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# A predictive structural model for gifted students' performance: A study based on intelligence and its implicit theories

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ABSTRACT

The current study aimed at identifying to what extent gifted students' academic performance differs in light of their emotional, social, analytical, creative, practical, and implicit intelligence, and to explore which of these are more effective for differentiating students' performance. This study was also an attempt to determine the direct effects of different kinds of intelligence on student performance, and to generate a structural model that could explain the relationship among different kinds of intelligence, students' implicit theories of intelligence, and student performance. The 174 participants were randomly chosen from primary school students who participated in summer enrichment programs. An emotional intelligence scale, a social intelligence scale, the analytical, creative, and practical intelligence tests of the Aurora Battery, an implicit intelligence scale, and performance assessment inventory were administered. A cluster analysis revealed that there were three profiles for students. The structural equation model confirmed that the predictor factors had positive and significant effects on performance. These predictor variables accounted for (68%) of the percent of the variance in performance. Ultimately, the factors affecting student performance were, in order of decreasing magnitude, emotional intelligence, analytical intelligence, practical intelligence, creative intelligence, implicit intelligence, and social intelligence. Furthermore, there were strong effects of implicit theory of intelligence on the different kinds of intelligence.



## 1. Introduction

The concept of intelligence has become central to the field of psychological studies and has permeated the research of many aspects of life. Over the years, researchers have suggested several theories that tried to explain the nature and importance of intelligence through various models. The original objective of measuring intelligence was to assign optimal educational settings for typical and atypical students by using intelligence scores to predict students' academic performance (hereafter simply "performance"). Differentiating the performance of gifted students and other students has since become a crucial point for many researchers to study. Are gifted students those who have high IQ? If gifted students are those who exhibit high intelligence, what are the factors that contribute to the performance variance among them?

McClain & Pfeiffer (2012) have stated that for >100 years, gifted students have been identified by scores obtained on IQ tests. Dutton, te Nijenhuis, & Roivainen (2014) have proposed that high intelligence scores may predict high academic performance more often than low intelligence scores, but that this is not a general rule.

Intelligence as indicated by IQ scores predicts around 25% to 50% of the variance in students' performance (Deary, Strand, Smith, & Fernandes, 2007; Gomes, Golino, & Menezes, 2014). However, while an important factor and a good predictor in the classroom, IQ is not enough to explain the variation in student performance or real-world success (Nisbett, 2009; Worrell, 2009). During childhood, intelligence seems to adequately explain school performance in students, but as the transition into adolescence begins, other non-cognitive variables may be equally relevant to explaining student performance (Hébert, 2011; Kappe & Van der Flier, 2012).

It has been generally acknowledged that success in various fields of life is dependent upon a broader range of abilities than what conventional intelligence tests measure. This is consistent with several modern interactive models of giftedness that present the concept of intelligence as a complex structure that consists of different cognitive, emotional, social and environmental factors (e.g., Heller, Pertelh, & Lim, 2005; Ziegler & Stoeger, 2007). According to such models, the development of gifted student performance requires the interaction between both cognitive and non-cognitive factors, in addition to the areas where the talent appears. These factors may exert great effects or make varying relative contributions to the development of gifted student performance.

Interest in the concept of a multi-dimensional intelligence has increased dramatically in recent years. Thus, researchers have tried to predict and explain the role of emotional intelligence (de Haro Garcia & Costa, 2014; Jiménez-Morales & López-Zafra, 2013), social intelligence (Boyatzis, Good, & Massa, 2012), successful intelligence (Mandelman,

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Barbot, & Grigorenko, 2015; Sternberg et al., 2014), and implicit theories of intelligence (Blackwell, Trzesniewski, & Dweck, 2007; Todor, 2014) in student performance.

The present study investigated variation in student performance as a dependent variable in light of the differences in gifted students' profiles on emotional intelligence, social intelligence, analytical intelligence, creative intelligence, practical intelligence, and the implicit theories of intelligence as independent variables. Moreover, it aimed at identifying the direct effects of these variables on gifted student performance. The main objective of this study was to generate a model of the relative effects of these variables on the development of gifted students' performance.

### 1.1. Performance

Performance is the most important indicator for measuring the quality of education and the excellence of students, who represent future leaders and those who are going to be responsible for the economic and social development of society. As a result, student performance has come under unprecedented scrutiny in our society today. Academic institutions have increasingly considered student performance more broadly than traditional intellectual achievement. Specifically, the concept of performance now includes soft skills, such as dealing with others and personal qualities, along with students' cognitive abilities (Kaplan, Satterfield, & Kington, 2012; Lievens, 2013; Lievens & Sackett, 2012).

