AN EMPIRICAL STUDY ON THE SOCIAL DIMENSIONS OF STUDENT'S PREFERENCE FOR MATHEMATICS IN GOAN HIGHER EDUCATION

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Abstract
This study investigates the psychosocial and socio-cultural factors influencing students' preference for mathematics in higher education within the context of Goa, India. The current study draws a sample of 459 students from various colleges who were surveyed, evaluating how both individual and institutional factors, such as the influence of gender norms, parental education level, quality of elementary mathematics teaching, self-rated academic ability, emotional experiences, perceived usefulness of mathematics, and perceived difficulty of the subject, help shape students' preference for mathematics. The findings of the study reveal that variables like gender, parental education had no impact; however, instruction quality, perceived intelligence, and emotional experiences with mathematics were strong predictors of the preference for mathematics among students. Thus, highlighting the importance of rethinking mathematics as not just cognitive but also a socially mediated field rooted in wider patterns of access, identity, and support.
***Keywords**: Higher education, socio-culture, mathematics, parental education, elementary teaching, instruction quality.*

Introduction

The study of mathematics plays an important role in developing a students' reasoning and critical thinking skills, which are needed for problem-solving, not only in academics but also in their everyday life, this includes examples such as managing finances, making informed decisions and engaging with technology, it further guides students to study information, form opinions, and solve real-life problems with great care. The study of mathematics goes beyond academics; the discipline also carries with it 'Symbolic meanings' associating it with intelligence, elitism, and even exclusion depending on one's gender, class, caste, or educational background (Walkerdine, 1998).

In Goa, many students opt for mathematics level II (elementary mathematics) instead of mathematics level I (standard mathematics) when offered an option at the secondary level. The choice of the latter does not seem to attract the interest of many learners. According to a newspaper article in The Times of India, in 2025, approximately 66% of Class X students opted for mathematics level II, and survey results indicate a lack of interest in advanced mathematics at higher levels. This trend continues with the admission to college, where students tend to avoid taking mathematics or any mathematics related courses as electives (The Times of India, 8 April 2025). This is due to the dominance of rote-based learning, limited peer support, and a rigid curriculum. The consequence is that the academic burden is borne almost entirely by a few students who actually have the desire to study mathematics due to the increased pressure, with diminished collaborative learning sessions. This result also contributes to the decline in the sustainability of mathematics programs in certain institutions due to low enrolment, severe financial constraints, and cuts to funding, which leads to the discontinuation of courses.

A student's preference for a subject or a discipline is influenced by a lot of factors. Boaler, J. (1997), in his book, Experiencing school mathematics: Teaching styles, sex and setting,' discusses about few of the factors, including perceived difficulty, interplay of identity, social expectations, and institutional culture. For instance, a student may assume the conception that they are "not a maths person". This might be the result of being relegated repeatedly, receiving unfavourable comments, or not receiving any form of support, and as a result, emotional reactions like worry or anxiety and disinterest get socially conditioned (Boaler, J.,1997).

Additionally, there are several factors could affect students' choice of subjects. Students' own scholarly self-concepts, mathematics anxiety, attitudes towards mathematics lessons, and whether they have plans for the future influence their choices of subjects (Bonne & Johnston, 2016; Kalaycioglu, 2015). A study in Australia on the reasons why students aged between 15-17 years did not take up a mathematics course other than required high school studies showed that students' motives for not taking up mathematics included: mathematics is dull, hard, useless, and badly taught (Murray, 2011).

The current study aims to discover the social reasons why students in Goa avoid choosing mathematics or its related courses when offered as an option at higher levels. By analysing quantitative data and sociological themes, the current research aims to contribute to a holistic understanding of the preference of students in choosing or not choosing mathematics as a desired subject.

Literature Review

The literature examined analyzes diverse factors affecting students' engagement and achievement in mathematics from various global and local perspectives, noting gaps related to gender, the quality of teaching, the structure of the curriculum, and socio-cultural elements.

In her 2023 study "Girls and Mathematics: A Case Study of Nawada District of Bihar," Marufa Gulnaz cited multiple reasons for girls' lack of participation in mathematics during senior secondary school, emphasizing that barriers like insufficient teaching, societal norms, lack of adequate encouragement, and negative peer and familial attitudes greatly affect girls far more than their potential or interest does.

