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Psychological Testing
December 2023, Vol.70 No.4, pp.313-335

Gifted Students' Emotional Intelligence to Achievement Motivation, and Self-Concept: A Mediation Analysis

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Abstract

Several previous studies suggested that achievement motivation is important for academic success and that emotional intelligence plays a vital role in enhancing achievement motivation, especially for gifted students. However, few studies focused on self-concept, which may involve the relationship between emotional intelligence and achievement motivation. This article explored how both gifted and non-gifted Taiwanese students' emotional intelligence, self-concept, and achievement motivation are related. The research involved a survey comprised of three sets of questionnaires concerning emotional response, self-concept, and achievement motivation. The participants included 149 gifted students and 170 non-gifted students who were 6 graders and recruited to confirm the triad mediation model proposed in this study. The findings indicated the following: 1) there were differences between the gifted and non-gifted students in performance, emotional intelligence, and achievement motivation, but little difference in self-concept; 2) emotional intelligence predicted achievement motivation in both contexts of gifted and non-gifted students; and 3) no matter for the gifted or non-gifted students, self-concept fully mediated the relationship between emotional intelligence and achievement motivation. Though emotional intelligence was a vital factor for achievement motivation, according to our findings, emotional intelligence didn't impact on achievement motivation directly. Not only emotional intelligence, but also self-concept was required to fulfill achievement motivation. The study suggested that self-concept, especially for gifted students, should be considered for academic development more than emotional intelligence.

Keywords: emotional intelligence, giftedness, mediating effects, motivation achievement, self-concept

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《測驗學刊》
第七十輯第四期 2023 年 12 月 313～335 頁

資優生情緒智商、成就動機與自我概念之中介效果考驗

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摘要

成就動機對於學業成就很重要，情緒對於增強成就動機具有至關重要的影響，因此資優教育特別將情意發展列為資優生特殊需求的核心素養之一。以往研究多探討資優生之成就動機受到情意特質的影響，但很少提及自我概念對情意發展及成就動機間產生的影響。本研究以 149 位國小六年級資優生與 170 位普通生為對象，使用情緒智商、成就動機與自我概念三份問卷，以結構方程模型的中介變項設計來探討三個變項之間的關係。研究發現有三：一是資優生與普通生在情緒智商及成就動機的所有變項均存在顯著差異，但自我概念僅有部分變項有差異；二是兩組學生的情緒智商均可預測成就動機；三是無論資優生與普通生，自我概念在情緒智商與成就動機的關係中呈現完全中介效果，也就是當自我概念擔任中介變項時，情緒智商與成就動機的直接效果就轉變為不顯著。因此，無論資優生與普通生的情緒智商均能影響自我概念，再藉由自我概念來影響成就動機。研究建議未來進行情緒與成就動機的相關研究，可將自我概念的影響納入考量。

關鍵詞：中介效果、成就動機、自我概念、情緒智商、資優生

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Introduction

Numerous studies have demonstrated a high association between intelligence (for example, IQ) and academic performance (Lynn & Vanhanen, 2012). However, some studies have found that affective factors, such as emotion and motivation, are also important for academic achievement (Goleman, 1995; Low & Nelson, 2006). Studies have shown that stable emotions and high intrinsic motivation are fundamental for gifted students' education and future success because they may help students overcome frustration and devote themselves to finding a solution (Sternberg & Grigorenko, 2014; Zeidner, 2017; Zeidner & Matthews, 2017). A lack of stable emotions and intrinsic motivation may lead to mental health challenges for gifted students. Several studies have indicated that gifted students with emotional challenges tend to have anxiety, phobias, and depression (Liratni & Pry, 2011; Parker, 1996). Furthermore, a lack of motivation may cause feelings of hopelessness in gifted students, which is one of the major reasons why they are likelier to commit suicide than non-gifted students (Baker, 1995; Cross, 2016; Cross & Cross, 2015; Pfeiffer & Stocking, 2000). In 2007, the Ministry of Education (Taiwan) stipulated that affective education, which is concerned with the beliefs, feelings, values and emotional well-being of learners, should be included in the curriculum for the sake of gifted students' well-being (Kao, 2012), but most studies of giftedness still focus on academic performance rather than on affective instruction that helps students overcome frustration.

Emotional intelligence

According to Dabrowski and Piechowski (1977), asynchronous development occurs when a gifted student's physical, social, and/or emotional development does not match their intellectual development. Matthews and Kitchen (2007) pointed out that this may occur when gifted students lack emotional intelligence. Emotional intelligence is the capacity to monitor one's own and other's feelings, and it indicates one's ability to manage one's emotions (Salovey & Grewal, 2005). Emotional intelligence is more an affective (emotion) factor than a cognitive (intelligence) one, and it significantly influences academic development among gifted students (MacCann et

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al., 2020). Furthermore, Goleman (1995) noted that emotional intelligence plays a role in stimulating students' learning potential. Children, especially gifted children with IQs above 145, who lack emotional intelligence often find their social lives difficult to deal with (Neihart et al., 2002; Sommers, 1981). Some findings also suggest that most gifted students who experience mental health problems (such as anxiety and depression) might have low emotional intelligence (Liratni & Pry, 2011; Parker, 1996). In the real world, we often learn that gifted people with high IQs end up achieving nothing in their careers, while people diagnosed as mediocre have bright accomplishments. Bartz (2019) argued that this phenomenon is attributable to emotional intelligence because it was a vital factor for students in developing their self-control, perseverance, and passion for achievement. Developing emotional intelligence is critical, especially for gifted children; nevertheless, it currently remains more at a theoretical stage than in educational practice.