Academic performance is thus currently considered a complex psychological construct. It is both multidimensional and influenced by multiple factors. Consequently, researchers face many complexities when studying academic performance (Hintsanen, Hintsa, Merjonen, Leino, & Keltikangas-Jarvinen, 2011). Moreover, despite these research efforts, those who are responsible for identifying giftedness are almost exclusively directed to measure only performance, regardless of the studies that have revealed that other factors contribute to the development of gifted students' performance. How to select and weigh the different variables that contribute to academic performance remains an issue in educational research and practice (Martín, Martínez-Arias, Marchesi, & Pérez, 2008).

Measuring gifted student performance in various ways has received much more attention recently, as it has been recognized that student performance may be significantly affected by cognitive, social, psychological and personal factors (Mushtaq & Khan, 2012). In addition, their impact on student performance may differ according to a student's gender, age, social background, and culture.

In the current study, the researchers used portfolios to evaluate gifted students' performance in different fields. Portfolios can show a student's progress and achievement through a collection of their best work produced during a specific period of time. They are considered to be a main indicator of gifted students' academic performance and progress.

### 1.2. Different kinds of intelligence and their implicit theory

Emotions play an important role in both academic and non-academic situations. It is the most prominent and essential construct supporting individuals' ability to lead a successful life. Emotional intelligence is defined as encompassing social, practical, and personal intelligences (Mayer, Salovey, & Caruso, 2008). In the education literature, emotional intelligence refers to a set of abilities that allow individuals to process and reason through emotional information in an efficient way about, using that information to regulate and guide feelings and actions to achieve better problem solving (Jiménez-Morales & López-Zafra, 2013). Etemadi, Etemadi, Kamvar, Keshtkar, Shahamati, and Shahamati (2015) refer to gifted students as those students who are different from ordinary students not only in fields of cognitive intelligence and academic talent, but also in emotional and social domains. Thus, gifted students may be defined not only by their cognitive aspects, but also their emotional and social aspects. So, determining gifted students' levels of potential emotional intelligence is important (Saygili, 2015).

Some studies have indicated that emotional intelligence plays an important role in improving students' academic performance (GolestanJahromi, Pourshahriary, & Asgharnejad, 2009; Hogan et al., 2010; Mayer et al., 2008). Several studies report that there is no significant association between traits of emotional intelligence and academic performance (Mavroveli, Petrides, Sangareau, & Furnham, 2009).

Another predicator that may affect performance is social intelligence. It has been found to be an important factor in learning and in the development of gifted social skills (Castedo, Juste, & Alonso, 2015). Additionally, it helps individuals gain high levels of self-esteem (Kostelnik, Gregory, Soderman, & Whiren, 2012). Modern work requires that students not only possess the ability to complete tasks on their own, but also to pool their knowledge and skills to effectively collaborate with others (Jackson, Joshi, & Erhardt, 2003). Gifted students show higher levels of cognitive skills, social strategy planning, and social consequence anticipating, which are all aspects of social intelligence (Machů & Červinková, 2014).

School and the classroom environment are dominated by educational, emotional, and social challenges, which may play a decisive role in the social adaptation of students. Social intelligence was proposed as a construct as early as 1937 by Thorndike and Stein, followed by other researchers who enriched the concept by refining it in multiple ways (Cherniss, 2010). Another term for social intelligence is social competence, which refers to the ability to understand others, and to act and behave intelligently and wisely in relationships with others (Safarinia, Solgi, & Tavakoli, 2011). Substantially, several definitions of social intelligence have been offered by theorists, but they all share two common components: the awareness of others, and the ability to respond and adapt to others within social situations (Dong, Koper, & Collaço, 2008). Machů and Červinková (2014) also found that social behavior appears to be a significant positive predictor of academic success.

In addition to emotional and social intelligence, successful intelligence is another variable that may affect performance. Many theories and models that deal with how students learn and how they actually apply what they have learned in their daily life have recently emerged. One of these theories is the theory of successful intelligence. The basic idea of successful intelligence theory is that an individual in almost any field of life needs creativity to generate new and exciting ideas, analytical intelligence to ascertain the value of their new ideas, and coping strategies and practical intelligence to execute their ideas and to persuade others of their value (Aljughaiman & Ayoub, 2012; Sternberg, 2010). Successfully intelligent students adapt to, shape, and select environments through a balance in their use of analytical, creative, and practical abilities (Mandelman et al., 2015). The theory of successful intelligence was developed as a framework for understanding how individuals apply their skills across the academic and nonacademic domains of their lives to attain success.

