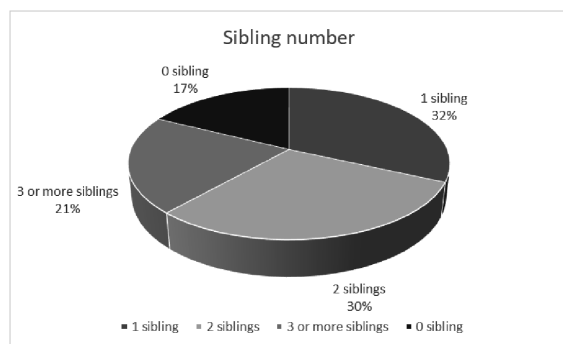


Figure 1: Sibling no. distribution

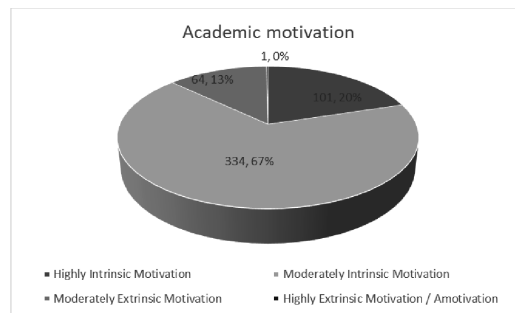


Figure 2: Academic motivation distribution

Figure 1 shows that most students have one sibling (32%) or two siblings (30%), indicating that the majority come from small to moderate-sized families. Students with three or more siblings account for 21%, while 17% are the only one child of the family. Overall, the sample is dominated by students with one or two siblings, with adequate representation of larger and no-sibling families for comparative analysis.

Figure 2 indicates that the majority of students exhibit moderately intrinsic motivation (67%), suggesting a generally positive but not strongly internalized level of academic motivation. A smaller proportion shows highly intrinsic motivation (20%), reflecting strong self-driven engagement with academic activities. In contrast, moderately extrinsic motivation accounts for 13%, while high extrinsic or amotivation is negligible (1%). Overall, the findings suggest that most students are academically motivated, with intrinsic motivation predominating over extrinsic forms.

Informants expressed that the competitive influence among sibling arouse the intrinsic academic motivation whereas the students without sibling have no such opportunity. Only the extrinsic motivation from parents is available to the lone wards of a family. In addition, older siblings motivate the younger ones.

NORMALITY TEST

TABLE 1

Normality test

Variable	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistics	df	Sig.	Statistics	df	Sig.
Sibling size	0.194	500	< .001	0.895	500	< .001
Motivation	0.080	500	< .001	0.986	500	< .001

Both sibling size and academic motivation significantly deviate from a normal distribution, as indicated by the Kolmogorov–Smirnov and Shapiro–Wilk tests ($p < .001$ for both variables) (Table 1). Consequently, the assumption of normality is violated, justifying the use of non-parametric statistical tests for further analysis.

CORRELATION BETWEEN SIBLING SIZE AND ACADEMIC MOTIVATION:

TABLE 2
Spearman's Rank-Order Correlation Between Sibling Size and Motivation

Variable	Sibling Size	Motivation
Sibling Size	—	.220***
Motivation	.220***	—

Note: N = 500. *** $p < .001$ (2-tailed).

The Spearman's rho analysis (Table 2) reveals a weak positive correlation between sibling size and academic motivation ($\rho = 0.220$), which is statistically significant at the 0.001 level ($p < .001$). This indicates that as the number of siblings increases, academic motivation tends to increase slightly. However, the strength of the relationship is

weak, suggesting that sibling size has only a limited influence on students' academic motivation.

CORRELATION BETWEEN GENDER AND ACADEMIC MOTIVATION:

TABLE 3
Spearman's Rank-Order Correlation Between Motivation and Gender

Variable	Motivation	Gender
Motivation	—	.215***
Gender	.215***	—

Note: N = 500. *** $p < .001$ (2-tailed).

