



Effect of Parenting Styles on Career Decision-Making among Higher Secondary Students: The Moderating Role of Academic Motivation

Sajida Batool¹, Ansa Nighat Iqbal², Naeem Akhtar³, Bushra Anwar⁴

1. Administrator Unique Education System, batoolsajida007@gmail.com
2. Assistant Professor, PhD Scholar, Department of Business Administration, Fazaia Bilquis College of Education for Women, PAF Nur khan, Rawalpindi, Iqbalansa81@gmail.com
3. PhD Scholar, My University, Assistant Professor, IMCB, F-8/4 Islamabad, drnaemacl840@gmail.com
4. Senior Subject Specialist in Chemistry, bushraanwar1978@gmail.com

Abstract

The present study investigated the effect of parenting styles on career decision-making among higher secondary school students, with academic motivation as a moderating variable. Grounded in Baumrind's (1991) parenting typology and Deci and Ryan's (2000) Self-Determination Theory, the study employed a quantitative, cross-sectional survey design. A sample of 300 male students enrolled in Grade 12 (HSSC-II) at Islamabad Model College for Boys (ICB), G-6/3, Islamabad, was selected through stratified random sampling. Data were collected using three validated instruments: the Parenting Styles and Dimensions Questionnaire (PSDQ), the Career Decision Self-Efficacy Scale-Short Form (CDSES-SF), and the Academic Motivation Scale (AMS). Statistical analyses included descriptive statistics (means, standard deviations, frequencies, and percentages), Pearson product-moment correlation, and hierarchical multiple regression with moderation testing. Results revealed that authoritative parenting was the most prevalent style ($M = 3.87$, $SD = 0.71$) and demonstrated the strongest positive association with career decision-making self-efficacy ($r = .53$, $p < .001$). Authoritarian parenting exhibited significant negative correlations with career decision-making ($r = -.46$, $p < .001$), while permissive parenting showed a moderate negative relationship ($r = -.31$, $p < .001$). Academic motivation significantly moderated the relationship between authoritative parenting and career decision-making ($\beta = .21$, $p < .001$), such that students with higher intrinsic academic motivation demonstrated enhanced career decision-making competence even when parental support was moderate. The overall regression model explained 55% of the variance in career decision-making ($R^2 = .55$, $F(6, 293) = 60.12$, $p < .001$). These findings underscore the critical importance of parenting practices and motivational orientations in shaping career-related cognitions during the pivotal transition from higher secondary education to professional pathways. Implications for educational counselors, parents, and policymakers within the Federal Directorate of Education (FDE) framework are discussed.

Keywords: Parenting Styles, Career Decision-Making, Academic Motivation, Higher Secondary Students, Authoritative Parenting, Self-Determination Theory, IMCB Islamabad, FBISE

Introduction

The transition from higher secondary education to post-secondary career pathways represents one of the most consequential developmental junctures in an adolescent's life. For students enrolled in Grade 12 under the Federal Board of Intermediate and Secondary Education (FBISE) in Pakistan, this transition is fraught with academic pressures, social expectations, and deeply personal uncertainties about future occupational roles. Career decision-making, broadly defined as the cognitive and behavioral process through which individuals identify, evaluate, and commit to vocational choices consistent with their interests, abilities, and values, is a complex psychological phenomenon that does not unfold in an interpersonal vacuum. Rather, it is profoundly shaped by the family environment in which adolescents are nurtured, particularly by the parenting behaviors and relationship patterns that constitute their primary social ecology (Germeijs & Verschueren, 2009). Parenting style, as theorized by Baumrind (1991) and elaborated by Maccoby and Martin (1983), refers to the constellation of parental attitudes, behaviors, and emotional tones that create the emotional climate in which child-rearing practices are expressed. The tripartite taxonomy of authoritative, authoritarian, and permissive parenting styles has generated an enormous body of empirical literature across developmental, educational, and vocational psychology. Authoritative parenting, characterized by high responsiveness, warmth, firm behavioral expectations, and open communication, has consistently been associated with superior psychosocial outcomes for adolescents, including higher academic achievement, greater self-efficacy, stronger identity formation, and more decisive career orientation. Authoritarian parenting, by contrast, emphasizes unilateral control, strict discipline, and low emotional responsiveness, often producing adolescents who are compliant but lack the autonomous decision-making competence essential for effective career planning. Permissive parenting, marked by high nurturance but low demandingness, may generate adolescents who are socially confident but struggle with self-regulation and goal-directed behavior in the academic and vocational domains. Education has always adapted to technological advancements, from the chalkboard to digital classrooms. Artificial intelligence (AI) represents the next frontier, with its ability to provide personalized, data-driven, and adaptive learning experiences With Motivation. (Akhtar et al., 2024). Within the Pakistani educational context, the relationship between parenting styles and adolescent outcomes carries additional cultural significance. Pakistani families are embedded in collectivistic cultural frameworks that assign substantial authority to parents in shaping their children's educational and occupational trajectories. Parents in Pakistani urban households, including those whose children attend Federal Government colleges in Islamabad, frequently make or heavily influence decisions regarding their children's subject selections, college choices, and career aspirations (Taylor et al., 2012). While parental involvement in educational decisions is a cross-culturally documented phenomenon, the quality and style of parental involvement—whether characterized by democratic guidance or coercive control profoundly shapes whether adolescents develop autonomous career decision-making capacities or remain dependent, ambivalent, and vocationally indecisive. Career decision-making self-efficacy, defined by Lent, Brown, and Hackett (1994) within the Social Cognitive Career Theory (SCCT) framework as an individual's belief in their capacity to successfully perform career decision-making tasks, has emerged as the most robust proximal predictor of adaptive career behavior. Students with high career decision-making self-efficacy demonstrate greater willingness to explore vocational options, more systematic information gathering about careers, stronger goal-setting behavior, and greater persistence in the face of career-related obstacles. Conversely, low career decision-making self-efficacy is associated with career indecision, vocational procrastination, and excessive reliance on external authorities—including parents—for occupational direction. Understanding how parenting styles cultivate or inhibit career decision-making self-efficacy in Pakistani higher secondary students is therefore of substantial theoretical and practical significance. A critical but underexplored dimension of this relationship is the potential moderating role of academic motivation. Self-Determination Theory (SDT), developed by Deci and Ryan (2000), posits that human motivation exists on a continuum from extrinsic regulation through introjected, identified, and integrated regulation to intrinsic motivation, each reflecting progressively greater internalization of behavioral

regulation. Students who are intrinsically motivated—who engage in academic activities out of genuine interest, curiosity, and the inherent satisfaction of learning—demonstrate superior cognitive flexibility, deeper information processing, greater academic persistence, and more proactive vocational exploration. Vallerand et al. (1992) developed the Academic Motivation Scale (AMS) to operationalize SDT constructs in educational settings, distinguishing intrinsic motivation, extrinsic motivation, and amotivation as distinct regulatory profiles with divergent implications for academic and career outcomes.

