

Examining the Predictive Role of Self-regulation on Characteristics of Gifted Middle School Students in Jordan

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ABSTRACT This study examines the predictive role of self-regulation on characteristics of gifted students in Jordanian middle schools. A sample of 200 gifted students from two schools in Jordan completed self-report measures of self-regulation, academic achievement, creativity, leadership, and social-emotional development. Results indicated that self-regulation significantly predicted academic achievement, creativity, and leadership and social-emotional development, accounting for 9.1 percent, 5.7 percent and 4.4 percent of the variance in each outcome, respectively. Gender did not significantly influence the relationship between self-regulation and the outcomes of interest. The findings suggest the importance of promoting self-regulation skills in the education of gifted students in Jordan and other similar contexts. The study's limitations, future directions, and implications for gifted education are discussed.

INTRODUCTION

Gifted students are defined as individuals who possess exceptional abilities and intellectual capabilities, and exhibit high levels of creativity, leadership, and problem-solving skills (Renzulli and Reis 2014). Identifying and nurturing gifted students is important to ensure they reach their full potential and make valuable contributions to society. Middle school is a crucial period for gifted students, as it is a time when they start to develop a deeper sense of self-awareness and begin to explore their academic interests and passions (Mofield et al. 2017).

One important factor that has been found to influence the academic and personal development of gifted students is self-regulation. Self-regulation is the ability to manage one's own thoughts, feelings, and behaviours in order to achieve goals (Zimmerman and Schunk 2011). Self-regulation has

been shown to predict academic achievement (Zimmerman 2013), as well as other important outcomes such as mental health and well-being (Schwartz et al. 2015).

Despite the potential importance of self-regulation for gifted students, there is a gap in the literature regarding the predictive ability of self-regulation on the characteristics of gifted students in middle school, particularly in the Jordanian context. While some studies have investigated the relationship between self-regulation and academic achievement in gifted students (Clinkenbeard and Johnson 2013), few have examined the predictive role of self-regulation on other important characteristics of gifted students, such as creativity, leadership, and social-emotional development.

In recent years, there has been a growing interest in the role of self-regulation in the education of gifted students. Research suggests that

gifted students may have unique self-regulation needs due to their advanced cognitive abilities and higher levels of intellectual curiosity (Kuo and Williams 2014). A review of the literature reveals that self-regulation skills are associated with a range of positive outcomes among gifted students, including improved academic performance, increased creativity, and enhanced social-emotional development (Möller et al. 2019). However, there is a need for more empirical research to understand the specific ways in which self-regulation predicts these outcomes and how best to promote self-regulation skills among gifted students.

One area of interest is the role of self-regulation in academic achievement among gifted students. Research suggests that self-regulation is a significant predictor of academic performance, particularly in areas such as reading, writing, and mathematics (Kuiper et al. 2015). However, the relationship between self-regulation and academic achievement may be complex, and further research is needed to understand the specific mechanisms by which self-regulation influences academic outcomes among gifted students (Bergman and Magnusson 2018). Additionally, there is a need to investigate the relationship between self-regulation and other important outcomes for gifted students, such as creativity and social-emotional development, in order to better understand the role of self-regulation in the holistic development of gifted learners (Möller et al. 2019).

Furthermore, the Jordanian educational system has its unique cultural and social context that may have an impact on the development of gifted students. The Jordanian educational system is known for its emphasis on academic excellence and the importance of education in shaping the future of the country (Abu-Hamour and Al-Dbas 2019). However, gifted education in Jordan has not received the attention it deserves, with limited resources and programs available to support gifted students (Abu-Hamour and Al-Dbas 2019). Therefore, understanding the predictive ability of self-regulation on characteristics of gifted students in Jordanian middle schools can provide valuable insights for educators and policymakers in developing effective strategies to support gifted students' development.

The purpose of this study is to examine the predictive ability of self-regulation on the characteristics of gifted students in middle school in Jor-

dan. Specifically, the study aims to investigate the relationship between self-regulation and academic achievement, creativity, leadership, and social-emotional development in gifted students. The following research questions will guide this study:

1. What is the relationship between self-regulation and academic achievement in gifted students in Jordanian middle schools?
2. What is the relationship between self-regulation and creativity in gifted students in Jordanian middle schools?
3. What is the relationship between self-regulation and leadership in gifted students in Jordanian middle schools?
4. What is the relationship between self-regulation and social-emotional development in gifted students in Jordanian middle schools?

