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# Climbing the Academic Ladder: The Role of Grit and Parental Education in Student Achievement

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**Abstract:** *Education plays an important role in the development of individuals and future success. Beyond cognitive skills, noncognitive skills like grit, perseverance, and persistent effort are recognized to be essential for academic success. Family background and student opportunities, motivation, learning, and even parental educational level, have an impact on students. The current study investigated the relationship of parental educational attainment, grit, and academic Success in Pakistani university students. The study was conducted using Duckworth's Grit Theory and Vygotsky's Social Development Theory as a theoretical framework. The study sought to evaluate the predictive and moderating functions of grit in mediating family background and academic success. Data were gathered from 200 first-year university students in public and private universities via purposive sampling. Standardized scales used were the Grit 12-Item Scale, Statistics Canada Educational Attainment Scale, and Academic Performance Questionnaire. Outcomes identified a strong positive association between grit and academic success, and parental education had no direct correlation with the academic success of students. Regression analysis validated grit as a highly predictive outcome of academic success, accounting for unique variance over demographic variables and parental education attainment. Moderation analysis demonstrated that grit was not a significant moderator of the relationship between parental education attainment and student academic success. Differences based on gender occurred, with male students showing higher scores in grit, whereas female students reported improved performance in academics. These findings highlight the importance of noncognitive attributes such as grit in predicting academic success, independent of parental background.*

**Keywords:** Grit, Perseverance, Academic Success, University Students, Education

## Introduction

Student performance in academics has remained a central focus in education research due to the many impacts it has on an individual's life, including mobility and development at the national level (Heckman & Mosso, 2014; OECD, 2019). Many researchers and policymakers have aimed to unravel the various attributes and characteristics that make certain learners excel in their academics, and others fail to do so (Berkowitz et al., 2017). One of the greatest controversies in educational psychology is the issue of whether achievement results from environmental conditions, as determined by the family and society, or the psychological attributes developed by the student throughout the years (Duckworth & Seligman, 2005; Sirin, 2005). Education forms the foundation for personal development and community creation, as well as being an important factor in the process of development for individuals and communities, as well as the economy (Lewis, 2021). Education remains a tool through which human capital is developed, and where humans are provided with the knowledge and skills required to deal with life challenges.

The significance of the level of education obtained by parents remains one of the strongest socioeconomic predictors of academic success among the variables studied by researchers. Indeed, there is ample evidence of how the children of better-educated parents perform better in standardized tests, achieve higher academic

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results in terms of their GPA scores, and also receive a higher educational qualification (Wilder, 2014). This phenomenon is explained by the variety of ways through which parental education affects child development: from providing better conditions for learning and more resources for education to setting higher expectations and more effective socialization (Roksa & Potter, 2011). Accordingly, the "ladder of academic success" is created, to some degree, by social and cultural capital transferred from one generation to another (Bourdieu, 1986; Coleman, 1988). Educated people are valuable not only for their personal success but also to society as a whole in its need to develop its technology, guarantee economic prosperity, and foster social cohesion. It is necessary to ensure sustainable development socially, which requires an educated population capable of making decisions and participating in the socio-economic sphere.

The parental educational achievement consists not only of the highest degree of educational attainment of the parents but also of the involvement and interest they show regarding their child's educational journey. It is widely accepted that parental educational achievement plays one of the most critical roles in determining the academic success of a student, including their cognitive growth, motivation, and educational atmosphere as a whole (Akhlaghipour & Assari, 2020; Shahid et al., 2025). It is crucial to note that the educational achievements of the parents play an important role in shaping the environment at home that supports learning and values that the child acquires regarding education. Well-educated parents will make efforts to foster a stimulating educational environment and encourage ambitious academic goals.

