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Original Article

PERCEIVED AUTONOMY SUPPORT FROM FATHER AND COGNITIVE FLEXIBILITY AMONG STUDENT ATHLETES: THE MEDIATING ROLE OF GRIT

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ABSTRACT

The current study examined the relationship between perceived autonomy support from father and cognitive flexibility through mediation of grit. In accordance with self-determination theory, the current research concerns the issue of whether perceived autonomy support from father might impact cognitive flexibility directly and indirectly through grit. The correlational research design was employed for collecting the data from 250 student athletes (138 males and 112 females aged 18-24 years) through purposive sampling. For measuring the variables in the research, three questionnaires were applied: Perceptions of Parents Scale (POPS; College Student Version), Grit Scale and Cognitive Flexibility Inventory (CFI). It has been found that there is a significant positive correlation among all the study variables, the perceived autonomy support from father and grit (r = .57), the perceived autonomy support from father and cognitive flexibility (r = .79), grit and cognitive flexibility (r = .55). On the basis of the results of mediation analysis, grit partially mediated the relationship between the perceived autonomy support from father and cognitive flexibility with the significant indirect effect (B = .10, SE = .03, 95% CI [.04, .16]) and the significant direct effect as well (β = .80, p < .001). The obtained model explains 32% of the variance in grit and 64.7% of the variance in cognitive flexibility. No gender differences in the perceived autonomy support from father were revealed but there were gender differences with regard to grit and cognitive flexibility. Therefore, the overall finding indicates the connection between perceived autonomy support from father and cognitive flexibility in student-athletes and determines that this relation is mediated by grit.

I. INTRODUCTION

In the social context, within which motivational and self-regulatory processes occur, has the impact on the psychological and cognitive development of the students. Self-Determination Theory posits that autonomy support in social context is related to internalization of values and development of self-regulation and autonomous motivation (Deci & Ryan, 2000). In families, fathers can become valuable participants in the process as they will value the opinion of their children and will stimulate independent actions and thoughts. Autonomy support provided by the parents can be particularly important for the student athletes who should find the balance between education and training, competition and performance and independent decision making. Perceived autonomy support from father is defined as the degree to which the individual perceives himself/herself to receive autonomy support from his/her father because he/she values his/her opinion and encourages self-regulation and independent action. Perceptions of autonomy-supportive parenting result in positive motivational and psychological outcomes such as engagement in educational activities, self-regulation and psychological adjustment

(Çelik et al., 2024; Lerner & Grolnick, 2022; Vasquez et al., 2016). Ability of the fathers to provide choices and be responsible for these choices can help in developing of necessary psychological resources to cope with difficult situations in education and in sports.

The relationship among the perception of fathers providing autonomous support, grit, cognitive flexibility demonstrates a process where supportive parenting helps in developing adaptive psychological characteristics that enhance adjustment to changeable situations among students. From literature, it is noted that parenting styles that promote autonomy have positive effects on motivation and involvement, resulting in increased grit and resilience (Ryan et al., 2006; Zhou et al., 2019). The term grit is used to refer to steadfast passion and perseverance focused on achieving long-term goals (Duckworth et al., 2007). This variable denotes the tendency of a person to continue trying in spite of difficulties or obstacles that may arise in pursuit of personal aims (Duckworth et al., 2007). Research has established the connection between grit and academic persistence, involvement in learning activities, and success among learners (Datu et al., 2023; Jachimowicz et al., 2018). According to Self-Determination Theory (SDT), it is possible that autonomous environments will facilitate the internalization of goals and motivation as well as help learners develop strategies that will help in continuing effort towards the pursuit of meaningful goals (Deci & Ryan, 2000). In the case of student athletes, persistence in efforts towards the achievement of goals is essential since physical improvement requires continued effort despite poor results in sport, intense training, and simultaneous studying.