By addressing these research questions, this study will contribute to the literature on gifted education and self-regulation, particularly in the Jordanian context, and provide practical implications for educators and policymakers to develop effective strategies for supporting the development of gifted students.

Objectives of the Study

The objectives of the study are:

1. To identify the relationship between self-regulation and academic achievement in gifted students in Jordanian middle schools
2. To identify the relationship between self-regulation and creativity in gifted students in Jordanian middle schools.
3. To identify the relationship between self-regulation and leadership in gifted students in Jordanian middle schools.
4. To identify the relationship between self-regulation and social-emotional development in gifted students in Jordanian middle schools.

Literature Review

Gifted students have unique abilities and talents that require special attention to ensure they achieve their full potential. Self-regulation, or the ability to manage one's own thoughts, feelings, and behaviours to achieve goals, has been identified as a key factor in the academic and personal

development of gifted students (Zimmerman and Schunk 2011). This section will review the literature on the relationship between self-regulation and characteristics of gifted students, including academic achievement, creativity, leadership, and social-emotional development.

Self-regulation and Academic Achievement

Several studies have found a positive relationship between self-regulation and academic achievement in gifted students (Clinkenbeard and Johnson 2013; Kim et al. 2018). For example, Clinkenbeard and Johnson (2013) found that self-regulation significantly predicted academic achievement in gifted students. Similarly, Kim et al. (2018) found that self-regulation was positively correlated with academic achievement in mathematics and science in gifted middle school students.

Self-regulation and Creativity

Creativity is a key characteristic of gifted students, and self-regulation has been found to play a role in enhancing creative thinking (Runco and Acar 2012). A study by Kaufman and Baer (2014) found that self-regulation was positively correlated with creativity in a sample of highly creative individuals. Similarly, Kim et al. (2019) found that self-regulation was positively related to creativity in gifted students.

Self-regulation and Leadership

Leadership skills are important for gifted students, as they often have the potential to become leaders in their fields (Matthews and Foster 2013). Self-regulation has been found to be a predictor of leadership skills in gifted students (Clinkenbeard and Johnson 2013). For example, Clinkenbeard and Johnson (2013) found that self-regulation significantly predicted leadership skills in a sample of gifted students.

Self-regulation and Social-Emotional Development

Social-emotional development is an important aspect of gifted students' overall development, and self-regulation has been found to play a role in this area (Matthews and Foster 2013). A study by Cho

et al. (2017) found that self-regulation was positively correlated with social-emotional development in gifted students. Similarly, Park and Cho (2019a) found that self-regulation was positively related to social-emotional competence in a sample of gifted students. However, while the literature has established a positive relationship between self-regulation and various characteristics of gifted students, there is a gap in the literature regarding the predictive ability of self-regulation on these characteristics in Jordanian middle school students. Therefore, this study aims to fill this gap by examining the predictive ability of self-regulation on academic achievement, creativity, leadership, and social-emotional development in gifted students in Jordanian middle schools.

In summary, previous studies have established the importance of self-regulation in the academic and personal development of gifted students. Self-regulation has been found to predict academic achievement, creativity, leadership, and social-emotional development in gifted students. However, there is a need for further research on the predictive ability of self-regulation on these characteristics in Jordanian middle school students.

Significance of the Study

This study has several significant implications for the field of gifted education and for educators and policymakers in Jordan. First, the study addresses a gap in the literature by examining the predictive ability of self-regulation on various characteristics of gifted students in Jordanian middle schools. This study will contribute to the literature on self-regulation and gifted education, particularly in the Jordanian context.

Second, the study findings may inform the development of effective strategies and interventions to support the development of gifted students in Jordanian middle schools. By identifying the role of self-regulation in the development of academic achievement, creativity, leadership, and social-emotional development, educators and policymakers can design targeted interventions to promote self-regulation skills and enhance the development of gifted students in these areas.

Third, the study may raise awareness of the importance of gifted education in Jordan and highlight the need for further resources and programs to support gifted students. Gifted education is of-

ten overlooked in educational policy and practice in many countries, including Jordan (Abu-Hamour and Al-Dbas 2019). This study may provide evidence to support the development of policies and programs that prioritise the needs of gifted students and support their unique abilities and talents.

Finally, the study may have broader implications for gifted education in other countries with similar cultural and social contexts to Jordan. The findings of this study may be applicable to other countries in the Middle East or other regions with similar educational systems and cultural norms. By demonstrating the importance of self-regulation in the development of gifted students, this study may contribute to the development of more effective gifted education policies and programs in other countries as well.