Moreover, besides fostering an environment conducive to learning, the involvement of the parents in the child's learning process is crucial in boosting motivation, self-regulation, and persistence, among other attributes. Parents who are involved in the education of their child are likely to monitor the academic growth of their child, assist in doing their homework, communicate with teachers, and participate in school activities (Fatimaningrum, 2022). The engagement of such parents sends out a strong signal indicating that education is a matter worth prioritizing. Additionally, setting high expectations for the child also acts as a strong motivator to perform well in studies and achieve success in academics. This means that when children know that their parents value education, it is likely that they will value it too, hence working harder and more dedicatedly. Academic self-concept can be described as the perception held by students regarding their ability to learn. According to the researchers, parental feedback and support influence the academic self-concept of the child (Davis-Kean, 2005).

Grit is a fundamental psychological trait that consists of unwavering passion and persistence in pursuing long-term goals in situations that involve challenges and setbacks (Duckworth et al., 2007). It is considered one of the main determinants of academic success because it enables students to continue learning even when they encounter obstacles, setbacks, and distractions. High levels of grit in students can ensure their perseverance in the face of difficulty, constant motivation, and resilience, which constitute vital components of academic success. Grit involves two dimensions: constancy of interest and effort perseverance. The latter refers to the extent to which a student perseveres with effort and overcomes obstacles, whereas the former represents the degree to which a student maintains focus on the goals of learning for a long period without giving up and becoming distracted (Howard et al., 2019).

In general, academic success refers to the ability of students to perform well academically, which is measured using grades, level of skill development, and information acquisition (Meeks, 2022). However, academic success relies on several other determinants, including mental abilities, intrinsic motivation, self-control, and social support from family members, teachers, and organizations. From among these variables, self-efficacy, which represents one's belief in his or her abilities to make it, has emerged to occupy a remarkably critical role when it comes to manipulation of students' goal-setting and perseverance behaviors (Davis-Kean, 2005). This idea is based on the theory that students who have high levels of self-efficacy are likely to show persistence behavior due to the belief that their efforts are not futile. The other variables that significantly contribute to academic success include proper time management, effective learning methods, and an intrinsic drive for success, enabling students to set realistic goals.

There have been several pieces of research that confirm these associations. For instance, Eskreis-Winkler et al. (2014) established that grit contributed to perseverance in harsh circumstances, including tough study programs and military training. Wolters and Hussain (2015) also revealed a high correlation between academic persistence and constancy of interest. Credé et al. (2017) added another level to this association and showed that constancy of interest was largely responsible for the predictive power of grit since it was a better predictor of success than perseverance of effort. These findings imply that studies of academic success must take more focus on consistency of interest since this will confirm the significance of goal clarity and perseverance for student academic success. Parent education helps to cultivate consistency of interest in children through examples of perseverance and dedication to their goals. Cheung & Pomerantz (2012), for example, show that parents' education contributes to increased students' motivation, engagement, and self-confidence.

In spite of the existence of a significant amount of data that indicates the importance of both grit and parental education as separate predictors of academic success, very few investigations have addressed the role of these variables in combination. In most of the studies, only one predictor is considered, which does not make it clear whether the predictors have independent effects in combination (Credé et al., 2017; Duckworth et al., 2007; Sirin, 2005). Moreover, most studies on grit have focused on Western educational environments, thereby limiting the generalization of the findings (Lam & Zhou, 2019). This paper seeks to address the aforementioned gaps.

**Theoretical Background of the Study**

Angela Duckworth's Grit Theory conceptualizes grit as a psychological trait defined by perseverance and passion for long-term goals (Duckworth et al., 2007). It indicates that not intelligence or talent alone, but rather effort and continuous interest throughout life, lead to success. Grit consists of two elements: perseverance of effort, which represents resilience against obstacles, and consistency of interest, which stands for focusing on the achievement of long-term goals. As applied to the educational context, it has been found that high grit levels have a direct effect on persistence, motivation, and success in studying, thus making this personality trait an important predictor of student achievement (Duckworth & Quinn, 2009). Grit Theory is chosen as the major theoretical basis for explaining the influence of individual traits on student achievement. According to the assumption made in this paper, high levels of grit are supposed to result in students' perseverance in studying, their academic discipline, and active involvement in study processes, thus positively influencing academic performance. One of the contextual variables, parental education, can be viewed as a factor promoting students' development of high levels of grit by stimulating their intellectual and emotional development. Consequently, it can be concluded that both grit and parental education will have either direct or indirect effects on student achievement by motivating students to study.