The theory of successful intelligence, then, also provides a strong theoretical basis for the identification of gifted students (Sternberg, 2010). There is evidence that assessment tools based on the theory of successful intelligence can provide valuable predictive information about individuals' cognitive functioning at various stages of the life span and in various settings (Sternberg et al., 2014). Furthermore, it has been shown that successful intelligence can improve the prediction of grade-point average as well as the prediction of success in extracurricular and leadership activities (Sternberg, Bonney, Gabora, Karelitz, & Coffin, 2010). According to successful intelligence theory analytical, creative, and practical skills play independent and prominent roles in performance and learning outcomes.

Analytical skills are very necessary, but not sufficient to succeed in the professional world. It is typified by the ability to break a problem into its components and understand those components (Sternberg, Jarvin, & Grigorenko, 2009). Analytical thinking is invoked when components are applied to fairly familiar kinds of problems abstracted

from everyday life (Stemler, Sternberg, Grigorenko, Jarvin, & Sharpes, 2009). Furthermore, analytical skills are applied to analyze, evaluate, compare and contrast, and make judgments in an abstract manner. This type of intelligence is typically used in academic settings, particularly in the course of solving problems through information processing, defining the problem, planning how to solve it, selecting the right strategy, following up and evaluating the decisions made (Sternberg, 2009).

Creative skills are necessary when facing situations that possess a certain degree of novelty (Stemler et al., 2009). Thus, creative skills are those that allow children to adapt successfully to novel situations, to solve new problems in an original way, and to generate ideas of high quality (Sternberg, Lubart, Kaufman, & Pretz, 2005). Creativity is now considered a necessary component of giftedness (Kaufman, Plucker, & Russell, 2012; Chart, Grigorenko, & Sternberg, 2008), yet creative individuals are not necessarily successful in dealing with standard IQ tests, as they tend to view problems differently from test developers and may solve a problem other than the one intended on the test (Sternberg, 2010; Sternberg et al., 2005). Rather, creative skills are expressed in a person's ability to generate and design new solutions for novel problems and situation.

Practical skills are exercised when, for example, an individual applies analytical and creative skills in everyday situations. Individuals who have high practical skills can identify what they need to succeed in a given situation, then implement the required skills to achieve their desired goals (Cianciolo, Grigorenko, Jarvin, Gil, Drebot, & Sternberg, 2006; Grigorenko et al., 2004). Practical skills are important for the development of students' higher-order thinking. These types of skills help students to develop strategies for applying new knowledge to complex situations in daily life, and to select appropriate strategies to build the knowledge needed to solve every day and future problems (Aljughaiman & Ayoub, 2013). Some studies have suggested the positive impact of practical intelligence on many variables (Grigorenko & Sternberg, 2001). For example, practical skills have been found to be a good predictor of adaptive functions such as anxiety, depression and self-efficacy.

Finally, Blackwell et al. (2007) have proposed an implicit theory of intelligence. In this theory, individuals can be classified as entity theorists or as incremental theorists. Entity theorists include individuals who believe that intelligence is fixed and unchangeable. Incremental theorists are individuals who believe that intelligence is malleable and can be improved with effort. Individuals' implicit theories of intelligence are gaining special importance in the field of gifted identification because how one conceives intelligence may influence the adoption of different definitions of giftedness (Dweck, 2012). Many researchers (Snyder, Barger, Wormington, Schwartz-Bloom, & Linnenbrink-Garcia, 2013) have investigated the implicit beliefs about intelligence high-ability students hold as a function of whether they reported having been previously identified as gifted.

Moreover, Blackwell et al. (2007) indicated that when students are equal in IQ, their personal beliefs about intelligence will influence their response styles in situations of academic challenge. Students' implicit theories of intelligence may thus have a significant effect on the academic goals and learning outcomes. Other research (e.g., Cury, Da Fonseca, Zahn, & Elliot, 2008; Good, Aronson, & Inzlicht, 2003) has proposed that implicit theories may affect cognitive and behavioral processes and outcomes such as performance. It is even thought that they may have a profound effect on the way in which people interpret their performance (Molden & Dweck, 2006). A study by Cury et al. (2008) clearly indicated that belief in the entity theory, as opposed to the incremental theory, had a detrimental impact on performance. Mellat and Lavfasani (2011) found that individuals with an incremental mindset tended to take on mastery or learning goals in order to develop their intelligence. Similarly, Blackwell et al. (2007) indicated that individuals with incremental theories of intelligence regard effort as positive and necessary for improving ability.

