

Beyond Ability: The Contribution of Grit, Academic Self-Efficacy, and Self-Regulation to Academic Achievement among Arab Adolescents

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ABSTRACT: This study examined the contribution of grit, academic self-efficacy, and self-regulation to academic achievement among Arab high school students in Israel. Participants were 457 students from the Northern Triangle region in Israel. Data were collected through an anonymous online questionnaire using measures of grit, academic self-efficacy, and self-regulation, while academic achievement was assessed through school grades. Pearson correlation analyses showed that academic self-efficacy was the only variable significantly associated with academic achievement. Multiple regression analysis indicated that the overall model was significant but explained a small proportion of variance in achievement ($R^2 = .022$, $p = .017$). Academic self-efficacy emerged as the only significant positive predictor, whereas grit and self-regulation did not make unique significant contributions. The findings highlight the central role of academic self-efficacy in students' school performance and suggest that strengthening students' confidence in their academic abilities may support academic success among Arab adolescents in Israel.

KEYWORDS: grit, academic self-efficacy, self-regulation, academic achievement, Arab high school students

INTRODUCTION

Secondary education represents a critical stage in students' academic development because it strongly influences future educational and career pathways. Academic achievement during this stage is shaped not only by cognitive abilities such as reasoning, memory, and problem solving, but also by non-cognitive and psychological factors that help students remain motivated, persistent, and engaged in learning. In recent years, increasing scholarly attention has been given to variables such as grit, academic self-efficacy, and self-regulation as important contributors to academic success.

Grit, defined as passion and perseverance for long-term goals, has been described as a meaningful non-cognitive trait that supports persistence despite challenges, setbacks, and slow progress (Duckworth et al., 2007). Research has linked grit to academic success, goal attainment, and developmental adjustment, although the strength of this relationship has varied across studies. In particular, evidence suggests that perseverance of effort may be more strongly related to academic outcomes than consistency of interest (Donita et al., 2022; Kalia et al., 2018; Mason, 2018). Grit has also been associated with resilience and reduced school burnout, suggesting that it may serve as a protective factor in demanding educational settings (Arya & Lal, 2018; Tang et al., 2021). It has been stated that enhancing grit and mental well-being can effectively reduce the challenges faced by adolescents in making career decisions (Egbaria, 2025).

Academic self-efficacy is another important factor in student achievement. Grounded in Bandura's social-cognitive theory, academic self-efficacy refers to students' beliefs in their ability to organize and successfully perform academic tasks (Bandura, 1982). Students with stronger self-efficacy are more likely to persist when facing academic challenges, use effective learning strategies, and regulate their effort more successfully. Previous studies have consistently shown positive associations between academic self-efficacy and academic outcomes, suggesting that students' beliefs about their capabilities play an important role in shaping motivation, persistence, and achievement (Barrios et al., 2026; Covarrubias-Apablaza et al., 2024; Motlagh et al., 2011).

Self-regulation is equally central to academic achievement, particularly during high school, when students are expected to manage increasing academic demands with greater independence. Self-regulation refers to the ability to plan, monitor, and control one's thoughts, emotions, and behaviors in order to achieve learning goals (Pintrich, 2000). Students who regulate their learning effectively tend to set goals, monitor their progress, adjust strategies when needed, and remain focused despite distractions. Research has repeatedly shown that self-regulation is positively associated with academic performance and long-term educational success (Michaelides & Durkee, 2021; Nota et al., 2004; Zuffiano et al., 2013).

Academic achievement itself is commonly defined as the degree to which students attain educational goals, usually reflected in grades, test scores, or other indicators of school performance. Although cognitive ability has traditionally been treated as a major predictor of academic success, growing evidence suggests that achievement is also strongly influenced by personal and motivational

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variables, including self-regulation, self-efficacy, and personality-related traits (Erdoğan, 2019; Michaelides & Durkee, 2021). At the same time, prior findings regarding grit have been somewhat mixed. Some studies have shown that grit is positively associated with academic performance, whereas others have suggested that its contribution may be indirect, modest, or dependent on contextual factors such as teacher and parental support (Alhadabi & Karpinski, 2020; Clark et al., 2020; Lam & Zhou, 2022; Williams, 2017). Despite the growing body of research on grit, academic self-efficacy, and self-regulation, several important gaps remain. Much of the existing literature has focused on university students, whereas fewer studies have examined these variables among high school students. In addition, relatively little research has investigated these three constructs together within a single predictive model. Research on Arab students is especially limited, and to the best of the researcher's knowledge, no previous study has examined the combined role of grit, academic self-efficacy, and self-regulation in predicting academic achievement among Arab high school students in Israel.