Studies have shown that autonomy-supportive parenting results in high levels of grit in the sense that such individuals can persist even under the harshest of circumstances since they motivate themselves (Zulfiqar et al., 2025). Consequently, grit acts as a psychological variable which links external context and inner motivation of the individual in sustaining effort in harsh learning situations. Cognitive flexibility entails having the ability to alter perspectives, modify strategies, and come up with alternative responses. This is one of the cognitive variables which result from the interaction of environmental and personal factors. Indeed, cognitive flexibility is positively related to executive function as well as adaptive problem solving (Scott, 1962; Martin & Rubin, 1995). Autonomy support from fathers provides an enabling environment for self-regulated learning and cognitive flexibility whereas grit enhances cognitive flexibility through sustaining motivation. Studies indicate that Grit is linked to the development of adaptive cognitive abilities including flexibility of thought, planning, and problem-solving persistence (Duckworth et al., 2007). Therefore, there is an assumption that perceived autonomy support improves grit, which affects cognitive flexibility positively, making the whole chain a logical sequence of adaptive development among students in the academic and athletic areas. Research shows that Autonomy support fulfills basic psychological needs thus leading to improved self-regulation and persistence, which are core elements of grit (Ryan et al., 2006). Athlete students are able to apply grit for constant effort within the course of intensive training, coping with failure, and maintaining academic focus.

Cognitive flexibility is defined as the ability to change one's point of view, think differently, and develop new responses in light of changing situations (Ionescu, 2012; Martin & Rubin, 1995). This ability allows people to reconsider their methods of doing things, consider alternative options, and adjust their responses accordingly. This construct is especially important for student athletes, since the environment in which they work is often unpredictable and requires quick strategic changes. Cognitive flexibility is considered an essential element of adaptive problem-solving and executive functioning (Dennis & Vander Wal, 2010; Miyake et al., 2000). There are interdependent relations between the concepts of perceived autonomy support, grit, and cognitive flexibility. Based on these relations, one can determine what effect an autonomy-supportive paternal environment may have on adaptive cognitive functioning. There is an extensive literature on the topics of autonomy-supportive parenting, grit, and cognitive flexibility as psychological constructs in different populations. A supportive father with regard to autonomy serves as a catalyst of self-confidence, which, in its turn, builds a personality trait called grit; and grit is what leads to high levels of an athlete's cognitive flexibility necessary for success in the conditions of constant challenges. In athlete students, it becomes particularly valuable since their lives require them to demonstrate psychological toughness, fast decision-making skills, and adaptability both psychologically and emotionally. According to literature there is a lack of studies on whether grit mediates the relation between father specific autonomy support and cognitive flexibility whereas grit enhances cognitive flexibility through sustaining motivation. This issue is particularly important in the context of Pakistani culture, in which paternal

guidance may be an orientation force for young adults. Therefore, the current study examines the connection between perceived autonomy support from the father and cognitive flexibility in student-athletes and determines if this relation is mediated by Grit.

Hypotheses

H1: There is likely to be a significant positive relationship between Perceived Autonomy Support from Father, Grit and Cognitive flexibility among Student Athletes.
H2: Perceived Autonomy Support from Father is a significant positive predictor of Grit among Student Athletes.
H3: Grit is a significant positive predictor of Cognitive flexibility among Student Athletes.
H4: Grit is likely to mediate the relationship between Perceived Autonomy Support from Father and Cognitive flexibility among Student Athletes.
H5: There is likely to be significant gender differences between Perceived Autonomy Support from Father, Grit and Cognitive flexibility among Student Athletes.

II. METHOD

Participants

A sample of 250 student athletes from Lahore, Pakistan, participated in the study. The sample was composed of individuals whose age ranged from 18-24 years (M_{age} = 21.32, SD = 1.45). The majority were men (55.2%), while the rest were women (44.8%). Purposive sampling method was used to collect data from participants. Permission to undertake the study was obtained from the relevant institutes. The students were asked to participate in the study, after which their consent was acquired. Students participated voluntarily and were free to stop doing the research whenever they wished to. All information was made anonymous and confidential.