Based on the aforementioned research, there is a continuing debate about student performance and the factors that are associated with and contribute to it. Yet, if we understand academic performance as representing a complex form of human growth, encompassing mental, cognitive, social, and emotional factors, we may conclude that gifted students' intelligence in correspondingly complex, engaging emotional, social, analytical, creative, practical skills, and influenced by the individuals' implicit beliefs about the nature of intelligence. Thus, the current study aims to develop a structural model to outline the relationship and the direct effects between intelligence, its component skills, implicit theories of intelligence, and the performance of gifted students at the primary stage.

## 2. Method

### 2.1. Participants

The participants in this study were 174 students ages 11 to 12 years ($M = 12.14$ years, $SD = 0.58$). Each of these students were participants in summer enrichment programs. The sample was divided according to gender (males, $n = 93$; females, $n = 81$) and grade into (5th grade, $n = 72$; 6th grade, $n = 102$).

## 3. Measures

### 3.1. Emotional intelligence scale

Emotional intelligence was assessed with a self-report that consists of 22 items taken from the Trait Emotional Intelligence Questionnaire advanced by Petrides and Furnham (2003), and from the Trait Meta-Mood Scale developed by Fernández-Berrocal, Extremera, and Ramos (2004). These items where then translated into Arabic. Answers were rated on a five-point Likert scale ranging from strongly agree (5) to strongly disagree (1). In the current study, the researchers used the overall emotional intelligence scores only. To calculate the validity and the reliability of the scale in the Arab environment, the researcher administered the scale to a sample of 5th and 6th grade students ($N = 236$). As a result of the Confirmatory Factor Analysis (CFA) by LISREL (Version 8.8), the factor loading values were determined to range between 0.64 and 0.87. The fit indices of the emotional intelligence scale were $\chi^2/df = 2.08$, the values of the root mean square error of approximation were (RMSEA = 0.054), goodness of fit index were (GFI = 0.93), adjusted goodness of fit index were (AGFI = 0.91), and normed fit index were (NFI = 0.96) which indicated a good fit of the suggested model to the data. The Cronbach's α of the scale reached 0.86.

### 3.2. Social intelligence scale

To assess the social intelligence of gifted students, the social intelligence scale developed by Silvera, Martinussen, and Dahl (2001) was translated into Arabic. This scale consists of 21 items, and includes the social information processing, social skills and social awareness subscales. Answers were rated on a five-point Likert scale ranging from strongly agree (5) to strongly disagree (1). We used the overall social intelligence scores in this study. The scale was administered to a sample of 236 students to measure the validity of social intelligence scale by confirmatory factor analysis. As a result of the CFA, the fit indices of the scale were observed to be at a good fit $\chi^2/df = 1.72$, RMSEA = 0.061, GFI = 0.92, AGFI = 0.90, NFI = 0.94. The Reliability coefficients (Cronbach's α) of the scale were 0.89.

### 3.3. Aurora battery

The Aurora Battery is an assessment designed for children from 9 to 12 years of age. It is based on the theory of successful intelligence and

one of its uses is for the identification of gifted students (Chart et al., 2008). The battery is composed of two parts: the first (Aurora-g Battery) measures general intelligence through series, analogy, and classification tests; the second (Aurora-a Battery) measures analytical, creative and practical skills. Both are paper and pencil assessments designed for students at the elementary to middle school levels.

In the current study, the researchers focused on Aurora-a. There are two subtests for the assessment of analytical ability (Floating Boats: identify matching patterns among connected boats, consists of 5 multiple choices items; Metaphors: explain how two somewhat unrelated things are alike, consists of 10 open-ended items); two for the assessment of creative ability (Book Covers: interpret an abstract picture and invent a story to accompany it, consists of 5 open-ended items; Number talk: imagine reasons for various described social interactions between numbers, consists of 7 open ended items); and two for the assessment of practical ability (Paper Cutting: identify the proper unfolded version of a cut piece of paper, consists of 10 multiple choices items; Maps: trace the best carpooling routes to take between friends' houses and destinations, consists of 10 right or wrong items). Researchers translated Aurora into Arabic and standardized it in Saudi Arabia.

A sample of 442 students was used to calculate the validity of Aurora Battery by confirmatory factor analysis to obtain factor loadings; the method of maximum likelihood supported the construct validity of Aurora. All the standardized loadings and their associated t-values for the analytical, creative, and practical tests were significant. The fit indices for this full three scale model were all excellent. Specifically, $\chi^2/df = 1.12$. In addition, the values of RMSEA = 0.036, GFI = 0.97, AGFI = 0.95, and NFI = 0.93 indicated that the suggested model for Aurora fits with the data. The reliability coefficient of the Aurora-a-Battery by using Cronbach alpha was (0.88) for analytical intelligence, (0.82) for creative intelligence, and (0.85) for practical intelligence.