These issues are especially important in the context of Arab students in Israel. The transition to adulthood among young Arabs in Israel is shaped by a complex social and cultural reality marked by minority status, limited resources, discrimination, poverty, school dropout, and barriers to educational and occupational integration (Sulimani-Aidan, 2020). In such a context, personal strengths such as perseverance, confidence in one's academic abilities, and the capacity to regulate learning may play a particularly important role in students' educational development. Examining these variables among Arab high school students may therefore contribute both to theory and to practice by identifying key personal resources that support academic success in an understudied population. To sum up, the present study examined the relationships among grit, academic self-efficacy, self-regulation, and academic achievement among Arab high school students in Israel. It also investigated the extent to which grit, academic self-efficacy, and self-regulation predict academic achievement. Based on the literature reviewed, the following hypotheses were proposed:

H1: Grit will be significantly associated with academic achievement among high school students.

H2: Academic self-efficacy will be significantly associated with academic achievement among high school students.

H3: Self-regulation will be significantly associated with academic achievement among high school students.

H4: Grit, academic self-efficacy, and self-regulation will significantly predict academic achievement among high school students.

METHOD

Participants

The study was conducted among Arab high school students in the Northern Triangle region in Israel. The sample consisted of 457 high school students, including 326 females (71.3%) and 131 males (28.7%). All participants were enrolled in secondary schools during the 2026 school year.

Measures

Grit

Grit was measured using the Short Grit Scale (Grit-S) developed by Duckworth and Quinn (2009). The scale includes 8 items assessing perseverance and passion for long-term goals. Responses are rated on a 5-point Likert scale ranging from 1 (not at all like me) to 5 (very much like me), with higher scores indicating higher levels of grit. A sample item is: "I have been obsessed with a certain idea or project for a short time but later lost interest". Higher scores on both subscales and on the total scale indicate greater grit. Duckworth and Quinn (2009) reported internal consistency coefficients of .78 for perseverance of effort and .70 for consistency of interest. In the current study, the internal consistency coefficients of .65 for perseverance of effort and .72 consistency of interest.

Academic Self-Efficacy

Academic self-efficacy was assessed using the Academic Self-Efficacy Scale developed by Chemers et al. (2001). The scale includes 8 items that measure students' confidence in their ability to perform academic tasks successfully. Items are rated on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). A sample item is: "I know how to take notes." Higher scores indicate higher academic self-efficacy. Previous research has reported acceptable internal consistency for the scale, with a reliability coefficient of .78. While the internal consistency for the scale, for this study is .88.

Self-Regulation

Self-regulation was measured using the self-regulation subscale of the Motivated Strategies for Learning Questionnaire (MSLQ), developed by Pintrich et al. (1991). The subscale includes 12 items designed to assess how students plan, monitor, and regulate their learning. It focuses on metacognitive processes such as goal setting, checking understanding, maintaining attention, and adjusting study strategies when necessary. A sample item is: "I ask myself questions to make sure I understand the material I have been studying in this class." Previous research has reported acceptable internal consistency for this measure, with a reliability coefficient of .78. While the internal consistency for the scale, for this study is .85.

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Academic Achievement

Academic achievement was assessed using students' school grades. Higher scores reflected higher levels of academic performance.

Procedure

The study targeted Arab high school students in villages and towns in northern Israel during the 2026 school year. Data were collected using an anonymous online questionnaire administered through Google Forms. Before distributing the questionnaire, the researcher obtained the required permissions from the original scale developers. Participants were informed about the purpose of the study through a detailed consent form, which clarified that participation was voluntary and that responses would remain confidential.

Data Analysis

Data were analyzed using SPSS Version 26. Descriptive statistics, including means, standard deviations, minimum values, and maximum values, were calculated for academic achievement, grit, academic self-efficacy, and self-regulation. Cronbach's alpha coefficients were computed to assess the reliability of the research instruments. Pearson correlation analyses were then conducted to examine relationships among the study variables. Finally, multiple regression analysis was used to test the extent to which grit, academic self-efficacy, and self-regulation predicted academic achievement.