Achievement motivation

In gifted education in Asian countries, most educators and parents pay more attention to students' academic performance than their affective development (Kao, 2012). Gifted students' affective development is supposed to be as vital as their academic performance. In addition to emotional intelligence, affective factors, such as achievement motivation, have gradually drawn increasing attention from educational researchers because achievement motivation is believed to be correlated with academic learning (Garn et al., 2010; Gottfried et al., 2005; Snyder & Wormington, 2020). Achievement motivation refers to an individual's need to meet realistic goals, receive feedback, and experience a sense of accomplishment (Singh, 2011). According to Al-Dhamit and Kreishan (2016), gifted students with high achievement motivation are intrinsically and extrinsically motivated. In addition to improving academic performance, the function of achievement motivation was believed to facilitate the development of socially adaptive behaviors (Fletcher & Speirs Neumeister, 2012; Terman & Oden, 1959). Because of the high correlation between achievement motivation and academic performance, studies in giftedness education are gradually concerned about how to elevate the achievement motivation of gifted students (Benony et al., 2007; Kroesbergen et al., 2016; Parker, 1996; Reis & McCoach, 2000). In edu-

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cational practice, in 2019, the U.S. Department of Education granted Purdue College of Education 2.1 million US dollars to investigate gifted students' achievement motivation (Schmidt et al., 2019).

Self-concept mediating emotional intelligence and achievement motivation

Past studies have strongly evidenced a causal connection between the affective factors of emotional intelligence and achievement motivation. Some models were proposed as follows: Lin (2004) suggested a significant positive correlation between elementary children's emotional intelligence and achievement motivation. Other studies argued that emotional intelligence is the most important predictor of achievement motivation (Desmet & Pereira, 2022; Fei-Zhou et al., 2013; Mahyuddin et al., 2009; Ogurlu, 2021), and they also found that achievement motivation was a prerequisite for emotional intelligence to predict academic performance. Due to evidence of a significant and high correlation between self-concept and achievement motivation (Awan et al., 2011; Lawrence & Vimala, 2013), it seemed that self-concept could be as effective as emotional intelligence at predicting achievement motivation. In other words, when discussing emotional intelligence and achievement emotion, self-concept should be taken into consideration. According to Huitt (2009), self-concept is defined as the perception of one's strengths and weaknesses. Lawrence (1996) extensively argued that self-concept has three aspects: self-image (what a person is), ideal self (what a person wants to be), and self-esteem (the difference a person feels between what they are and what they want to be). Hoge and Renzulli (1993) suggest that gifted students generally exhibit more positive self-concept than their peers. Significant differences have been found between gifted students and their peers in terms of self-concept. Few studies have modeled that both emotional intelligence and self-concept are predictors of achievement motivation (Emmanuel et al., 2014; Magnano et al., 2016; Yan & Haihui, 2005).

Many studies have pointed out that gifted students perform differently from regular students in the variables of self-concept (Hoge & Renzulli, 1993; Huitt, 2009), emotional intelligence (Dabrowski & Piechowski, 1977; Kao, 2012; Liratni & Pry, 2011; Matthews & Kitchen, 2007), and achievement motivation (Al-Dhamit &

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Kreishan, 2016; Benony et al., 2007; Kroesbergen et al., 2016). Therefore, we grouped the two groups of students for analysis. Through analyzing the discrepancies between the two sample groups, we investigate the potential correlation between these three variables and determine whether it is necessary to implement differential teaching methods.

Since some studies have reported that self-concept was a predictor for emotional intelligence (Ferrando et al., 2010; Ogurlu, 2021), it implied that the relationship between achievement motivation, emotional intelligence, and self-concept mutually correlate. Some researchers have postulated that a mediator effect might exist in this triad relationship (Fei-Zhou et al., 2013; Pekrun, 2006). Self-concept is the candidate for mediating the relationship between emotional intelligence and achievement motivation. At present, this theoretical mediating model has not been proven by any experiments, especially for gifted students. The purpose of this study was to examine the mediating effects of self-concept on the relationship between emotional intelligence and achievement motivation among gifted and non-gifted students. Our three research goals are as follows:

1. To determine the difference between gifted and non-gifted students in the following three dimensions: emotional intelligence, achievement motivation, and self-concept.

2. To examine the direct relationship between emotional intelligence and achievement motivation.

3. To assess the mediating role of self-concept in the relationship between emotional intelligence and achievement motivation.

Methods

Participants

Understanding the process of identification and the philosophy of the program for gifted students in Taiwan helps depict the participants' characteristics. Taiwan's Special Education Act (Ministry of Education, 2013) defines a gifted student as a child with excellent cognitive abilities, as assessed by educational psychologists, and

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thus has a need for enhanced education. At the elementary and middle school levels, authorities in Taiwan intend to support the education of gifted children through integrated instruction in regular classes (integrated gifted). Gifted education has been implemented through the following approaches: individual tutoring, accelerated scheduling, deepening the curriculum, skipping years, and early enrollment.

Gifted students must be identified by centers of pedagogical-psychological advisory services through three steps. First, parents and teachers recommend children for evaluation following an observation period. Second, teachers and psychologists administer standardized tests to candidates, and their scores must be above two standard deviations, or PR97, to be considered for the program. Third, educators classify accepted students, according to their traits and performance levels, into the following categories to aid their future development: 1) general intellectual giftedness, 2) academic giftedness, 3) artistic giftedness, 4) creativity giftedness, 5) leadership giftedness, or 6) other special talents giftedness.

