



Predictive Validity of Decision-Making Ability and Academic Achievement for Successful Intelligence Among Preservice Teachers

Neama Abdulsalam Hassan¹, Amani. K Hamdan Alghamdi² and Abdulghani Al-Hattami³

¹ Psychology, Imam Abdulrahman bin Faisal University, Dammam Saudi Arabia

² Curriculum and instruction, Imam Abdulrahman bin Faisal University Department, Dammam Saudi Arabia

³ Bahrain Teachers College, University of Bahrain, Kingdom of Bahrain

Received 27 Oct. 2019, Revised 16 Dec. 2019, Accepted 25 Dec. 2019, Published 01 Jan. 2020

Abstract: The successful intelligence theory by Sternberg (1997) is one of the few educational theories that examine students' ability to make decisions. Based on the work of Sternberg the present study examines the predictive validity of behavioral traits associated with the successful intelligence capabilities of preservice teachers on decision-making ability and academic achievement. The study sample consisted of 118 female preservice teachers in a university in the Kingdom of Saudi Arabia. The preservice teachers were asked to complete a questionnaire consisting of 42 items to assess the behavioral traits of successful intelligence and decision-making abilities. The data was collected and then analyzed using the multiple regression method. The results showed that successful intelligence significantly predicts preservice teachers' ability to make successful decisions. The results also indicated that successful intelligence is not related to academic achievement. As successful intelligence is associated with success in life, these results imply that academic achievement and success in life are not necessarily related. Therefore, it is suggested that teaching methods should concentrate on improving successful intelligence.

Keywords: Successful Intelligence, Decision-Making Ability, Academic Achievement, Preservice Teachers, Saudi Arabia

1. INTRODUCTION

Being successful in life is not a matter of genetics; rather, it stems from an individual's choices, opportunities, and will. The first steps in achieving success are based on having rational thoughts and the ability to make sound decisions. These qualities enable a person to achieve his or her goals. When an individual strives to develop such characteristics, and depends on them when handling various life issues and facing certain situations, success is a likely outcome.

Intelligence is much discussed in educational circles, and key theories about it have been put forward by educational psychologists, such as the eight intelligences proposed by Howard Gardner (2008) (visual, linguistic, mathematical, kinesthetic, musical, interpersonal, intrapersonal, and naturalistic intelligence). The theory of successful intelligence, which was developed by Sternberg in 1997, is considered to be one of the few educational theories that examines students' ability to "create" success. There are many different ways to achieve success in life, even when the people following these different ways hold similar objectives. Some people

are able to achieve success through the authenticity and efficiency of their reflections when dealing with and overcoming problems, and by taking advantage of pitfalls to make better subsequent decisions (Merrick, 2011). Others achieve success through their character traits and through the impact they have on others (Al-Jassim, 2010, p. 152).

Sternberg and Grigorenko (2002) consider that a person with successful intelligence is one that can adapt to his or her environment—whether through modification, change, or reconfiguration—and be compatible with it. Such people also possess an efficient and active attitude. Using whatever means possible, they try to make use of their energy, in so far as they are aware of it. It is notable that, while people with successful intelligence may fail, they never succumb to failure. They learn from their mistakes and mishaps, and avoid falling into the same pitfalls again. Moreover, they have a positive attitude toward their abilities and have confidence in their ability to change and achieve. Sternberg (1997) defined successful intelligence as a set of integrated capabilities—namely, analytical, creative, and practical intelligence—that an individual needs in



order to succeed in life, by identifying his or her strengths and weaknesses. A person with analytical intelligence is distinguished by her or his ability to analyze, evaluate, make judgments, and perceive relationships between the elements of objects. These people are distinguished in the performance of school tasks, standardized tests, and IQ tests. A person with creative intelligence can generate new ideas, and has the ability to discover, visualize, and solve problems in unconventional ways. These people connect objects and ideas in new ways to reach entirely new conclusions. Practical intelligence appears in an individual's ability to recruit, apply, and utilize information and theoretical knowledge in applied reality (Sternberg, 2005, p. 191). Successful intelligence is measured by the individual's level of each type of intelligence. More specifically, the three aspects of successful intelligence can be defined as follows (Sternberg, 2005, p. 191):

- (1) Analytical intelligence: the process by which an individual seeks to solve common problems using strategies that address the elements of the problem or the relationships existing between these elements; relevant skills include analysis, comparison, classification, interpretation, critique, and evaluation.
- (2) Creative intelligence: an individual's ability to imagine, innovate, discover, build hypotheses, and generate new ideas.
- (3) Practical intelligence: an individual's ability to employ what has been learned to solve various types of problems faced in daily life; social intelligence is one aspect of practical intelligence.