RESULTS

Descriptive Statistics

Table 1: Means, Standard Deviations, Minimums, and Maximums for the Study Variables

Variable	M	SD	Min	Max
Grit	3.25	.55	1.63	4.75
Academic Self-Efficacy	5.45	1.07	1.11	7.00
Self-Regulation	5.16	1.03	1.00	6.91
Academic Achievement	88.65	9.40	53	100

Table 1 presents the descriptive statistics for the study variables. The findings show that students reported moderately high levels of grit ($M = 3.25$, $SD = 0.55$) and high levels of academic self-efficacy ($M = 5.45$, $SD = 1.07$) and self-regulation ($M = 5.16$, $SD = 1.03$). Academic achievement was also relatively high ($M = 88.65$, $SD = 9.40$). In general, these results suggest that the sample was characterized by generally positive levels of the study variables, with sufficient variability to support further correlational and regression analyses.

Correlations Among the Study Variables

Pearson correlation coefficients were calculated to examine the associations among grit, academic self-efficacy, self-regulation and academic achievements as presented in Table 2.

Table 2: Pearson Correlations Among the Study Variables (N = 457)

Variable	1	2	3	4
Grit	—			
Academic Self-Efficacy	.580**	—		
Self-Regulation	.429**	.640**	—	
Academic Achievement	.051	.146.	.074	—

** $p < .01$.

Table 2 presents the Pearson correlation coefficients among the study variables. The findings indicate that grit was positively and significantly associated with academic self-efficacy ($r = .580$, $p < .01$) and self-regulation ($r = .429$, $p < .01$), suggesting that students with higher levels of perseverance also tended to report stronger academic confidence and more effective self-regulatory skills. In addition, academic self-efficacy was positively and significantly related to self-regulation ($r = .640$, $p < .01$), reflecting a strong association between students' beliefs in their academic capabilities and their use of learning management strategies. Regarding academic achievement, it showed a small but significant positive correlation with academic self-efficacy ($r = .146$, $p < .01$), whereas its correlations with grit ($r = .051$) and self-regulation ($r = .074$) were positive but not statistically significant. Generally, these findings suggest that grit, academic self-efficacy, and self-regulation are meaningfully interrelated, while academic self-efficacy appears to be the only variable among them that is significantly associated with academic achievement at the bivariate level.

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Regression Analysis Predicting Academic Achievement

Table 3: Regression Analysis Predicting Academic Achievement

Multiple regression coefficients predicting grades

Predictor	B	SE	β	t	p
Self-Efficacy	1.617	.575	.185	2.813	.005
Self-Regulation	-.255	.558	-.028	-.457	.648
Grit	-.633	.944	-.037	-.671	.503

a. Dependent Variable: academic achievement

$R^2 = .023$, $F(3, 452) = 3.56$, $p = .014$

According to table3, a multiple linear regression analysis was conducted to examine whether grit, academic self-efficacy, and self-regulation predict academic achievement. The overall model was statistically significant, $F(3, 452) = 3.56$, $p = .014$, but explained only a small proportion of the variance ($R^2 = .023$, adjusted $R^2 = .017$). Among the predictors, only academic self-efficacy made a significant unique contribution to academic achievement, $B = 1.617$, $SE = 0.575$, $\beta = .185$, $p = .005$. In contrast, self-regulation and grit were not significant predictors. These results suggest that academic self-efficacy was the strongest and only significant predictor of academic achievement in the model.

DISCUSSION

The present study examined the relationships among grit, academic self-efficacy, self-regulation, and academic achievement among Arab high school students in Israel, and investigated the extent to which these variables predict academic achievement. Overall, the findings showed that academic self-efficacy was the only variable that demonstrated a significant association with academic achievement and emerged as the only significant predictor in the regression model. In contrast, grit and self-regulation were not significantly related to academic achievement and did not make significant unique contributions to its prediction. These findings provide partial support for the study hypotheses and offer important insight into the role of non-cognitive factors in the academic lives of Arab high school students in Israel.

The first hypothesis proposed that grit would be significantly associated with academic achievement. This hypothesis was not supported. The correlation between grit and academic achievement was positive but non-significant, and grit did not significantly predict academic achievement in the regression model. This finding suggests that although grit may reflect an important personal quality related to perseverance and long-term goal pursuit, it may not directly translate into better school grades in this sample. This result is consistent with studies that have questioned the strength of the direct relationship between grit and academic performance. For example, Bazelaïs et al. (2018) found that grit did not significantly predict academic performance, and Mateo (2024) likewise reported that grit did not directly affect science academic performance. In addition, Credé et al. (2017) argued in their meta-analysis that the predictive power of grit may be weaker than originally assumed, particularly when examined as a global construct.