For the purpose of analysis, gender was coded as a dummy variable. The Spearman's rho analysis (Table 3) reveals a weak but statistically significant positive correlation between gender and academic motivation ($\rho = 0.215$, $p < .001$). Given the coding scheme, this positive association indicates that female students tend to report slightly higher levels of academic motivation than male students. However, the magnitude of the correlation is weak, suggesting that while the gender difference is statistically significant, gender explains only a small proportion of the variation in academic motivation.

DIFFERENCES IN ACADEMIC MOTIVATION ACROSS SIBLING SIZE CATEGORIES

TABLE 4
Differences in Academic Motivation Across Sibling-Number Groups (Kruskal–Wallis Test and Bonferroni-Adjusted Pairwise Comparisons)

Sibling Group	n	Mean Rank	Significant Pairwise Differences (Bonferroni adjusted)
0 sibling	88	209.99	Lower than 2 siblings ($p = .008$); lower than 3 or more siblings ($p < .001$)
1 sibling	159	225.26	Lower than 2 siblings ($p = .026$); lower than 3 or more siblings ($p = .001$)
2 siblings	149	272.07	Higher than 0 sibling ($p = .008$) and 1 sibling ($p = .026$); not significantly different from 3 or more siblings ($p > .05$)
3 or more siblings	104	292.47	Higher than 0 sibling ($p < .001$) and 1 sibling ($p = .001$); not significantly different from 2 siblings ($p > .05$)
Total	500	—	—

Overall Test: $H(3) = 23.99$, $p < .001$

Note: Pairwise comparisons were adjusted using Bonferroni correction.

The Kruskal–Wallis test (Table 4) revealed a statistically significant difference in academic

motivation across sibling-number groups, $H(3) = 23.994$, $p < .001$. The mean rank scores showed a

clear increasing trend with sibling size, with students having three or more siblings exhibiting the highest level of academic motivation and only children showing the lowest.

Bonferroni-adjusted post hoc pairwise comparisons indicated that students with two siblings and those with three or more siblings differed significantly from students with no siblings and one sibling. However, the difference between the two-sibling group and the three-or-more-sibling group was not statistically significant ($p > .05$). Overall, the findings suggest that academic motivation tends to increase gradually with sibling size, indicating a progressive trend rather than abrupt differences between adjacent higher sibling groups.

DIFFERENCES IN ACADEMIC MOTIVATION BETWEEN DIFFERENT GENDERS

TABLE 5
Mean Rank of Academic Motivation by Gender

Gender	<i>n</i>	Mean Rank	Sum of Ranks
Male	200	212.68	42536.50
Female	300	275.71	82713.50
Total	500		

TABLE 6
Mann–Whitney U Test for Gender Differences in Academic Motivation

Test	Value
Mann–Whitney <i>U</i>	22436.50
Wilcoxon <i>W</i>	42536.50
<i>Z</i>	-4.792
<i>p</i>	< .001

Table 5 and Table 6 together indicate a statistically significant gender difference in academic motivation. Female students show a higher mean rank in motivation (275.71) compared to male students (212.68), suggesting higher motivation levels among females. This difference is confirmed by the Mann–Whitney U test, which reveals a significant difference between the two groups ($U = 22,436.50$, $Z = -4.792$, $p < .001$), indicating that gender is meaningfully associated with variations in academic motivation in the present sample.

The effect size for the Mann–Whitney U test was calculated using $r = \frac{Z}{\sqrt{N}}$ and was found to be 0.214, indicating a small effect size according to Cohen’s benchmarks. Although a highly statistically significant difference in academic motivation was observed between male and female students ($p < .001$), the small effect size suggests that the magnitude of this difference is limited.

DISCUSSION

The findings show that both family structure and gender influence academic motivation among higher secondary students in Manipur. Most students in the sample came from small- to medium-sized families based on sibling size, which reflects the current demographic trend toward smaller households.

