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The Effectivness Of The Jordanian Arabic Version Of The Cognitive Abilities Screening Test (cogat, Seven) In Identifying Gifted And Talented Children In Kindergarten And Elementray School

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THE EFFECTIVNESS OF THE JORDANIAN ARABIC VERSION OF THE COGNITIVE ABILITIES SCREENING TEST (COGAT, SEVEN) IN IDENTIFYING GIFTED AND TALENTED CHILDREN IN KINDERGARTEN AND ELEMENTRAY SCHOOL

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DEDICATION

This Dissertation is dedicated to the sake of my Lord, Allah, who created me and created everything in this life. To the seal of prophets and messengers, Mohammad (peace be upon him), the greatest teacher who guided us from darkness to the light. To my country, Jordan, the place that I love the most after the Two Holy Mosques and the Al-Aqsa Mosque. To my great parents, who raised me when I was a kid and kept me in their prayers when I became a man. May Allah give them long life and good health. To my lovely wife, who was patient and supportive during my studies. She was the infinitive source of support and love that helped me in achieving my dream. May Allah protect and bless her. To the light of my eyes, my kids: Abdallah, Abdalrahman, and Misk. To my beloved brothers Yahia, Mohmad, Mamdoh, and Ahmad. To my beloved sisters Mai, Mayson, and Majd. To my brothers in law Akef and Hussain. Finally, to everyone helped and supported me in accomplishing this work.

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CHAPTER 1: INTRODUCTION

Recently, there has been global support for starting the gifted and talented identification process as early as possible in order to provide services that might fit their potential (Steven I. Pfeiffer & Blei, 2008). Hence, there is a great need to adopt a new identification procedure that gives an equal opportunity for all students and moves on from the old criteria into a new concept of identification (Richert, 1985). The identification process is the most difficult and crucial component of applying gifted education services. Therefore, a multi-phase identification process that starts with screening all students should take place as a first phase of the identification process (Pierce, Adams, Speirs Neumeister, Cassady, & al, 2007).

Gifted and Talented Identification Procedures

During the 20th century, gifted and talented students were usually identified by using Intelligence Quotient (IQ) tests (Gardner, 1993; Steven I. Pfeiffer, 2012; Sekowski & Łubianka, 2013; Sternberg, Torff, & Grigorenko, 1998; Winner, 1997) as well as high achievement performance (Brown et al., 2005; Passow & Frasier, 1996). Dr. Lewis M. Terman shaped the idea of the connection between giftedness and intellectual abilities at the beginning of the 20th century, and this model dominated the gifted assessment for a long time (Melita, 1968; Yarborough & Johnson, 1983). However, modern theories and researchers that study identifying gifted and talented students have doubted the validity of using such criteria and called for a shift in the current paradigm of identifying those students (McCoach & Siegle, 2003; Reis & McCoach, 2000).

For more than a century, this educational framework identified gifted and talented students in schools based on their IQ scores (S. I. Pfeiffer, 2012), yet tests using IQ scores as the sole criteria are not able to identify gifted and talented students in classroom environments (CCEA, 2006).

The IQ score and academic performance as standards for identifying gifted and talented students led to exclude underachieved gifted and talented students from gifted education services (Reis & McCoach, 2000). In fact, old methods in identifying gifted and talented students consider those students as a homogeneous group, which is not true. The education system teaches and identifies them based on traditional strategies designed for left cerebral hemisphere students (Juntune, 1982; Reis & Renzulli, 2009). However, scientific studies from as early as 1977 began to prove that gifted students need other learning strategies in order to demonstrate high academic performance and higher IQ scores. Torrance and others, for example, developed a paper and pencil test to determine the cerebral hemisphere specialization of gifted students. They found that intellectual giftedness might be more highly associated with the right hemisphere (Reynolds, Kaltsounis, & Torrance, 1979). Indeed, successive studies have investigated this issue, and most of them support Torrance's theory (Dikaya & Ermakov, 2008). The traditional methods that use lectures and listening do not fit these learners, therefore identifying them based on traditional methods is unsuccessful (Beaumont, Young, & McManus, 1984; Olson, 1977).

Shifting Paradigm in Identifying Gifted and Talented

The concept of paradigm refers to "the system of thought or practice that dominates thinking, feeling, and doing in a field, so much so that it becomes the norm, deviation from which can be quickly and easily detected" (Dai & Chen, 2013). Patton says:

> "A paradigm is a world view, a general perspective, a way of breaking down the complexity of the real world. As such, paradigms are deeply embedded in the socialization of adherents and practitioners: paradigms tell them what is important, legitimate, and reasonable. Paradigms are normative; they tell the practitioner what to do without the necessity of long existential epistemological consideration" (Lincoln & Guba, 1985).

However, gifted education as an educational movement witnessed three important paradigms that dominated the gifted theories in the last two centuries:

> "The first, especially identified with Terman, was to identify a gifted group by I.Q., then devise after-school or enrichment classes and acceleration through grade skipping or tracking. The second shift emerged from a needs model adapted from special education and the spread of services for handicapped children, taking on not only the strengths of this movement but its many weaknesses as well. The third shift, which she placed at about 1990-91, is allied with general policy changes that move from emphasis on individual benefits to established funding and training for systematic changes in school" (Tice, 1996).

Shifting to a new paradigm in gifted and talented education has become a necessity. Educators in the field must thoroughly recognize students' abilities before referring them to special education services (Matthews & Foster, 2005). The current criteria of identifying gifted and talented students, those that rely on academic achievement and/or IQ scores, must be shifted to a new criteria that takes in account students who could have average achievement performance, or even low achievement performance, by using multiple assessment methods (Worrell, 2009). More importantly, the identification process must start early, in the kindergarten and sometimes preschool level, inside and outside schools (Cross & Coleman, 2014; Silverman, Chitwood, & Waters, 1986)

The gifted and talented identification process depends on a "3-D Model": "Discovery, Description, and Development" and is one of the identification methods that support the old paradigm where the discovery phase includes selecting children based on their score on standardized tests, such as Stanford Achievement Test, SAT, and their score in IQ tests, such as Stanford Binet Scale or Wechsler Scale (Assouline & Lupkowski-Shoplik, 2012).

On the other hand, Lohman states that shifting to a new paradigm requires changing some of the practices used in the field. He suggested an alteration in field vocabulary: screening versus

placement, identification versus selection, and potentials versus accomplishment. Furthermore, Lohman believes that all learners should have the same opportunity to learn and to be identified if they are eligible to receive "talent development services" (Lohman, n.d).

In support of a shift from the current paradigm of identifying gifted and talented children to a new paradigm, Renzulli points to:

> "Subsequent work by leading scholars such as Paul Torrance, Robert Sternberg, Howard Gardner, David Lohman, and Benjamin Bloom have reinforced the argument for using an expanded set of criteria to examine high levels of potential in young people, and viewing giftedness as something we can develop in far more students than previously identified by using an IQ cutoff score approach" (Renzulli, 2011)

Screening for Identification

Identifying gifted and talented students has been one of the most important topics in the field for several decades (Renzulli & National Association for Gifted Children (U.S.), 2004). Three different primary methods are used to identify gifted and talented students: Observable behaviors inside the classroom; Parents and teacher's recommendations, and Screening and evaluation (Gadzikowski, 2013).

In general, the main purpose of the gifted identification process is discovering and selecting students with specific aptitudes and developing their talent (Assouline & Lupkowski-Shoplik, 2012). Moreover, the identification process should include multiple procedures that measure many aspects of students' potentials, abilities, and background. For this reason, screening of students at an early age for all these aspects is a crucial procedure that the identification process should start with (Clark & Zimmerman, 2004).

> "Screening assessments are used to determine whether students may need specialized assistance or services, or whether they are ready to begin a course, grade level, or academic program. Screening assessments may take a wide variety of forms in educational settings, and they may be developmental, physical, cognitive, or academic. A preschool screening test, for example, may be used to determine whether a young child is

> physically, emotionally, socially, and intellectually ready to begin preschool, while other screening tests may be used to evaluate health, learning disabilities, and other things" ("The Glossary of Education Reform -," n.d.).

Furthermore, screening is an important stage in providing early services for students. A useful and successful screening assessment should be compatible with other services' demands, valid, reliable, accurate, and appropriate for the target population (Glover & Albers, 2007). Burns, Mathews, and Mason (1990) suggest the following steps for a successful screening process:

- The first stage of the screening procedure is education of the public and should contain information to the public about the personal characteristics of gifted children. Some of the methods that should be used to educate the public about this topic would be newspapers, television, public speaking, articles, and magazines.
- The second stage should involve general screening for all students which aims to provide a comprehensive screening to identify children who show potential for being gifted. Some forms of this screening might include brochure, application, parent and teacher questionnaire, and instruments.
- The third stage, individualized screening, includes collecting more information about potentially gifted children and providing information about evaluation methods prior to formal evaluation.
- The final stage would be a formal evaluation that should include a set of procedures to identify gifted children by using a variety of evaluation methods.