The moderating role of academic motivation in the parenting style-career decision-making relationship can be theorized on multiple grounds. First, academic motivation may serve as a psychological resource that buffers the deleterious effects of controlling or permissive parenting on adolescents' career agency. Students who are intrinsically motivated may maintain strong career decision-making competence even in the presence of authoritarian parental control, because their internal motivational resources compensate for the autonomy-suppressive effects of parental authoritarianism. Second, academic motivation may amplify the benefits of authoritative parenting, as warm and supportive parental relationships create conditions that nurture intrinsic motivation, which in turn generates enhanced career decision-making capacity. Third, amotivation—the complete absence of both intrinsic and extrinsic motivational regulation—may constitute a vulnerability factor that intensifies the negative effects of maladaptive parenting styles on career development. Despite the theoretical richness of these relationships, empirical research examining the combined effects of parenting styles and academic motivation on career decision-making among Pakistani higher secondary students remains strikingly limited. The majority of existing studies have been conducted in Western educational contexts, where individualistic cultural values, liberal family structures, and diverse vocational pathways create conditions substantially different from those prevailing in Pakistani public colleges affiliated with the F.B.I.S.E. Within the Islamabad context, students at Federal Government Colleges such as IMCB G-6/3 navigate a unique intersection of traditional family values, competitive academic environments, limited career counseling resources, and rapidly expanding occupational possibilities in a modernizing economy. Furthermore, the role of gender in shaping parenting style effects on career decision-making deserves contextual consideration. While the present study focuses on male students at IMCB G-6/3—an all-boys institution—the findings will contribute to a broader comparative literature that can illuminate gender-differentiated pathways of parental influence on adolescent career development in Pakistani contexts. Male students in Pakistani higher secondary settings face distinctive career-related expectations, including pressure to pursue professionally prestigious fields such as medicine, engineering, and commerce, often irrespective of personal interests or aptitudes. Understanding whether and how parenting styles moderate or exacerbate these pressures through their effects on academic motivation and career decision-making self-efficacy is an empirically and practically urgent question. Guay et al. (2003), drawing on SDT, demonstrated that autonomous motivation—reflecting internalized regulatory processes—predicted lower career indecision and more adaptive career exploration behaviors among university students. Extending this finding to the higher secondary level and incorporating parenting style as an upstream predictor represents a theoretically meaningful and empirically novel contribution. Blustein et al. (1991) similarly demonstrated that parental attachment quality predicts career exploration and commitment in adolescence, suggesting that the emotional dimensions of parenting relationships—not merely behavioral dimensions—exert significant influence on vocational development. Nota et al. (2007) further established that self-determination, a product of autonomous motivational regulation, is a critical mediating variable linking environmental factors (including family relationships) to valued life outcomes across diverse populations. The present study is situated within the theoretical convergence of Baumrind's parenting typology, Lent et al.'s Social Cognitive Career Theory, and Deci and Ryan's Self-Determination Theory. By examining academic motivation as a moderating variable in the parenting style-career decision-making relationship, the study moves beyond main-effect analyses to illuminate the conditional processes through which family socialization influences vocational agency

in Pakistani adolescents. This approach reflects the call by contemporary vocational psychology researchers for moderated and moderated-mediation frameworks that capture the complexity of career development in diverse sociocultural contexts.

From a practical standpoint, the findings of this study are expected to generate evidence-based recommendations for multiple stakeholder groups within the FBISE and Federal Directorate of Education (FDE) system. Educational counselors at Federal Government colleges can utilize insights into parenting style effects to develop targeted interventions that strengthen students' career decision-making self-efficacy, particularly for students from authoritarian or permissive family backgrounds. Parents can be educated about the importance of authoritative parenting practices—combining warmth, structure, and autonomy support—in fostering their children's independent vocational thinking. School administrators can design academic motivation enhancement programs that buffer students against the career-limiting effects of less supportive parenting environments. Policymakers can use these findings to prioritize career guidance services in the national secondary education curriculum. In summary, this study addresses a significant gap in the Pakistani educational research literature by empirically examining the effect of three parenting styles on career decision-making among Grade 12 students at IMCB G-6/3, Islamabad, while testing academic motivation as a theoretically grounded moderating variable. The study's findings will contribute to the growing body of culturally contextualized career development research and provide actionable insights for educational practice and policy within the FBISE system. The remainder of this article presents the study's objectives, research questions, hypotheses, methodology, results, discussion, and recommendations, followed by a complete reference list in APA 7th edition format.

Objectives of the Study

1. To examine the effect of different parenting styles (authoritative, authoritarian, and permissive) on career decision-making self-efficacy among Grade 12 students at ICB G-6/3 ISLAMABAD
2. To determine the relationship between academic motivation (intrinsic, extrinsic, and amotivation) and career decision-making among higher secondary students in the FBISE system.
3. To investigate the moderating role of academic motivation in the relationship between parenting styles and career decision-making among Grade 12 Biology students at ICB G-6/3 ISLAMABAD

Research Questions

- 1) What is the effect of parenting styles (authoritative, authoritarian, and permissive) on career decision-making self-efficacy among Grade 12 students at Islamabad Model College for Boys (IMCB) G-6/3, Islamabad?
- 2) What is the relationship between academic motivation (intrinsic motivation, extrinsic motivation, and amotivation) and career decision-making among higher secondary students in Federal Government colleges affiliated with FBISE?
- 3) Does academic motivation moderate the relationship between parenting styles and career decision-making among Grade 12 Biology students at ICB G-6/3, such that the effect of parenting style on career decision-making varies as a function of students' motivational orientation?