**Objectives**

- To study the correlation between parental Educational Attainment, grit, and academic success of university students.
- To examine the impact of grit in moderating the relationship between parental educational attainment and the academic success of university students.
- To examine the role of grit in predicting the academic success of university students.
- To examine the impact of demographic variables on grit amongst university students.

**Hypotheses**

**H1:** Parental educational attainment and grit may possibly have a strong positive association with the academic achievement of university students.

**H2:** Grit acts as a moderator between parental educational attainment and the academic achievement of students.

**H3:** The research determined if Grit is a predictor of academic achievement of university students.

**H4:** Demographic factors such as age, socioeconomic status, and gender may strongly correlate with grit among university students.

## Method

### Research Design

The correlational research design was employed in this research to explore the correlation between parental level of education, grit, and academic achievement. The design was suitable for the study of naturally occurring correlations between variables without control or manipulation of the research environment. Consistency in the sample was ensured by considering only first-year BS university students aged 18 to 22 years, studying full-time, and not undertaking employment. Married students, retaking a semester, or living with one parent were excluded to reduce confounding variables that may affect academic performance.

### Sampling and Sample Size

The sample comprised 200 first-year students from government and private sector universities in various fields. The participants were chosen based on purposive sampling, with a focus on students between the ages of 18 and 22 years at the start of their undergraduate years. The use of students at the same level of study ensured similar educational experiences, while excluding married students, students repeating a semester, or those having other work obligations ensured homogeneity in the sample.

Following ethical clearance, data were gathered in classroom environments via self-report questionnaires. Participants were informed about the voluntary nature of the study and gave their informed consent. SPSS was used to calculate descriptive statistics, Pearson correlations, stepwise multiple regression, independent samples t-tests, one-way ANOVA, and moderation analysis with Hayes' PROCESS macro.

## Measures

### Grit 12-Item Scale

Grit, as passion and perseverance for long-term goals (Duckworth & Quinn, 2009), was assessed with the 12-item Grit Scale (Duckworth et al., 2007). It measures two dimensions: consistency of interests and perseverance of effort. The scale has been used extensively in education research, with a Cronbach's α of .60.

### Academic Performance Questionnaire (APQ)

Academic achievement was assessed via the 8-item APQ, which measures dimensions of attendance, participation, submission of assignments, and behavior. Answers were noted on a 5-point Likert scale. Self-reported GPA was added as another measure of academic achievement. Cronbach's α for this scale is .70.

### Statistics Canada 8-Point Scale

Parental level of education was measured with the Statistics Canada 8-point scale, from "0 = less than high school" to "7 = completed doctorate." The scale yields a standardized representation of parents' highest level of education achieved. It had satisfactory reliability with a Cronbach's α of .78.

### Data Analysis

All statistical analyses were done utilizing IBM SPSS Statistics (Version XX). Descriptive statistics were initially calculated to provide a summary of demographic variables and an overview of the primary study variables, such as parental education, grit, and academic achievement. Pearson product–moment correlations were subsequently used to assess the strength and direction of relationships between the variables. Stepwise multiple regression analysis was used to examine the predictive function of grit and parental education, whereas Hayes' PROCESS macro (Model 1) was used to evaluate the possible moderating function of grit. Group differences were also examined with independent samples t-tests (e.g., gender) and one-way ANOVAs (e.g., household income). All statistical tests were conducted at a $p < .05$ significance level.

The convergence of these analyses provided descriptive and inferential findings. Correlation analysis yielded an initial understanding of associations, regression identified the independent contribution of grit over parental education, and moderation analysis examined conditional effects. Group comparisons enabled examination of demographic differences in grit and academic achievement. Collectively, these methods enabled an intensive examination of the study aims and yielded both statistical and applied significance.

