

The differences between intellectually gifted and average students on a set of leadership competencies

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Abstract

The current study investigates differences in the leadership skills between intellectually gifted and average students and explores the relationship between intelligence and leadership potential. Participants in this study were 176 students (57 males and 120 females) from an Eastern Province University in Saudi Arabia. Students were selected on a voluntary basis and asked to complete the Leadership Inventory (LI); data were also collected about their General Ability Test (GAT) scores. The Spearman Rho correlation formula was calculated and then the sample was divided into two groups based on their GAT scores – intellectually gifted and average students – and a subsequent *t*-test was performed. The LI consists of four subscales: leading self and others; problem solving skills; effective communication; and planning skills. LI internal consistency was $\alpha = .94$. No significant correlations were found between leadership and intelligence ($r = .077, P > .05$). The mean of gifted students only in planning skills ($M = 26.16$) was significantly higher than the mean of average students ($M = 24.747, t = -2.069, P = .04, df = 174, \text{Cohen's } d = .31$). No other significant means differences among all other variables were found. Intellectually gifted students lacked essential skills to prevail in the global competitive economy. Recommendations, implications, and limitations of the study are discussed.

Keywords

Leadership, gifted, intelligence, communication, planning, problem solving, leading self, leading others, higher education

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Introduction

Intellectually gifted students lack basic leadership skills that are vital to succeed in a global competitive economy (Ceci, 1996; Ceci and Liker, 1986; Chan, 2007; Kim, 2009; Sternberg, 1985, 2000, 2005; Sternberg and Wagner, 1986; Trilling and Fadel, 2009). Although it promotes positive achievement, leadership is the most overlooked aspect in the education of gifted students and in public education generally (Kim, 2009; Lee and Olszewski-Kubilius, 2006). Sternberg (2005) argues that gifted adults are recognized for their leadership role, which they acquire in a specific field. The real world is full of persistent problems and opportunities that necessitate leadership responsibility; unfortunately, educational systems pay minimal attention, if any, to this developmental aspect. Matthews (2004) concludes that leadership is the least served and researched area in the domain of giftedness. A false assumption is that intelligent students would prosper in the real world. Intelligence tests that measure basic cognitive competencies and speed of learning tend to overlook the complexity of human abilities like leadership that unfold in real-life situations. Researchers over the last 30 years have provided consistent evidence showing conventional intelligence tests tap restricted aspects of human cognitive abilities, which partially explain academic performance (Sternberg, 2000; Sternberg and Wagner, 1986). Empirical evidence in the field of psychology and social psychology revealed the same pattern of results that “school smart” individuals lack leadership skills that result in real-life success (Ceci, 1996; Ceci and Liker, 1986; Gardner, 1983, 1993, 1999, 2011; Goleman, 1995, 2006; Maker, 2005; Maker et al., 1996; Sternberg and Wagner, 1986). Qualities of cognitive capacity are more complex and go beyond what tests of intelligence measure. In the current study, the author explores the relationships between intelligence and a set of leadership skills along with the difference in these skills between gifted and average students in a higher education setting.

Leadership and intelligence

According to Sternberg (2005), literature on leadership and intelligence can be traced back to as early as the 20th century, yet the relationship between them is rather ambiguous. Although early scholars showed moderate association between intelligence and leadership, this relationship theoretically and empirically has to be evidence based (Matthews, 2004). Theoretically, results of conventional tests of intelligence, also known as IQ tests, seek to assess basic cognitive competencies including memory, analytical skills, speed of cognitive processing, attention span, and inductive and deductive reasoning by using contextually invalid problems that seem to be theoretically unrelated to leadership potential (Ceci and Liker, 1986; Maker, 2005; Maker et al., 1996; Meegan and Berg, 2002; Patrick and Strough, 2004). Sternberg argues that many intellectually gifted individuals are not gifted leaders. Leadership for many scholars to a large extent is a complex phenomenon that is influenced by many cognitive, emotional, social, moral, situational, tacit, and contextual factors that appear to be crucial in leadership effectiveness (Goleman et al., 2002; Gordon, 1995; Kim, 2009; Lee and Olszewski-Kubilius, 2006; Matthews, 2004; Northouse, 2012; Sternberg, 2005). These internal and external factors interact with each other during a leadership situation. Hence, intelligence alone may not exclusively dominate the situation.