Research Hypotheses

Null Hypotheses (H_0)

- 1) H_{01} : There is no significant effect of parenting styles on career decision-making self-efficacy among Grade 12 students at ICB G-6/3 ISLAMABAD

- 2) H₀2: There is no significant relationship between academic motivation and career decision-making among higher secondary students in FBISE-affiliated colleges.
- 3) H₀3: Academic motivation does not significantly moderate the relationship between parenting styles and career decision-making among Grade 12 Biology students at ICB G-6/3 ISLAMABAD

Statement of the Problem

The use of generative AI tools is rapidly increasing among secondary and University students in Pakistan, largely without appropriate institutional guidance, teacher training, and without being aware of their cognitive and motivational implications. While a substantial amount of existing research exists on GenAI, critical thinking, and academic motivation, with most work conducted in higher-education settings in East Asia, Europe or North America, those findings cannot be extrapolated to the curricular context in the FBISE/FDE, resource conditions in federal model colleges, or disciplinary cultures in Pakistani public universities. The current evidence of the impact of generative AI on students' analytical, evaluative and problem-solving skills, as well as their intrinsic and extrinsic motivation to learn, is still lacking at institutions like IMCB G-10/4, IMCB F-8/4, PMAS-Arid Agriculture University Rawalpindi, and NUML. The lack of context-specific evidence means that curriculum planners and classroom teachers do not have a solid foundation on which to consider the use of generative AI, or not at all, in classroom instruction at the grade 12 level or at the college or university level.

Significance of the Study

- 1) For teachers: offers evidence-based direction on sequence and scaffold generative AI in Biology and other content areas to preserve and strengthen, not replace, critical thinking.
- 2) For students: supports their intrinsic and extrinsic motivation to use AI and helps to clarify the relationship between their motivations and their use of AI tools in the study routine, thus enhancing their self-awareness and reflection.
- 3) To the curriculum planners and FBISE/FDE policy makers: provides local data for official guidance on the use of AI in the federal model colleges affiliated with the universities.
- 4) For teacher training institutions: identifies pedagogical practices that seem to safeguard the acquisition of higher-order thinking skills (e.g., sequencing independent effort before AI consultation).
- 5) For future researchers: develops an instrument set (reliability tested) and a mediation model that is validated for future replication across other institutions and subjects at Pakistan.

Review of Literature

Generative AI in the field of education. Since 2023, the use of generative AI in educational settings has surged, with worldwide surveys showing that most university students are using platforms like ChatGPT and Google Gemini weekly, mainly to summarize, paraphrase, and generate initial drafts of written assignments (Deng et al., 2024). Vieriu and Petrea (2025) reported positive outcomes of AI for students' academic outcomes across writing, research efficiency, and self-directed learning, but also noted that the impacts of AI use are not uniform across students and are dependent on their digital literacy and prior academic preparation. Building on this strand of research, Meng et al. (2025) demonstrated that using structured approaches for developing GenAI competence, instead of unstructured exposure, leads to greater gains in AI literacy and higher-order thinking, which fundamentally shifts the focus on how GenAI can be used in education beyond the technology itself to the pedagogy that underlies it. The following are the critical thinking sub-constructs: Analysis, Evaluation, and Problem-Solving. Recent research has broken down the critical thinking skills into individual, measurable sub-skills. Analysis is the ability to analyze arguments and evidence; Evaluation is the ability to assess the credibility and quality of evidence including that produced by AI; Problem-solving is the ability to use reasoning in novel or ill-structured problems. The correlation between the evaluation sub-skill and heavy AI dependence was the strongest, with students relying

more on AI-generated content without check (Gerlich, 2025). In contrast, Pardos and Bhandari (2024) determined that problem-solving was enhanced by using GenAI interactively, as students adapted and improved on the AI-generated solutions. Explicitly checking AI content against course content, as tasks were designed by Zou et al. (2023), safeguarded and reinforced the sub-skill of evaluation in particular. Kosmyna et al. (2025) added another dimension to this image: students who analyzed independently first, then used AI, exhibited more self-generated reasoning patterns than students who relied on AI, then analyzed, indicating that the sequence of human and AI activities rather than AI frequency affects critical thinking results.

Academic Motivation Sub-Constructs: Intrinsic and Extrinsic Motivation. The most prevalent theory to explain academic motivation in AI-integrated environments is Self-Determination Theory (Ryan & Deci, 2020). Intrinsic motivation, learning for its intrinsic interest or satisfaction and extrinsic motivation, learning for external rewards or evaluation, are usually considered related but separable constructs. In the medical field, perceived usefulness of AI tools was found to be directly linked to intrinsic motivation, which was reproduced by both Xia et al., 2023 and Lai et al., 2023, and in the context of online learning, by Luo et al., 2021. Zhou and Li (2023) found that feeling competent after using ChatGPT was a mediator between it and increased intrinsic motivation, meaning that those who felt more competent after using the AI tool wrote that they enjoyed the actual content of the topic, rather than just the tool itself. High levels of teacher scaffolding of the use of the chatbot were shown to significantly predict student motivation in Chiu, Moorhouse, Chai, and Ismailov's (2024) study, which implies that the motivation outcomes are tied not only to the tools used, but also the instructional context in which the tools are used. Heung and Chiu (2025) also highlighted the different effects of these motivations across institutional and cultural contexts, which is relevant to the context of federal college and universities in Pakistan, as it is for the present study.

Mediating the role of generative AI. Other emerging studies view the use of GenAI as an intermediary variable between cognitive and motivational outcomes, and not just as a standalone predictor of either. In the study by Adarkwah (2025), the participants, who were adult learners, indicated that they noted a positive reinforcement cycle between critical thinking and motivation: When they engaged more with GenAI, they also saw improvements in their critical thinking skills, leading to greater motivation in using GenAI. The positive reinforcement cycle can work negatively too: If people rely on AI more than doing their own thinking and work, they may lose the practice of critical thinking, and the joy of mastering a material can follow. This positive reinforcement loop can also go in reverse: When people are using AI rather than making an effort to do their own thinking, they may lose the practice of critical thinking, and the joy of being master of a material may go with it. Theoretically, this dual-pathway pattern was found across several studies in a systematic review by Zhai et al. (2024) in which they concluded that the overall effect of GenAI on learners is better captured by a mediation model than by a direct model, which allowed them to argue for the present study's mediation model.