An individual has successful intelligence when he or she can strike a balance between analytical, creative, and practical intelligence (Abu Hamdan, 2008; Kafafi, 2002; Hassan, 2015). Sternberg (2003, p. 142) explained the interaction between these three aspects of successful intelligence as follows: A person needs creative thinking to generate ideas, analysis to judge the quality of these ideas, and practical intelligence to employ these ideas and to convince others that the ideas are worthwhile. The ability to make sound decisions is one of the characteristic constituents of an individual with successful intelligence. This ability helps people to direct their thinking, and provides potential guidance in creating their lives and making decisions that determine their success in the academic, practical, and professional domains.

The current study seeks to investigate the nature of the relationship between successful intelligence variables and decision-making ability, and to determine whether this relationship is predictive; that is, whether it is possible to predict an individual's ability to make decisions by identifying behavioral traits in that person that are associated with successful intelligence. Decision-

making is defined as a complex thought process that aims to select the best alternatives or solutions available to an individual in a given situation, in order to allow that individual to reach a desired goal (Jarwan, 2016, p. 87). For the purposes of this discussion, we define academic achievement as the total number of achieved grades in the courses taken by a preservice teacher over a full academic year.

Many studies have shown the impact of successful intelligence on various personal, academic, and leadership variables. For example, Abu Jado (2006) found that an educational program based on the theory of successful intelligence had a significant impact in developing the analytical, creative, and practical abilities of mentally gifted students. He also examined the effect of interaction between the treatment variables and gender on the analytical, creative, and practical abilities. Abu Jado's study comprised 98 male and female Grade 10 students at the Jubilee School in Jordan. The Jordanian image in Abu Jado's study was used for the Sternberg tripartite test of abilities after being developed by the researcher. The students were taught using a developed educational program based on successful intelligence theory with the aim of improving their analytical, creative, and practical abilities.

Chan (2008) studied self-efficacy and its association with successful intelligence in 220 secondary school teachers in Hong Kong (83 males and 137 females). He began by studying six areas of self-efficacy (classroom management, guidance and instruction, student treatment, diversity in teaching methods, enrichment of learning, and differential teaching) in relation to successful intelligence capabilities (practical, analytical, and creative). The practical differences between these teachers in the areas of teaching self-efficacy and successful intelligence indicated that practical intelligence is the most predictive variable for the self-efficacy of a teacher, and for her or his beliefs in the effectiveness of teaching. The results revealed a very strong statistical correlation (0.01) between a teacher's self-efficacy and his or her successful intelligence capabilities.

In another study, Chan (2007) focused on the efficacy of leadership abilities in relation to the successful and emotional intelligence of a gifted student sample in Hong Kong. He found a strong correlation between successful intelligence and the emotional components of leadership. He also showed that leadership abilities could be predicted based on successful and emotional intelligence.

In a study of 238 average students, Salem and Attia (2016) examined the relationship between habits of mind, decision-making, and self-efficacy. The results showed a



positive relationship between the habits of mind, decision-making, and self-efficacy in the students of the sample.

As shown through the examples above, successful intelligence skills have been used to develop and improve educational programs (Abu Jado, 2006), activate teaching (Chan, 2008), and examine how to build leadership (Chan, 2007). These aims are all relevant for the training of preservice teachers. Therefore, the present study focused on answering the following questions:

- (1) What is the predictive validity of behavioral traits associated with the successful intelligence of preservice teachers on decision-making ability?
- (2) What is the predictive validity of behavioral traits associated with the successful intelligence of preservice teachers on academic achievement?
- (3) Are there any significant differences between preservice teachers in scientific and literary tracks in terms of:
 - The ability to make a decision?
 - Behavioral traits associated with successful intelligence (analytical, creative, and practical) and the overall degree of successful intelligence?

2. EASE OF USE

This study used a quantitative approach to identify the relative contribution of the independent variable, successful intelligence, in predicting the dependent variables, decision-making ability and academic achievement, respectively.

Sample

The pool consisted of 82 preservice teachers in the College of Education at a university in the Kingdom of Saudi Arabia. Their ages ranged from 22 to 41, with an average age of 26.47 and a standard deviation of 2.94. The main study sample consisted of 118 preservice teachers in the College of Education at the same university. Their ages ranged from 22 to 41, with an average age of 26.5 and a standard deviation of 3.09. All of the preservice teachers were enrolled in the general diploma course at the College of Education, and were chosen to participate in the study upon their approval.