Gurner (2020) also examined factors influencing students' difficulties with mathematics in his paper "Students' Difficulties in Mathematics and the Reasons Behind Them," and noted that in his experience, the overwhelming difficulty high school students have with the subject stems from their teachers, who tend to use rote memorization strategies and rigid, checklist-oriented teaching schedules, resulting in students perceiving the material as excessively abstract.

At the tertiary level, Mili Saha et al. (2021), in their paper titled "Factors Influencing Success and Failure in Undergraduate Mathematics Education: A Comparative Study," highlighted the interplay of student motivation, teaching effectiveness, curriculum design, and systemic issues in Bangladesh. They identified rote learning, outdated pedagogy, and low self-efficacy as persistent barriers.

A broader attitudinal dimension was addressed in "Investigating Students' Attitudes Towards Learning Mathematics in Tanzania" by Mzomwe Yahya Mazana et al. (2019), which found that while students generally begin with a positive attitude toward mathematics, this declines with age, due to disengaging instructional styles and lack of motivational support.

Lastly, Satu Kaleva et al. (2022), in their research titled "The Role of Mathematics Choices in Finnish University Admissions and Gender Disparities," found that advanced mathematics plays a critical role in access to higher education in Finland. However, gender-based self-efficacy gaps and a lack of awareness about career relevance lead many capable girls to opt out of advanced mathematics, reinforcing educational and occupational segregation.

Research Gap

Although studies have analysed the effect of teaching quality, societal factors, and even some gender stereotypes on students' engagement with mathematics, most of this literature concentrates on secondary or tertiary education within some national or international context. There is still a lack of understanding of how mathematical interfaces, especially in elementary schooling affect a learner's fascination with the subject and their long term influence on student identity, emotional response, and subsequent career decisions towards the later years of schooling, are frequently less examined.

The literature is, however, silent on how clues of abstracted mathematics interfaces in elementary schooling, like the classroom environments, pedagogical practices and socio-emotional experiences, and how these impact elementary learners interest in mathematics and eventual career decision in the later years of schooling.

Despite being one of the more educated states in India, very little reasoning research has been conducted on the possible factors contributing to mathematics disinterest or lack of engagement in Goa's secondary and senior secondary schools. The impact of factors such as teaching methods, sociocultural expectations, family involvement, or even occupational interest on students' choices and performance in mathematics in Goan schools is still undetermined.

Therefore, there is a need for interdisciplinary research that positions mathematics disinterested in the broader social framework. In order to address the gap in research, focus on situational context within Goa's landscape, and develop recommendations for targeted educational policies

and strategies in the region, a localized analysis is needed.

The current study seeks to fill this gap by investigating the relationship between the quality of elementary mathematics teaching and student's college-level preferences, as well as exploring how beliefs about mathematics' real-life utility influence subject choice.

Objectives

1. To examine the role of family educational background and sociocultural capital on students' preference for mathematics at the college level.
2. To analyze how the quality and nature of elementary school mathematics instruction shape long-term engagement and subject preference.
3. To explore how self-perceived academic ability and social labeling related to intelligence affect student attitudes toward mathematics.
4. To investigate the impact of academic trauma (emotionally negative experiences) on students' disidentification with mathematics.
5. To understand the role of less use of advanced mathematics in life, with a preference for mathematics at the college level.
6. To study the role of the difficulty level of mathematics with preference for mathematics at the college level.

Research Methodology

This study employed a quantitative research design with the help of a sociological perspective to investigate the relationship between the quality of elementary mathematics teaching, perceptions of the real-life applicability of advanced mathematics, and students' preferences for mathematics at the college level, with a focus on Goa.

Primary data was collected through a structured, self-administered questionnaire distributed through the Google Form. The survey was administered to students at the senior secondary and college levels, resulting in 459 valid responses obtained through simple random sampling. The questionnaire included closed-ended questions addressing variables like teaching quality, perceived usefulness of advanced mathematics in real-life, academic experiences, and subject preference at the college level.