### 3.4. Implicit theories about intelligence

In this study, implicit theories about intelligence were evaluated using a scale adapted and translated into Arabic by the researchers from the scale originally developed by Dweck (2000). The scale consists of 5 items assessing incremental theories (e.g., Performing a task successfully can help develop your intelligence) and 5 assessing entity theories (e.g., You are born with a fixed amount of intelligence). Additionally, in this study the researchers used the overall scores of scale. Participants were asked to report their agreement on a 5-point Likert scale from agree strongly (5) to disagree strongly (1). As a result of the CFA, the items loading values were determined to range between 0.59 and 0.75. The fit indices of the implicit theory intelligence scale were $\chi^2/df = 3.11$, RMSEA = 0.093, GFI = 0.91, AGFI = 0.89, NFI = 0.92. These results indicated a good fit for the data. In the present sample the Cronbach alpha was 0.82.

### 3.5. Performance assessment inventory

In order to assess student's performance, the researchers developed a rubric to look at 10 indicators: academic achievement, scientific thinking, research skills, problem solving, discussions, dialogues, presentations, projects, motivation, leadership, autonomy, and team work. This rubric was used by three raters to evaluate students' portfolios of work that they had created during the summer enrichment programs. The raters were asked to assess students' portfolios on the scale's indicators from 0 (incorrect response) to 10 (full mark). An example of the project's indicators: the student got (10) if the plan is completely clear, organized in points, applicable and flexible. Also, the student got (10) if he accomplished all the project's stages and all these stages characterized by quality, creativity, applied all the concepts that are related to the program, and performed each stage on time. These performance assessment inventories were checked by a number of professionals in the field of giftedness. Percentages of agreement between raters were as follows: Rater 1–Rater 2 (98%), Rater 1–Rater 3 (94%), and Rater 2–Rater 3 (96%) on sample of thirty students. The Cronbach's alpha was $\alpha = 0.69$).

### 3.6. Procedures

The results were collected from students who were participating in summer enrichment programs held annually by Mawhiba. Summer enrichment programs are programs which held by King Abdulaziz and his Companions Foundation for Giftedness and Creativity (Mawhiba), other universities, research centers, and some prominent companies in some academic specialists (math, science, and data technology) for gifted male and female students. These summer enrichment programs aimed at providing mental, emotional, social and physical care for students. Moreover, it requires full accommodation for male and female students. Those gifted students selected according to the criteria of the General Administration for Giftedness at the Ministry of Education in Saudi Arabia. The participants were selected for the study according to two criteria: (a) being among the top 5% on the ability test designed for the Saudi environment and (b) a general studies achievement test score between 90% and 100%. The students were administered the scales of emotional, social, analytical, creative, practical, and implicit theories of intelligence. The inventory was distributed to three teachers, and every one of them was asked to assess students' performance during their participation in these programs.

## 4. Results

### 4.1. Cluster analyses

To determine the participants' profiles on the study variables (performance, emotional intelligence, social intelligence, analytical intelligence, creative intelligence, practical intelligence, and implicit theory of intelligence), K-means (k = 3) clustering analysis was used. The researchers classified the 174 participants across the three clusters (see Table 1).

### 4.2. Structure equation model

A default model was formulated using the results of the previous studies, which were based on Strictly Confirmatory Situation. After

**Table 1**
K-means clustering analysis results of study variables.

| | Cluster_1 | Cluster_2 | Cluster_3 |
|---|---|---|---|
| | M(SD) | M(SD) | M(SD) |
| Performance | 89.16(4.81) | 74.48(8.45) | 62.29(6.75) |
| Emotional intelligence | 73.33(9.06) | 39.32(8.36) | 46.57(10.40) |
| Social intelligence | 77.37(11.94) | 55.57(4.85) | 74.10(7.68) |
| Analytical intelligence | 36.73(2.21) | 24.55(4.23) | 31.52(4.13) |
| Creative intelligence | 43.14(6.37) | 30.63(4.08) | 36.00(3.69) |
| Practical intelligence | 28.65(4.58) | 14.88(3.97) | 18.84(5.00) |
| Implicit intelligence | 37.06(5.82) | 20.57(4.28) | 25.90(6.26) |
| Demographic | | | |
| Sex | | | |
| Boys n (%) | 28 (57.14) | 31 (55.36) | 34 (49.28) |
| Girls n (%) | 21 (42.86) | 25 (44.64) | 35 (50.72) |
| Grade | | | |
| Fifth n (%) | 15 (30.61) | 29 (51.79) | 28 (40.58) |
| Sixth n (%) | 34 (69.39) | 27 (48.21) | 41 (59.42) |

Table 1 showed that the sample size of the students in the first cluster was 49 (28.16%), and the sample size of the students in the second cluster was 56 (32.18%), while the sample size for the participant in the third cluster was 69 (39.66%). To determine the validity of cluster analysis or, one-way ANOVA was used. Results were shown in Table 2.