The preservice teachers were informed of the content of the research before beginning, and were given the opportunity to agree or to refuse to participate, under the clear understanding that there would be no negative repercussions to a refusal. Participants were also assured that they could choose to end their participation at any time. Written permission was obtained from all of the participants. Participant names were omitted, and precautions were taken to ensure participant anonymity.

Instruments

A questionnaire was used that consisted of 42 items related to behavioral attributes for successful intelligence, the three aspects of successful intelligence (practical, analytical, and creative intelligence). The questionnaire reflected the behavioral traits that describe the three aspects of successful intelligence (practical, analytical, and creative). The initial form of the questionnaire was presented to five professors in the field of educational psychology, measurement of the three aspects of successful intelligence (practical, analytical, and creative intelligence), and evaluation, who assessed the vocabulary use and relevance, along with the content, structure, and validity of the questionnaire. Based on this assessment, the questionnaire was modified for clarity. The internal consistency of the questionnaire was found to be 0.78.

A second questionnaire was used to assess the preservice teachers' decision-making ability. This questionnaire comprised 20 words describing an individual's decision-making characteristics under different situations. Participants were asked to choose words that applied to their own decision-making, and were subsequently graded three points for choosing a word associated with good decision-making, two points for a choice that was somewhat relevant to good decision-making, and one point for an irrelevant choice. Negative points were given for choices that related to poor decision-making. The questionnaire was tested for its validity. It was presented to a group of professors of educational psychology, who assessed the wording and the relevance of the questionnaire to the study population. The reliability of the questionnaire was calculated by means of the Cronbach Alpha, and was found to be 0.76.

Limitations of this study

The current study was limited by its focus on the preservice teachers within just one College of Education at a single university in Saudi Arabia. As a result, the findings of these studies cannot be generalized to other countries or sample populations. Future studies across a wider population and in more than one country are recommended.

RESULTS

The first research question involves the predictive validity of behavioral traits associated with successful intelligence on decision-making ability. The data were statistically analyzed using the multiple regression analysis method using SPSS software. As a preliminary step in presenting the results of the regression analysis, Table 1 shows the matrix of the correlation coefficients between successful intelligence, its three aspects (creative, analytical, and practical), decision-making, and academic achievement.



Table 1. Matrix of correlation between successful intelligence, its three aspects (creative, analytical, and practical intelligence), decision-making, and academic achievement.

Study variables	Decision-making	Academic achievement	Creative intelligence	Analytical intelligence	Practical intelligence	Successful intelligence
Decision-making	1					
Academic achievement	-0.043	1				
Creative intelligence	**0.407	-0.017	1			
Analytical intelligence	**0.434	-0.024	**0.618	1		
Practical intelligence	**0.346	0.110	**0.662	**0.598	1	
Successful intelligence	**0.458	-0.044	**0.904	**0.794	**0.880	1

** level indication 0.01

*level indication 0.05

Unsurprisingly, the results show that successful intelligence is highly correlated with its three aspects of creative intelligence, practical intelligence, and analytical intelligence ($r = 0.90, 0.88, 0.79$, respectively). A medium correlation was found between successful intelligence and decision-making ($r = 0.46$). The results

showed no relationship between successful intelligence and academic achievement ($r = -0.04$).

Table 2 shows the multiple regression analysis of the total score of the aspects of successful intelligence (creative, analytical, practical) on students' decision-making ability and, specifically, which of the independent variables (creative, analytical, practical) are best predicting the students' decision-making ability.

Table 2. Multiple regression of the total score of the aspects of successful intelligence (creative, analytical, practical) on students' decision-making ability (N = 118).

Source of contrast	Total of squares	DF	Square average	P value
Regression	468.561	1	468.561	
Residuals	1766.634	116	15.230	**30.766
Total	2235.195	117	–	

** level indicates 0.01

The results show that the calculated p -value is a function at the level of 0.01. Thus, the regression equation can be formed. This indicates the significance of the three aspects of successful intelligence in the prediction of decision-making ability.

Table 3 shows multiple regression analysis of successful intelligence on the dependent variable of decision-making ability.

Table 3. Multiple regression analysis of successful intelligence on the dependent variable of decision-making ability (N = 118)

Independent variables	R ²	Regression coefficients	Beta value	T value
Successful intelligence Fixed gradient	0.2861	286.173	–	**7.24
	0.209	0.209	0.458	**5.547

* level indication 0.05

** level indication 0.01

As shown in Table 3, $R^2 = 0.2861$. That is, 28.617% of the variance of the dependent variable (decision-making) is due to the independent variable: successful intelligence.