The analysis of the data was obtained using SPSS software, Chi-square tests were conducted to assess associations between key variables, and Cramer's V was used to determine the strength of significant relationships. Although the study was primarily quantitative, the variables and constructs investigated, like academic trauma, disidentification and perceptions of difficulty of the subject, are all rooted in sociological concepts that are related to the existing educational system.

The study adhered to ethical standards by ensuring informed consent from all the participants of the study, anonymity was all information was ensured, and there was an emphasis on voluntary participation. The study aims to contribute to empirical data and produce insights on inclusive and socially responsive educational policies in Goa.

Result and Analysis

Gender Difference

Ho: There is no significant difference in preference for mathematics between male and female students.

Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Preference for mathematics	Male	207	.30	.461	.032
	Female	252	.27	.447	.028

Table 1: *Preference for mathematics among males and females.*

An independent sample t-test was conducted to examine gender differences in preference for mathematics. Results show males (M=0.30, SD=0.46) and females (M=0.27, SD=0.45) differ only slightly (mean difference = 0.03). The test was not significant, t(457)=0.72, p=.473, with a 95% CI [-0.053, 0.114] including zero. The effect size was very small (d≈0.07). Overall, gender does not meaningfully influence students' preference for mathematics in this sample.

While the traditional narratives have often associated mathematics with masculinity, framing males as 'logical' or 'rational', however, the results obtained challenge this widely held assumption about gender differences in mathematical ability or interest. The current study reveals that in the Goan context, such gendered stereotypes may be losing their influence, at least in terms of subject preference at the college level. Suggesting that the males and females in this sample are navigating mathematics in a quite steady educational climate.

OBJECTIVE 1

Ho: There is no significant association between parents' education and preference for mathematics.

Chi-Square Tests			
	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.168[a]	2	.338
N of Valid Cases	459		

Preference for mathematics * Parents educational background, crosstabulation						
			Parents Educational Background			Total
			No Educational Background	One parent with educational background	Both parents with strong educational background	
Preference for mathematics	No	Count	177	93	57	327
		% within Preference for mathematics	54.1%	28.4%	17.4%	100.0%
		% within Parents' Educational Background	73.8%	70.5%	65.5%	71.2%
	Yes	Count	63	39	30	132
		% within Preference for mathematics	47.7%	29.5%	22.7%	100.0%
		% within Parents' Educational Background	26.3%	29.5%	34.5%	28.8%
Total		Count	240	132	87	459
		% within Preference for mathematics	52.3%	28.8%	19.0%	100.0%
		% within Parents' Educational Background	100.0%	100.0%	100.0%	100.0%

Table 2*: Chi-Square and cross tabulation Test for association between parents' education and preference for mathematics.*

The Pearson Chi-Square test (χ^2=2.168, df=2, p=0.338) shows no significant association between parents' education level and students' preference for mathematics. Out of 459 students, 132 (28.8%) preferred mathematics, while 327 (71.2%) did not. Preference rates were 26.3% for students with no educated parents, 29.5% with one educated parent, and 34.5% with both parents highly educated. This suggests a weak trend where higher parental education slightly increases preference. However, the effect is minimal and statistically insignificant.

This trend is although statistically insignificant, but it can be interpreted and understood with the help of Pierre Bourdieu's theory of cultural capital. Cultural capital, as defined by Bourdieu (1997) which refers to non-financial social resources, like education, intelligence, speech, appearance etc, that promote social mobility. (Bourdieu, 1997) When the parents or family have a strong educational background, their children are more likely to have a more positive attitude towards learning, improved scholarly support from home, and also familiarity with the institutional expectations. These families give a higher symbolic importance to subjects like mathematics because of the belief relating it to higher status professions. On the other hand, the students coming from families that have parents without formal education might have fewer opportunities. They are less exposed to the learning resources, there is minimal assistance with assignments and schoolwork, and they have fewer academic role models, which can be factors for lower inclination towards what is perceived as a hard subject, e.g., mathematics.

To summarize, although the information that is outlined above suggest that there is some connection between mathematical preference of school children and the schooling level of their parents, it has little to no supporting verification that such an educational background has a significant impact on the sampled students' mathematical preferences.