Study Justification

Jordan is one of the most progressive countries in the Middle East in the field of special education and specifically in the gifted and talented education. Nevertheless, many components

should be included in such education to provide the ideal services for gifted and talented students. For example, Jordanian educational laws do not include a standardized definition to help teachers and specialists identify gifted students, so every school or center might have its own perception of who gifted and talented students are, as well as different methods to identify them. Even though the Gifted Department at the Ministry of Education (MOE) is the sole party that provides services for these students, there are other gifted schools in Jordan, such as the Jubilee school. Additionally, gifted programs in private schools have their own strategies and services. And although the MOE has many educational alternatives for gifted and talented students, most of these alternatives exclude gifted students from public education and place them in separated schools or centers which opposes inclusive principles. Most importantly, the identifying methods and standards that MOE uses depend upon the students' achievement abilities.

The current criteria used by the MOE for identifying gifted and talented students, one that relies on academic achievement, must be changed because this criterion opposes new scientific concepts indicating that gifted students could have average and/or low achievement performance (Reis & McCoach, 2000). Many studies reported that high achievement is not the only standard that should be taken in account in identifying gifted and talented students (Bock, Karin & Doret, 2011). In addition, other studies did not consider high achievement as an important value in the process of identifying gifted and talented (Cross & Coleman, 2014).

More importantly, there is a crucial necessity to use comprehensive tools in the process of identifying gifted and talented students in Jordan, such as social, personal, and cognitive abilities. This identification process must be applied to all students, without exception, irrespective of their mental abilities, achievement performance, or personal abilities. Gifted

students should be identified at all stages of their life, from kindergarten through high school, because giftedness is not linked to a particular stage. In fact, many studies indicate the importance of identifying gifted and talented students in elementary school and kindergarten (Hodge & Kemp, 2000; Silverman, Chitwood, & Waters, 1986).

The identification process in Jordan should include multiple-step procedures that start with a screening process to identify gifted and talented students followed by other assessment procedures, such as referral and full assessment. The main aim of such practices is to place students in an inclusive educational environment and avoid educational alternatives that separate gifted and talented students from their peers which could have a negative impact on gifted and talented students as well as their peers.

Ultimately, identifying gifted and talented students is an important process that requires developing new educational instruments that do not evaluate students based on their achievement performance or IQ scores. The identification process should include all students regardless their gender, ethnicity, language background, and economic status. It is an initial but crucial phase to ensure children who need special services are identified (Coleman, Gallagher, & Job, 2012).

The education system in Jordan, as in many other countries in the world, still identifies gifted and talented students based on their achievement performance and general mental ability (MOE, Gifted and Talented Dept.). Therefore, new criteria to identify gifted and talented students in Jordan become a very important need that will lead to improvement of the identification methods there. In order to reach the optimal method of identifying gifted students, the education system in Jordan absolutely needs new instruments that consider students as learners based on their abilities and potentials. Therefore, the study justifications are:

1- The lack of appropriate instruments that identify gifted children in kindergarten and elementary schools in Jordan.
2- Early intervention for identifying gifted children at an early age and develop their abilities and potentials.
3- Drawing attention to the need of changing the current criteria that is used to identify gifted children in Jordan.
4- To bring attention to changing the gifted educational paradigm in Jordan and keep up with the new global paradigm that supports students as learners and knowledge constructors.
5- The ability of CogAT test of identifying gifted children at early ages regardless of their academic performance, mental abilities, language skills, and cultural backgrounds.
6- Provide a valid and reliable instrument to identify gifted children in Jordan that might be helpful in developing professional programs and services.

Study Problem

The problem of this study stems from the necessity of changing the current identification process of gifted and talented children in Jordan to using valid and reliable instruments in order to identify all gifted and talented students in Jordanian schools regardless of their age, achievement performance, language skills, and IQ score.

More specifically, this study, that is titled "The Effectiveness of the Jordanian Arabic Version of the Cognitive Abilities Screening Test (CogAT, Seven) in Identifying Gifted and Talented children in Kindergarten and Elementary School.", has developed a valid and reliable Jordanian version of the Cognitive Abilities Screening Test (CogAT, 7) levels five/six, seven,

and eight. In this study, the researcher translated the assigned levels of the CogAT Screening Test from the English language to the Arabic language and extracted validity and reliability indicators that support the effectiveness of using this test to identify gifted and talented students in a sample of Jordanian students between the ages of five and eight years.

Study Questions

The study addressed the following questions:

1- Do the total scores of the Jordanian version of Cognitive Abilities Test, Screening Form (CogAT 7), levels 5/6, 7, and 8, reflect significant reliability?

2- Does the Jordanian version of Cognitive Abilities Test, Screening Form (CogAT 7), levels 5/6, 7, and 8, have a significant validity?

3- Does the Jordanian version of Cognitive Abilities Test, Screening Form (CogA 7), levels 5/6, 7, and 8, efficiently identify gifted and talented students?

Study Assumptions

This study has the following assumptions:

1. The CogAT seventh edition is one of the widely used group tests to identify gifted and talented students (Thompson, 2011; Kubiszyn & Borich, 2007; Lohman, 2011; 2006; 2005). Additionally, the CogAT seventh edition is a credible and valid test used to identify gifted and talented students at an early age and regardless of their cultural background, language skills, achievement performance, or mental ability. This fact has led to the assumption that the seventh edition of CogAT is appropriate to be adapted in another culture.
2. This study assumes that the validity indicators that will be obtained will support the Jordanian version and its future utilization in Jordan.

3. This study assumes that the reliability indicators that will be obtained will support the Jordanian version and its future utilization in Jordan.
4. This study assumes that the Jordanian version of Cognitive Abilities Screening Test seventh edition will efficiently identify gifted and talented students.

Study Limitations

1- This study sample is restricted to students in public and private schools in the city of Amman, the capital of Jordan, which makes this test appropriate to identify gifted and talented students in Jordan only.

2- Despite the cultural and linguistic similarities between Jordan and other Arab countries, this study will be valid for use only in Jordan regarding the cultural specificity that each country has.

3- This study will obtain validity and reliability indicators from a sample of Jordanian students' age three to eight years, which limits the instrument generalization for other ages.

4- This study will be used to screen students who might need gifted education services, and it will be valid for that purpose only.

Study Definitions

The following definitions were determined in the study:

1- Gifted and Talented students are "Children with outstanding talent who perform or show the potential for performing at remarkably high levels of accomplishment when compared with others of their age, experience, or environment" (National Society for the Gifted and Talented adopted from the United States Department of Education definition, 1993).

2- The Cognitive Abilities Screening Test, CogAT, are the levels, Five/Six, Seven, and Eight of the Seventh edition, which used to identify gifted and talented students between ages three to eight (Riverside Publishing, 2012).

CHAPTER 2: REVIEW OF THE LITERATURE

Introduction

The gifted and talented identification process is one of the most important components of gifted programs because it is the first step of establishing gifted and talented education. In addition, the success of the programs offered for gifted and talented children relies on the accuracy of the identification process, so it is the foundation of the following steps in educating gifted and talented children. The literature review covers the following areas: the history of gifted education, gifted and talented definition, identifying gifted and talented children, Cognitive Abilities Test, and gifted education in Jordan.

History of Gifted Education

Societies throughout history focused on educating gifted individuals and prepared them to be leaders in those societies. Historical documents indicated that the Greeks, Romans and Chinese had different models in educating these specific populations (VanTassel-Baska, 2010; Shnikat, 2010).

Identifying gifted students' processes started in 1868 by Dr. William T. Harris, the Superintendent of Schools in St. Louis. Dr. Harris suggested in his reports that schools should accelerate gifted students through the grades (James J. Gallagher, 1994; Passow, 1979). By the 1930s, the services for gifted and talented students were increased steadily to include brilliant students' classes, language classes, and other special programs. Moreover, special schools for the gifted were established that concentrated on developing superior students' intellectual ability (VanTassel-Baska, 2010). In the United States of America, the gifted movement emerged in the 1920a and increased in the 1950s during the Cold War between the United States and Russia, especially after the launch of the Soviet Union's first spaceship (Davis & Rimm, 1989; Colangelo

& Davis, 2002). Furthermore, a number of special programs that provide educational services for gifted children emerged in the 1970s. These programs were private schools, resource rooms, and enrichment and accelerator programs (Borland, 1989). After the 1970s, the number of programs and services offered to gifted and talented were increased, yet these programs and services differ from country to country, state to state, even from county to county (Lupart, Pyryt, Watson, & Pierce, 2005).

The following dates illustrate the major stepping stones in the development of gifted education in the United States of America:

- "1868, William Torrey Harris, superintendent of public schools for St. Louis, institutes the earliest systematic efforts in public schools to educate gifted students.
- 1901, Worcester, Massachusetts opened the first special school for gifted children.
- 1905, French researchers, Binet and Simon, develop a series of tests (Binet-Simon) to identify children of inferior intelligence for the purpose of separating them from normally functioning children for placement in special classrooms. Their notion of mental age revolutionizes the science of psychological testing by capturing intelligence in a single numerical outcome.
- 1922, Leta S. Hollingworth begins the Special Opportunity Class at P. S. 165 in New York City for gifted students.
- 1954, The National Association of Gifted Children is founded under the leadership of Ann Isaacs.
- 1954, Brown vs. the Board of Education ends "separate but equal education."
- 1957, The Soviet Union launches Sputnik, sparking the United States to reexamine its human capital and quality of American schooling particularly in mathematics and

science. As a result, substantial amounts of money pour into identifying the brightest and talented students who would best profit from advanced math, science, and technology programming.