Table I: Demographic Characteristics of the Sample (N = 250)

Variables	n	%	Variables	n	%
Gender			Current Level of Education		
Men	138	55.2	Undergraduate	155	62.0
Women	112	44.8	Graduate / post graduate	47	18.8
Residential Area			Type of University		
Urban	147	58.8	Public / government university	164	65.6
Semi urban	31	12.4	Private	86	34.4
Rural	72	28.8	Average Weekly Training Hours		
Family System			5–10 hours	76	30.4
Nuclear	127	50.8	More than 15 hours	18	7.2
Joint	123	49.2	Academic Discipline		
Father's Employment Status			Basic Sciences	47	18.8
Government Employed	67	26.8	Social Sciences	75	30.0
Private Employed	69	27.6	Languages	37	14.8
Self-Employed	64	25.6	Computer sciences	91	36.4
Unemployed	14	5.6	Father's Education Level		
Retired	36	14.4	Matric / o levels	76	30.4
Level of Sports Participation			Intermediate/ A level	75	30.0
Recreational	24	9.6	Bachelor's Degree	72	28.8
Intercollegiate /university level	156	62.4	Master's Degree or Above	27	10.8
Club/professional level	68	27.2	Duration of Sports Involvement		
			6 months – 11 months	32	12.8
			1–3 years	89	35.6
			4–6 years	76	30.4

The participants had a mean age of 21.32 years (SD = 1.45), with men comprising 55.2% and women 44.8% of the sample. Most participants were from urban areas (58.8%), were undergraduate students (62.0%), and attended public universities (65.6%). Computer Science (36.4%) and Social Sciences (30.0%) were the most represented academic disciplines. The majority competed at the intercollegiate/university level (62.4%) and practiced sports for less than five hours per week (52.4%). Among fathers, private employment was the most common occupation (27.6%), while Matric/O-level was the most frequently reported education level (30.4%).

Measures

To measure perceived autonomy support from father, Perceptions of Parents Scale (POPS; College Student Version) was used, the scale has total of 21 items and it measure the perceptions of autonomy support from the father using a 7-point scale (1 to 7). It had very good reliability in this study (α = .85). A 12-item Grit Scale which was developed by Duckworth et al. (2007) was used to measure Grit and it has 5-point ratings. It had very good reliability in this particular study (α = .83). To measure Cognitive Flexibility, Cognitive Flexibility Inventory (CFI), a total of 20-items CFI, developed by Dennis & Vander Wal (2010) was applied. It is based on a 7-point scale (from Strongly Disagree to Strongly Agree). This measurement tool had excellent reliability in this study (α = .92).

Procedure

Prior to data collection, formal permission to conduct the study was obtained from the relevant university or college authorities. The people considered as potential participants were approached in various universities and colleges, and the purpose of the research were informed to them. All the ethical guidelines were strictly followed throughout the process of research. Anonymity and confidentiality of information collected through the research process was assured. The analysis was performed using the Statistical Package for the Social Sciences (SPSS). Reliability analysis and Descriptive statistics were applied on all the study variables. Relationship between the variables was investigated using Pearson product moment correlation. Mediation analysis was performed to test whether grit mediated the effect of perceived autonomy support from father on cognitive flexibility. The significance level was set at p<.05.

III. RESULTS

Table I: Psychometric Properties of Perceived Autonomy Support From Father, Grit and Cognitive Flexibility

Scales	*SD*	*M*	Range	*α*
Perception of Parent Scale	19.31	98.79	21-147	.85
Grit Scale	9.24	40.99	12-60	.83
Cognitive Flexibility Inventory	21.74	91.03	44-136	.75

The psychometric properties of were assessed in table 1. All measures exhibited satisfactory internal consistency with an α of greater than 0.70 in all measures used in the study. Table presents the descriptive statistics and internal consistency reliabilities of the study variables. The mean score on Perceived Autonomy Support by Father was 98.79 (*SD* = 19.31), with scores varying from 57 to 140, which is a measure that shows good reliability (α = .85). On the other hand, the mean score on Grit was 40.99 (*SD* = 9.24), with scores varying from 26 to 59 that shows good reliability (α = .83). Finally, the mean score on Cognitive Flexibility was 91.03 (*SD* = 21.74), with scores varying from 44 to 136, and shows excellent reliability (α = .92).