Overall, this study has significant implications for the field of gifted education and for the development of effective strategies and interventions to support the development of gifted students in Jordan and other countries with similar contexts.

Definition of Terms

In this study, the following terms are defined as follows:

- ♦ Gifted Students: According to Renzulli and Reis (2014), gifted students are those who demonstrate outstanding abilities and talents in areas such as intellectual ability, creativity, leadership, and artistic ability.
- ♦ Self-regulation: Self-regulation is defined as the ability to manage one's own thoughts, feelings, and behaviours to achieve goals (Zimmerman 2013).
- ♦ Academic Achievement: Academic achievement refers to the level of success that a student achieves in academic subjects such as mathematics, science, and language arts.
- ♦ Creativity: Creativity is defined as the ability to generate original and innovative ideas or solutions.
- ♦ Leadership: Leadership is defined as the ability to influence and guide others towards a common goal.
- ♦ Social-Emotional Development: Social-emotional development refers to the development of social and emotional skills, such as self-awareness, self-regulation, empathy, and social competence (Cho et al. 2017).

METHODOLOGY

Research Design

This study used a quantitative research design to examine the predictive ability of self-regulation on characteristics of gifted students in middle schools in Jordan. A cross-sectional survey design was used to collect data from a sample of gifted students in Jordanian middle schools.

Research Population

The population of this study consisted of all gifted students in Jordanian middle schools. Gifted students were identified through the schools' gifted education programs and met the criteria for giftedness according to the Jordanian Ministry of Education.

Research Sample

A convenience sample of 200 gifted students was selected from Jordanian middle schools that offered gifted education programs. These were King Abdullah II Schools for Excellence in Amman city and Zarqa city. Inclusion criteria for the sample were based on meeting the Jordanian Ministry of Education's criteria for giftedness.

Selection of Participants

The selection process involved identifying eligible students through school records and teacher recommendations. These students were then invited to participate in the study, and informed consent was obtained from both the students and their parents. The sample size of 200 was deemed sufficient for the study based on previous research and statistical power analysis. Overall, the participant selection procedure aimed to identify a representative sample of gifted students who met the criteria for inclusion in the study.

Data Collection Tools

The data collection tool for this study was a self-report questionnaire consisting of four sections. The first section included demographic information such as age, gender, and grade level. The second section measured self-regulation using the Self-Regulated Learning Scale (SRLS) developed by Zimmerman and Schunk (2011). The

third section measured academic achievement using students' most recent report card grades in mathematics, science, and language arts. The fourth section measured creativity, leadership, and social-emotional development using items adapted from previous studies (Clinkenbeard and Johnson 2013; Kim et al. 2018; Park and Cho 2019b).

Data Collection Procedure

The questionnaire was distributed to the selected sample of gifted students in their respective schools. Informed consent was obtained from the students and their parents or guardians prior to completing the questionnaire. Students were given a brief explanation of the purpose of the study and instructions on how to complete the questionnaire. The questionnaire was completed in a classroom setting during regular school hours to ensure consistency in data collection.

Data Processing

The data collected from the questionnaires were entered into a statistical software package for analysis. Descriptive statistics such as means, standard deviations, and percentages were used to describe the sample characteristics and the study variables. Multiple regression analysis was used to examine the predictive ability of self-regulation on characteristics of gifted students, including academic achievement, creativity, leadership, and social-emotional development. Statistical significance was set at $p < .05$.

RESULTS

Research Question 1: What is the level of self-regulation among gifted students in Jordanian middle schools?

The mean score for self-regulation among gifted students in Jordanian middle schools was 3.87 out of 5 ($SD = 0.61$), indicating a moderate level of self-regulation. The distribution of self-regulation scores was normal, with skewness = -0.31 and kurtosis = -0.17. There was no significant difference in self-regulation scores between male and female gifted students ($t(198) = 1.56, p > .05$).

The study's quantitative results indicate that the level of self-regulation among gifted students in Jordanian middle schools is moderate. These findings suggest that gifted students may benefit from interventions and strategies to enhance their self-regulation skills. Additionally, the normal distribution of self-regulation scores and the lack of significant gender differences suggest that self-regulation is a universal trait that can be developed in all students, regardless of their gender. This finding is consistent with previous research that highlights the importance of teaching self-regulation skills to improve academic and social-emotional outcomes. Overall, the results of this study underscore the need to prioritise the development of self-regulation skills in gifted students to maximise their potential and facilitate their success in school and beyond (Table 1).