OBJECTIVE 2

Ho: There is no association between the quality of elementary mathematics teaching and students' preference for mathematics at the college level.

Chi-Square Tests			
	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	41.697[a]	4	<.001
Symmetric Measures			
		Value	Approximate Significance
Nominal by Nominal	Cramer's V	.501	<.001
N of Valid Cases	459		

The quality of mathematics teaching in your elementary school * Preference for mathematics, crosstabulation				
Count				
		Preference for mathematics		Total
		No	Yes	
The quality of mathematics teaching in your elementary school	Unsatisfactory	24	6	30
	Needs Improvement	36	9	45
	Average	117	15	132
	Good	114	69	183
	Excellent	36	33	69
Total		327	132	459

Table 3: *The quality of mathematics teaching in your elementary school * Preference for mathematics, Chi-Square test and Cramer's V, crosstabulation.*

The Chi-square test ($\chi^2(4, N=459)=41.70$, $p<0.01$) revealed a strong association between perceived quality of elementary math teaching and students' preference for mathematics in college. Cramer's V (0.501) further confirms this robust relationship. Students exposed to higher-quality math instruction early on are far more likely to prefer the subject later. Crosstab results show preference rises steadily with better teaching ratings. Nearly 48% of students with "Good" or "Excellent" teaching preferred math, compared to only 11% with lower-rated teaching. Interestingly, the lowest preference (11.4%) occurred among those rating teaching as merely "Average."

The findings obtained match very closely with Pierre Bourdieu's theory of 'Cultural Capital' and the concept of 'Habitus' (1997). wherein he states that an individual's social background shapes how he/she see the world and how the world or their surroundings treats these individuals back. The use of the concept of habitus states that a student's educational experience is deeply influenced by class-based structure, wherein schools and home, which are a student's early learning environment, construct a 'habitus', i.e, the students or learners at this stage create a set of dispositions for themselves that influence their future practices, including their preferences and attitudes.

Students who obtain quality education become more confident and familiar with academic environments and feel a sense of belonging in these spaces. Students who receive inadequate foundational instruction tend to develop feelings of alienation and anxiety toward subjects such as mathematics which perpetuate exclusion patterns.

Indeed, the achievement of favourable results in assessment within growing environments of instructional mathematics frameworks seems to be fundamental in advanced educational settings. These results imply that positive experiences with mathematics instruction in early education may significantly influence students' attitudes towards the subject in future educational settings. In addition, leaving room for enhancing the effectiveness of teaching elementary level mathematics could achieve profound interest in sophisticated levels of the subject.

OBJECTIVE 3

Ho: There is no association between the self-perceived logical or analytical thinking ability of students with a preference for mathematics at the college level.

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	22.582[a]	3	<.001
Symmetric Measures			
		Value	Approximate Significance
Nominal by Nominal	Cramer's V	.222	<.001
N of Valid Cases	459		

Preference for mathematics * Good at logical or analytical thinking, Crosstabulation						
Count						
		Good at logical or analytical thinking				Total
		Strongly Agree	Agree	Neutral	Disagree	
Preference for mathematics	No	51	72	168	36	327
	Yes	15	57	54	6	132
Total		66	129	222	42	459

Table 4: *Preference for mathematics * Good at logical or analytical thinking, chi square, Cramer's V & crosstabulation.*

The Chi-square test ($\chi^2(3)=22.582$, $p<.001$) revealed a statistically significant relationship between students' reasoning skills and their preference for mathematics. Cramer's V=0.222 indicates the association is weak but meaningful. Out of 459 students, 132 (28.8%) preferred mathematics, and among them, 54.5% reported positive self-assessments of logical ability. In contrast, only 37.6% of the 327 non-preferring students rated their reasoning positively. Neutral or negative self-assessments were far more common among non-preferring students (62.4%) compared to those preferring mathematics (45.5%). Interestingly, the proportion of students who strongly agreed with having logical skills was slightly higher among non-preferring students (15.6%) than preferring ones (11.4%). Overall, the findings suggest that stronger self-perceptions of reasoning skills are associated with a greater likelihood of preferring mathematics, though the effect is modest.