Table II: Bivariate Correlation between Perceived Autonomy Support from Father, Grit and Cognitive Flexibility

Variables	1	2	3
Perceived Autonomy Support from Father	--	.57**	.79**
Grit		--	.55**
Cognitive Flexibility			--

***p* < .01

Perceived Autonomy Support from Father (PASF) is highly significantly positively correlated with Grit (r = .57**, p < .01), indicating that athletes who perceive higher paternal autonomy support demonstrate greater persistence

and passion. Perceived autonomy support from father also shows a highly significant positive relationship with Cognitive Flexibility (r = .79**, p < .01). Grit was significantly and positively correlated with Cognitive Flexibility (r = .55**, p < .01), indicating that athletes with higher grit also exhibit greater cognitive flexibility. These significant positive correlations support the proposed mediation model

Table III: Regression Coefficients, Standard Errors, and Model Summary for Perceived Autonomy Support from Father, Grit and Cognitive Flexibility (N=250)

	Consequents							
	Grit				Cognitive Flexibility			
Antecedents		*B*	*SE*	*P*		*B*	*SE*	*P*
PASF	A	.27	.02	.000	*c'*	.80	.05	.000
Grit	-------	---------	----------	-------	*b*	.36	.10	.000
(Constant)		14.24	2.52	.000		−2.44	4.55	.59
	R=	.56			*R*=	.80		
	R^2=	.32			R^2=	.64		
	F=	116.74***			*F*=	226.04***		

Note. PASF = Perceived Autonomy Support from Father; *Grit*=Mediator; *Cognitive Flexibility*= Dependent Variable; *B*=Unstandardized Coefficient; *SE* = Standard Error
***p< .001, p< .01**, P< .05*.

The findings indicated that perceived autonomy support from father significantly predicted grit and grit significantly predicted cognitive flexibility. The direct effect of perceived autonomy support from father on cognitive flexibility remained significant after controlling for grit (β = .80, p < .001), indicating that grit partially mediated the relationship between perceived autonomy support from father and cognitive flexibility. The model explained 32% of the variance in grit and 64.7% of the variance in cognitive flexibility.