Empirically, the relationship between the two constructs depends upon whom you assess, how each construct is defined and measured and in which context. For instance, Hollingworth (1926) illustrated that with a group of children with an average IQ of 100, the leaders' intelligence scores were between 115 and 130, and those who were above 130 IQ did not show leadership skills (cited in Landau and Weissler, 2001). Similarly, Stogdill (1974), after reviewing a large number of studies, found low correlation between leadership and IQ, $r = .28$ (cited in Landau and Weissler, 2001). Furthermore, Edmunds and Yewchuk (1996) assessed intelligence and leadership skills for 90 gifted students from the 12th grade and found it low but significant, $r = .22$. Notably, the sample consisted of only gifted students and IQ scores ranged from 100 to 149, which could limit the generalization of such results due to restricted range. Alternatively, Kim (2009) found contradicting results. She investigated the relationship between leadership skills and intelligence for both gifted and average students in a large sample that consisted of 2343 Korean middle school students. Intelligence was measured by using the KEDI-IQ test; she found no significant correlation between IQ scores and leadership skills. On the other hand, Chan (2007) reported in his study on leadership and intelligence that traditional views of intelligence could account for a limited variance of leadership performance when he used the same method of assessment: rating scales. He concluded that such a relationship might be due to the same method of variance being used in the study. Nevertheless, Sternberg (2005) stated that the correlation between the two constructs seemed to be modest; however, these correlations were moderated by internal and external factors that could change the direction of the relationship. Similar to previous views, Lee and Olszewski-Kubilius (2006) affirmed that the relationship between intellectual giftedness and leadership is not clear and is not necessarily linear. It can be seen from the above-mentioned review that intelligence at best explains 7% of accounted variance for leadership. Conventional tests of intelligence may not be good predictors of leadership potential because these tests tap basic cognitive processes that minimally explain the complexity of leadership effectiveness. Researchers are still pursuing answers to the following question: Is there a true relationship between intelligence and leadership?

Leadership in theories of giftedness

Leadership potential has been introduced by many theorists and scholars in the field of education of the gifted as a separate form of giftedness. Terman (1925) argued that intelligent students are more inclined to lead their average classmates (cited in Kim, 2009). Among essential areas of giftedness proposed by Marland in his report in 1972 was leadership (Colangelo and Davis, 1997, 2003; Heller et al., 1993). In his theory of Multiple Intelligences, Gardner (1983, 1993, 2011) included interpersonal and intrapersonal intelligences that mainly deal with effective interaction with people and self by using attributes of understanding self as well as other's emotions and feelings. He argued that students with high interpersonal skills who are extroverted, sociable, and able to understand emotions of others, demonstrate a high leadership potential more than those who are low on these types of intelligences. Sternberg (2005), in his wisdom, intelligence, and creativity, synthesized (WICS) theory, postulated that that leadership

potential is largely a function of several types of ability including creativity, analytical thinking, practicality, and wisdom.

Leadership theories

Leadership is a multifarious construct that is evoked through complex interactions of leader attributes, situational factors, and followers' qualifications (Chan, 2007; Lee and Olszewski-Kubilius, 2006; Sternberg, 2005). These factors add greater complications to leadership. Major theories of leadership focus on aspects derived from various schools of thought (McNichol, 2001; Northouse, 2012; Yoon et al., 2010). Great Man theories assume that leaders are born not made. Similar to previous theories are Traits theories, which assume that leaders inherit personal qualities that distinguish them from others. Contingency theories focus on situations instead of individuals and factors that involve the environment that may have an influence on leaders' roles. Thus, different situations may entail different styles and qualities of leadership. Situational theories assume that leaders change their course of action based on the context of the situation. Behavioral theories are based on the assumption that leaders are made, not born, where people can learn leadership behaviors. Participative leadership theories take into account the followers' or stakeholders' perceptions in decisions. Transactional theories, named management theories, focus on individual, group, and organizational performance whereby incentive systems are put in place for rewards and punishments. Transformational theories focus on inspired and ethical behaviors of leaders and their followers.