- 1964, The Civil Rights Act passes, emphasizing equal opportunities including those in education.
- 1972, The Marland Report-The first formal definition is issued encouraging schools to define giftedness broadly, along with academic and intellectual talent. The definition includes leadership ability, visual and performing arts, creative or productive thinking, and psychomotor ability. [Note: psychomotor ability is excluded from subsequent revisions of the federal definition.]
- 1988, Congress passes the Jacob Javits Gifted and Talented Students Education Act as part of the Reauthorization of the Elementary and Secondary Education Act.
- 1990, The National Research Center on the Gifted and Talented was established at the University of Connecticut and included researchers at the University of Virginia, Yale University, and the University of Georgia.
- 2002, The No Child Left Behind Act (NCLB) is passed as the reauthorization of the Elementary and Secondary Education Act. The Javits program is included in NCLB and expanded to offer competitive statewide grants" (National Association for Gifted Children, n.d.).

Gifted Education in Jordan

Education laws in Jordan, including special education laws, do not have definitions for gifted and talented students. For instance, education laws in Jordan, which include Law No. 16 of 1964 (Jordanian Legislation), the Law of Education Provisional No. 27 of 1988, Law No. 3 of 1994,

and Law No. 1 of 2007 (Ministry of Education, MOE), do not contain any definitions that might help teachers and specialists identify who the gifted and talented students are. On the other hand, the special education laws of 1993 (Jordanian Legislations) and 2007 (Higher Council for Affairs of Persons with Disabilities, HCD, 2007) completely excluded gifted and talented students from its instructions and guidelines.

Furthermore, the gifted and talented department was established in the MOE in 2011 as the sole responsible department for providing educational services for gifted and talented students. This department consists of three sub departments, which are:

- Department of gifted, which oversees the Pioneers centers, 19 centers servicing 2,372 students. Starting from seventh grade, students are provided part-time services in these centers during holidays or after school. Moreover, this department oversees gifted resource rooms, which is comprised of 52 rooms serving 1,805 students.

- Department of talented, which oversees the King Abdullah II Schools for Excellence that were established in 2001. There are ten of these schools in Jordan, and they provide full-time services for students for 40 hours per week. In addition, this department controls the academic acceleration services in regular schools, which were created in 1997 and serves 1,025 students.

- Department for guidance, which provides services for gifted and talented students and their families in Pioneers centers and King Abdullah II Schools for Excellence. (MOE, Gifted and Talented Dept.)

Finally, according to the Department of gifted and talented programs in the Ministry of Education in Jordan, talented and gifted students in Jordanian schools are identified based on a number of criteria:

- Academic Achievement: students whose total grades are more than 90% in basic materials in sixth and seventh grade.
- Behavioral characteristics: which are checklists filled out by teachers.
- An achievement test that has been developed by the department.
- Special abilities in different fields.
- Personal interviews done by a committee of the department. (MOE, Gifted and Talented Dept.)

The gifted and talented movement emerged in the Middle East during the middle of the last century by establishing a number of gifted and talented schools in the area and holding conferences under the auspices of the Arab League (Alzoubi, 2003). In Jordan, there were some programs and projects that provided services for gifted students, such as:

- The Jubilee school which was established in 1977.
- The Salt Pioneer center for Gifted and Talented which was established in 1984 under the supervision of the MOE. This center provided advanced programs for gifted students in math, science, and arts.
- Al Hussain Award for Youth which was created in 1984 to encourage young students to develop the concept of participation rather than that of competition.
- Pioneers centers for gifted and talented students that were established in 1996.
- Gifted resource rooms, which provided educational services inside public schools under the supervision of MOE.
- King Abdullah II Schools for Excellence that were established in 2001.

However, researchers have combined efforts in Jordan to develop appropriate methods to identify gifted children in Jordan especially at an early age. Al Rosan and Al Batsh (1990)

conducted a study aimed to factor analysis methods for a Jordanian version of the Preschool and Kindergarten Interest Descriptor (PRIDE). The study sample consisted of 194 children from 3-6 years, and the results showed acceptable reliability coefficient for five factors: multiplicity of interests, purposeful playing, imaginative thinking, independence, and originality.

Moreover, Al Rosan, Al Batsh, and Qatami (1990) conducted a study aimed to extract validity and reliability indicators of the same test by using the same study sample. The study results showed high reliability coefficients by using split-half method (r = .89), internal consistency (r = .84), and test-retest (r = .83). Validity was computed by extracting criterion validity indicators with the Jordanian version of McCarthy Scale of Cognitive Ability (r = .76).

Furthermore, Shnikat (2010) developed a scale to identify gifted children in Jordan by examining its reliability and validity indicators in a sample of 400 children at the kindergarten stage. The study finding showed acceptable content, construct, and criterion (with Stanford-Benet scale) validity indicators. Moreover, the finding found acceptable reliability indicators by using internal consistency and test-retest methods.

Gifted and Talented Definition

The term giftedness was used to label people who show outstanding skills in one or more area (Steven I. Pfeiffer, 2012). In fact, Lewis Terman's definition is one of the oldest definitions of giftedness. He defines giftedness as “the top 1% level in general intellectual ability, as measured by the Stanford-Binet Intelligence Scale or a comparable instrument” (Burnett, 2004). In general, the old definitions of giftedness focused on general mental ability, academic readiness, leadership, creative thinking, visual arts, and psychomotor abilities (J. J. Gallagher, 1964). While most definitions of giftedness focus on special abilities or skills, the quality and social meaning of giftedness has been completely excluded (Runco, 1997).

With regards to this, Renzulli defines gifted behavior as an interaction between three elements which must work together in order to produce these behaviors. These elements are:

- Above average abilities in general abilities, such as processing information, and specific abilities, such as the capacity to acquire knowledge.
- Creativity, which consist of fluency, flexibility, and originality.
- Task commitment, such as hard work (Renzulli, 2011; Renzulli & Reis, 2002; Sternberg & Davidson, 2005).

Furthermore, gifted children have been defined as children who are identified at any stage of education from pre-school to high school and have a high capacity in a number of areas, such as intelligence, academic skills, leadership skills, or visual arts (Smith, 2004). In addition, gifted children are those who have an ability or more in a specific field as compared with their peers from the same age group (MacIntyre, 2008).

One of the most popular definitions of giftedness that was adopted by many school districts in the United States was based on the federal government definition mentioned in a national report called the "Marland Report" (Passow & Rudnitski, 1993) . The U.S. Department of Education (Marland Report) defines giftedness as

> "Gifted and talented children are those identified by professionally qualified persons, who by virtue of outstanding abilities are capable of high performance. These are children who require differentiated educational programs and/or services beyond those normally provided by the regular school program in order to realize their contribution to self and society. Children capable of high performance include those with demonstrated achievement and/or potential ability in any of the following areas singly or in combination: general intellectual ability, specific academic aptitude, creative or productive thinking, leadership ability, visual performing arts, and psychomotor ability" (Marland, 1971).

In the mid-eighties of the last century, Gardner defined intelligence as "the capacity to solve problems or to fashion products that are valued in one or more cultural setting" (Brualdi, 1996;

Gardner & Hatch, 1989). Consequently, many scientists abandoned the IQ score as the sole criteria of gifted identification and adopted Gardner's theory of “Multiple Intelligence”, so giftedness definitions at that time included most of the areas of intelligence that were mentioned in Gardner's theory (Fasko, 2001). Moreover, Robert Sternberg defines giftedness as an interaction between three thinking abilities: analytic ability, synthetic ability, and practical ability. He argued that the IQ score and the high achievement performance are not sufficient standards to identify gifted students (Sternberg & Davidson, 2005).

The United States Department of Education (1993) provided one of the most comprehensive definitions in the world. The US Department of Education defines gifted and talented students as “children and youth with outstanding talent who perform or show the potential for performing at remarkably high levels of accomplishment when compared with others of their age, experience, or environment” (Ross, 1994). Indeed, the Improving America’s Schools Act of 1994 defines gifted and talented as “children, or youth who give evidence of high performance capability in areas such as, intellectual, creative, artistic, or leadership capacity, or in specific academic fields, and who require services or activities not ordinarily provided by the school in order to fully develop such capabilities” (Johnsen, 2009).

According to Gagné, giftedness is “a natural ability that requires the appropriate environment and supporting conditions to develop fully into a talent." (Lassig, 2009). In fact, the terms “Gifted” and “Talented” are usually used as synonyms to refer to the same students (Johnsen, 2009). However, some researchers indicate that there is a difference between “Talented” and “Gifted” terms. These researchers reported that “Talented” refers to the special ability or aptitude that might people exhibit after teenage stage. Furthermore, they defined “Gifted” as an

instinctive aptitude that refers to the integration of intellectual and cognitive abilities, creativity, and excellence, which appears in childhood stage. (CCEA, 2006; Hallahan, 2012).

Identifying Gifted and Talented Children

There is a significant debate among scientists in the field of gifted education about the accuracy of definition, identification, and assessment practices used to label students as intellectually gifted (S. I. Pfeiffer, 2012; Renzulli, 2011a; Sisk, 1980). The main debate in the field of gifted education is about who gifted children are. In other words, scholars argue the validity of the definitions of giftedness that have been used to determine educational programs for those gifted and talented students (Helfer & Schroth, 2009). The traditional definitions of giftedness focus on mental ability expressed by intelligence in defining the giftedness concept (S. I. Pfeiffer, 2012; Renzulli, 2011a; Sternberg & Zhang, 1995). Some definitions concentrate on supreme abilities and skills that distinguish students among their peers (Sternberg & Davidson, 2005) while others emphasize creativity in certain fields as a major concept of giftedness (ebrary, Inc, 2013; Petrovic, Trifunovic, & Milovanovic, 2013). The new paradigm in the gifted and talented field argues that the concept of giftedness is a complex term because giftedness contains many abilities or potentials as well as the shifting of the giftedness categorization through developmental phases (Worrell & Erwin, 2011).