**Table 2**
The validity of cluster analysis - ANOVA.

| | Cluster | | Error | | |
|---|---|---|---|---|---|
| | Mean square | df | Mean square | df | F |
| Social intelligence | 16,658.429 | 2 | 88.514 | 171 | 188.20** |
| Emotional intelligence | 7662.017 | 2 | 71.072 | 171 | 107.81** |
| Implicit intelligence | 3669.754 | 2 | 30.952 | 171 | 118.56** |
| Practical intelligence | 2606.927 | 2 | 20.892 | 171 | 124.78** |
| Creative intelligence | 2052.038 | 2 | 22.135 | 171 | 92.71** |
| Analytical intelligence | 1973.133 | 2 | 13.898 | 171 | 141.97** |

Table 2 showed that F values were statistically significant ($p < 0.01$), which confirmed the valid differentiation of the three clusters on the variables of the study. To determine the profiles of the three clusters in the emotional intelligence, social intelligence, analytical intelligence, creative intelligence, practical intelligence, and implicit intelligence, all the variables were converted to standardized Z scores (m = 0, sd = 1) (Fig. 1).

drawing the model and selecting the required path directions, the researchers used the Maximum Likelihood Method to estimate the parameters of a structural equation model. The effects of (emotional intelligence, social intelligence, analytical intelligence, creative intelligence, practical intelligence, and implicit intelligence) on performance, and the effects of implicit intelligence on (emotional intelligence, social intelligence, analytical intelligence, creative intelligence, practical intelligence, and implicit intelligence) were analyzed. The model is presented in Fig. 2.

According to Fig. 2, standardized path coefficients and t values were observed to be between the predictive variables and performance as (0.58, $t = 9.36$, $p < 0.01$) for emotional intelligence, (0.38, $t = 6.23$, $p < 0.01$) for social intelligence, (0.49, $t = 8.03$, $p < 0.01$) for analytical intelligence, (0.48, $t = 8.00$, $p < 0.01$) for creative intelligence, (0.39, $t = 6.39$, $p < 0.01$) for practical intelligence, and (0.45, $t = 7.63$, $p < 0.01$) for implicit intelligence, respectively. These values indicated that the model fit the data adequately. Examining the fit indices, $\chi^2 = 171.76$, $df = 110$, $p > 0.01$, $\chi^2/df = 1.56$, values indicated that the model fit the data adequately. The RMSEA = 0.03, GFI = 0.93, AGFI = 0.92, and NFI = 0.95, values indicated a good level of fitness. Additionally, predictor variables accounted for (68%) of the percent of the variance in performance. According to the findings, the model was verified and confirmed that the predictor variables had positive and significant effects on performance. Furthermore, it is clear that the most powerful influences on performance were emotional intelligence, analytical intelligence, creative intelligence, implicit intelligence, practical intelligence, and social intelligence respectively. Additionally, there was a high effect of implicit intelligence on creative intelligence, analytical intelligence, practical intelligence, emotional intelligence, and social intelligence respectively. These values indicated the positive and significant effects of implicit intelligence on many forms of intelligence.