A total of 319 sixth graders from 14 classes at 7 schools in central Taiwan were selected for this study's quantitative survey. Of the 319 subjects, 149 were gifted students (general intellectual giftedness) and 170 were non-gifted students. This study selected an equal number of regular students from seven sampled schools as the control group. This research design was intended to avoid interference from the socioeconomic differences that may exist among different schools or regions on the research results. There was no intervention involved in this study. All data collected through computerized questionnaires were kept private and anonymous. Since children were involved, this research was not conducted until parents understood the study and granted permission for their children to participate with signed consent forms.

Measurements

Emotional Response Test

The Emotional Response Test, which consists of 35 items, was designed and developed in Taiwan to measure emotional responses at the primary school level (Chang, 2014). The researchers obtained permission from the authors to use this tool. The test contains seven subtests on the following subjects: self-motivation and adjustment,

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emotional reflection, emotional expression, sensing one's own emotions, total self-knowing, sensing the emotions of others, and distinguishing the emotions of others. This 5-point Likert scale test caters mainly to children in grades G5 and G6 in Taiwan. The internal consistency of the test was .93.

Self-Concept Questionnaire

The Self-Concept Questionnaire employed Kuo's (1987) Children's Self-Concept Scale, and the wording was revised slightly. The questionnaire consisted of 80 items in five categories: physical characteristics, personality traits, acceptance by others, abilities and achievements, and values and beliefs. Each category contained 16 items, and each item was binary (the options were "agree" and "disagree"). A higher score on the questionnaire indicated a better self-concept. According to the subjects' responses, the Cronbach's alpha of this questionnaire was .81, and the range of reliability in each dimension was between .77 and .85.

Achievement Motivation Questionnaire

The Achievement Motivation Questionnaire (AMQ) was based on Kuo's (1984) Academic Motivation Scale, with minor wording revisions. The content involved questions about academic life. The AMQ consisted of 50 items, and its scale was dichotomous, with two options (agree and disagree). A higher AMQ score indicated better achievement motivation. Cronbach's alpha for the AMQ was .82, and the retest reliability was .84.

Procedures

This study primarily involved a survey comprised of three questionnaires designed to measure the emotional response, self-concept, and achievement motivation of gifted and non-gifted students. As our first research goal stated, our study used the participants' scores on these three questionnaires to differentiate between gifted and non-gifted students. Regarding our second and third research goals, we employed mediation analysis to probe the triad relationship between emotional response, self-concept, and achievement motivation. Both direct and indirect effects of emotional response on achievement motivation were considered to confirm the mediating role of self-concept in the relationship between emotional response and achievement mo-

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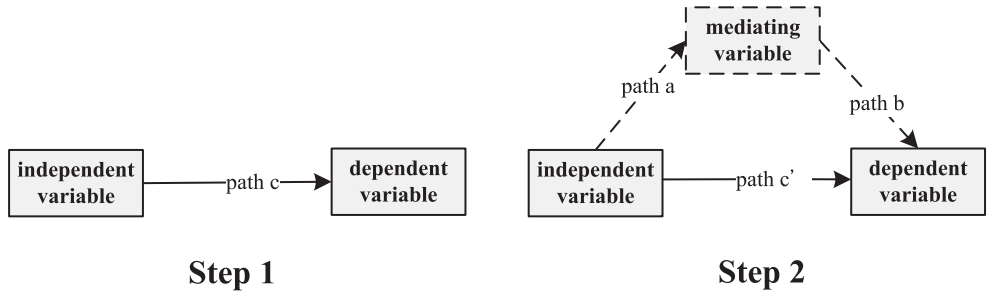
tivation.

A mediation model involves three variables that correlate bilaterally: an independent variable, a dependent variable, and a mediator. As shown in Figure 1, a mediation analysis aims to examine the difference in correlations (path c and path c') between independent variables and dependent variables under the contexts with (Step 2) and without (Step 1) a mediator (Baron & Kenny, 1986). A full mediation occurs when c-c' (the difference in coefficients between path c and path c') is significant and c' is not significant, and a partial mediation occurs when c-c' and c' are both significant. There is no mediation effect when c-c' is not significant. The magnitude of path c is the total effect, and the difference of coefficients between paths c and c' is the indirect effect, which can be derived by the product of the coefficients of paths a and b. In our study, the independent variable is emotional intelligence, the dependent variable is achievement motivation, and the mediator is self-concept.

Figure 1.
Theoretical model of the role of a mediating variable in the relationship between the dimensions of an independent variable and a dependent variable.



Data analysis

Our analysis applied two kinds of statistical software, SPSS (Statistical Product and Service Solutions) and Mplus, to conduct the data analysis. SPSS was used for descriptive statistics to describe the performance of gifted and non-gifted students on the three questionnaires, and Mplus was used for structure equation modeling (SEM) to confirm whether there was a mediation effect in our theoretical model.

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Results

Table 1 presents the gifted and non-gifted students' scores on three questionnaires, which represent their performance in emotional intelligence, self-concept, and achievement motivation. In this table, a t-test was conducted to examine the performance differences in each group. The results indicated that gifted students significantly outperformed non-gifted students in both emotional intelligence and achievement motivation. In terms of self-concept, however, both groups showed only two significant differences: gifted students significantly edged non-gifted students only in the abilities and achievements; non-gifted students had better performance than gifted students in the category of values and beliefs.

To summarize the results in Table 1, non-gifted students had higher emotional intelligence scores than gifted students, except in the self-motivation and adjustment and total self-knowing categories. For self-concept, gifted and non-gifted students showed significant differences on only two variables: abilities and achievements and values and beliefs.