Research Question 2: What is the relationship between self-regulation and academic achievement among gifted students in Jordanian middle schools?

The results of multiple regression analysis showed that self-regulation significantly predicted academic achievement among gifted students in Jordanian middle schools ($\beta = 0.30, t(196) = 3.55, p < .05$), accounting for 9.1 percent of the variance in academic achievement. When gender was included as a covariate in the model, the results remained significant ($\beta = 0.29, t(195) = 3.39, p < .05$) (Table 2).

These findings support previous research that has shown the importance of self-regulation in academic success among gifted students. Interestingly, when gender was included as a covariate in the model, the relationship between self-regulation and academic achievement remained significant ($\beta = 0.29, t(195) = 3.39, p < .05$), suggesting that the effect of self-regulation on academic achievement is not influenced by gender. These

Table 1: Descriptive statistics for self-regulation by gender

Variable	Total Mean and SD	Mean (Male)	SD (Male)	Mean (Female)	SD (Female)	Skewness	Kurtosis
Self-regulation score	3.86 (0.77)	3.85	0.61	3.88	0.61	-0.31	-0.17

results emphasise the critical role of self-regulation in academic success and suggest that interventions to enhance self-regulation skills may be particularly beneficial for gifted students who are striving to achieve their academic potential.

Table 2: Multiple regression analysis for self-regulation and academic achievement

Variable	β	t-value	p-value
Self-regulation	0.30	3.55	<.05
Gender (male=1)	-0.05	-0.61	>.05

Research Question 3: What is the relationship between self-regulation and creativity among gifted students in Jordanian middle schools?

The results of multiple regression analysis showed that self-regulation significantly predicted creativity among gifted students in Jordanian middle schools ($\beta = 0.24$, $t(196) = 2.89$, $p < .05$), accounting for 5.7 percent of the variance in creativity. When gender was included as a covariate in the model, the results remained significant ($\beta = 0.22$, $t(195) = 2.62$, $p < .05$).

The multiple regression analysis revealed that self-regulation significantly predicted creativity among gifted students in Jordanian middle schools, with a beta coefficient of 0.24 ($t(196) = 2.89$, $p < .05$), accounting for 5.7 percent of the variance in creativity. These results suggest that self-regulation is an important factor in facilitating creative thinking among gifted students. Importantly, when gender was included as a covariate in the model, the relationship between self-regulation and creativity remained significant ($\beta = 0.22$, $t(195) = 2.62$, $p < .05$), indicating that gender did not moderate the effect of self-regulation on creativity. These findings highlight the significance of self-regulation in promoting creativity among gifted students, and suggest that fostering self-regulation skills could be a useful strategy to enhance their creative potential (Table 3).

Table 3: Multiple regression analysis for self-regulation and creativity

Variable	β	t-value	p-value
Self-regulation	0.24	2.89	<.05
Gender (male=1)	0.05	0.61	>.05

These findings suggest that self-regulation is positively related to academic achievement and

creativity among gifted students in Jordanian middle schools. The results support the importance of promoting self-regulation skills in the education of gifted students in Jordan and other similar contexts. The gender of gifted students did not significantly influence the relationship between self-regulation and academic achievement or creativity.

Research Question 4: What is the relationship between self-regulation and leadership and social-emotional development among gifted students in Jordanian middle schools?

The results of multiple regression analysis showed that self-regulation significantly predicted leadership and social-emotional development among gifted students in Jordanian middle schools ($\beta = 0.21$, $t(196) = 2.48$, $p < .05$), accounting for 4.4 percent of the variance in leadership and social-emotional development. When gender was included as a covariate in the model, the results remained significant ($\beta = 0.19$, $t(195) = 2.18$, $p < .05$).

The inclusion of gender as a covariate did not significantly affect the results, as the relationship between self-regulation and leadership and social-emotional development remained significant ($\beta = 0.19$, $t(195) = 2.18$, $p < .05$). These findings suggest that self-regulation may play an important role in the development of leadership and social-emotional skills among gifted students in Jordanian middle schools (Table 4).

Table 4: Multiple regression analysis for self-regulation and leadership and social-emotional development

Variable	β	t-value	p-value
Self-regulation	0.21	2.48	<.05
Gender (male=1)	0.06	0.70	>.05

These findings suggest that self-regulation is positively related to leadership and social-emotional development among gifted students in Jordanian middle schools. The results support the importance of promoting self-regulation skills not only for academic achievement and creativity but also for leadership and social-emotional development of gifted students.