On the other hand, many studies have argued that the issue of identifying gifted children is the most important issues facing workers in the gifted education field. For example, twenty-nine experts in the field of gifted education were asked to arrange twelve issues in the field according to their importance. The findings indicate that the issue of identifying gifted and talented children was the first important issue (Cramer, 1991). Moreover, another study asked 64 experts in the field of gifted education to specify the three major issues related to the identification and

assessment in the fields. Experts' responses centered on the absence of a unified definition of giftedness, the insufficiency of using multi-standard identification process, and the validity of using IQ tests to evaluate giftedness (Steven I. Pfeiffer, 2003). Dai & Chen (2013) mentioned three different paradigms of identifying gifted children:

- The Gifted Child Paradigm, which depends on intelligence scales as the main criteria of identifying gifted children.
- The Talent Development Paradigm, which refused the principle of high IQ scores as an identifying slandered and depends on children talent and creativity.
- The Differentiation Paradigm, which believes that the identification methods are not appropriate and there is no "gifted" and "non-gifted" children. This paradigm advocates the concept of inclusive education for all children that match their needs.

Many changes in the identification of gifted and talented children have taken place in the education system around the world, but more changes are still needed in order to better identify those children (Renzulli, 2011a). As an illustration, the main methods of identifying gifted children depends on children's IQ scores and achievement performance (Haan, 1957), but this processes have been criticized by many scholars who argue the inefficiency of these methods in identifying all gifted students (Gardner & ebrary, Inc, 2011; Johnsen, 2009b; S. I. Pfeiffer, 2012; Steven I. Pfeiffer, 2003). Reis and McCoach (2000) indicated that high achievement and IQ scores are not the only standards that we have to take in account in identifying gifted and talented students. Moreover, many other studies did not consider high achievement and high IQ scores as the sole important values in the process of identifying gifted and talented (Besjes-de Bock & de Ruyter, 2011; Cross & Coleman, 2014).

Consequently, many scientists criticize the appropriateness of identification methods that were used to identify gifted children from ethnic minorities and non-speakers of the language used in the identification instruments (Forsbach & Pierce, 1999; Lohman, Korb, & Lakin, 2008; Masten, 1985). Furthermore, other studies criticize the ability of such identification processes in identifying children who have average achievement ability or even under-achievement ability (Reis & McCoach, 2000). However, because of the diversity and the giftedness nature among gifted and talented children, many scholars have called for a change to the current criteria in identifying those children and to consider all aspects that affect gifted and talented children's giftedness (Johnsen, 2009b; Worrell & Erwin, 2011). Currently, there is a strong belief among workers in the field of gifted education about the necessity of using so-called "Multiple assessment" or "multiple identification processes" to identify gifted children (Johnsen, 2009b; McBee, Peters, & Waterman, 2014; Sternberg, 2010).

Brown, Renzulli, Gubbins, and Siegle (2005) investigated the perception of workers in the gifted education field about the identification process used in the field. Findings indicated that most of the participants strongly agreed with items that support using an inclusive identification process, continuing assessment, and multiple standards for identification. Moreover, the findings showed that most of the workers in the field strongly disagreed with items that support using achievement or IQ scores as sole criteria.

Otey (1978) suggested the following criteria that should be used as a multiple identification process: intelligence and cognitive abilities, nomination, achievement performance, creativity, aptitude, checklists, products, potentials, imagination, and originality. Indeed, Tannenbaum indicated five factors that should be taken in consideration when designing the identification process:

- General ability, such as overall intelligence, reasoning skills, and problem solving skills.
- Special ability, such as particular aptitude and capacity of thinking.
- Non-intellective factors, such as motivation, self-concept, and concentration.
- Environmental factors, such as the society perception of giftedness, economic factors, and policy.
- Chance factors, such as availability of resources (Colangelo & Davis, 2002).

Moreover, gifted identification processes should consider the following principles:

- Using multi-assessment procedures to avoid the error that might occur by using a particular test or instrument.
- Taking into account environmental aspects that might affect children's giftedness, such as economic factors and culture restriction.
- Taking into account personal aspect that might affect children's giftedness, such as motivation and psychological factors (Steven I. Pfeiffer, 2008).

Furthermore, Johnsen (2009) indicated some issues that decision makers in the field of gifted education should take into account when designing identification methods. These issues are:

- Gifted children may seem similar with their peers in a science field, but they may be distinct in specific area in this field. For example, a gifted child may be at the same level as his peers in math in general, but he/she may express remarkable understanding in algebra.
- Giftedness is a changeable term, so a test score may not reflect children’s abilities. Hence, identification methods should be applied for long period of time.

- Identification methods may not be effective in identifying gifted children from ethnic minorities or with disabilities; therefore, giftedness definitions that are used in the identification process must be reviewed to include all students regardless of their origins and abilities.
- The necessity of identifying gifted and talented children early.

In addition, Kelemen (2012) states the following problems that might affect the accuracy of giftedness' identification process:

- The level of giftedness.
- Labeling issues.
- Types of giftedness.
- Cultural and environmental issues.
- The nature of giftedness.
- Screening methods.
- Educational alternatives.

Early Identification

Many studies have proven the necessity of the early identification process in order to provide services and determine eligible students as early as the preschool level (Sankar-DeLeeuw, 2002). Moreover, many scholars tried to evaluate the ability of different programs and instruments in identifying young gifted children. For example, Kuo, Maker, Su, & Hu, 2010 administered a study aimed to discover the potential gifted students in Taiwan by using a program for problem solving and multiple intelligences. By implementing this program for over a 3-year period, this study provides a new identification model that is able to identify preschool gifted children regardless of the giftedness nature, disabilities, or cultural and economic factors by using

multiple procedures, such as screening all children, interviews, assessment scales, checklists, and observations. As a result, "the researchers in this program had a belief that children, whether gifted or not, did not get the satisfaction of making progress until they had opportunities to find and develop their potentials".

Zhbanova, Rule, & Stichter (2013) suggested an identification model of young gifted children based on leadership, creativity, and academic performance. Researchers found that African American young gifted children provided evidence that the subjects obtained confidence and leadership skills, creativity, and academic performance during the study. Furthermore, Sternberg (2010) reported an identifying model, called Aurora Project, that aims to identify gifted students at the elementary stage by using analytical, creative, and practical approaches.

Johnsen (2009) suggested the following procedures be applied in the field in order to identify young gifted children:

- Teacher and parent checklists.
- Portfolio products and performances.
- Peer and self-nominations.
- Student background information.
- Teacher observations.
- Group intelligence and achievement tests.

However, some of the most important procedures that might be useful for early identification of gifted children are:

- Observable behaviors that may exhibit in the school.
- Conversations that may have at home.
- Screening instruments (Gadzikowski, 2013).

On the other hand, other studies argued the role of parents and teachers in identifying gifted and talented children at the beginning of their school life (Jarosewich, Pfeiffer, & Morris, 2002). Elhoweris (2008) investigated the effect of the children's characteristics on teachers' referral decisions to gifted and talented programs. After studying 207 teachers' decision by using a short survey, the researcher found that children's characteristics do not significantly affect teachers' decisions. Another study investigated teachers' previous expectations about children, and its effect in their referral decisions. The researchers found that teachers seemed to be able to control their expectations when it comes to the judgment (Glock & Krolak-Schwerdt, 2014).

At the same time, other studies doubted the accuracy of the teachers and parents' nominations of children to the gifted and talented programs. For example, Kaya (2015) interviewed ten teachers from USA public schools to study their backgrounds of giftedness concept. The researchers found that giftedness definitions may be different from teacher to teacher. Also, they found that teachers' understanding of gifted characteristics and their potentials and abilities is a main factor in teachers' judgments.

Screening for Early Identification

Identifying gifted children at an early age is an important principle in the field of gifted education in order to meet those children's needs since early identification may affect their future abilities and potentials. More importantly, reliable identification methods must be applied earlier in order to accurately identify those children and provide appropriate services for them (Sandel, McCallister, & Nash, 1993). Using the multiple criteria evaluation that depends on a comprehensive assessment of children's potentials and talents is one of the best methods to identify gifted children (Johnsen, 2009b; Sternberg & Davidson, 2005b; Worrell & Erwin, 2011). The multiple criteria of identifying gifted children include three phases: the identification phase,

the evaluation phase, and the selection phase (Cramond, 1997; Krisel & Brown, 1997; Roach & Bell, 1986). Consistently, the identification phase is the first and the most important phase in the gifted education process because it is the phase where children may be excluded from the whole identification procedure (Goodhew & ebrary, Inc, 2009). However, the popular identification methods, which are screening and nomination, allow workers in the field of gifted education to determine the children eligibile for gifted services, yet this phase must be applied accurately to insure equality between children to avoid excluding gifted children from getting the appropriate educational services (Johnsen, 2009b; Livesay & Mealor, 1984).