Figure 2 presents a model of the relationship between emotional intelligence and achievement motivation without self-concept. According to the model fit indices, the TLI (Tucker-Lewis Index) and CFI (Comparative fit index) indices were larger than .94, and the RMSEA (root mean square error of approximation) and SRMR (standardized root mean square residual) were less than .08, which showed an acceptable model fit (Hu & Bentler, 1999). Regarding the total effect shown in Figure 2, emotional intelligence significantly predicts achievement motivation for gifted and non-gifted students (standardized coefficient ß = .43 and .23, $p < .01$). For gifted students, emotional intelligence explained an 18.5% variance in achievement motivation; for non-gifted students, emotional intelligence only explained a 5.3% variance.

Figure 3 presents the mediation model, which evaluates the strength of the indirect relationship while controlling for the direct effect of emotional intelligence on achievement motivation. The present study has completed simultaneous analysis of several groups and has found no significant differences in the equivalence assumptions of the Measurement Path analysis and Measurement weights analysis. All indi-

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Table 1.

Mean, Standard Deviation, and T-Test of Related Constructs.

	Gifted (n = 149)		Non-gifted (n = 170)		
	Mean	*Std. Deviation*	*Mean*	*Std. Deviation*	*T-value*
Emotional intelligence					
self-motivation and adjustment	16.17	3.28	12.89	2.66	9.718 ***
emotional reflection	15.13	3.49	23.08	4.40	−17.949 ***
expressing one's own emotions	19.13	4.06	20.00	3.74	−1.985 *
sensing one's own emotions	11.06	2.86	16.82	2.84	−17.988 ***
total self-knowing	22.19	4.90	16.36	2.75	12.851 ***
sensing the emotions of others	15.45	3.32	20.15	3.41	−12.460 ***
distinguishing the emotions of others	15.35	3.32	16.62	2.83	−3.640 ***
Achievement motivation	34.11	7.59	29.42	4.97	6.420 ***
Self-concept					
physical characteristics	10.33	2.39	9.95	2.26	1.439
abilities and achievements	10.06	3.18	9.21	3.17	2.380 *
personality traits	9.98	3.25	10.14	3.00	−0.458
acceptance by others	11.53	2.79	11.82	2.65	−0.939
values and beliefs	10.10	2.51	10.74	2.53	−2.243 *

*p < .05; ***p < .001

ces indicate that the model fit is acceptable (TLI = .946, CFI = .962, RMSEA = .06, SRMR = .07). The magnitude of the direct effect of emotional intelligence on achievement motivation was insignificant for gifted (−.04) and non-gifted (.02) students. Personal factors regarding self-concept were significantly associated with emotional intelligence for both gifted students (ß = .57, p < .001) and non-gifted students (ß = .39, p < .01). Moreover, self-concept was predictive of achievement motivation for both groups (gifted students: ß = .70, p < .001; non-gifted students: ß = .55, p < .001). The indirect effect for gifted students was ß = .399 for gifted students and ß = .195 for non-gifted students; both indirect effects were significant. The indirect effect could also explain most of the variance in this mediation model (gifted students: 15.9%; non-gifted students: 3.8%). From the above results, the insignificance of direct effects and the significance of indirect effects may indicate that full mediation

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Table 2.

Correlation coefficients among variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Self-motivation and adjustment	1	0.694	0.549	0.568	0.548	0.506	0.554	0.282	0.386	0.480	0.361	0.364	0.458
2. Emotional reflection	0.618	1	0.566	0.513	0.577	0.553	0.621	0.201	0.399	0.493	0.356	0.304	0.429
3. Expressing one's own emotions	0.666	0.620	1	0.469	0.552	0.608	0.644	0.200	0.377	0.348	0.309	0.227	0.308
4. Total self-knowing	0.659	0.612	0.540	1	0.599	0.510	0.575	0.117	0.318	0.357	0.210	0.193	0.249
5. Sensing one's own emotions	0.667	0.652	0.608	0.689	1	0.656	0.649	0.088	0.286	0.307	0.187	0.211	0.298
6. Sensing the emotions of others	0.649	0.622	0.629	0.679	0.805	1	0.646	0.064	0.275	0.208	0.125	0.120	0.254
7. Distinguishing the emotions of others	0.609	0.664	0.612	0.670	0.777	0.746	1	0.252	0.397	0.361	0.266	0.242	0.320
8. Self-concept_physical characteristics	0.100	0.217	0.083	0.170	0.177	0.111	0.147	1	0.382	0.476	0.363	0.278	0.230
9. Self-concept_abilities and achievements	0.334	0.270	0.307	0.218	0.323	0.292	0.226	0.389	1	0.489	0.559	0.250	0.525
10. Self-concept_personality traits	0.256	0.261	0.203	0.255	0.272	0.174	0.194	0.424	0.666	1	0.501	0.400	0.463
11. Self-concept_acceptance by others	0.295	0.214	0.262	0.225	0.226	0.191	0.184	0.307	0.592	0.469	1	0.486	0.528
12. Self-concept_values and beliefs	0.284	0.171	0.195	0.139	0.255	0.230	0.140	0.208	0.445	0.428	0.564	1	0.574
13. Achievement motivation	0.266	0.148	0.161	0.203	0.261	0.164	0.104	0.245	0.397	0.378	0.472	0.429	1

Notes: Correlation coefficients from Gifted are below the diagonal; those from Non-gifted are above the diagonal.