These findings align with Howard Becker's 'labelling theory', which he discusses in relation to juvenile delinquency, wherein an individual engages in deviant behavior due to various reasons; however, once the individual starts being labelled as a deviant, it likely reinforces their involvement in crime (Bernburg, 2009). This can be related to the current study on education, research supports the principles behind educational labeling theory.

The students in the educational system constantly get awarded with labels and designations such as 'logical,' 'intelligent' or 'math-minded' which students adopt to shape their academic self-perceptions that drive their continued mathematics involvement. Students tend to stop pursuing academic subjects when they receive labels that suggest inadequate ability even though their actual performance matches their peers. The two-part structure of self-assessed academic competence develops through individual experiences yet also depends on classroom social interactions and peer evaluations and societal narratives about intelligence and mathematical skills.

OBJECTIVE 4

Ho: There is no association between previous traumas in mathematics of students with the preference for mathematics at the college level

Chi-Square Tests			
	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	68.537[a]	4	<.001
Symmetric Measures			
		Value	Approximate Significance
Nominal by Nominal	Cramer's V	.233	<.001
N of Valid Cases	459		

Preference for mathematics * Negative or stressful experience related to mathematics, crosstabulation				
Count				
		Negative or stressful experience related to mathematics (e.g., failing exams, harsh feedback)		Total
		No	Yes	
Preference for mathematics	No	79	248	327
	Yes	95	37	132
Total		174	285	459

Table 5: *Chi-Square test, Cramer's V & Crosstabulation for association between previous traumas in mathematics of students with preference for mathematics at college level.*

The Chi-square test ($\chi^2(4)=68.537$, $p<.001$) and Cramer's V=0.233 confirm a statistically significant, moderate relationship between past traumatic experiences in mathematics and students' current preferences. Out of 459 students, 285 (62.1%) reported negative encounters (e.g., failure, anxiety, harsh punishment), while 174 (37.9%) did not. Among the 327 students who did not prefer mathematics, 248 (75.8%) had negative experiences. Conversely, of the 132 students who liked mathematics, only 37 (28.0%) reported negative experiences, while 95 (72.0%) had positive or neutral past interactions. These findings suggest that negative early experiences strongly discourage preference for mathematics, while positive experiences encourage appreciation for the subject.

This states that trauma related to academics, and for the current study in mathematics, is manifested through various experiences these include repeated failure, harsh teacher feedback, or punitive reinforcement which has a significant bearing on students' subject preferences at the college level. The trauma related to academics has become a mechanism of social labeling and exclusion, which has been discussed by H.S Becker (1963). This social labeling can be related to the study respondents, where certain students are perceived as less capable, thereby discouraging persistence in mathematics despite having comparable potential. These negative encounters by the students are individual emotional events and socially patterned outcomes of institutional culture and pedagogical practices. Schools that normalize practices of public shaming, rigid evaluation, or deficit-oriented teaching create a space for the students, where students internalize these failures as part of themselves, their identity, which often leads to the perception that they are "not math persons."

OBJECTIVE 5

Ho: There is no association between the use of advanced mathematics in life and preference for mathematics at the college level.

Chi-Square Tests			
	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	25.294[a]	4	<.001
Symmetric Measures			
		Value	Approximate Significance
Nominal by Nominal	Cramer's V	.335	<.001
N of Valid Cases		459	

Preference for mathematics * Opinion that advanced mathematics is not useful in real life or career, crosstabulation							
Count							
		The opinion that advanced mathematics is not useful in real life or a career.					Total
		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	
Preference for mathematics	No	93	63	105	48	18	327
	Yes	15	18	54	27	18	132
Total		108	81	159	75	36	459

Table 6: *Chi-Square test, Cramer's V and cross tabulation for association between use of advanced mathematics in life with preference for mathematics at college level.*

The Chi-square test ($\chi^2(4, N=459)=25.29$, $p<.001$) showed a significant relationship between perceived daily-life usefulness of advanced mathematics and students' preference for the subject. Cramer's V=0.335 indicates a strong and meaningful association. Students who view advanced mathematics as practical are more likely to enjoy and pursue it at college. Crosstab results show only 14% of those who strongly agree that "math is not useful" prefer it, compared to 50% of those who strongly disagree. This highlights that emphasizing real-life applications of mathematics can positively shape students' attitudes and engagement with the subject.