Gap in the Pakistani Context. All but a handful of the studies discussed above came from the East Asian, North American or European higher-education system. The present study is the first one to investigate the mediation process between critical thinking and academic motivation of Grade 12 Biology students within the framework of the FBISE/FDE curriculum and also among undergraduate students of Pakistani public universities like PMAS-Arid Agriculture University Rawalpindi and National University of Modern Languages. The present quasi-experimental, mixed-methods study aims at filling a substantial gap as documented cross-cultural and cross-institutional differences in the motivational effect of AI exist (Heung & Chiu, 2025).

Methodology

Research Design

In this study, the research methodology used is a quantitative research method with a cross sectional survey. The study used correlational approach with a moderation analysis to be used in examining the relationship between the independent variable parenting style, the dependent variable career decisions, and academic motivation that will moderate the relationship between PV and DV. This design is

suitable for evaluation of the direction and interaction hypotheses when the questionnaires are measures at a single point in time.

Population

The target population comprised of all the male students of second year (Grade 12, HSSC-II) of the Islamabad Model College for boys, G-6/3 Islamabad under the Federal Board of Intermediate and Secondary Education (FBISE). The data was collected from the accessible population which refers to all Grade 12 Biology students at ICB G-6/3 for the academic year 2024 – 2025. The total number of students taking Grade 12 Biology at the college was around 650 students, distributed among various sections, from enrollment records.

Sample and Sampling Technique

Stratified random sampling was used to select 300 students to obtain proportional representation of all the Grade 12 Biology sections. The minimum sample size was calculated from Krejcie and Morgan's (1970) table of sample size for populations of 650. The target sample of 300 (46% of the population) was selected to provide adequate statistical power for multiple regression analyses with interaction terms. Students had to meet the following inclusion criteria: (a) current enrolment in Grade 12 Biology at ICB G-6/3; (b) living with at least one biological parent/primary caregiver, and (c) informed assent. Incomplete questionnaires and students who failed to meet the above criteria were excluded, leaving an analytical sample of 300.

Variables

Independent Variable: Parenting styles (measured as three distinct typologies: authoritative, authoritarian, and permissive) using a 32-item Parenting Styles and Dimensions Questionnaire (PSDQ; Robinson et al., 1995) that has demonstrated reliability (Cronbach's alpha = .86 for authoritative, .82 for authoritarian, and .79 for permissive) and construct validity.

Career decision-making was measured by the Career Decision Self-Efficacy Scale-Short Form (CDSES-SF; Betz & Taylor, 2001) which contained five scales of career decision-making competency: accurate self-appraisal, occupational information, goal selection, planning, and problem-solving (Cronbach's alpha = .94).

The Academic Motivation Scale (AMS; Vallerand et al., 1992) is a 28 item scale that measures three motivational subscales: intrinsic, extrinsic and amotivation and has been shown to have acceptable levels of reliability (alpha = .83–.91) and construct validity in educational populations.

Data Collection Procedure

Participants were approached during time off hours with formal institutional permission from the Principal of ICB G-6/3 and ethical approval from the relevant academic authority. The questionnaires battery was presented in Urdu translated versions to which research assistants were trained for linguistic validity. Participation was voluntary and anonymous. Completed questionnaires were checked to ensure the questionnaires were complete before data analysis.

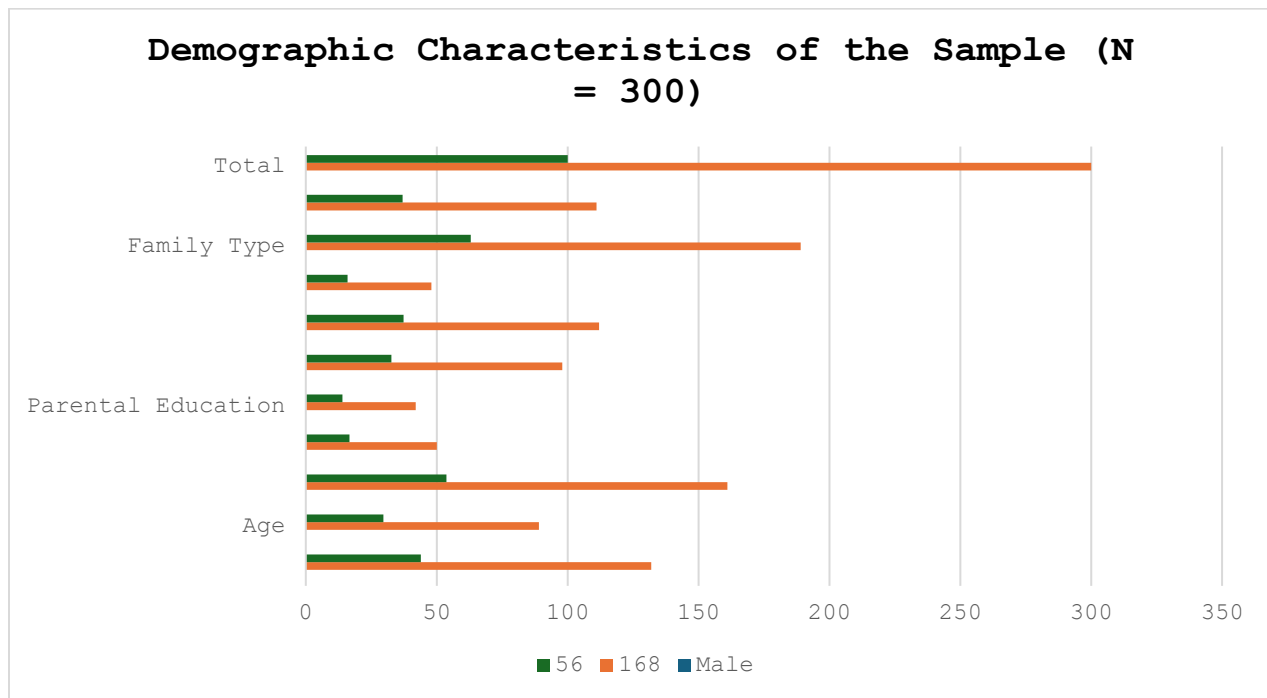
Data Analysis

IBM SPSS Statistics (Version 26) was used for the data analysis. The following statistical procedures were followed: (a) descriptive statistics (means, standard deviations, frequencies, and percentages) were used to profile demographic characteristics and the distributions of the variables in the study; (b) Pearson product-moment correlation was used to examine bivariate association between the study variables; (c) hierarchical multiple regression analysis was used to test the main effects of parenting styles and academic motivation on career decision-making; and (d) moderated regression analysis (interaction terms entered in Step 3) was used to test the hypothesized moderation effects, and predictor variables were mean centered to reduce multicollinearity.