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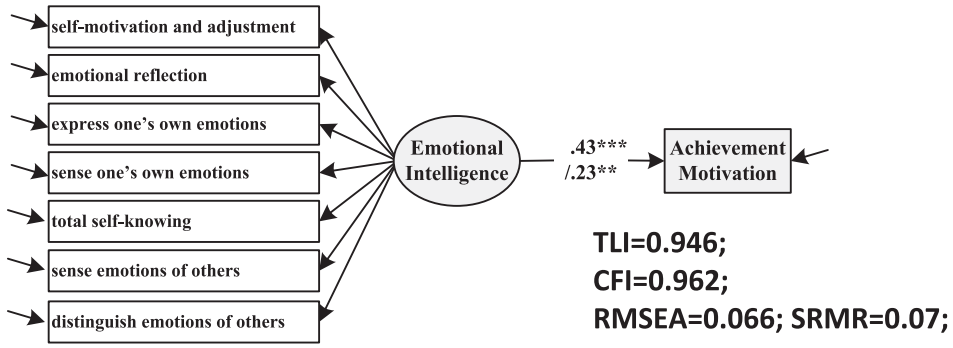
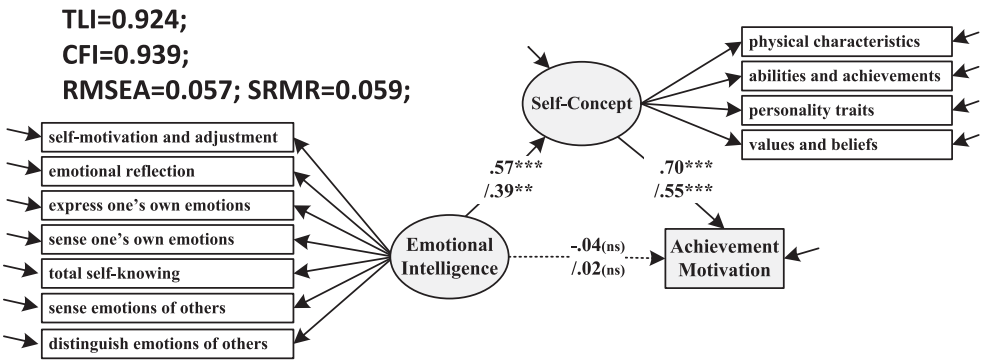
Figure 2.
The SEM results with the direct effect of emotional intelligence on achievement motivation (standardized).



**p < .01; ***p < .001

Figure 3.
The SEM results with direct and indirect effects (mediated through self-concept).



**p < .01; ***p < .001

exists for both gifted and non-gifted students, which means emotional intelligence cannot predict achievement motivation directly unless via self-concept.

Discussion

By exploring both gifted and non-gifted students, this study offers a new interpretation of the triad relationship between emotional intelligence, achievement motivation, and self-concept to explain student development. The purpose of this study

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was threefold. The first goal was to determine the differences between gifted and non-gifted students in the emotional intelligence, achievement motivation, and self-concept dimensions. The second aim was to examine the direct relationship between emotional intelligence and achievement motivation. The third goal was to assess the mediating role of self-concept in the relationship between emotional intelligence and achievement motivation.

With respect to our first goal, our findings showed that gifted and non-gifted students differed significantly in their emotional intelligence and motivation achievement levels. In self-concept, non-gifted students and gifted students were not significantly different except in the categories of "abilities and achievement" and "values and beliefs". Regarding emotional intelligence performance, non-gifted students outperformed gifted students in emotional reflection, expressing one's own emotions, sensing one's own emotions, sensing the emotions of others, and distinguishing the emotions of others. These findings align with Dabrowski's (1972) overexcitability (OE) theory, which characterizes gifted students as being more sensitive and paying less attention to others than non-gifted students (Mendaglio & Tillier, 2006). In addition, OE theory describes gifted students as having stronger egos, causing them to show more concern for themselves than for others. This may also explain why gifted students outscore non-gifted students in self-motivation adjustment and total self-knowing. As for self-concept, past experiments have produced controversial results. Some researchers argued that there would be little difference between gifted and non-gifted students in this construct (Pyryt, 2008). On the total self-concept score (sum of 5 aspects of self-concept in Table 1), the mean of gifted students was 52 and that of non-gifted students was 51.86, so our results were consistent with those of past studies. In terms of achievement motivation, we found that gifted students had better scores than non-gifted students. This result agrees with that of Fletcher and Speirs Neumeister (2012), the interpretation of which showed that gifted students have higher achievement motivation due to their perfectionism.

Our study highlights the differences between the gifted and non-gifted groups in emotional and achievement motivation. In giftedness education, emotional development and psychological counseling are far more important than we think. In the current educational system and environment of Taiwan, teachers and parents mainly ex-

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pect academic performance from gifted students; consequently, emotional factors are often ignored. When gifted students are unable to link their cognitive abilities with their emotions in a balanced and healthy way, it harms their learning and social interactions. Therefore, new education legislation stipulates that it is compulsory for gifted students, at both the primary and high school levels, to receive counseling to evaluate their emotional development (Kao, 2012; Ministry of Education, 2013). Studies show that integrating emotional courses into gifted education in primary school benefits students. For gifted students to realize their full potential, they must have a robust psychological status (Chan, 2007; Dwairy, 2004).

With respect to the second goal, this study found that emotional intelligence predicts achievement motivation in gifted and non-gifted students; in addition, this relationship was stronger for gifted students who tested higher in academics. Our findings are consistent with results from past studies (Fei-Zhou et al., 2013; Kumar et al., 2013; Terman & Oden, 1959), which showed that emotional intelligence could predict achievement motivation. According to OE theory, students normally possess higher emotional intelligence with better achievement motivation, which makes them confident, optimistic, creative, flexible, happy, and better learners and problem solvers (Mahyuddin et al., 2009). According to Fei-Zhou et al. (2013), who used college students for their experiment, the magnitude of this relationship was r = .36, which was inside the range between non-gifted (.23) and gifted (.43) students, as shown in Figure 2.