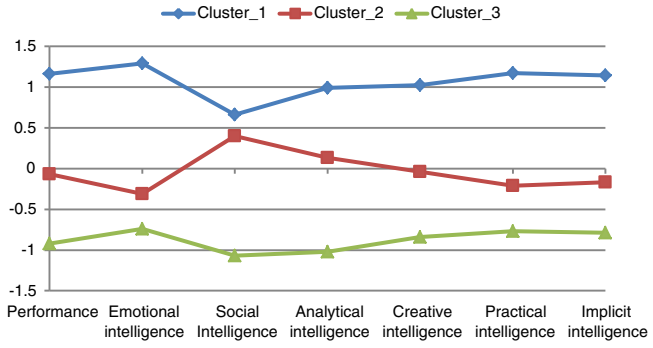


**Fig. 1.** The profiles of the three clusters in the study variables.

## 5. Discussion

The main contribution of the present study was to divide students into three profiles. The students in each profile had the same level and characteristics of emotional intelligence, social intelligence, successful intelligence, and implicit intelligence. In the first profile, the majority of participants were 6th grade students (69.39). Additionally, most of the students included in this profile were boys (57.14%). This cluster registered the lowest number of 5th grade students (30.61). The students of this cluster were characterized with the high degrees in all variables. The second profile indicated that most of the participants were 5th grade students (51.79), while the participants of 6th grade students were (48.21). In addition, this cluster registered (55.36) for boys and (44.64) for girls. The students of this cluster were characterized with the medium degrees in all variables. In the third and last profile, the majority of the students included in this profile were 6th grade students (59.42), while the 5th grade students were (40.58). In addition, this cluster registered (50.72) for girls and (49.28) for boys. The students of this cluster were characterized with the low degrees in all variables. It is clear from the previously mentioned that in the three profiles the highest representation of boys and 6th grade students in the first profile. While, the highest representation of 5th grade students was in the second profile and the highest representation of girls was in the third profile. These results follow the results of previous studies, which have indicated that emotional intelligence is a distinguished predictor of performance (Naghavi & Redzuan, 2011), and that the components of successful intelligence may differentiate students' performance (Mandelman, Barbot, Tan, & Grigorenko, 2013). The study of Beheshtifar and Roasaei (2012) revealed that social intelligence abilities are more successful in developing creativity and productivity. Additionally, implicit theories can affect cognitive and behavioral processes and outcomes (Cury et al., 2008; Good et al., 2003). Furthermore, the results provided valid empirical evidence for the importance of intelligence and its implicit theories in performance. Moreover, it indicated that emotional intelligence, successful intelligence, implicit intelligence, and social intelligence, were the strongest positive significant predictors of students' performance.

The results of the current study contributed in the increased insurance of the importance of emotional intelligence in the students' performance in general and on the gifted students' performance in particular. A lot of teachers and workers in the educational field in the Arab environment believe that it is difficult to effect change in the emotional intelligence of students, or even to improve it. They viewed the family as having the greatest role in the development of children's emotional intelligence. This view is in stark contrast with the modern visions of these skills, which emphasizes the importance of implementing emotional intelligence in the school curricula. Here, the researchers suggest that more time and interest be devoted to improve this kind of intelligence in the classroom. Teachers may be trained to contribute to improving emotional intelligence through programs aimed at developing the educational process.

The findings of the current study also show clear contributions of each of the component skill areas of successful intelligence in the prediction of student performance. This result reinforces the notion that not only memory and analytical skills may have an impact on student performance; creative and practical skills may also play a strong role. The researchers attribute this result to the development of the educational system in the Kingdom of Saudi Arabia, the flexibility in the curriculum, teaching strategies, and the transmission of learning toward solving everyday problems (Aljughaiman & Ayoub, 2012). The importance of successful intelligence appears to be its ability to activate higher-order thinking skills in students. It also helps them to develop strategies for the application of new knowledge in complex situations during their daily life. Moreover, it helps students to be more aware of the level of their educational progress, and more able to choose