## Results

### Psychometric Properties of Scales

Table 1: Summary of psychometric properties of the study measures. All scales' reliability coefficients lie within acceptable ranges. The Grit scale-12 items-Cronbach's α = .60. Although not strong, such a coefficient is adequate for research purposes when sufficient samples exist (MacCallum et al., 1999). The Academic Performance scale-8 items-presented good internal consistency: Cronbach's α = .78. Parental Educational Attainment (2 items) also showed acceptable reliability (α = .70). Taken together, these results suggest that the instruments employed in this study were sufficiently reliable for assessing the targeted constructs.

**Table 1**

*Psychometric Properties of Scale*

| Assessment Measures | *k* | *M* | *SD* | *Cronbach's α* |
|---|---|---|---|---|
| Grit | 12 | 31.06 | 5.86 | .60 |
| Academic Performance | 8 | 19.31 | 6.40 | .78 |
| Parental Education | 2 | 9.05 | 3.55 | .70 |

*Note: k = Scale Items, M = Means, SD = Standard Deviation, α = Cronbach's Alpha, N = 200.*

### Correlations Among Key Study Variables

Pearson product-moment correlations, means, and standard deviations of all study variables are reported in Table 2. Several significant associations were observed. Age was positively related to birth order ($r = .16$, $p < .05$); that is, older students tended to be later-born within their families. Gender was positively correlated with last academic result percentage ($r = .36$, $p < .01$), but negatively correlated with academic performance ($r = –.22$, $p < .01$), so there are performance differences by gender.

Degree program was inversely correlated with grit ($r = –.23$, $p < .01$) and parental education ($r = –.15$, $p < .05$). The university type was positively correlated with grit ($r = .18$, $p < .05$). Last result percentage was significantly related to gender ($r = .36$, $p < .01$), birth order ($r = .15$, $p < .05$), and mother's education ($r = .15$, $p < .05$), but with academic achievement negatively ($r = –.33$, $p < .01$).

Parental education was strongly correlated with father's education ($r = .68$, $p < .01$) and mother's education ($r = .71$, $p < .01$), and moderately with monthly income of the family ($r = .21$, $p < .01$). Academic achievement was positively correlated with grit ($r = .36$, $p < .01$) and birth order ($r = .15$, $p < .05$). Academic achievement was negatively correlated with last result percentage ($r = –.33$, $p < .01$).

**Table 2**

*Pearson Product-Moment Correlation, Mean and Standard Deviations of Grit, Parental Educational Attainment and Academic Success, and demographics*

| Variable | M | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Age | 20.36 | 1.38 | — | | | | | | | | | | | | |
| Gender | 1.50 | 0.50 | -.05 | — | | | | | | | | | | | |
| Deg Prog | 2.33 | 0.88 | .02 | .00 | — | | | | | | | | | | |
| Uni | 1.49 | 0.50 | -.08 | -.07 | .00 | — | | | | | | | | | |
| Las Re % | 73.52 | 8.52 | .03 | .35 | .10 | -.07 | — | | | | | | | | |
| Siblings | 3.76 | 1.62 | .11 | .05 | .06 | .08 | .08 | — | | | | | | | |
| Bir Order | 2.57 | 1.26 | .16 | .08 | .00 | .08 | .15 | .66 | — | | | | | | |

| Variable | M | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F Edu | 2.33 | 1.00 | .04 | -.08 | .01 | -.03 | .07 | -.08 | -.06 | — | | | | | |
| M Edu | 2.22 | 0.92 | -.01 | -.06 | -.01 | -.13 | .15 | -.07 | -.04 | .45 | — | | | | |
| MFI | 75695.3 | 30731.04 | -.03 | -.14 | -.07 | .01 | .02 | .00 | -.03 | .24 | .12 | — | | | |
| DF at H | 1.56 | 0.50 | .03 | -.01 | -.06 | .04 | .04 | -.03 | .08 | .07 | .03 | .16 | — | | |
| Total Grit | 31.10 | 5.60 | -.06 | -.05 | .22 | .17 | -.11 | .00 | .14 | -.05 | -.03 | -.10 | -.01 | — | |
| Acad Perf | 3.34 | 0.43 | -.07 | -.22 | -.03 | .13 | -.32 | -.05 | -.05 | .07 | -.04 | .13 | .06 | .35 | — |
| PEA | 4.52 | 1.05 | .06 | -.09 | -.14 | -.05 | .11 | -.15 | -.10 | .67 | .70 | .21 | .05 | .03 | .10 |