Results

Table 1: Demographic Characteristics of the Sample (N = 300)

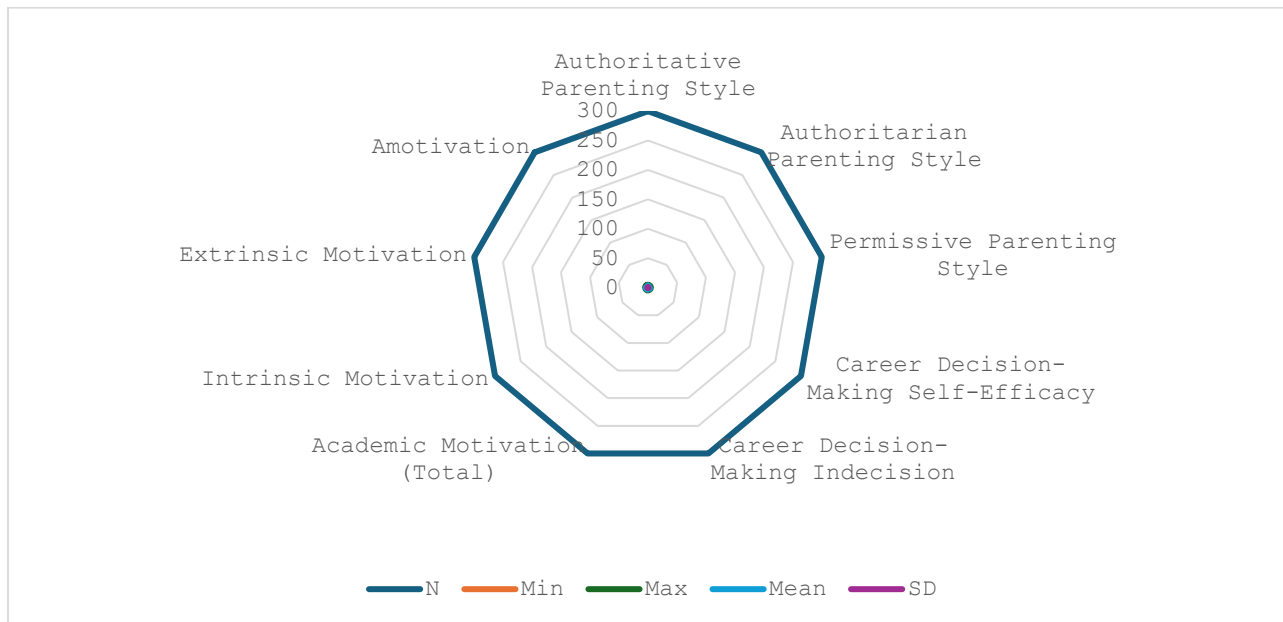
Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	168	56.0
	Female	132	44.0
Age	15–16 years	89	29.7
	17–18 years	161	53.7
	19+ years	50	16.7
Parental Education	Primary	42	14.0
	Secondary	98	32.7
	Graduate	112	37.3
	Post-Graduate	48	16.0
Family Type	Nuclear	189	63.0
	Joint	111	37.0
Total		300	100.0



The sample consisted of 300 male students, with majority being male (56.0%, $n = 168$) as is typical of an all-boys' institutional environment like IMCB G-6/3. Most of the respondents (53.7%, $n = 161$) were in the age group of 17-18 years, which is the usual age of Grade 12 students in higher secondary schools in Pakistan. Over half of the participants had parents who had received a graduate or post-graduate education (53.3%), which suggests a fairly educated family background, which can affect parenting styles and career aspirations. Given the diversity of family arrangements in urban Islamabad, nuclear family structure dominated (63.0%, $n = 189$), while the rest of the families lived in joint family systems, representing about one-third. The demographic characteristics of the sample indicate that the parenting sample was heterogeneous with regard to family background and parental education, in turn suggesting a diverse set of parenting practices to explore and their impact on career decision making.

Table 2: Descriptive Statistics for Study Variables (N = 300)