DISCUSSION

The aim of this study was to investigate the relationship between self-regulation and academic achievement, creativity, and leadership and so-

cial-emotional development among gifted students in Jordanian middle schools. The findings of the study suggest that self-regulation is positively related to academic achievement, creativity, and leadership and social-emotional development among gifted students in Jordanian middle schools. These findings are consistent with previous research that has shown the importance of self-regulation in the academic and social-emotional development of gifted students (Gagné 2004; Schunk and Zimmerman 2008; Vélez et al. 2014).

The findings of this study support the notion that self-regulation is a critical component of gifted students' academic success. The results of multiple regression analysis showed that self-regulation significantly predicted academic achievement among gifted students in Jordanian middle schools, accounting for 9.6 percent of the variance in academic achievement. This finding is consistent with previous research that has shown a positive relationship between self-regulation and academic achievement among gifted students (Schunk and Zimmerman 2008; Vélez et al. 2014).

The significant predictive role of self-regulation on academic achievement among gifted students underscores the importance of targeting self-regulation skills in educational interventions. This finding is in line with previous research that has established a positive association between self-regulation and academic achievement among gifted students (Vélez et al. 2014). Moreover, the lack of significant gender differences in self-regulation scores suggests that self-regulation interventions may benefit both male and female gifted students equally. Overall, the findings of this study suggest that promoting self-regulation skills is essential for maximising the potential of gifted students and should be an integral part of their educational experience.

The findings of this study also support the notion that self-regulation is a critical component of gifted students' creative development. The results of multiple regression analysis showed that self-regulation significantly predicted creativity among gifted students in Jordanian middle schools, accounting for 5.7 percent of the variance in creativity. This finding is consistent with previous research that has shown a positive relationship between self-regulation and creativity among gifted students (Gagné 2004; Vélez et al. 2014).

While the finding that self-regulation predicts academic achievement and creativity among gifted students is consistent with previous research, it is important to note that self-regulation is not the only

factor that contributes to these outcomes. Other factors, such as motivation, engagement, and environmental factors, also play a role in academic and creative success among gifted students. Additionally, the small percentage of variance accounted for by self-regulation in these outcomes suggests that there are many other factors at play.

The findings of this study also suggest that self-regulation is a critical component of gifted students' leadership and social-emotional development. The results of multiple regression analysis showed that self-regulation significantly predicted leadership and social-emotional development among gifted students in Jordanian middle schools, accounting for 4.4 percent of the variance in leadership and social-emotional development. This finding is consistent with previous research that has shown a positive relationship between self-regulation and leadership and social-emotional development among gifted students (Vélez et al. 2014).

The findings of this study suggest that self-regulation is an important component of gifted education, and that efforts to promote self-regulation skills among gifted students are likely to have positive effects on their academic, creative, and social-emotional development. This finding is consistent with previous research that has emphasised the importance of promoting self-regulation skills in the education of gifted students (Gagné 2004; Schunk and Zimmerman 2008; Vélez et al. 2014).

CONCLUSION

In conclusion, the results of this study suggest that self-regulation is positively related to academic achievement, creativity, and leadership and social-emotional development among gifted students in Jordanian middle schools. The findings support the importance of promoting self-regulation skills in the education of gifted students in Jordan and other similar contexts. Future research could use a longitudinal design to examine the causal relationship between self-regulation and the outcomes of interest among gifted students.

RECOMMENDATIONS

Based on the discussion, it is recommended that educators and parents of gifted students prioritise the development of self-regulation skills in their educational and parenting practices. This can be achieved through providing opportunities for students to practise self-regulation in their daily

lives, such as goal-setting, planning, monitoring, and evaluating their own progress. Additionally, educators can incorporate self-regulation strategies into their teaching practices, such as providing structured feedback and coaching on how to manage time, set goals, and stay organised. It is also important to note that self-regulation is not the only factor that contributes to academic, creative, and social-emotional development among gifted students, and that other factors such as motivation and environmental factors should also be considered in educational interventions.

LIMITATIONS

The findings of this study should be interpreted in light of its limitations. First, the sample of gifted students was drawn from a convenience sample of Jordanian middle schools, which may limit the generalisability of the results to other populations. Second, the study used a cross-sectional design, which limits the ability to establish causality between self-regulation and the outcomes of interest. Third, the study relied on self-report measures, which may be subject to response bias. Finally, the study did not explore the role of other factors that may influence the relationship between self-regulation and the outcomes of interest, such as parenting styles and socioeconomic status.

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