*Note: M = mean, SD = Standard Deviation, Deg Pro = Degree Program, Uni =University Las Re % = last result percentage, Bir order = Birth Order, F Edu = fathers' Education, M Edu = Mothers Education, MFI = Monthly Family Income, DF at H = Dominant Figure at Home, Acad Perf = Academic Performance, PEA = Parental Educational Attainment p <.05, p** <.01, (N = 200)*

### Predictors of Academic Performance

Stepwise multiple regression was applied to investigate the predictive capability of demographic factors, parental education, and grit for academic performance (Table 3).

**Step 1**: The demographic factors explained 14 percent of the variance in academic success: $R^2 = .14$, Adj. $R^2 = .10$. Among these, last result percentage, $\beta = –.32$, $p < .001$, and monthly family income, $\beta = .14$, $p < .05$, were shown to be independently predictive.

**Step 2:** Parental education was included, with a minimal contribution to explained variance by 1.5% ($R^2 = .15$). Parental education did not predict academic achievement when demographics were controlled for.

**Step 3:** Grit was added, greatly enhancing the model, accounting for 27% of the variance in academic performance ($R^2 = .27$). Grit was a significant positive predictor ($\beta = .37$, $p < .001$), evidencing its pivotal position in academic achievement above demographics and parents' education.

**Table 3**

*Stepwise Multiple Regression Results in Parental Educational Attainment, Grit, and Academic Success in University Students.*

| Variables | *B* | *SE B* | *β* | *R2* | *Δ R2* |
|---|---|---|---|---|---|
| **Step I** | | | | .14 | .10 |
| Age | -0.21 | 0.31 | -.04 | | |
| Gender | 0.21 | 0.90 | .017 | | |
| DP | 0.05 | 0.37 | .009 | | |
| Uni | 0.77 | 0.51 | .104 | | |
| LR % | -0.20 | 0.04 | -.32 | | |
| Siblings | -0.16 | 0.28 | -.05 | | |
| BO | 0.14 | 0.40 | .03 | | |
| MFI | | | | | |
| **Step II** | | | | .15 | .01 |
| PEA | 0.24 | 0.13 | .13 | | |
| **Step III** | | | | .27 | .23 |
| Grit | .40 | .07 | .37 | | |

*Note: p*=0.5, p**= .01, B= Unstandardized beta, β=beta, SEB=the standard error of the computed value of b, R2=coefficient of determination, ΔR2= change in the coefficient of determination, (N = 200).*

### Moderation Analysis

A moderation analysis was performed to test if grit moderated the association between parental education and academic performance (Table 4). The model accounted for 14.1% of the variance in academic achievement. Grit was a substantial predictor of academic achievement (B = 0.59, p = .004), while parental

education was not (B = 0.86, p = .19). The interaction between parental education and grit was nonsignificant (B = –0.02, p = .28), suggesting that grit did not moderate the association between parental education and academic achievement.

**Table 4**

*Moderation analysis of Grit on the relationship between parental education and academic Success*

| Predictor | *B* | *SE* | *T* | *p* | *95% CI* | |
|---|---|---|---|---|---|---|
| | | | | | *LL* | *UL* |
| Constant | -0.42 | 6.36 | -0.07 | .94 | -12.96 | 12.13 |
| PEA (X) | 0.86 | 0.66 | 1.30 | .19 | -0.45 | 2.16 |
| Grit (W) | 0.59 | 0.21 | 2.88 | .00 | 0.19 | 1.00 |
| X*W | -0.02 | 0.02 | -1.07 | .28 | -0.06 | 0.02 |
| R2 | .14 | | | | | |
| F | 10.71 | | | | | |

*Note: B = unstandardized beta; SE = standard error; CI = Confidence Interval, UL = Upper Limit, LL = Lower Limit, PEA = Parental Educational Attainment, X*W = interaction, (N = 200), P < .01*