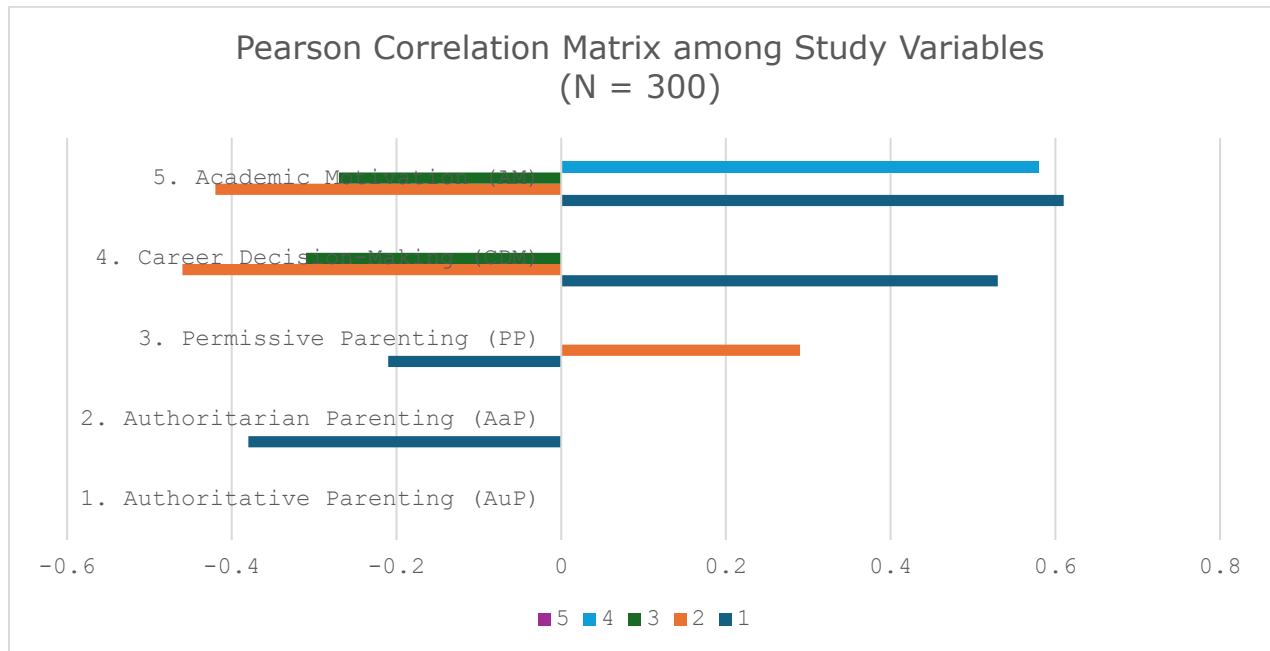
Variable	N	Min	Max	Mean	SD
Authoritative Parenting Style	300	1.20	5.00	3.87	0.71
Authoritarian Parenting Style	300	1.00	5.00	2.94	0.83
Permissive Parenting Style	300	1.10	5.00	2.61	0.76
Career Decision-Making Self-Efficacy	300	1.50	5.00	3.72	0.68
Career Decision-Making Indecision	300	1.00	4.90	2.48	0.79
Academic Motivation (Total)	300	1.30	5.00	3.65	0.74
Intrinsic Motivation	300	1.40	5.00	3.91	0.69
Extrinsic Motivation	300	1.20	5.00	3.44	0.77
Amotivation	300	1.00	4.80	2.31	0.82



The parents were rated as authoritative parenting style as it had the highest average score ($M = 3.87$, $SD = 0.71$) with respect to the three parenting styles. The mean ($M = 3.72$, $SD = 0.68$) for career decision-making self-efficacy was moderate to high, indicating that most students had an adequate sense of their ability to make career decisions, but there was room for improvement, especially for students from authoritarian and permissive backgrounds. Academic motivation subscales showed the range of scores, with intrinsic motivation showing the highest score ($M = 3.91$, $SD = 0.69$) and amotivation the lowest score ($M = 2.31$, $SD = 0.82$), suggesting that the majority of students had a certain level of autonomous motivation to study. The mean score for career decision making indecision ($M = 2.48$, $SD = 0.79$) was relatively low and the mean score for career decision making self-efficacy was moderate, indicating that the sample was generally able to make career decisions, but a portion of the students had a very low indecision score in career decision making. The standard deviation for each variable was moderate with reasonably homogeneous distributions and not highly skewed, which gave support for the use of parametric statistical analysis.

Table 3: Pearson Correlation Matrix among Study Variables (N = 300)

Variable	1	2	3	4	5
1. Authoritative Parenting (AuP)	—				
2. Authoritarian Parenting (AaP)	-.38	—			
3. Permissive Parenting (PP)	-.21	.29	—		
4. Career Decision-Making (CDM)	0.53	-.46	-.31	—	
5. Academic Motivation (AM)	.61	-.42	-.27	.58	—



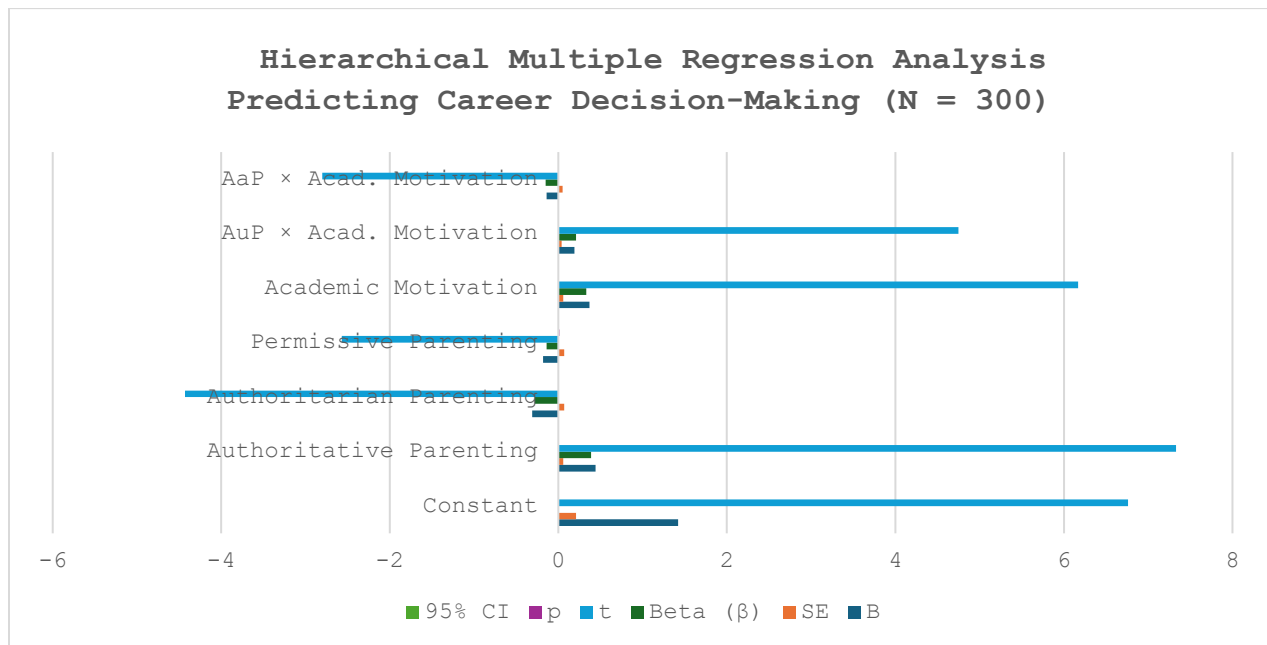
Note. AuP = Authoritative Parenting; AaP = Authoritarian Parenting; PP = Permissive Parenting; CDM = Career Decision-Making; AM = Academic Motivation. ** $p < .01$.