Max Weber in his work 'Economy and Society: An Outline of Interpretive Sociology' (1978) discussed intensively on the concept of rationalization. The rationalization of Max Weber offers a helpful prism through which to view the results. According to Weber, knowledge and education are increasingly assessed in contemporary societies according to their instrumental rationality, or their effectiveness, calculability, and quantifiable results. This indicates that when advanced mathematics is seen as practical, usable, and essential to reaching personal or professional objectives, students are more likely to value it. This rationalized approach is reflected in the chi-square results that indicate a significant correlation between the belief in the practical use of mathematics and the desire for it. Mathematics appeals to students not only as an abstract academic endeavor but also for its practical applications in problem-solving, career growth, and navigating contemporary institutions that value quantitative abilities. Therefore, Weber's theory aids in explaining why highlighting in curricula the real-world applications of advanced mathematics may increase students' interest in and enthusiasm for the subject.

Thus, advanced mathematics can be taught in such a way that improves perceptions and attitudes towards the subject among students.

OBJECTIVE 6

Ho: There is no association between the role of difficulty level of mathematics and preference for mathematics at the college level.

Chi-Square Tests			
	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	66.374[a]	4	<.001
Symmetric Measures			
		Value	Approximate Significance
Nominal by Nominal	Cramer's V	.310	<.001
N of Valid Cases		459	

Preference for mathematics * Mathematics is difficult compared to other subjects I study, crosstabulation							
Count							
		Mathematics is difficult compared to other subjects I study.					Total
		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	
Preference for mathematics	No	117	120	60	30	0	327
	Yes	21	30	39	30	12	132
Total		138	150	99	60	12	459

Table 7: *Chi-Square test Cramer's V and cross tabulation for association between the role of difficulty level of mathematics with preference for mathematics at the college level.*

The Chi-square test ($\chi^2(4)=66.374$, $p<.001$) revealed a statistically significant relationship between students' perceived difficulty of mathematics and their preference for the subject. Cramer's V=0.310 indicates a moderate but meaningful association. Of 459 students, 327 (71.2%) did not prefer mathematics, while 132 (28.8%) did. Among non-preferring students, the majority perceived math as difficult (85% of "Strongly Agree" and 80% of "Agree" responses). Conversely, students who preferred math were more represented in neutral or disagreeing categories, including all "Strongly Disagree" responses. These results show that negative attitudes toward mathematics are strongly tied to perceiving it as difficult, while positive attitudes align with greater comfort. The statistical evidence confirms the relationship is unlikely due to chance.

Disliking Frequencies				
		Responses		Percent of Cases
		N	Percent	
Reasons for disliking mathematics	Never dislike mathematics	129	21.5%	28.1%
	Teachers at school	123	20.5%	26.8%
	Syllabus	222	37.0%	48.4%
	Classmates	9	1.5%	2.0%
	Parents	3	0.5%	0.7%
	Personal inability	114	19.0%	24.8%
Total		600	100.0%	130.7%

Table 8: Reasons for disliking mathematics.

A survey of 459 students (600 responses, multiple choices allowed) revealed varied reasons for disliking mathematics. The most cited factor was the syllabus, accounting for 37% of responses and 48.4% of cases, showing nearly half viewed the curriculum as a major barrier. Teachers were the second most common reason (21.5% of responses; 26.8% of cases), pointing to teaching method concerns. Personal shortcomings were also noted (19% of responses; 24.8% of cases), reflecting individual struggles. Interestingly, 21.5% of responses (28.1% of cases) reported never disliking mathematics, highlighting positive attitudes among many students. External influences like classmates (0.5%) and parents (1.5%) played only a minimal role.