At the same time, the present finding does not necessarily mean that grit is unimportant in educational settings. The results showed that grit was significantly and positively associated with both academic self-efficacy and self-regulation. This indicates that students with higher grit also tended to report stronger confidence in their academic abilities and better regulation of their learning. Such a pattern is consistent with the view that grit may contribute indirectly to academic functioning through motivational and behavioral pathways rather than through a direct effect on grades. This interpretation aligns with Alhadabi and Karpinski (2020), who suggested that grit may influence academic outcomes through other variables, and with Clark et al. (2020), who emphasized that the impact of grit may depend on contextual supports such as teacher and peer support. It is also consistent with Lam and Zhou (2022), who concluded that the relationship between grit and academic achievement is generally positive but modest, and may vary across cultural and educational contexts.

The second hypothesis stated that academic self-efficacy would be significantly associated with academic achievement. This hypothesis was supported. Academic self-efficacy showed a significant positive correlation with academic achievement and was also the only significant positive predictor in the regression analysis. Students who reported stronger beliefs in their academic abilities tended to achieve higher grades. This finding is highly consistent with social-cognitive theory, which emphasizes that self-efficacy beliefs influence effort, persistence, coping, and performance (Bandura, 1982). Students who believe they can succeed academically are more likely to engage with challenging tasks, invest greater effort, and persist despite obstacles, all of which can support higher academic achievement.

The present result is in line with previous empirical studies showing that academic self-efficacy is an important determinant of academic success. Motlagh et al. (2011) found that self-efficacy was positively associated with academic achievement among high school students, while Okweye and Onoyase (2024) reported that academic self-efficacy strongly predicts school performance by influencing students' effort, persistence, and task choices. Similarly, Barrios Sánchez et al. (2026) concluded that academic self-

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efficacy is a central factor in student success because it supports students' capacity to manage challenges, regulate learning, and perform effectively. The current findings therefore reinforce the argument that self-efficacy is a particularly important personal resource in adolescence, when students are expected to cope with increasing academic demands and make important decisions about their future educational pathways.

The third hypothesis proposed that self-regulation would be significantly associated with academic achievement. This hypothesis was not supported. Although self-regulation was positively correlated with grit and academic self-efficacy, its correlation with academic achievement was not statistically significant, and it did not significantly predict academic achievement in the regression analysis. This finding is somewhat surprising given the strong body of literature linking self-regulation to academic success (Michaelides & Durkee, 2021; Nota et al., 2004; Zuffiano et al., 2013). However, several explanations may account for this result. One possible explanation is that the role of self-regulation may overlap substantially with academic self-efficacy. In the present study, self-regulation was strongly correlated with academic self-efficacy, suggesting that students who believed more strongly in their academic abilities also tended to regulate their learning more effectively. When both variables were entered simultaneously into the regression model, academic self-efficacy may have accounted for the motivational variance most closely related to grades, leaving self-regulation with no unique predictive contribution. This interpretation is consistent with research suggesting that self-efficacy and self-regulation are conceptually and empirically intertwined, with self-efficacy often supporting the effective use of self-regulatory strategies (Covarrubias-Apablaza et al., 2024; Zuffiano et al., 2013).

Additional possible explanation is that self-regulation may be more strongly related to specific learning behaviors, long-term adjustment, or domain-specific outcomes than to overall school grades as measured in the present study. Previous research has often shown that self-regulation contributes to academic functioning over time, particularly through planning, monitoring, and strategic learning (Nota et al., 2004; Suan, 2023). It is therefore possible that its contribution was not fully captured by the general grade indicator used here. In addition, contextual factors such as school structure, teaching methods, family expectations, and available educational resources may shape whether self-regulation translates into measurable academic achievement in this population.

The last hypothesis stated that grit, academic self-efficacy, and self-regulation would significantly predict academic achievement. This hypothesis was partially supported. The overall regression model was statistically significant, indicating that the three predictors together contributed to the prediction of academic achievement. However, the amount of explained variance was small ($R^2 = .022$), and only academic self-efficacy made a statistically significant unique contribution. Thus, while the set of predictors was meaningful as a whole, their combined explanatory power was limited, and the model suggests that other important factors not included in the study likely play a larger role in explaining academic achievement.