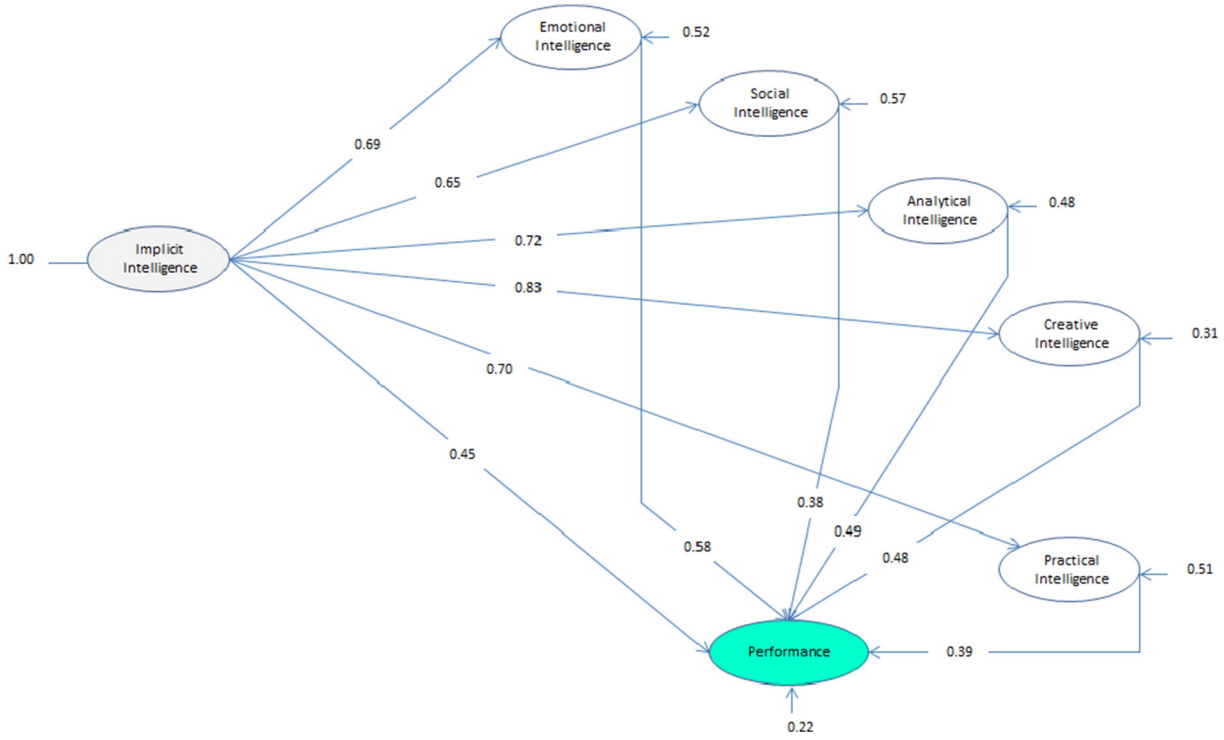


**Fig. 2.** Structural model for study variables.

strategies for building the knowledge that they need to solve academic and non-academic problems (Aljughaiman & Ayoub, 2013).

This study showed how students' implicit theories about intelligent could predict performance, in addition to predicting their emotional, social, analytical, creative and practical intelligences. In spite of the significant differences among students in learning speed and in mental development, students' beliefs about the nature of intelligence may be considered as one of the most important factors that affect students' thinking styles and their performance.

Students' beliefs about intelligence can be modified through training. The concept of intelligence is always related to negative characteristics while the belief in modifying intelligence is related to positive characteristics. Consequently, the results of the current study about the implicit theories of intelligence had many educational implications not only on predicting performance, but also on developing different and varied kinds of intelligence. Moreover, it had many educational implications on teachers' educational practices which can effect greatly on students' performance and developing their abilities and intelligences.

The results revealed a clear weakness in the social intelligence of gifted students, and their strengths in cognitive, mental, and other personality factors. This indicates that students may benefit from training programs focused on developing their communication and social skills. So, it will be necessary to study the social practices of the students in their classes.

## 6. Conclusion

The major educational implications of these results are suggestions on how to improve various factors of students' intelligence to develop their academic performance. By drawing the attention of those who are in charge of designing programs for gifted students to the importance of the activities of creative and practical intelligence as much as academic aspects. The educational experience that didn't include creative and practical aspects cannot affect clearly on the students' behavior. There is no doubt that the gifted students have a high cognitive potential for success in different fields, but the real challenge lies in transferring that energy and experience to everyday life.

The results of this study agreed with the results of (Aliughaiman & Ayoub, 2012; Lipton, 2007) which stated that the interventions that targeted at developing mental, emotional, and cognitive aspects of students may help them transfer learning effect and develop skills, abilities, beliefs, and engagement in the classroom.

There is an urgent need to divide the delivery of gifted education into graduated levels so that students can participate at the level that best suits his or her skills, abilities and potential, and can progress at their own speed. Providing education at the same level for all students means wasting time, effort and money. Also, it is necessary to assess each student using his or her portfolio of work, which collection may show best his or her real level scientific, academic, cognitive, mental, social, and emotional skills.

### *6.1. Limitations and future research*

One limitation of this study was the small sample size. In addition, the proposed model cannot be generalized outside the scope of the study sample because the sample was not representative of all gifted students. Also, the performance results of the current study were determined using rubrics. Despite the face validity and reliability of these tools, their external validity requires further research and study. Finally, the results of this study were limited to the performance of elementary school gifted students. Of course, the gifted performance and actual achievement of adults may depend on other cognitive and non-cognitive factors that may affect student performance. Consequently, the results of the current study cannot be generalized to populations outside of Saudi Arabia. In future studies, it will be interesting to expand the size of the sample and to increase the school and family factors that may affect the performance of gifted students. It is also suggested that a confirmatory model be applied to intermediate and secondary stages gifted students.

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