**Group Differences in Grit, Academic Achievement, and Parental Education**

Independent samples t-tests were used to analyze gender differences (Table 5). Male students indicated significantly greater grit (M = 32, SD = 5.31) compared to female students (M = 30, SD = 5.75), t(198) = 2.51, p = .013, Cohen's d = 0.36 (small-to-moderate effect). Female students performed better than male students in academic performance (M = 83.53, SD = 9.23 vs. M = 80.04, SD = 10.35), t(198) = –2.51, p = .013, Cohen's d = 0.36. There were no gender differences for parents' level of education, t(198) = 0.34, p = .73, Cohen's d = 0.05.

**Table 5**

*Independent Sample t – test comparing Grit, Academic Performance, and Parental Educational Attainment based on Gender*

| Variables | Male (n=100) | | Female (n=100) | | *t* | *p* | Cohen's d |
|---|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | | | |
| Grit | 32 | 5.31 | 30 | 5.75 | 2.51 | .13 | 0.36 |
| AP | 80.04 | 10.35 | 83.53 | 9.23 | -2.51 | .013 | 0.36 |
| PEA | 9.14 | 3.46 | 8.97 | 3.66 | 0.34 | .73 | 0.05 |

*Note: n = sample size, M = mean, SD = standard deviation, t = t- statistics, AP = Academic Performance, PEA = Parental Educational Attainment, P< .05.*

## Discussion

The study explored the relationship between parental educational attainment, grit, and academic success in university students. Results show that grit is a better predictor of academic success than parental educational level, endorsing Duckworth et al.'s (2007) claim that persistence and long-term interest are the keys to success. These findings also confirm research showing that grit encourages resilience, self-regulation, and continued motivation among students (Howard et al., 2019). The absence of moderation suggests that although parental education makes a contribution to the learning environment, it does not moderate or suppress the predictive potential of grit for academic success.

Gender differences also point out that whereas male students have greater grit, female students convert their effort into better academic success, indicating intricate interactions among character traits and academic success. Regarding parental education, anticipated impacts were weaker within the Pakistani context, by

virtue of structural and socio-economic factors that insulate parental effect during higher education. However, the results highlight the importance of personal characteristics above background in student outcomes.

Overall, the research highlights grit—specifically consistency of interest—as a strong predictor of academic achievement, stressing its position as a psychological strength that allows students to persevere in the face of adversity. These results have important implications for developing resilience and motivation among Pakistani university students.

## Conclusion

This study highlights grit as a crucial predictor of academic achievement, more powerful than parental education. Parental background provides some protection, but perseverance and self-motivation were more reliable predictors of success, highlighting the value of developing resilience among students.

Based on Duckworth's grit theory, the study investigated the associations between parental education, grit, and academic achievement among 200 students in a university. Results indicated grit to be a substantial positive predictor of academic performance, whereas parental education had no significant effect and did not moderate through grit.

Demographic analysis revealed greater grit in male students, while no significant impact of family income was reported. Such findings imply that internal characteristics such as grit could be independent of socioeconomic conditions.

## Limitations and Future Directions

There are some limitations to this study. To begin, the cross-sectional and correlational design limits causal inferences; while grit was predictive of success in academics, it cannot be said to cause improved results directly. Second, the sample only included 200 university students aged 18–22 from selected Lahore universities, making generalizability limited. Third, the use of self-report measures, particularly for academic achievement, could have imposed social desirability or memory biases. Lastly, certain groups—e.g., married students, single-parent raised students, and semester repeat students—were excluded, which might have suppressed contextual variables impacting grit and academic achievement.

Based on the findings and limitations, longitudinal studies may show the causal relationships more effectively. Expanding the sample to include students from diverse academic years, regions, and backgrounds would enhance generalizability. Multiple sources of academic performance data—such as institutional GPA records— may be used; rather than relying solely on self-reports. Finally, efforts may have been made to refine the measurement of grit to ensure it captures its multidimensional nature more reliably and validly in university student populations.

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