The relatively small explained variance is important to consider. Academic achievement is a complex outcome shaped by multiple influences, including cognitive ability, study habits, school climate, family support, socioeconomic conditions, teacher expectations, and educational opportunities (Erdoğan, 2019). In the case of Arab high school students in Israel, these influences may be especially relevant because academic development takes place within a broader sociocultural context marked by structural inequality, limited resources, and barriers to educational opportunity (Sulimani-Aidan, 2020). For this reason, although self-efficacy emerged as a meaningful predictor, academic achievement in this population cannot be understood solely in terms of individual motivational traits. Rather, it appears to reflect the interaction between personal strengths and broader contextual realities.

The findings also have practical implications. Since academic self-efficacy emerged as the strongest and only significant predictor of academic achievement, educators and school counselors may benefit from developing interventions that strengthen students' academic confidence. Such efforts may include mastery-based learning experiences, constructive feedback, goal-setting strategies, mentoring, and opportunities for students to experience success in manageable academic tasks. Strengthening self-efficacy may be especially valuable for Arab high school students in Israel, as it may help them cope more effectively with challenges, remain engaged in learning, and build confidence in their ability to succeed academically. Although grit and self-regulation did not directly predict achievement in the present study, they were strongly related to the broader motivational profile of students and therefore should not be neglected in educational practice.

More broadly, the present study contributes to the literature by focusing on an understudied population and by examining grit, academic self-efficacy, and self-regulation together within one predictive model. Much of the prior literature has centered on university students, whereas this study highlights the importance of examining non-cognitive predictors earlier in the educational trajectory. The results suggest that not all motivational variables operate in the same way, and that academic self-efficacy may be more proximally related to school performance than grit or self-regulation among Arab high school students in Israel.

In conclusion, the findings showed that academic self-efficacy was the only variable significantly associated with and predictive of academic achievement, thereby supporting Hypothesis 2 and partially supporting Hypothesis 4. Hypotheses 1 and 3 were not supported, as grit and self-regulation did not show significant direct relationships with academic achievement. These results underscore the central role of students' beliefs in their academic capabilities and suggest that self-efficacy may be a more robust predictor of academic success than grit or self-regulation in this context. Future research should continue to examine these variables

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in culturally diverse school populations and include additional contextual, family, and school-related factors in order to develop a more comprehensive understanding of academic achievement among Arab adolescents in Israel.

LIMITATIONS AND RECOMMENDATIONS

Several limitations should be considered when interpreting the findings of this study. First, the cross-sectional design does not allow causal conclusions to be drawn. Second, grit, academic self-efficacy, and self-regulation were assessed through self-report measures, which may be influenced by response bias. Third, academic achievement was measured using school grades only, which may not fully reflect students' overall academic performance. In addition, the regression model explained only a small proportion of the variance in academic achievement, suggesting that other important factors may also contribute. Finally, because the study focused on Arab high school students from the Northern Triangle region in Israel, the generalizability of the findings may be limited.

In light of these limitations, several recommendations can be made. Since academic self-efficacy emerged as the only significant predictor of academic achievement, schools should place greater emphasis on strengthening students' confidence in their academic abilities through supportive feedback, goal-setting, mentoring, and opportunities for success. Although grit and self-regulation were not significant predictors, they remain important personal resources that may indirectly support students' adjustment and resilience. Future research should use longitudinal designs, include multiple measures of academic achievement, and examine additional contextual factors such as family support, school climate, and socioeconomic background. It would also be valuable to explore whether academic self-efficacy mediates the relationship between grit, self-regulation, and academic achievement.

CONCLUSION

The current study examined the contribution of grit, academic self-efficacy, and self-regulation to academic achievement among Arab high school students in Israel. The findings showed that academic self-efficacy was the only variable significantly associated with and predictive of academic achievement. In contrast, grit and self-regulation were not significantly related to academic achievement and did not make unique contributions in the regression model. These results suggest that students' beliefs in their academic abilities may be more directly relevant to school performance than perseverance or self-regulatory tendencies in this particular context.

At the same time, grit and self-regulation were positively related to academic self-efficacy and to each other, indicating that these variables remain important parts of students' broader motivational and psychological functioning. The study therefore highlights the complexity of academic achievement and suggests that academic success cannot be explained by one factor alone. Rather, it reflects the combined influence of personal, motivational, and contextual factors.

By focusing on Arab high school students in Israel, the study contributes to the literature on non-cognitive predictors of academic achievement in an understudied population. It also offers practical implications for educators and school counselors by emphasizing the importance of strengthening academic self-efficacy as a means of supporting student success. Overall, the findings underscore the need for continued research that integrates personal resources with sociocultural and educational factors in order to better understand academic achievement among Arab adolescents.

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