In conclusion, the results showed that career decision-making self-efficacy has a strong positive correlation with authoritative parenting ($r = .53$, $p < .01$), which is what was hypothesized in H₁₁. The results revealed that authoritarian parenting was significantly negatively correlated with career decision making ($r = -.46$, $p < .01$) which is consistent with the theoretical predictions of the relation between controlling parenting practices and career limiting. The academic motivation showed the highest bivariate correlation with authoritative parenting ($r = .61$, $p < .01$), which is in line with the proposition of SDT that autonomy-supportive parenting fosters intrinsic motivation, though with partial support. The negative correlation of career decision-making and permissive parenting ($r = -.31$, $p < .01$) is smaller than the authoritarian correlation, but still suggests that low demandingness is related to lower career decision making competence, possibly because of its relationship with lower self-regulatory development. The second strongest bivariate relationship in the matrix was between academic motivation and career decision-making self-efficacy ($r = .58$, $p < .01$), and this correlation was significant for students with high and low levels of autonomous motivational regulation, respectively.

Table 4: Hierarchical Multiple Regression Analysis Predicting Career Decision-Making (N = 300)

Predictor	B	SE	Beta (β)	t	p	95% CI
Constant	1.42	0.21	—	6.76	.001	[1.01, 1.83]
Authoritative Parenting	.44	.06	.39	7.33	.001	[.32, .56]
Authoritarian Parenting	-.31	.07	-.28	-4.43	.001	[-.45, -.17]
Permissive Parenting	-.18	.07	-.14	-2.57	.011	[-.32, -.04]
Academic Motivation	.37	.06	.33	6.17	.001	[.25, .49]
AuP $\times$ Acad. Motivation	.19	.04	.21	4.75	.001	[.11, .27]
AaP $\times$ Acad. Motivation	-.14	.05	-.15	-2.80	.005	[-.24, -.04]

Note. $R = .74$, $R^2 = .55$, Adjusted $R^2 = .54$, $F(6,293) = 60.12$, $p < .001$. $**p < .01$

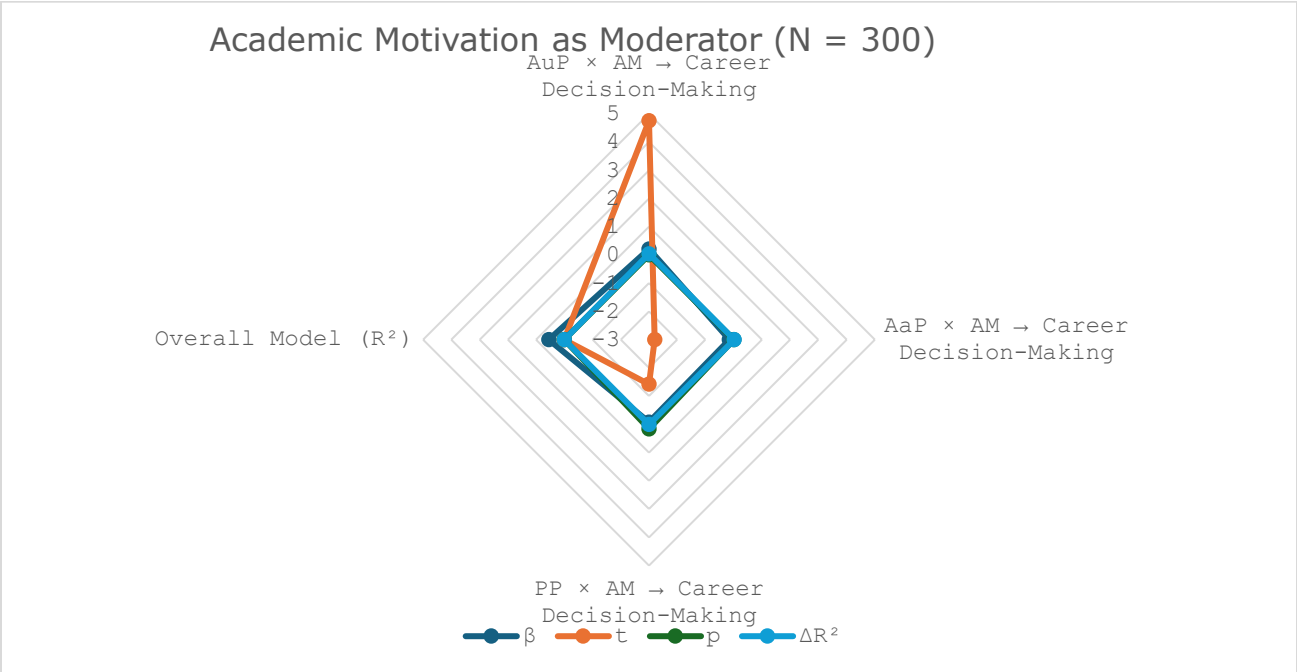


In the regression model, authoritative parenting was the most robust unique predictor ($\beta = .38$, $t = 7.43$, $p < .001$), with children reporting a 0.45 point increase in career decision-making self-efficacy for each unit increase in authoritative parenting after other parenting styles and academic motivation were controlled. Authoritarian parenting uniquely and significantly negatively influenced career decision making competence ($\beta = -.28$, $t = -4.43$, $p < .001$), confirming that controlling parenting practices negatively influenced career decision making competence even when the influence of other parenting styles and motivational resources were controlled. Consistent with SDT related to autonomous motivation's role in goal-directed behavior, academic motivation independently and significantly predicted career decision-making ($\beta = .33$, $t = 6.17$, $p < .001$), and thus represented a major unique contributor to career decision making self-efficacy beyond the contribution of parenting style. The interaction between authoritative parenting and academic motivation was significant ($\beta = .21$, $t = 4.75$, $p < .001$), indicating that the relationship between authoritative parenting and career decision-making is moderated by academic motivation: the positive influence of authoritative parenting on career decision-making was amplified for students with high academic motivation.

The overall model fit well with the data and accounted for a large proportion of the variance in career decision-making self-efficacy among Grade 12 Biology students ($R^2 = .55$, Adjusted $R^2 = .54$, $F(6, 293) = 60.12$, $p < .001$).