The identification process that depends on test scores underrepresented students from minority background or students who have disability (Brice & Brice, 2004; Ford, 2010; Tallent-Runnels, 1992). On the other hand, teachers' nomination could be not an appropriate method to identify children to gifted education services, especially if those children were from different background or if they were foreign language speakers (Bracey, 1994). For example, a study analyzing early childhood gifted programs recorders to measure the validity of screening and referral procedures in Louisiana indicated that the identification procedures were inefficient in identifying many children for gifted education services, especially African Americans and rural children (Sandel et al., 1993). Hence, using screening instruments to evaluate all children regardless of any factors that may exclude any child from the screening procedure is an appropriate method in this matter (Lewandowski & Sussman, 1988).

More importantly, there is almost a consensus among interested parties and workers in the gifted education about the importance of early identification of gifted children to develop their talents at an early age (Hollinger & Kosek, 1985). In fact, many studies suggest that the screening method should be started as early as the preschool stage, and this method could be

applied in three phases: General Screening, Individual Screening, and Final Evaluation (Burns, Mathews, & Mason, 1990; Steven I. Pfeiffer & Petscher, 2008). A study done by Feiring, Louis, Ukeje, Lewis, & Leong (1997) aimed to identify kindergarten and elementary gifted children from different minorities in Newark, New Jersey by using a screening method being developed to identify those children. The results indicated that the ratio of identified gifted children in public schools was increased from 0.2% to 2% after using the early identification methods.

To track the need for early identification methods of gifted children, a national survey of early intervention of gifted children in fifty states in the United States of America, reported that fourteen states have fifty-one early childhood programs for gifted children located at schools, universities, and private locations. In addition, twenty-nine states provide services for 2,655 gifted children in kindergartens and preschools. Finally, sixteen states don't have any early childhood gifted programs, and these states reported the need for such programs at their kindergartens and preschools (Stile, Kitano, & Lecrone, 1993). Currently, many studies prove that there is a need to find appropriate instruments to identify gifted children in the kindergarten and elementary schools (Walsh, Kemp, Hodge, & Bowes, 2012).

Cognitive Abilities Screening Test

Test Description

The Cognitive Abilities Test Form 7, CogAT 7, is a widely used test for students from kindergarten through high school. The test measures student's reasoning abilities that are considered a crucial factor to distinguish gifted learners (Warne, 2014; Lohman,2012; Lohman, 2011). However, The CogAT is not a test used to identify students' intelligence or IQ, yet is used to discover the gained reasoning skills through educational experience, even skills that have not been taught at school (Lohman & Hagen, 2001). Furthermore, the CogAt contains two major

parts: the full battery test and the screening test. While the full battery test is used to measure children's' cognitive abilities, the screening test is used to offer fast and reliable signs of children who need gifted education services. Furthermore, the screening test is just a shorter form of the full battery and includes all subtests located within the full battery test (Lohman, 2012).

The seventh edition of CogAT is the most reliable edition of the test since its first issuance in 1968 (Warne, 2014; Lohman, 2012). The CogAT seven contains ten levels, and each level contains three main batteries, which means nine subtests for each level. However, both forms of CogAT measure three main skills which are reported in the test's manual as the following:

- "The Verbal Battery measures flexibility, fluency, and adaptability in reasoning with verbal materials and in solving verbal problems. These reasoning abilities play an important role in reading comprehension, critical thinking, writing, and virtually all verbal learning tasks.
- The Quantitative Battery measures quantitative reasoning skills; flexibility and fluency in working with quantitative symbols and concepts; and the ability to organize, structure, and give meaning to an unordered set of numerals and mathematical symbols. These reasoning skills are significantly related to problem solving in mathematics and other disciplines.
- The Nonverbal Battery measures reasoning using geometric shapes and figures. To perform successfully, students must invent strategies for solving novel problems. They must be flexible in using these strategies and accurate in implementing them" (Riverside Publishing, 2012).

In fact, CogAT seven batteries, Verbal, Nonverbal, and Quantitative battery, correlate with (Carroll, 1993) studies of reasoning abilities (Warne, 2014). The verbal battery measures the

student's vocabulary, understanding, efficiency of verbal memory, and capability to identify relationships between words. The three subtests in this battery are verbal classification, sentence completion, verbal analogies. Moreover, the nonverbal battery measures the student's ability to solve problems by relationships between fingers and shapes. The three subtests in this battery are figure classification, figure analogies, and figure analysis. Finally, the quantitative battery measures the student's abstract reasoning and problem solving by solving numerical problems. The three subtests of this battery are quantitative relations, number series, equation building (Riverside Publishing, 2012).

The seventh edition of CogAT's manual justifies using this to identify gifted children for the following reasons:

- Intensify efforts to change the gifted identification process to the potentials and abilities of Children.
- Identifying gifted children by measuring their cognitive development that might be not evaluated by achievement tests.
- Identifying students whose levels of achievement might not reflect their talent.

David Lohman, the test's author, indicated many features that distinguish the seventh edition of CogAT from previous editions, which are:

- The validity and reliability of the test in identifying gifted children, especially from minority backgrounds and children who do not speak English as a native language.
- The ability of the test in identifying gifted children based on their aptitude and potentials and regardless the achievement performance.
- The possibility of applying the test not only for gifted students, but for all students.
- The availability of the test instructions in Spanish language.

- The on-line edition of the test.
- The screening form of the test.
- The availability of practice tests along with teacher guidelines (Lohman, 2012; Lohman, 2011).

The main change that distinguishes the seventh edition of CogAt from previous editions is that this edition's levels were built based on the students' ages. For example, the first level of the sixth edition of CogAT was called level "K" to refer to the kindergarten level. This level was changed to level "5/6" in the seventh edition of CogAT to refer to the students' ages, which are kindergarten students (age five) and first grade students (age six); however, table one shows the major changes in the tests' levels between the sixth and the seventh editions of CogAT. (Riverside Publishing, 2012; Lohman, 2012; Lohman, 2011).

Table 1
The Test Levels in the Sixth and Seventh Editions of CogAT

CogAT Form Six	CogAT Form Seven
Level K	Level 5/6
Level 1	Level 7
Level 2	Level 8
Level A	Level 9
Level B	Level 10
Level C	Level 11
Level D	Level 12
Level E	Level 13/14
Level F	Level 15/16

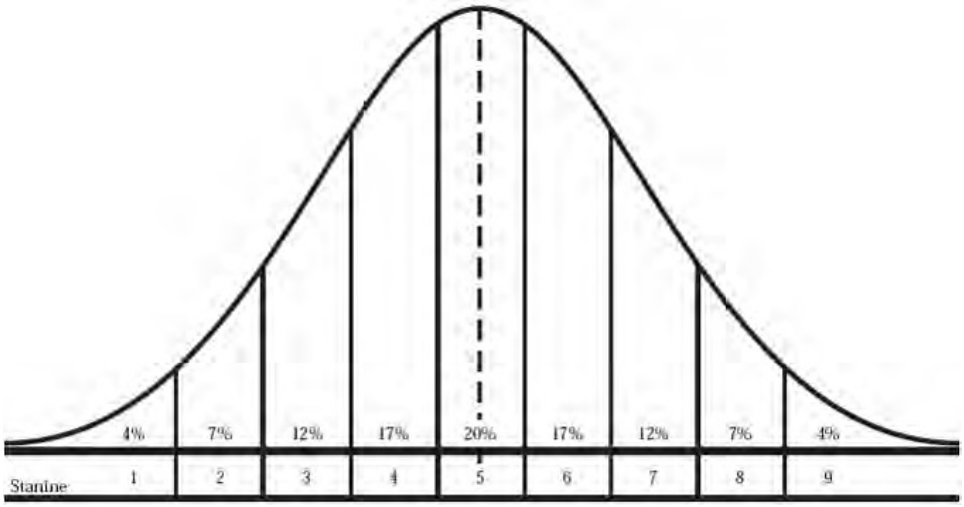
Level G	Level 17/18
Level H	

Furthermore, the primary levels of the seventh edition of CogAT (5/6-8) have been completely revised to fit students who do not speak English as a mother tongue, so all items in these levels are pictures that do not require any language skills as well as the availability of the test instruction in other languages (Lohman & Gambrell, 2012). More importantly, the seven edition of CogAT has three options in interpreting the test score, which are:

- “Score Levels” that use a median age stanine (one to nine) score scale where one refers to the lowest score and nine refers to the highest score. Figure one shows the CogAT median age stanine scale.
- “Score Patterns” that describes students' results based on their Age Percentile Rank (APR). This method of interpreting CogAT results classified as (A, B, C, or E) profiles. For example, (A) profile means that the student is at the same level in all batteries, (B) profile means that the student is below or above in one or more of the batteries, (C) profile shows that there is a contrast between two scores, and (E) profile refers to extreme differences between the scores.
- "Ability Profile" that uses the above two methods together along with (+ or -) signs to refer to students' strength or weakness. For example, 9A refers to high scores on all three batteries, 2B (N+) refers to general below-average scores but a relative strength on the nonverbal battery, and 8B (Q-) refers to general high scores but a relative weakness on the quantitative battery.

Whatever the method that will be used in interpreting CogAT scores, the final report of results describes students' reasoning ability and "build(s) on the student's strengths and shore(s) up any weakness" (Riverside Publishing, 2012).