Regarding the third goal, our study found a mediation effect between emotional intelligence and achievement motivation for both gifted and non-gifted students. The result of the full mediation effect indicates that emotional intelligence has no effect on achievement motivation, which is accomplished only through self-concept (see Figure 3). Previous studies have found that gifted children are mentally idiosyncratic, which may hinder their social interactions and academic performance. Gifted students undeniably have advantages and privileges in learning because of their cognitive abilities; nevertheless, most teachers and parents neglect the development of gifted students' emotional states and identities. Our findings reveal that students' emotional intelligence can aid in the development of self-concept through self-awareness (Ogurlu, 2021). Self-concept can help students appraise their achievement

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motivation and later their academic performance (Awan et al., 2011). In the case of gifted students, control over emotional intelligence is insufficient to improve their learning motivation and academic achievement. Knowing themselves is also important to their psychological well-being, which will lead to further development.

Self-concept is one of the key factors in developing intrinsic motivation. Our investigation showed little difference in self-concept between gifted and non-gifted students. Due to the influence of globalization on Confucian culture, Tan (2012) argued that more students, including gifted ones in East Asian countries, tend to lack self-concept. Though this culture may facilitate these students' outstanding PISA (Programme for International Students Assessment) test performances, this collective ideology, in fact, does not pay attention to individual emotional development, especially in self-concept. Currently, regulations demand that schools provide affective education for gifted students in Taiwan, but most schools still offer exam-oriented instruction rather than quality affective education (Kao, 2012). Several domestic studies have advised that gifted students should be encouraged to demand themselves rather than outperform others, and they should be intrinsically motivated to progress instead of comparing themselves to others (Lin & Wong, 2014). Quality affective education should be theory-based, which requires educational researchers to clarify how affective factors affect the mental development of gifted students. In gifted education practice, our findings could remind instructors of the importance that self-concept plays in affective education.

Conclusion

This study concluded that gifted and non-gifted students differ significantly in terms of emotional intelligence and achievement motivation. Moreover, the relationship between emotional intelligence and achievement motivation is fully mediated by self-concept in both gifted and non-gifted students. Our findings highlight that emotional intelligence does not affect achievement motivation directly, which runs counter to the findings of past studies. Our research implies that paying scant attention to emotional intelligence is insufficient. Self-concept is far more important than previously supposed, especially in the case of gifted students; they must know them-

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selves comprehensively, or they will not be motivated to learn or set goals. Recently, more researchers have begun to work on the affective factors of gifted students, such as their emotions and motivations. Our findings strongly suggest that self-concept should be taken into consideration to examine whether our recommended mediating model prevails. In our mediating model, emotional intelligence could affect self-concept, but further study is required to explain how emotional intelligence can influence self-concept. While some of our findings are consistent with those of past studies, our study sample restricts the generalization of our mediation model to other contexts. To overcome the limitations imposed by the sole focus on sixth graders in our survey study and enhance the generalizability of our findings, a future longitudinal study is recommended to investigate the mediation model and its variations over time.

To promote talent development, it is crucial to consider the psychological and social aspects of students. Evaluating self-concept, emotional intelligence, and achievement motivation for all students, particularly those who are gifted, is essential, as their potential may interfere with their well-being and talent development. As other studies have shown, improving performance and understanding abilities are key to enhancing self-concept and obtaining higher grades. Therefore, family, peer relationships, and teacher involvement play a vital role. Furthermore, future studies could explore the relationship between academic performance and these factors by expanding upon the three variables of self-concept, emotional intelligence, and achievement motivation, and by incorporating other variables such as family factors (including parenting style or family socioeconomic status) and school factors (including peer relationships and teacher instructional behaviors).

Acknowledgments

The authors thank the study participants.

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References

Al-Dhamit, Y., & Kreishan, L. (2016). Gifted students' intrinsic and extrinsic motivations and parental influence on their motivation: From the self-determination theory perspective. *Journal of Research in Special Educational Needs, 16*(1), 13-23. https://doi.org/10.1111/1471-3802.12048

Awan, R. U. N., Noureen, G., & Naz, A. (2011). A study of relationship between achievement motivation, self-concept and achievement in English and mathematics at secondary level. *International Education Studies, 4*(3), 72-79.

Baker, J. A. (1995). Depression and suicidal ideation among academically gifted adolescents. *Gifted Child Quarterly, 39*(4), 218-223. https://doi.org/10.1177/001698629503900405

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*(6), 1173-1182.

Bartz, D. E. (2019). Grit, emotional intelligence, and mindset: Three skill sets for fostering career advancement for organization members. *International Journal of Education and Human Developments, 5*(1), 1-6.

Benony, H., Van Der Elst, D., Chahraoui, K., Benony, C., & Marnier, J. P. (2007). Link between depression and academic self-esteem in gifted children. *Encephale, 22*, 11-20. https://doi.org/10.1016/S0013-7006(07)91554-7

Chan, D. W. (2007). Leadership competencies among Chinese gifted students in Hong Kong: The connection with emotional intelligence and successful intelligence. *Roeper Review, 29*(3), 183-189. https://doi.org/10.1080/02783190709554407

Chang, Y. T. (2014). The multiple-group comparison study between elementary gifted and regular students' emotional intelligence. *Journal of Research in Special Education and Assistive Technology, 7*, 51-73. https://doi.org/10.6684/JRSEAT.201412.7.51

Cross, J. R., & Cross, T. L. (2015). Clinical and mental health issues in counseling the gifted individual. *Journal of Counseling & Development, 93*(2), 163-172. https://doi.org/10.1002/j.1556-6676.2015.00192.x

Cross, T. L. (2016). Social and emotional development of gifted students: The role of contagion in suicidal behavior among students with gifts and talents. *Gifted Child Today, 39*(1), 63-66. https://doi.org/10.1177/1076217515597272

Dabrowski, K. (1972). *Psychoneurosis is not an illness*. Gryf Publication.

z-ca907-03.tpf-19 12/15/2023 10:48:12

Dabrowski, K., & Piechowski, M. M. (1977). *Theory of levels of emotional development: Multilevelness and positive disintegration* (Vol. 1). Dabor.