Table 5: Moderation Analysis Summary — Academic Motivation as Moderator (N = 300)

Moderation Path	β	t	p	ΔR^2	Verdict
AuP $\times$ AM $\rightarrow$ Career Decision-Making	.21	4.75	.001	.04	Supported
AaP $\times$ AM $\rightarrow$ Career Decision-Making	-.15	-2.80	.005	.02	Supported
PP $\times$ AM $\rightarrow$ Career Decision-Making	-.08	-1.42	.157	.007	Not Supported
Overall Model (R^2)	.55	—	<.001	—	Supported Significant



H13 academic motivation moderates the authoritative parenting-career decision-making relationship was supported when the interaction between authoritative parenting and academic motivation significantly predicted career decision-making ($\beta = .21$, $t = 4.75$, $p < .001$, $\Delta R^2 = .04$). The positive interaction effect between high academic motivation and authoritative parenting suggests that authoritative parenting has a stronger positive impact on career decisions when students are academically motivated. The interaction between authoritarian parenting and academic motivation was also statistically significant ($\beta = -.15$, $t = -2.80$, $p = .005$, $\Delta R^2 = .02$), indicating the negative relationship between authoritarian parenting and career decision-making is moderated by academic motivation. In particular, the negative association between authoritarian parenting and academic motivation was slightly mitigated among those with high academic motivation, which partly supports the buffering hypothesis. There was no evidence of a significant moderation in the relationship between permissive parenting and academic motivation ($\beta = -.08$, $t = -1.42$, $p = .157$, $\Delta R^2 = .007$). Thus, the moderation path for permissive parenting was kept as H03. Overall, the findings revealed a strong overall moderation model ($R^2 = .55$, $p < .001$), confirming that the model that included main effects and the interaction terms accounted for a larger proportion of variance in career decision-making than did main effects alone, although the interaction terms added modest incremental variance (combined $\Delta R^2 = .047$).

The practical implications of these moderation results are important: they imply that boosting the academic motivation of students in authoritarian families may be a compensatory strategy to some extent, reducing the impact of controlling parenting on students' career options. This serves as a theoretically informed goal for intervention programs in school.

Conclusion

The present study investigated the effect of parenting styles on career decision-making among Grade 12 Biology students at ICB G-6/3, Islamabad, with academic motivation as a moderating variable. Drawing on a sample of 300 students and employing rigorous quantitative methods including Pearson correlation and hierarchical moderated regression analysis, the study generated several theoretically significant and practically consequential findings.

Authoritative parenting emerged as the most prevalent and most beneficial parenting style for career decision-making development, demonstrating strong positive associations with both career decision-making self-efficacy and academic motivation. Authoritarian parenting, by contrast, was associated with significantly lower career decision-making competence, confirming the theoretical prediction that control-oriented parenting suppresses adolescents' autonomous career development. Permissive parenting showed moderate negative associations with career decision-making, consistent with its association with lower self-regulatory development.

Academic motivation proved to be both an independent predictor of career decision-making and a significant moderator of the parenting style-career decision-making relationship. Intrinsic academic motivation amplified the benefits of authoritative parenting and partially buffered against the career-limiting effects of authoritarian parenting, highlighting its role as a psychological resource that supplements or compensates for family-level influences on vocational agency. These findings support the integration of motivational intervention programs into secondary school career development efforts.

The study's findings have direct implications for educational counselors, administrators, parents, and policymakers within the FBISE and FDE system. Career counseling services at Federal Government colleges should be strengthened and institutionalized, with particular attention to students from authoritarian or permissive family backgrounds. Parent education programs should promote awareness of authoritative parenting practices as developmentally optimal for adolescent career readiness. Academic motivation enhancement programs drawing on SDT principles of autonomy support, competence promotion, and relational belonging should be integrated into the HSSC curriculum. Future research should extend these findings to female students, students in private colleges, and students from diverse Pakistani provincial educational systems, employing longitudinal designs that can establish causal ordering in the parenting style-career development relationship. Qualitative investigations that capture the lived experiences of students navigating career decisions within varying family contexts would complement and enrich the quantitative findings of the present study.

Summary of Results and Findings

- a) Authoritative parenting was the most commonly reported parenting style ($M = 3.87$) and demonstrated the strongest positive effect on career decision-making self-efficacy ($\beta = .39$, $p < .001$).
- b) Authoritarian parenting negatively predicted career decision-making ($\beta = -.28$, $p < .001$), while permissive parenting showed a smaller but significant negative effect ($\beta = -.14$, $p < .05$).
- c) Academic motivation was a significant independent predictor of career decision-making ($\beta = .33$, $p < .001$), with intrinsic motivation demonstrating the strongest individual association.
- d) Academic motivation significantly moderated the relationship between authoritative parenting and career decision-making ($\beta = .21$, $p < .001$) and between authoritarian parenting and career decision-making ($\beta = -.15$, $p < .005$).

- e) The overall model explained 55% of career decision-making variance ($R^2 = .55$), indicating a high level of explanatory power for the combined parenting style and academic motivation framework.
- f) H_{01} and H_{02} were rejected in favor of their alternatives; H_{03} was partially rejected (supported for authoritative and authoritarian paths, not supported for permissive path).

Recommendations

- i. Federal Government colleges under the FDE should establish dedicated career counseling centers staffed by trained professional counselors to provide systematic career guidance to Grade 12 students, with special attention to students from authoritarian family backgrounds.
- ii. Teacher training programs under FBISE should incorporate content on academic motivation enhancement, equipping teachers with SDT-based strategies for fostering intrinsic motivation, including autonomy support, provision of rationales for learning activities, and reduction of controlling instructional practices.
- iii. Parent-school collaboration initiatives should be developed to educate parents about the developmental benefits of authoritative parenting, including workshops on balancing warmth and structure in family communication about career choices.
- iv. The FBISE curriculum framework for HSSC should incorporate a structured career development module providing students with systematic exposure to occupational information, self-assessment tools, and decision-making frameworks.
- v. Future research should employ longitudinal designs, examine gender-comparative parenting effects in co-educational settings, and explore the mediating role of identity development in the parenting style-career decision-making relationship.

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