Consequently, scholars have not come to an agreement on the underlying psychological constructs of leadership that underpin the effectiveness of leadership. Goleman (1995, 2006) postulates the concept of emotional intelligence, which includes self-awareness, self-regulation, motivation, empathy, and social skills, a key feature for successful leaders. Kim and Chun (2006) found 158 leadership components reported in the literature and grouped them into 20 categories including interpersonal skills, creativity, vision, caring for others, task commitment, team work, community service, intelligence, confidence, communication skills, self-management, problem solving, etc (cited in Kim, 2009). Black (2008) added sociability, future oriented, critical thinking, responsibility, and self-assurance (cited in Kim, 2009). In a similar vein, Landau and Weissler (2001) noted that traits of leaders through the literature include responsibility, desire to dominate, consistency and perseverance, physical energy, achievement oriented, expressive and persuasive power, organizational abilities, decisiveness and daring, self-confidence, empathy with group, emotional equilibrium, and control. Smyth and Ross (1999) concluded on a theoretical basis that leadership includes the ability of an individual to articulate their vision, foster acceptance of group goals, convey high expectations, provide models of values, stimulate followers, and catalyze their intrinsic motivation and build a culture. The complexity of the leadership concept suggests a wide range of competencies and skills are perceived to be important for effective leaders. The unique contribution of each component to leadership effectiveness was, however, not well documented in the literature, largely due to the complexity of the construct.

Northouse's (2012) conceptualization of leadership skills falls into three major categories: administrative skills, interpersonal skills, and conceptual skills. The administrative skills

refer to those competencies that leaders possess to run an organization. These skills include planning, organizing work, managing resources, and technical skills. The interpersonal skills include possessing effective communication skills, showing emotional intelligence, and being able to handle conflict. The conceptual skills include problem solving ability and strategic planning. This framework was used to conceptualize the assessment of leadership skills in the current study: (a) leading self and others; (b) effective communication; (c) planning; and (d) problem solving. These four skills are considered among the primary skills and competencies for any leader (Northouse, 2012; Yoon et al., 2010).

Purpose of the study

The purpose of this study is to explore the relationship between intelligence and components of leadership and leadership composite scores. In addition, it aims to investigate the differences between intellectually gifted and average students on a set of leadership skills using average students as a reference group on these skills. The current research attempts to answer the following questions: Is there a relationship between the components of leadership scores and intelligence? Are there significant differences between gifted students and average students on components of leadership skills: leading self and others, problem solving skills, effective communication, and planning?

Method

Participants

A total of 176 students (56 males and 120 females) enrolled at a university in the eastern province of Saudi Arabia participated in this study. Students were selected on a voluntary basis. They were asked to complete the Leadership Inventory (LI) and data was collected about their General Ability Test (GAT) scores. Students were assured that data would be used for research purposes only. Students were from various colleges and disciplines covering health, science, engineering, art, and the humanities. The gifted sample consisted of 56 students who were drawn from the original sample based on their GAT scores. Those who scored above 80 on the GAT were considered gifted and those who scored below that were considered average. The cut-off score placed students who scored 80 and above in the top 5%.

Measurements

The GAT has been, like the Scholastic Aptitudes Test (SAT), developed by The National Center for Assessment in Higher Education (Qiyas). Qiyas aims to develop standardized general ability and achievement tests whereby the results of these tests are used in admission criteria for higher education institutes. The GAT consists of two subtests: verbal and quantitative. The GAT aims at assessing analytical reasoning and students' readiness for learning (Qiyas, 2011). Specifically, the GAT measures the following abilities: reading comprehension; ability to understand logical relationships; solving problems based on basic mathematical concepts; and deductive and inductive reasoning. The verbal subtest consists of 68 questions for science track students in high school and 92 questions for

literature track students. Four types of questions are presented in this subtest: reading comprehension; verbal analogy; sentence completion; and word meanings. The quantitative subtest consists of 52 questions for science track students and 30 questions for literature track students. This subtest includes arithmetic, geometric, algebraic, and statistical questions. The GAT is administered in two and a half hours in six parts, 25 minutes for each part. The population mean on GAT is 65.

Leadership Inventory. A questionnaire for leadership skills was developed by the author and AboJado based on the framework of Northouse (2012) and the adaptation of Birkenholz and Schumacher's (1994) scale. The LI was translated from English to Arabic by a native speaker of Arabic who was very advanced in English and then translated back to English by an independent person. This showed that the meanings of the items of the questionnaire resembled that of the original English version. The content validity was checked by three experts in related fields. The LI was validated by Alhattami and Muammar (submitted for publication). The results showed that the four-model factor analysis explained 42% of the total variance. The LI consisted of 34 items tapping four skills and the overall internal consistency as indicated by Cronbach's α was .94; the subscale reliability was as follows: leading self and others (eight items) $\alpha = .79$; problem solving skills (nine items) $\alpha = .84$; effective communication (eight items) $\alpha = .79$; planning skills (nine items) $\alpha = .84$. Participants were asked to rate each item on a scale of 1 (very minimally applied to me) to 4 (very highly applied to me). As indicated, the analyses of all scales' reliabilities were acceptable and high.