Figure1. CogAT Median Age Stanine Scale



There were many factors behind developing a new edition of CogAT, as stated on the test development guide:

- "Improving continuity between the abilities measured in kindergarten through grade 3 and those at later grades by creating new subtests at kindergarten through grade 3 that blend seamlessly into the subtests at grades 4–12.
- Reducing the overlap in items across grades from five to two levels, thereby administering a completely new test every other level.
- Improving measurement of the abilities of English language learner (ELL) students by eliminating oral language from Levels 5/6–8 tests that they must take.
- Improving measurement of the abilities of the ablest students by providing tests with higher ceilings and extending the standard age score scale to 160.

- Providing updated national norms."

Using CogAT in Identifying Gifted Children

Many studies have proved the validity of using the CogAT test in identifying gifted children, especially at early ages (Lohman, 2005; Lohman et al., 2008; Lohman & Lakin, 2009; Widiatmo, 2004). Dr. Lohman reported that developing the latest edition of CogAT took more than nine years of work that included large sample pilot studies, more than 20,000 pictures, four forms, two doctoral dissertations, and more than ten research publications (Lohman & Gambrell, 2012). To develop a valid and reliable test, the seventh edition of CogAT sample contained 65,350 students from American K-12 schools representing all areas and ethnic groups (Warne, 2014).

However, the test in its original form had high reliability indicators (.80-.92) in all three batteries by using split-half correlation method. Moreover, the validity indicators reflect a high content validity (82%-88%) in all nine subtests and concurrent validity (r =.51) with Naglieri Nonverbal Ability Test, Second Edition and (r =.76) with Wechsler Intelligence Scale for Children, Fourth Edition (Riverside Publishing, 2012).

Lohman (2008) conducted a study aimed to compare the validity of using nonverbal assessments to identify gifted students from English Language Learners programs (ELL). The study sample included 1,198 ELL students from kindergarten through six grade. The study applied the Raven Standard Progressive Matrices (Raven), the Naglieri Nonverbal Ability Test (NNAT), and Form 6 of the Cognitive Abilities Test (CogAT). Findings indicated that the three nonverbal tests are different in their norms, reliability indicators, and ability to identify gifted ELL students. Furthermore, the results indicated high ability of CogAT, among other tests, in identifying those students.

In addition, there is high correlation coefficients between CogAT7 and the Iowa Tests of Basic Skills and Educational Development because these tests used the same norms and study sample (Warne, 2014). Moreover, to examine the validity of using the CogAT Screening Test, Giessman, Gambrell, & Stebbins (2013) studied 5,833 children tested using CogAT 6 and 4,038 tested using NNAT2 between 2005 and 2011 to examine the screening procedures of identifying gifted children from different minorities. The results indicated that the CogAT6 showed smaller gaps in the screening procedures than the NNAT2 in Blacks, Hispanics, Asians, and ELL students.

CHAPTER 3: METHODOLOGY

Introduction

This chapter includes an in-depth description of the data collection procedures used to address the study questions. In particular, each of the following topics are included: restatement of the problem, study questions, study design, study sample, data collection procedures; translation procedures, administration procedures, quantitative procedures, and qualitative procedures.

Restatement of the Problem

This study aimed to examine the effectiveness of using a Jordanian Arabic version of the Cognitive Abilities Screening Test (CogAT) Form Seven in Identifying Gifted and Talented children between five and eight years. Researches in Jordan indicated that there is a need for valid and reliable instruments used to identify gifted children in kindergarten and elementary schools. This study brought more attention about the necessity of adopting such instruments by obtaining validity and reliability indicators of the study instrument and by gathering information from people working in the field about the appropriateness of using such instrument in Jordan.

Identifying gifted children at an early age is an important factor when providing gifted education services in school, so using accurate screening instruments is a critical component to improving the educational settings for those children. However, teachers could accomplish screening tests for all students in order to identify gifted children by using simple instruments that allow them to be referred for a comprehensive evaluation that protects their potentials and abilities.

Study Questions

This study aimed to address the following questions:

1- Do the total scores of the Jordanian version of Cognitive Abilities Test, Screening Form (CogAT 7), levels 5/6, 7, and 8, reflect significant reliability?
2- Does the Jordanian version of Cognitive Abilities Test, Screening Form (CogAT 7), levels 5/6, 7, and 8, have a significant validity?
3- Does the Jordanian version of Cognitive Abilities Test, Screening Form (CogA 7), levels 5/6, 7, and 8, efficiently identify gifted and talented students?

Study Design

This study used a Mixed Method Research MMR, which included the Quantitative method to extract reliability and validity indicators for the Jordanian version of CogAt test, and the Qualitative method to examine the test's effectiveness. The mixed method research is an increasing field of methodological approach for many scientific disciplines, and it refers to "philosophical assumptions that guide the direction of the collection and analysis of data and the mixture of qualitative and quantitative data in a single study or series of studies" (Cameron, 2011).

More importantly, the mixed method research is a research method that compromises between the advocates of maintaining the statistical procedures in social science and those who believe that social observations should be considered as a structure in social phenomena (R. B. Johnson & Onwuegbuzie, 2004). To this end, this research used the mixed method research to obtain the fundamental psychometric properties that should be contained in assessment instruments through extracting reliability and validity indicators (Creswell, 2014a; Fraenkel, 2012; Mertens, 2015) and to describe and explore new aspects of social phenomena by understanding participants' perspective (Bogdan & Biklen, 1998; B. Johnson & Christensen, 2008).

Study Paradigm

The four most important paradigms used in social and behavioral science are Positivism, Post-positivism, Constructionism, and Interpretivism (Crotty, 1998) . At the same time, Tashakkori & Teddlie (1998) report there are four paradigms that are widely used by researchers in social and behavioral science, which are Positivism, Post positivism, Pragmatism, and Constructivism. However, this study was conducted by using mixed method research that contains quantitative and qualitative methods in the interpretive paradigm.

Even though some researchers, such as Tashakkori and Teddlie, claim that the mixed method research falls in the pragmatic paradigm, other researchers, such as Creswell, report that "the mixed research method could be used with any paradigm" (Creswell, 2014). For this reason, this study argues that the main reason of the study was to understand the participants' experiences and feelings during their participation in this study whether if it was in the quantitative phase or in the qualitative phase.

With regards to the comparison between the interpretive and the pragmatic paradigms, Goldkuhl (2012) claims that: "The core idea of interpretivist is to work with these subjective meanings already there in the social world; i.e. to acknowledge their existence, to reconstruct them, to understand them, to avoid distorting them, to use them as building blocks in theorizing". In fact, that is exactly what this study tried to investigate. The quantitative phase of the study was administered in the local environments of the students and without attempting to adjust or change any factor that may affect these environments. Furthermore, the qualitative phase studied experiences, feelings, and opinions of some of the participants, and then the study drew conclusions through these experiences and opinions.

Study Sample

Quantitative Phase

The targeted population of this study was gifted and talented students ages five to eight years old in Jordan. Because the gifted and talented identification process in Jordan starts at ages 12-13 years (MOE, Gifted Dept.), students aged 5-8 years have not been identified. For that reason, the study sample was chosen randomly from public and private elementary schools and kindergartens in the city of Amman, the capital city of Jordan, and used teachers' nominations for gifted students as an alternative identification method which is a valid method used by many researchers (Hunsaker, Finley, & Frank, 1997). Twenty public and private schools were chosen randomly to cover the area of Amman by using systematic sampling method. The systematic sampling method consists of selecting the study sample from the population by randomly selecting sequential points (Fraenkel, 2012). Hence, this study selected the multiples of number ten of the schools' lists obtained from the Ministry of Education. Therefore, the study selected four schools (numbers: 10, 20, 30, and 40) from each schools' list in the city of Amman (east side list, west side list, north side list, south side list, and center area list), in total of 20 schools from all lists.

More importantly, the reason for choosing schools from different areas in the city of Amman was to ensure representation of the cultural and economic diversity of this region. As an illustration, the western and northern regions of Amman reflect high economic levels compared to southern, eastern, and central regions. In addition, there are a number of religious and ethnic minorities living in different parts of the city including the Syrians and Iraqis refugees, Christians, and Circassian minority.

To ensure the objectivity of the study procedures, all students ages 5-8 in these schools were tested by using the Arabic version of CogAT Screening Test. For example, the number of the test level refers to children's age, so the 5/6 will be used in kindergarten and first grade, level 7 in second grade, and level 8 for third grade. Hence, teachers were asked to test all children in their classes regardless of any previous assumption they may have about the students, such as their mental abilities and/or their achievement performance.

The study participants were 280 students, 136 males and 144 females (Table 2) ranging in age from 5 to 8 years (M = 7.22, SD = 1.17), who were randomly chosen from kindergarten, first grade, second grade, and third grade classes at 20 schools in Amman.

Table 2
Demographic Characteristics for the Sample

Grade	Gender		Total	M	SD
	F	M			
K	27	34	61	5.63	.382
1	38	36	74	6.69	.398
2	40	31	71	7.65	.378
3	39	35	74	8.65	.393
Total	144	136	280	7.22	1.17

Among those students, teachers nominated 19 students as gifted students (M = 7.17, SD = 1.17) (Table 3), based on criteria that was explained to them before applying the test. Teachers were asked to nominate students based on the definition that this study adopted which is the US Department of Education's definition: "Children and youth with outstanding talent who perform or show the potential for performing at remarkably high levels of accomplishment when

compared with others of their age, experience, or environment." (US Department of Education, 1993). Therefore, teachers nominated students that they think they are gifted in their classes regardless of their language skills, achievement performance, intellectual ability, and/or gender.