Figure I: Statistical Model of the Research

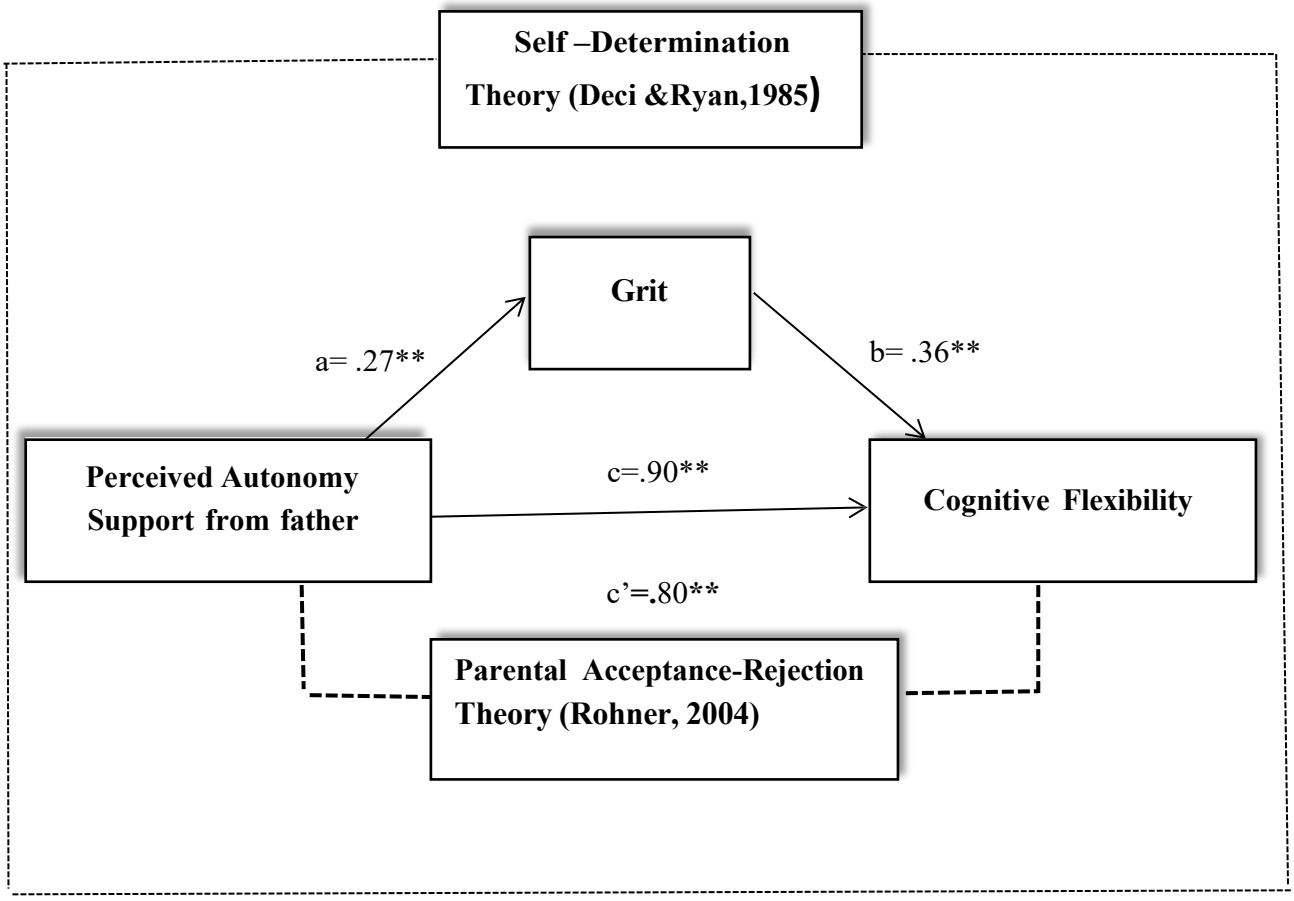


Table IV: Bootstrapped Indirect Effect of Perceived Autonomy Support from Father on Cognitive Flexibility through Grit (N = 250)

Indirect Path	Unstandardized Effect	*SE*	Lower Bound	Upper Bound
PASF → Grit →CF	.10	.03	.04	.16

Note. PASF = Perceived Autonomy Support from Father; CF= Cognitive Flexibility; SE = Standard Error

Shows a bootstrapped mediation analysis was conducted to examine the indirect effect of Perceived Autonomy Support from Father (PASF) on Cognitive Flexibility through Grit. The results revealed a significant indirect effect (B = .10, p < .001). These findings indicate that Grit significantly mediates the relationship between Perceived Autonomy Support from Father and Cognitive Flexibility among student athletes suggesting partial mediation.

Table V: Mean Differences between Men and Women among Perceived Autonomy Support from Father, Grit and Cognitive Flexibility

	Men		Women			
Variables	*M*	*SD*	*M*	*SD*	*t*(198)	*p*
Perceived Autonomy Support from Father	100.09	19.89	97.19	18.64	1.19	.48
Grit	42.07	9.86	39.66	8.27	2.10	.00
Cognitive Flexibility	92.36	23.36	89.38	19.54	1.09	.04

An independent sample t-test is run to establish gender differences in perceived autonomy support by father, grit and cognitive flexibility of student athletes (N=250). There is no gender difference in the perceptions of autonomy support by fathers. Contrary to the finding above, a significant gender difference is found in grit where men scored an average of M=42.07 (SD = 9.86), which is significantly higher than that of women who scored M=39.66 (SD = 8.27). Besides, a significant gender difference was established on the Cognitive Flexibility where men had a higher score (M = 92.36, SD = 23.36) than women whose average scores were M = 89.38 (SD = 19.54).