The second research question asked whether academic achievement can be predicted based on behavioral traits associated with successful intelligence. To answer this question, the data were statistically analyzed using the multiple regression method for the independent variables. The results showed that academic



achievement could not be predicted based on successful intelligence. Table 4 shows the result of the model significance and Table 5 shows the result of the regression analysis of behavioral traits associated with successful intelligence, and academic achievement

Table 4. Analysis variance of behavioral traits associated with successful intelligence, and academic achievement (N = 118).

Source of contrast	Square total	DF	Square average	P value
Regression	0.020	1	0.020	
Residual	10.063	116	0.087	0.230
Total	10.083	117	-	

Table 5. Regression analysis of behavioral traits associated with successful intelligence, and academic achievement (N = 118)

Independent variables	R ²	Regression coefficients	Beta value	T value
Fixed gradient Behavioral attributes associated with successful intelligence	0.027	4.245	-	0.480
			0.001	

As shown in Table 5, R² = 0.027. Thus, 0.027% of the variance of the dependent variable (academic achievement) is due to the independent variables (the behavioral traits associated with successful intelligence).

The third question asked whether there were significant differences between the average scores of preservice teachers with scientific and literary majors in terms of their decision-making ability, behavioral traits associated with the three aspects of successful intelligence (analytical, creative, and practical), and overall degree of successful intelligence. In order to answer the research question, the data were statistically processed using an independent sample t-test. Table 6 shows the results of t-test which assess the differences between the average scores of students with scientific and literary majors in terms of decision-making, the three aspects of successful intelligence, and total score in successful intelligence.

Table 6. T-test assessing the differences between the average scores of students with scientific and literary majors in terms of decision-making, the three aspects of successful intelligence, and total score in successful intelligence (N = 118).

STUDY VARIABLES	ACADEMIC MAJOR				D H	T VALUE	LEVEL OF INDICATION
	Scientific (N = 47)		Literary (N = 71)				
	M	SD	M	SD			
Decision-making	49.89	116	50.81	4.36	116	1.125	Not significant
Creative intelligence	36.70	116	36.92	4.28	116	0.271	Not significant
Analytical intelligence	27.53	116	28.14	2.43	116	1.23	Not significant
Practical intelligence	39.82	116	39.77	3.58	116	0.076	Not significant
Successful intelligence	104.25	116	104.63	8.97	116	0.209	Not significant

Table 6 shows that there were no significant differences between the average scores of students with scientific and literary majors in terms of decision-making, the three aspects of successful intelligence (creative, analytical, and practical), or the total score in successful intelligence.

DISCUSSION

The results of this study show that the decision-making ability of the preservice teachers in this sample

could be predicted based on their behavioral characteristics of the three aspects of successful intelligence (analytical, creative, and practical intelligence). That is, 28.617% of the participants' decision-making score was associated with the independent variables of the participants' scores in analytical, creative, and practical intelligence.

This finding coincides with the concept of successful intelligence as explained by Sternberg (1997). According to Sternberg, a successfully intelligent person can balance



creative, analytical, and practical intelligence in different life situations. This finding also aligns with the work of Hunt (2008), who showed that a person's success in all aspects of life can be predicted from their awareness from the interaction between their abilities, personality, and interests (Hunt, 2008, p. 511). As Kafafi (2002, p. 23) has pointed out, in order to achieve success and happiness, and to enjoy a balanced life, an individual must make an effort to change her or his way of thinking, including the overall outlook on situations and events around her or him. Thus, the findings of the present study imply that successful intelligence is a significant factor that helps people make good decisions in their life. Successful intelligence skills are very crucial to cope with the 21st century changes.

CONCLUSION

The results of this study show that successful intelligence is a significant predictor of preservice teachers' ability to make successful decisions. It also indicates that successful intelligence is not significantly related to academic achievements, as defined in this study. These results imply that success in life does not necessarily align with excellence in academic achievement within the educational system. Therefore, it is suggested that teaching methods should concentrate more on improving successful intelligence, which is associated with success in life and good decision-making, in comparison with its current focus on academic achievement. Intelligence has become a hot topic in educational circles, and several key theories have been put forward by educational psychologists, such as Gardner's (2008) eight intelligences. Sternberg's (1997) theory of successful intelligence has a specific focus on helping students to succeed in life. Based on Sternberg's work, this study examined the predictive validity of successful intelligence on preservice teachers' decision-making ability, and showed that successful intelligence did significantly predict successful decision-making among the participants in this sample. Making good decisions is an essential part of good teaching—and of living a good life. Therefore, strengthening preservice teachers' successful intelligence will strengthen their ability as teachers and increase their opportunities to succeed.

ACKNOWLEDGMENT

AUTHORS WOULD LIKE TO ACKNOWLEDGE REVIEWERS OF THIS MANSUCRTIP.

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