Table 3
Demographic Characteristics for the Nominated Students Sample

Grade	Gender		Total	M	SD
	F	M			
K	2	1	3	5.50	.458
1	2	1	3	6.60	.100
2	4	2	6	7.60	.424
3	4	3	7	8.58	.353
Total	12	7	19	7.17	1.17

Qualitative Phase

Six teachers were randomly chosen to conduct a focus group interview (Table 4). Those teachers who participated by either reviewing the test, administering the test, or nominating gifted children were invited to attend an interview and were asked to discuss open-end questions (See Qualitative Procedures) about their experience and suggestions for using the Arabic version of CogAT Screening Test in Jordan.

Table 4
Demographic Characteristics for the Focus Group Sample

Participant	Gender	Age	Grade	Role in the study
Teacher 1	F	26	1st	Administration and Nomination
Teacher 2	F	35	1st	Review Translation

Teacher 3	M	29	KG	Administration
Teacher 4	F	44	2nd	Administration and Nomination
Teacher 5	M	36	3rd	Administration
Teacher 6	F	28	2nd	Administration and Nomination

Data Collection Procedures

Data collection took place during the winter and spring semesters of 2014 after obtaining permission to conduct the study from Riverside Publishing Company (Houghton Mifflin Harcourt), the publisher of CogAT test (Appendix A). In addition, all data from each of the participating children and teachers was collected after obtaining permission from the Expedited Review for Behavioral Research Study Human Investigation Committee (HIC) at Wayne State University to conduct the study (Appendix B).

This study has three main Procedures: a) the translation of the CogAT test, b) the quantitative producer, which includes the reliability and validity indictors' extraction, and c) the qualitative producer, which includes the focus group interview to examine the effectiveness of using the Arabic version of CogAT in identifying gifted students in Jordan.

The first procedure in this study was translating the Jordanian Arabic version of the CogAT Screening Test, Form 7. However, the test's levels that were used in this study, level 5/6, 7, and 8, include pictures in all questions (Appendix C). Therefore, the translating stage consisted of translating the administration guidelines for all levels from the English language, which is the original language of the test, to the Arabic language, which is the primary language in Jordan. Subsequently, the translating guidelines were prepared, and a back translation carried out by a person proficient in both languages. Five experts in the field of gifted education in Jordan and

ten teachers who participated in the study reviewed all materials, including the tests and the guidelines, and percentages of agreements between reviewers were computed.

The second procedure in this study was using the Mixed Method Research to obtain reliability indicators, which includes test-retest method and the internal consistency methods (Alpha coefficient reliability and split-half method), and to extract the validity indicators, which includes content and criterion validity.

Finally, the third procedure in this study was a focus group interview that was conducted with six teachers who participated in this study to examine the effectiveness of using the Arabic version of CogAt Screening Test in Jordan.

Translation Procedures

The translation procedure of the CogAT Screening Test form 7, levels 5/6, 7, and 8, includes three main steps, which are: a) the primary translation, b) the back-translation (from Arabic to English), and c) the professional revision.

Primary Translation

The original CogAT Screening Test form seven, levels 5/6, 7, and 8 was translated by the researcher into the Arabic language to guarantee that the original version of the test matches the translated version in terms of culture, instructions, and score conversion. At the primary translation, the researcher translated the original tools from English (the original language of the tests) into the Arabic language (the native language in Jordan). That said, the CogAT screening form seven, levels 5/6, 7 and 8, is a nonverbal test, includes pictured items in all tests' questions; therefore, the primary translation procedure included a non-literal translation for the test administration instructions and score conversion. Then, the researcher prepared a primary Arabic

version of CogAT Screening Test, levels 5/6, 7, and 8 as well as an Arabic version of the instructions and score conversion.

Back-Translation (from Arabic to English)

A Jordanian doctoral student from Wayne State University, who is proficient in both Arabic and English, translated all test materials from Arabic language into English language (Back Translation). This back-translation version was compared with the original English version to verify that the translation is similar to the original test in terms of: administration instruction, key scores, and conversion tables. Then, the back-translation was compared with the original version of the test materials, and the two copies generally matched each other with slight differences in some vocabulary due to the translation process.

Professional Revision

The original tests, including their instructions, scores conversion, and primary translated tests, were sent to five experts, who are proficient in both languages in the field of gifted and talented education, and to ten randomly selected teachers from elementary schools and kindergartens in Jordan for professional revision. The aim of this revision was to gather experts and teachers comments about cultural appropriateness of use, the clarity of the application guidelines, and the accuracy of extracting results based on the following standards:

- The suitability of pictures and figures to the Jordanian culture.
- Translation matching (non-literal translation) with the original test, so teachers can easily read and understand the procedural guidelines when they intend to give the test.
- The clarity of extraction and interpretation of the results based on the test manual of norms and score conversion.

Subsequently, the researcher computed the percentage of agreement among experts and teachers' revision on subtest and overall test by using one/two scale for each item on the tests, where one refers to the appropriateness of use and two refers to the inappropriateness of use. Then, the researcher applied the experts and teachers' comments and suggestions to finalize the formal version of Arabic CogAT test that was used to identified gifted and talented children among the study sample.

Administration Procedures

The researcher indirectly coordinated the administration procedure, which include the following steps:

1. Obtaining formal approval from the Ministry of Education (the sole responsible party for schools in Jordan) to commence the study.
2. A research assistant was recruited to conduct the study and consent to follow the research procedures was obtained from him.
3. A team of ten senior special education students from the University of Jordan was recruited to apply the study and consents to follow the research procedures were obtained from them.
4. Twenty elementary schools and kindergartens in Amman were randomly chosen.
5. The final version of CogAt Screening Test seven, levels 5/6, 7 and 8 was sent to the research assistant in Jordan who directly supervised the administration procedure and was in contact with the researcher.
6. A group meeting via Skype with the research assistant and the team members was held to explain the administration process and to answer any questions or concern.

7. Consent forms to participate in the study were sent to all participants' parents or guardians.
8. Teachers were asked to nominate gifted children among the study participants based on the giftedness definition explained above.
9. An administration day was determined based on the school calendar and teachers' recommendation.
10. According to the CogAT guidelines, children's teachers administered the test to ensure accuracy of the results because they are familiar with children. Moreover, the research assistant met teachers before the administration date, and he confirmed that they understand the test administration guidelines and accommodations.
11. On the test day, the team members provided assistance for teachers before and during the administration process without any direct intervention in the administration process.
12. A retest day was determined after four weeks of the administration day, and the previous steps were repeated accurately on that day.
13. The research assistant contacted six teachers who were involved in the nomination and application process to set up an interview date and to sign the consent forms.
14. A focus group interview was held with six teachers to obtain their opinions about the test's ability to identify gifted children.
15. The research assistant is a university teacher in the field of special education who has a PhD degree in special education and is familiar with the qualitative methods of interviews, so the focus group interview was held and audio recorded based on the qualitative research process and protocol.

Table 5
Data Collection Procedures

Study Phase	Procedure	Timeline
Quantitative phase	Pre test	April 2014
Quantitative phase	Post test	May 2014
Qualitative phase	Interview	June 2014

Analysis Procedure

Quantitative Procedures

Reliability and validity are important values to examine instrument properties (Hancock & Mueller, 2010). Moreover, "comprehensive investigation of psychometric properties is needed when developing and translating questionnaires, instruments or tests"(Kottner & Streiner, 2010). The main purpose of the Quantitative procedures is to obtain validity and reliability indicators of the Arabic version of the CogAt Screening Test form seven, levels 5/6, 7, and 8. To answer the first and the second questions of the study, the researcher:

(a) Measured reliability indicators by using test-retest and the internal consistency methods (Alpha coefficient reliability and split-half method).

(b) Measured content validity indicator (the match with the original English version).

(c) Measured concurrent-criterion validity indicator (the correlation with the teachers' nomination of gifted children).

Reliability Indicators extraction

The word reliability in the English dictionary means "the extent to which an experiment, test, or measuring procedure yields the same results on repeated trials" (Merriam-Webster English Dictionary) while evaluation and testing procedures define it as: "the consistency of scores

students would receive on alternate forms of the same test" (Wells & Wollack, 2003). Reliability also means the degree to which a study tool is constant and gives similar results by using it with the same methodology over the time (Golafshani, 2003). Therefore, acceptable reliability indicators are necessary for a research tool to be considered as a valid and reliable tool. Researchers could extract reliability indicators by using many measurements including test-retest and internal consistency methods (Winer & Michels, 1991).

To answer the first question in the study, test-retest and internal consistency correlations coefficients were used to extract reliability indicators. Test-retest method is the similarity of scores extracted by the same researcher when retested with the same instrument during different events or with different instruments identical to the original instrument (Marxa, Menezesb, Horovitza, Jonesb, & Warren, 2003). Test-retest reliability is extracted by applying a test at two different times to the same sample and extracting the correlation between the two groups of scores (Kimberlin & Winterstein, 2008). However, the researcher must give an appropriate time between the two tests to insure that the participants would not either remember answers if the time between the two application is too short or other variables would affect the result if the application time is too long (Fraenkel, 2012).