Procedure

Participants were invited to take part in a leadership talent development program, and they were asked to complete an electronic survey about their demographic information and an LI questionnaire about leadership skills as a part of their registration in the program. To explore the relationship between leadership skills using the LI and the GAT, firstly a Spearman Rho correlation formula was employed. Subsequently a *t*-test was performed to explore the difference between the two groups (gifted and average) on the four skills and the overall composite score for the LI. Alpha was specified at the 0.05 level to control for type 1 error. No directional hypotheses were made about the populations' means.

Results

The author used scores on the LI self-rating scale to assess leadership skills and scores on the GAT to assess intelligence. The LI includes a set of leadership skills as follows: leading self and others, effective communication, problem solving, and planning. The sum of scores on these subscales is considered as the leadership composite score. Table 1 shows the means and standard deviations of all variables of the sample, including intelligence and scores on subscales of the LI. Students rated themselves highest on effective communication and lowest on leading self and others.

Table 1. Mean and standard deviation of all variables ($N = 176$).

Variable	Mean	SD
1. General Ability Test	77.36	8.68
2. Leading self and others	23.72	4.28
3. Effective communication	25.58	5.11
4. Problem solving	24.36	4.26
5. Planning	25.14	5.35
6. Leadership composite score	98.80	16.69

Table 2. Correlations between scores on all variables ($N = 176$).

Variable	1	2	3	4	5	6
1. GAT	1					
2. Self and other management	-.012	1				
3. Effective communication	.113	.622 ^a	1			
4. Problem solving	.058	.736 ^a	.606 ^a	1		
5. Planning	.104	.718 ^a	.693 ^a	.763 ^a	1	
6. Leadership composite score	.077	.871 ^a	.822 ^a	.894 ^a	.915 ^a	1

^a $p < .01$. GAT: General Ability Test.

Research question 1

Is there a relationship between leadership skills and intelligence? To answer this question, a Spearman Rho correlation was calculated and a coefficient was used to illustrate the relationship between leadership skills and leadership composite scores and scores of intelligence. In Table 2 the relationships are presented. The leadership composite score did not correlate significantly with intelligence as measured by the GAT ($r = .077, P > .05$).

Furthermore, the relationships between intelligence and the set of leadership skills were not significant. As indicated in Table 2, all leadership skills did not correlate significantly with scores on the GAT: leading self and others ($r = -.012, P > .05$); effective communication ($r = .113, P > .05$); problem solving skills ($r = .058, P > .05$); planning skills ($r = .104, P > .05$). Another observation is that all leadership skills were highly correlated with each other; the correlations ranged from .62 to .76.

Research question 2

Is there a difference between intellectually gifted and average students on leadership competencies? To answer this question both descriptive and inferential statistics were used. Table 3 shows the means and standard deviations for both gifted and average students. Interestingly, all the means for leadership skills were slightly higher for the gifted students in comparison to the average students. Inferential statistics were carried out using a t -test to pinpoint whether the differences in means between the two groups were significant for all leadership skills. As indicated in Table 4, the mean of gifted students

Table 3. Mean and standard deviation between gifted and average students for all variables ($N = 176$).

Variable	Gifted students		Average students	
	Mean	SD	Mean	SD
1. GAT	85.83	3.82	71.77	6.05
2. Self and other management	23.89	4.09	23.60	4.42
3. Effective communication	26.40	4.51	25.04	5.42
4. Problem solving	25.05	3.82	23.91	4.49
5. Planning	26.16	4.71	24.47	5.65
6. Leadership composite score	101.49	14.95	97.02	17.59

GAT: General Ability Test.

Table 4. t-test analysis for all the differences between gifted and average students on leadership skills.