Desmet, O. A., & Pereira, N. (2022). The achievement motivation enhancement curriculum: Evaluating an affective intervention for gifted students. *Journal of Advanced Academics, 33*(1), 129-153.

Dwairy, M. (2004). Parenting styles and mental health of Arab gifted adolescents. *Gifted Child Quarterly, 48*(4), 275-286. https://doi.org/10.1177/001698620404800403

Emmanuel, A. O., Adom, E. A., Josephine, B., & Solomon, F. K. (2014). Achievement motivation, academic self-concept and academic achievement among high school students. *European Journal of Research and Reflection in Educational Sciences, 2*(2), 24-37.

Fei-Zhou, X., wen-Chen, Y., Hui, X., & Hong, X. (2013, December 10-13). *The associations between emotional intelligence and academic achievement: Mediator or moderator effect of learning adaptability*. 2013 IEEE International Conference on Industrial Engineering and Engineering Management, Bangkok, Thailand. https://doi.org/10.1109/IEEM.2013.6962694

Ferrando, M., Prieto, M. D., Almeida, L. S., Ferrándiz, C., Bermejo, R., López-Pina, J. A., Hernández, D., Sáinz, M., & Fernández, M.-C. (2010). Trait emotional intelligence and academic performance: Controlling for the effects of IQ, personality, and self-concept. *Journal of Psychoeducational Assessment, 29*(2), 150-159. https://doi.org/10.1177/0734282910374707

Fletcher, K. L., & Speirs Neumeister, K. L. (2012). Research on perfectionism and achievement motivation: Implications for gifted students. *Psychology in the Schools, 49*(7), 668-677. https://doi.org/10.1002/pits.21623

Garn, A. C., Matthews, M. S., & Jolly, J. L. (2010). Parental influences on the academic motivation of gifted students: A self-determination theory perspective. *Gifted Child Quarterly, 54*(4), 263-272. https://doi.org/10.1177/0016986210377657

Goleman, D. (1995). *Emotional intelligence*. Bantam.

Gottfried, A. W., Gottfried, A. E., Cook, C. R., & Morris, P. E. (2005). Educational characteristics of adolescents with gifted academic intrinsic motivation: A longitudinal investigation from school entry through early adulthood. *Gifted Child Quarterly, 49*, 172-186. https://doi.org/10.1177/001698620504900206

Hoge, R. D., & Renzulli, J. S. (1993). Exploring the link between giftedness and self-concept. *Review of Educational Research, 63*(4), 449-465.

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure

z-ca907-03.tpf-20 12/15/2023 10:48:12

analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*(1), 1-55.

Huitt, W. (2009). Self-concept and self-esteem. *Educational Psychology Interactive*. Valdosta State University. http://www.edpsycinteractive.org/topics/regsys/self.html

Kao, C. Y. (2012). The educational predicament confronting Taiwan's gifted programs: An evaluation of current practices and future challenges. *Roeper Review, 34*(4), 234-243. https://doi.org/10.1080/02783193.2012.715335

Kroesbergen, E. H., van Hooijdonk, M., Van Viersen, S., Middel-Lalleman, M. M., & Reijnders, J. J. (2016). The psychological well-being of early identified gifted children. *Gifted Child Quarterly, 60*(1), 16-30. https://doi.org/10.1177/0016986215609113

Kumar, V. V., Mehta, M., & Maheshwari, N. (2013). Effect of emotional intelligence on the achievement motivation, psychological adjustment and scholastic performance of secondary school students. *Journal of the Indian Academy of Applied Psychology, 39*(1), 60-67.

Kuo, S. Y. (1984). The relationships of causal attributions for success or failure and achievement-related behavior. *Bulletin of Educational Psychology, 17*, 51-72.

Kuo, W. F. (1987). *An evaluation of the self-concept for children*. Chinese Behavioral Science Corporation.

Lawrence, A. S., & Vimala, A. (2013). Self-concept and achievement motivation of high school students. *Online Submission, 1*(1), 141-146.

Lawrence, D. (1996). *Enhancing self-esteem in the classroom*. Paul Chapman.

Lin, C. C. (2004). *The effect of achievement motivation on elementary students' emotional intelligence* [Unpublished master's thesis]. National Yan-Chi University.

Lin, S. Y., & Wong, C. K. S. (2014). The mediating roles of intrinsic and extrinsic motivation between classroom learning environment and creativity among hospitality students in Taiwan. *Asia Pacific Journal of Tourism Research, 19*(8), 913-931. https://doi.org/10.1080/10941665.2013.818050

Liratni, M., & Pry, R. (2011). Enfants à haut potentiel intellectuel: Psychopathologie, socialisation et comportements adaptatifs. *Neuropsychiatrie de l'Enfance et de l'Adolescence, 59*(6), 327-335. https://doi.org/10.1016/j.neurenf.2010.11.005

Low, G. R., & Nelson, D. B. (2006, October 18-21). *Emotional intelligence and college success: A research-based assessment and intervention* [Paper]. The 39th Annual Conference of the College Reading and Learning Association and the 25th Annual Conference of College Academic Support Programs, Austin, Texas. http://www.tamuk.edu/edu/kwei000/Research/Articles/Article_files/EI_and_College_Suc-

z-ca907-03.tpf-21 12/15/2023 10:48:12

cess-2006_cederpaper.pdf

Lynn, R., & Vanhanen, T. (2012). National IQs: A review of their educational, cognitive, economic, political, demographic, sociological, epidemiological, geographic and climatic correlates. *Intelligence, 40*(2), 226-234. https://doi.org/10.1016/j.intell.2011.11.004

MacCann, C., Jiang, Y., Brown, L. E., Double, K. S., Bucich, M., & Minbashian, A. (2020). Emotional intelligence predicts academic performance: A meta-analysis. *Psychological Bulletin, 146*(2), 150-186. https://doi.org/10.1037/bul0000219

Magnano, P., Craparo, G., & Paolillo, A. (2016). Resilience and emotional intelligence: Which role in achievement motivation. *International Journal of Psychological Research, 9*(1), 9-20.