IV. DISCUSSION

The present study attempts to examine the relation among perceived autonomy support from father, grit, and cognitive flexibility in student athletes. Moreover, the present study also attempts to explore the mediation effect of grit on the relation between perceived autonomy support from father and cognitive flexibility. The results of the study show that there are significant relations among the study variables, thereby lending support to the hypotheses proposed in the present study. These results are discussed based on the empirical research conducted on the topic before, and Self-Determination Theory (Deci & Ryan, 2000). The presented findings are mostly consistent with the hypotheses proposed and stress the significance of autonomy support from fathers and perseverance. In particular, the first hypothesis was verified since there is a positive relationship between perceived autonomy support from father and cognitive flexibility. This means that student athletes reporting more autonomy support from father are expected to be more flexible in their thinking. Autonomy supportive environment fosters self-reliant functioning (Deci & Ryan, 2000). Furthermore, according to the second hypothesis, a positive correlation between perceived autonomy support from father and grit can be seen in this study. This means that the experience of such kind of support promotes perseverance and commitment among student athletes. Parental autonomy fostering facilitates intrinsic motivation (Duckworth et al., 2007).

Bases on the third hypothesis, grit was positively correlated with cognitive flexibility. In other words, student athletes having more perseverance demonstrated greater flexibility. Perseverant individuals are capable of continuing their actions and considering alternative approaches to overcoming the encountered difficulties. These findings were previously examined in relation to perseverance and adaptive psychological functioning of individuals (Datu et al., 2023). In support of the fourth hypothesis, the mediation analysis indicated that grit partially mediated the relationship between perceived autonomy support from father and cognitive

flexibility. This suggests that grit may represent one pathway through which paternal autonomy support is associated with cognitive flexibility, while the remaining direct association indicates that other factors may also contribute. This interpretation is consistent with Self-Determination Theory, which emphasizes the importance of supportive interpersonal environments in psychological development (Deci & Ryan, 2000; Ryan et al., 2006). The findings also highlight the potential relevance of motivational processes in understanding psychological outcomes among young athletes (Zulfiqar et al., 2025). Also, the results concerning the fifth hypothesis were obtained, regarding gender differences, no significant gender differences in perceptions of fathers' support can be observed. At the same time, male participants reported significantly higher scores than female participants in terms of grit and cognitive flexibility. This is probably related to some difference in social experiences and sporting environments. Nevertheless, these assumptions are tentative and have to be confirmed. Previously, the individual differences and perseverance were investigated as well (Wang & Li, 2023). Therefore, it is possible to conclude that there is a direct and indirect (through grit) relationship between paternal perceived autonomy support and cognitive flexibility.

Theoretical, Clinical, Cultural, and Societal Implications

The present study contributes to the theoretical understanding of Self-Determination Theory by emphasizing the role of paternal autonomy support in psychological development. From a clinical perspective, counseling and sports psychologists can develop interventions to strengthen grit, cognitive flexibility, and adaptive coping skills among student athletes. Parent psychoeducation programs may also encourage fathers to adopt autonomy-supportive parenting practices that balance guidance with independence. Within the Pakistani cultural context, promoting culturally sensitive parenting approaches can help support young adults' personal growth and independent decision-making. Furthermore, educational institutions and sports organizations can introduce parental awareness programs and psychological skills training to support students in managing academic and athletic demands. Such initiatives may promote resilience, healthy adjustment, and overall psychological well-being among young adult.

Limitations and Future Research

The current study has some limitations that must be kept in mind while interpreting the results. Firstly, the data was collected using self-report measures, and there is always an aspect of social desirability and response bias associated with them. Also, the study only looked at paternal autonomy support but not maternal autonomy support and any other influence within the family system. Furthermore, the participants for the study were taken from selected institutions, and hence the representativeness of the sample could be a limited. Finally, the study involved only student athletes.

V. CONCLUSION

The current study exploring the relationship between father's perceived autonomy support, grit, and cognitive flexibility for student athletes while also looking at grit as a mediator in the relationship. The results show that perceived autonomy support from fathers is positively related to both grit and cognitive flexibility. In addition, grit is found to have a positive correlation with cognitive flexibility and partially mediates the link between perceived autonomy support from fathers and cognitive flexibility. It appears that student athletes who receive autonomy support from their fathers are able to foster perseverance and flexible cognition skills. The findings support Self-Determination Theory and highlight the importance of autonomy-supportive paternal behaviors in promoting positive motivational and cognitive outcomes among student athletes.

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