Variable	Sig	t	df	Mean difference
Self and other management	.67	-.426	174	.28
Effective communication	.09	-1.734	174	1.36
Problem solving	.08	-1.757	174	1.15
Planning	.04	-2.069*	174	1.69
Leadership composite score	.08	-1.750	174	4.47

* $p < .05$

only on planning skills ($M = 26.16$) was significantly higher than the mean of average students ($M = 24.747$, $t = -2.069$, $P = .04$, $df = 174$). No other significant mean differences among all other skills were found: leadership composite score ($t = -.08$, $P = .08$, $df = 174$); leading self and others ($t = -.426$, $P = .67$, $df = 174$); problem solving skills ($t = -1.757$, $P = .081$, $df = 174$); effective communication ($t = -1.734$, $P = .085$, $df = 174$). Even though the means of the gifted group were higher than those of average students in the overall leadership composite score, no significant difference was found between the two groups.

Discussion

In this study, the author examined the relationship between leadership skills using the LI and intelligence scores as measured by the GAT. The results show that no significant correlations existed between student intelligence as measured by the GAT and their self-rating scores on the LI. Furthermore, even though there were moderate to high correlations between the leadership skills, including leading self and others, effective communications, problem solving, and planning skills, no significant correlations existed between intelligence and leadership composite scores or on the subscales of various leadership skills. These results confirm that leadership and intelligence are distinct psychological constructs. They

also show convergent evidence that intelligence is domain specific and not domain general, which means that intellectually gifted students do not necessarily demonstrate giftedness across all domains, including leadership. The results are consistent with similar research by Kim (2009) using a different population. They are also aligned with Sternberg (2005) and Chan's (2007) conception of leadership. Chan found that successful intelligence contributed to leadership effectiveness. The findings of Chan's study, however, should be taken with caution for two reasons: firstly, the method of assessment used rating scales and, secondly, the concept of intelligence he used is broader than the conventional concept of intelligence. Current study results are contradicting others (Matthews, 2004), yet that may be due to several reasons, such as the method of assessment of both constructs, the definition of each construct, and the population and range of variations on each variable.

Nevertheless, gifted students rated themselves higher on planning skills than average students. When the sample was divided into two groups based on their intelligence scores as gifted and average students, the results showed consistent patterns. No significant difference existed between the two groups across all leadership skills except for the planning skills. This result shows an interesting phenomenon. Only planning skills distinguished gifted students from average students. In other words, those who were considered as intellectually gifted students based on their intelligence scores tended to have higher scores on the planning skills subscale. Unquestionably gifted students showed a higher performance on the GAT as a result of their planning abilities. Planning skills in the LI scale used in the current study tap students' perception on responsibility, self-discipline, goal setting and achievement oriented, high expectation from groups, and time management and scheduling activities. Success is not a result of random incidents, but good planning and dedication to achieve excellent outcomes. As indicated by Cohen's d , the effect-size was relatively small (Cohen's $d = .31$), which means only a small portion of the planning skill is associated with intellectually gifted students. This pattern of results confirmed that giftedness is domain specific and those who are intellectually gifted are in real need of developing other essential skills to complement their talents and attain more successful career paths (Ann, 2010; Bisland, 2004; Ceci, 1996; Ceci and Liker, 1986; Kim, 2009; Landau and Weissler, 2001; Lee and Olszewski-Kubilius, 2006; Matthews, 2004; Sternberg, 2005). Another observation is that gifted students did not differ from average students on all other leadership skills but planning. If average students were used as a reference group, the results indicate that leadership potential does not come by virtue of favoring gifted students. The results were consistent with Kim's study (2009), which found that cognitive components, specifically self-regulation, time management, and effort regulation, distinguished gifted students from average ones. Muammar (2011) found similar results when he studied the contributions of intelligence and self-control (as an aspect of leadership) to academic performance. He found that self-control contributed roughly twice as much as intelligence to academic achievement, while intelligence and self-control were not correlated.

Implications and limitations

The current study has many implications for the education of the gifted. Firstly, soft skills should be the responsibility of schools more than anybody else. These skills should

be taught through the academic curricula and any extracurricular activities. They should be integrated across all classes and modules and should be given proper consideration in order to prepare gifted students for successful career paths and leadership roles. Secondly, even though gifted and average students did not differ on these set of skills, both groups are in need of soft skills. Most importantly, gifted students are less adaptive to work environments than average students and have greater potentials to foster society development. Thirdly, these skills have to be calibrated through all academic programs to ensure the mastery level that university students should reach upon their graduation and in their careers. The results of the current study have to be taken with caution due to the convenience sampling of the participants who were selected randomly. Therefore, we cannot assume the generalizability of the results. Besides, using self-rating scales of leadership may have validity problems. Future research may focus on assessing leadership using performance-based tests rather than self-reporting scales.

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