Mahyuddin, R., Elias, H., & Noordin, N. (2009). Emotional intelligence, achievement motivation and academic motivation among students of the public and private higher education institutions. *International Journal of Diversity in Organization, Communities & Nations, 9*, 135-144.

Matthews, D., & Kitchen, J. (2007). Allowing idiosyncratic learners to thrive: Policy implications of a study of school-within-a-school gifted programs. *Journal of School Choice, 1*(4), 27-52. https://doi.org/10.1300/15582150802098647

Mendaglio, S., & Tillier, W. (2006). Dabrowski's theory of positive disintegration and giftedness: Overexcitability research findings. *Journal for the Education of the Gifted, 30*(1), 68-87. https://doi.org/10.1177/016235320603000104

Ministry of Education. (2013). *Ministry of Education white paper on cultivation of talent*. National Academy for Educational Research. http://www.naer.edu.tw/ezfiles/0/1000/attach/5/pta_2189_2524507_39227.pdf

Neihart, M., Reis, S. M., Robinson, N., & Moon, S. (2002). *The social and emotional development of gifted children: What do we know?* Prufrock Press.

Ogurlu, U. (2021). A meta-analytic review of emotional intelligence in gifted individuals: A multilevel analysis. *Personality and Individual Differences, 171*, Article 110503. https://doi.org/10.1016/j.paid.2020.110503

Parker, R. S. (1996). The spectrum of emotional distress and personality changes after minor head injury incurred in a motor vehicle accident. *Brain Injury, 10*(4), 287-302.

Pekrun, R. (2006). The control-value theory of achievement emotions: Assumptions, corollaries, and implications for educational research and practice. *Educational Psychology Review, 18*(4), 315-341. https://doi.org/10.1007/s10648-006-9029-9

Pfeiffer, S. I., & Stocking, V. B. (2000). Vulnerabilities of academically gifted students.

z-ca907-03.tpf-22 12/15/2023 10:48:12

Special Services in the Schools, 16(1-2), 83-93.

Pyryt, M. C. (2008). Self-concept. In J. A. Plucker & C. M. Callahan (Eds.), *Critical issues and practices in gifted education: What the research says* (pp. 595-601). Prufrock Press.

Reis, S. M., & McCoach, D. B. (2000). The underachievement of gifted students: What do we know and where do we go? *Gifted Child Quarterly, 44*, 152-170. https://doi.org/10.1177/001698620004400302

Salovey, P., & Grewal, D. (2005). The science of emotional intelligence. *Current Directions in Psychological Science, 14*(6), 281-285. https://doi.org/10.1111/j.0963-7214.2005.00381.x

Schmidt, J. A., Kafkas, S. S., Maier, K. S., Shumow, L., & Kackar-Cam, H. Z. (2019). Why are we learning this? Using mixed methods to understand teachers' relevance statements and how they shape middle school students' perceptions of science utility. *Contemporary Educational Psychology, 57*, 9-31. https://doi.org/10.1016/j.cedpsych.2018.08.005

Singh, K. (2011). Study of achievement motivation in relation to academic achievement of students. *International Journal of Educational Planning & Administration, 1*(2), 161-171.

Snyder, K. E., & Wormington, S. V. (2020). Gifted underachievement and achievement motivation: The promise of breaking silos. *Gifted Child Quarterly, 64*(2), 63-66. https://doi.org/10.1177/0016986220909179

Sommers, S. (1981). Emotionality reconsidered: The role of cognition in emotional responsiveness. *Journal of Personality and Social Psychology, 41*, 553-561.

Sternberg, R. J., & Grigorenko, E. L. (2014). A capsule history of theory and research on styles. In R. J. Sternberg & L. F. Zhang (Eds.), *Perspectives on thinking, learning, and cognitive styles* (pp. 1-22). Routledge.

Tan, C. (2012). The culture of education policy making: Curriculum reform in Shanghai. *Critical Studies in Education, 53*(2), 153-167. https://doi.org/10.1080/17508487.2012.672333

Terman, L. M., & Oden, M. H. (1959). *Genetic studies of genius: The gifted group at midlife* (Vol. 4). Stanford University Press.

Yan, K., & Haihui, Z. (2005). A decade comparison: Self-concept of gifted and non-gifted adolescents. *International Education Journal, 6*(2), 224-231.

Zeidner, M. (2017). Tentative guidelines for the development of an ability-based emotional intelligence intervention program for gifted students. *High Ability Studies, 28*(1),

z-ca907-03.tpf-23 12/15/2023 10:48:12

29-41. https://doi.org/10.1080/13598139.2017.1292895

Zeidner, M., & Matthews, G. (2017). Emotional intelligence in gifted students. *Gifted Education International, 33*(2), 163-182. https://doi.org/10.1177/0261429417708879

z-ca907-03.tpf-24 12/15/2023 10:48:12