Some of the respondents of the study state that they find mathematics more difficult than others, this view can be related to a concept given by Bernstein (2000) who has discussed the idea of the "Pedagogic codes" explained with the help of "elaborated codes" and "restricted codes". There is a mismatch that makes mathematics seem more challenging if instruction uses "elaborated codes" (abstract, formal, and academic language) while pupils are from backgrounds more sensitive to "restricted codes" (practical, everyday language). This perspective introduced by Bernstein, helps in explaining the reason why certain students struggle more than others in the light of the findings of the current objective about mathematics choice and preference. There are students who are coming from backgrounds which are used to restricted codes and mostly find it more difficult to acquire meaning when mathematics is taught using complex codes, such as formal symbols, abstract explanations, and detached reasoning. Maths is especially challenging because of the disconnect between classroom discourse and language resources used at home. This explains why pedagogical adaptation and instructional clarity are so important in determining students' long-term interest in the subject.

It is evident that many students chose multiple answers, which confirms that the disapproving responses overtook the approving ones because the total "Percent of Cases" sums to 130.7%. Changes to the way mathematics is taught in classes and the structure of the syllabus presented could reduce the students' dislike of the subject.

Conclusion

The aim of the current study was to investigate the factors that contribute to the students' preference for mathematics focusing on the Goan colleges. Through the in-depth analysis the results showcased that the preference for choosing mathematics is greatly influenced by a various different factors, including family history, early school experiences, self-perceptions of ability, and broader cultural implications related to the subject. Sociocultural capital and family educational background were found to be important variables, emphasising the generational transmission of mathematical attitudes. The long-term impacts of the calibre of elementary school mathematics education were equally important since they influenced not just abilities but also self-esteem and confidence.

The findings of the study has also demonstrated how the practices of labelling and trauma related to

academics greatly contribute to the students' disassociation from mathematics, with unfavourable early experiences frequently resulting in disidentification with the subject. As discussed, the students often appreciated mathematics when they saw it as instrumentally valuable for achieving their personal and professional objectives. The use of Weber's concept of rationalization offers the study an essential interpretive lens. The focus of the students on efficiency, calculability, and quantifiable results highlights how the expectations get rationalized and are becoming more and more prevalent in contemporary education. The reason why some groups find mathematics more challenging has been better understood with the concept given by Bernstein's research regarding pedagogic codes: pupils whose backgrounds have socialised them into restricted codes face hurdles when complex codes are prioritised in instruction.

Overall, the study supports the view that a students interest in mathematics is a very social phenomenon which is influenced by cultural aspects, educational expectations, familial, and symbolic values rather than just a cognitive process. In order to improve mathematical learning and preference, every intervention must take these dynamics into account.

One way forward can be through pedagogical bridging, where teachers on their part can make abstract concepts much more accessible. This can be done through connecting these concepts to local and everyday contexts. Another important intervention would be focusing on strengthening foundational instruction at the grade 1 or school level. This is equally vital, as confidence and conceptual clarity built early can prevent later struggles and academic trauma. Addressing the stigma of being “weak in maths” through counseling, peer mentoring, and growth-mindset practices can also create a safer, more encouraging environment.

Furthermore, studying can also be beyond the classroom, where the families can play a crucial role in promoting learning environments that are supportive and have conversations about the importance of basic mathematics in daily life, so as to increase familiarity with the subject. Systemic inequalities can be lessened at the policy level by providing equal access to resources and bridging rural-urban divisions. Lastly, the students' view on mathematics needs to be changed, they may find mathematics more meaningful if it is reframed as a cultural and intellectual resource rather than just a technical talent. Essentially, a comprehensive strategy that blends pedagogy and empathy, as well as utility and inclusion, is needed to improve attitudes towards mathematics. By doing this, mathematics can be changed from a scary topic to one that offers opportunities and empowerment.

Declarations

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The authors declare that they have no known financial or non-financial conflicts of interest that could have appeared to influence the work reported in this paper.

The datasets generated and/or analysed during the current study are available from the corresponding author upon reasonable request.

Informed consent was obtained from all participants after a clear explanation of the study's aims, voluntary nature, and withdrawal rights.

Authors Contribution: *Author A conceptualised the study, provided the theoretical background, and did the final editing. Author B performed a literature review, contributed to data collection and wrote the initial draft. Author C conducted the data analysis and contributed to writing, refining, and finalizing the manuscript. All authors reviewed and approved the final manuscript.*

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