The results indicate that sibling size is positively associated with academic motivation, though the relationship is modest. Spearman’s rank-order correlation found a weak but statistically significant positive link between sibling size and academic motivation ($\rho = 0.220$, $p < .001$), meaning that motivation tends to increase slightly as the number of siblings grows. The Kruskal–Wallis test also showed significant differences across sibling-size groups ($H = 23.99$, $p < .001$), with students who had two or more siblings scoring higher in motivation than those with none or one. While the effect is small, the pattern was consistent across groups, pointing to a genuine family-related influence. This aligns with earlier research suggesting that sibling relationships and birth order affect children’s educational development and motivational outlook (McHale *et al.*, 2012; Krejčová *et al.*, 2019).

One likely reason for this pattern is that siblings shape each other’s study habits and attitudes toward school. Younger children often look to older siblings as academic role models at home. On top of that, comparison and competition within the family — whether over grades, achievements, or parental recognition — can push children to work harder and stay persistent. This is consistent with prior findings that having academically successful siblings can raise motivation and educational aspirations (Scheel *et al.*, 2009; Mchale *et al.*, 2012). Only children, by contrast, miss out on this kind of sibling-based

influence and tend to depend more on parental expectations and guidance for their motivation.

Overall, the majority of students showed moderate intrinsic motivation, while very few displayed signs of amotivation. This suggests that students genuinely value education, especially at the higher secondary stage when board exams and career choices become more pressing. It also supports the idea that academic motivation is a key driver of academic behaviour and performance (Koyuncuoglu, 2021; Scheel *et al.*, 2009). That said, very high intrinsic motivation was uncommon, which hints that academic engagement is often pushed along by external pressures and practical concerns as much as by personal interest.

Gender differences were also clear in the data. Spearman's correlation showed a weak but significant positive relationship between gender and motivation ($p = 0.215$, $p < .001$), with female students scoring slightly higher. This was backed up by the Mann-Whitney U test, which confirmed a significant difference between male and female students ($U = 22,436.50$, $p < .001$). Female students had a higher mean rank (275.71) compared to male students (212.68). However, the effect size was small ($r = 0.214$), meaning that while gender is significantly linked to motivation, its real-world impact is limited. Earlier studies have similarly noted gender differences in educational attitudes and motivational patterns (Krejčová *et al.*, 2019). These differences likely stem from variations in socialization, discipline, future planning, and the academic expectations placed on boys and girls. Still, the small effect size makes clear that gender alone cannot fully explain differences in motivation.

Taken together, the findings suggest that academic motivation is shaped by several interacting factors rather than any single cause. Sibling relationships seem to boost motivation through role modelling and healthy competition, while only children lean more heavily on parental input. Female students tend to show slightly higher motivation than male students, though the practical gap is small. Overall, the weak but significant relationships found for both sibling size and gender support the view that academic motivation is multidimensional, driven by a mix of

family-related and personal factors (Koyuncuoglu, 2021; McHale *et al.*, 2012; Scheel *et al.*, 2009).

CONCLUSION

The study found that both sibling size and academic motivation are significantly associated ($p = 0.220$, $p < .001$); also gender and motivation are significantly associated ($p = 0.215$, $p < .001$) among higher secondary students, though their effects are modest. Female students showed higher motivation than male students, but the small effect size indicates limited practical difference. The patrilineal societies in Manipur treat more or less gender equally to their wards regarding the educational opportunities. As the girls are calmer along with strong cultural supervision from caretakers, they are motivated slightly stronger. Differences across sibling-number categories were significant (Kruskal-Wallis $H = 23.99$, $p < .001$), with students having two or more siblings demonstrating higher motivation than those with no or one sibling. Gender differences were further confirmed by the Mann-Whitney U test ($U = 22,436.50$, $p < .001$), though the effective size was small ($r = 0.214$). Overall, the findings suggest that though the gender and sibling size are significantly associated with academic motivation, their effects are modest, and other factors probably play a bigger role in shaping students' academic motivation.

ACKNOWLEDGEMENTS

The author sincerely thanks the participating schools for their cooperation during data collection and extends appreciation to the students, teachers, and administrators whose support made this study possible.

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