In this study, the participants were given four weeks after the first administration to retest the same instrument, the Jordanian Arabic Version of CogAT Screening Test. The aim of this length of time is that children developmentally at this age (5-8 years) grow rapidly (Urbina, 2014); therefore, the study should not leave a long period between the two tests, so developmental change factors do not interfere the results of the study. In addition, the study should not leave a short period between the two tests, so that memory factors, such as memorizing the test items (Urbina, 2014), do not affect the participants' performance. For these reasons, a four week period

has been selected as a moderate time to administer the two tests. Then, the reliability coefficient was computed for the tow-time testing.

Internal consistency evaluates the relation between items homogeneity, or the extent to which the questions on an instrument or assessment test simultaneously evaluate the same structure (Ferketich, 1990; Henson, 2001; Kottner & Streiner, 2010). "The term 'internal consistency' has been used extensively in classical psychometrics to refer to the reliability of a scale based on the degree of within-scale item inter-correlation, as measured by say the split-half method, or more adequately by Cronbach's"(Boyle, 1991). However, Cronbach's Alpha is the most widely used method of the internal consistency reliability coefficients (Christmann & Van Aelst, 2006; Gliem & Gliem, 2003; Streiner, 2003). Cronbach's Alpha measures the internal consistency coefficient correlation of items in an instrument to evaluate its reliability (Kottner & Streiner, 2010; Peterson, 1994; Tavakol & Dennick, 2011). Furthermore, split-half method measures the degree to which all the test items participate equally in measuring the target subject by matching the findings a half of a test with the other half findings(Cole, Mills, & Dale, 1989; Urbina, 2014).

In the study titled "The Effectiveness of the Jordanian Arabic Version of the Cognitive Abilities Screening Test (CogAT, Seven) in Identifying Gifted and Talented Children in Kindergarten and Elementary School," the children were given four weeks to retest using the same test that they were given at the first administration. Hence, the reliability coefficient was computed for the two measurements. Moreover, the researcher computed the reliability indicators by using the coefficient Alpha and split-half reliability coefficient procedures. All reliability indicators were computed by using the Statistical Package for the Social Sciences (SPSS).

Validity Indicators extraction

The word "validity" in the English dictionary refers to "the state or quality of being valid (Merriam-Webster English Dictionary) while in the social science it means the degree to which any evaluation method or research tool be successful in outlining and measuring what it is designed to evaluate (Rossiter, 2011). In other words, extracting validity demonstrates that the results of an instrument accurately reflect the goal that the study tries to evaluate (Adcock & Collier, 2001). However, there are many types of validity indicators, such as construct validity, content validity, face validity, criterion validity, and concurrent validity (Rossiter, 2011; Fraenkel, 2012). Indeed, these types of validity indicators refer to a set of evidences that researchers might obtain to support their studies. These evidences include: "(a) evidence based on test content, (b) evidence based on response Processes, (c) evidence based on internal structure, (d) evidence based on relationships to other variables, and (e) evidence based on consequences of testing" (Cizek, Rosenberg, & Koons, 2008).

Content validity is the extent of the representation and the link of the assessment tool elements to the study objective that needs to be measured (Haynes, Richard, & Kubany, 1995). Moreover, it refers to the examination and analysis of test content to find out how to represent the target that is measured by the test (Rubio, Berg-Weger, Tebb, Lee, & Rauch, 2003). Content validity could be determined by using many methods, such as the review method where the test content is reviewed by a number of arbitrators and specialists in the study field to judge the extent to which the test items match its content and objectives and review the clarity of the questions (Newman, Lim, & Pineda, 2013).

Criterion validity refers to the concordance versus correlation between variables on a test and other variables on a similar test that might be applied at the same time or within a short period

(Fraenkel, 2012; Rossiter, 2011). There are two types of criterion validity: concurrent validity and predictive validity (Barrett, Phillips, & Alexander, 1981). Concurrent validity is extracted when two different tools are applied at the same time or within a short time between them with the assumption that the results of the two tests will be correlated. On the other hand, predictive validity refers to the concordance and correlation between performance on current test items and other test items that will be conducted in the future (McIntire, 2007).

To answer the second question, the researcher extracted content and criterion validity indicators. To extract content validity indicators, five experts in the field of gifted education and ten teachers from elementary schools and kindergarten in Jordan were asked to review the Arabic version of CogAT Screening Test, levels 5/6, 7, and 8 and the instructions and score conversion to verify the instrument content validity. Experts and teachers were asked to review the suitability of pictures and figures to the Jordanian culture and whether they match with the original test in regards to the application and interpretation guidelines. The percentages of agreements among experts and teachers were computed to extract the content validity.

In regards to the criterion validity, the original form of the CogAT "is correlated with IQ scores from individually administered ability tests as well as IQ scores from different individually administered tests correlate with each other" (Lohman & Lakin, 2009). Furthermore, there is an acceptable correlation indicator between the CogAt form six, the Raven Standard Progressive Matrices (Raven), and the Naglieri Nonverbal Ability Test (NNAT) (Lohman, Korb, & Lakin, 2008; Warne, 2014). In addition, there is a strong correlation coefficient between the CogAT and the Iowa test (Warne, 2014). However, none of the previous instruments or equivalent instruments are used in Jordan to identify gifted and talented children ages 5-8 years. More importantly, those students have not been identified in Jordan either in public or in private

schools, and there are no standards required by the Department of Gifted at the MOE in Jordan to identify these children. Based on that, the researcher extracted criterion validity indicators between the Jordanian Arabic version of the Cognitive Abilities Screening Test and teachers' nomination for gifted children. This study assumes that there is a correlation between the above two methods in identifying gifted and talented children. Criterion validity indicators were obtained by using the Statistical Package for Social Sciences (SPSS).

Qualitative Procedures

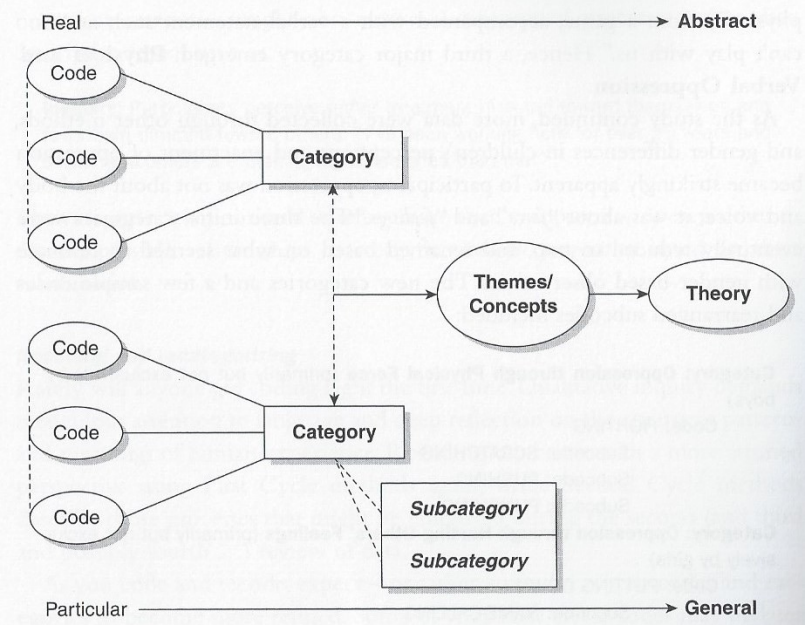
Gathering quantitative data does not prevent the researcher from using the qualitative method to analyze the data. Using qualitative methods helps the researcher to deeply understand and analyze information in a way that supports the study objectives (Frels & Onwuegbuzie, 2013). The best way to verify the effectiveness of the tools used in research is by developing techniques that depend upon the perspective of the participants in the research by describing the process of interaction between them and the nature and objectives of the research. This valuable data cannot be obtained from the study tool nor the researchers by analyzing quantitative data (Filstead, 1981). However, a qualitative approach includes many methods of collecting data, such as phenomenological method, action research, and case study (Bogdan & Biklen, 1998). Quantitative research superficially examines the phenomenon while phenomenological methodology examines deeply the phenomena itself. The phenomenological methodology stems from the need for a deeper understanding of the phenomena. Phenomenology is a simple method in which one must understand the inside part of any phenomena and describe it carefully as it is (Crotty, 1998). Phenomenology is a "philosophy, methodology or an approach to study or research" (Sloan & Bowe, 2014).

The most common method of collecting data in phenomenological methodology is interviews. The interviews vary depending on the objective of the study and the type of phenomenological methodology. However, phenomenological methodology uses personal interviews, such as structured and semi-structured interviews as well as focus groups or group interviews. Using a phenomenological methodology in the educational field gives researchers and readers a deep understanding of the phenomena or the experience which being studied. This kind of understanding stems from the different methods of seeing and analyzing such phenomena. Moreover, phenomenological methodology helps researchers to evaluate reality by allowing participants to express their experiences and feeling, which other research types do not measure (Sloan & Bowe, 2014).

To answer the third question, the researcher conducted a focus group interview with six teachers who participated in the study. To do that, teachers who participated in the translation verification procedure, nomination procedure, and/or application procedure were asked open-end questions. A qualified person in the qualitative research methods and interview protocol administrated and recorded an open discussion interview (Appendix D).

This study used the “Codes to Theory” model for qualitative inquiry to analyze the collected data. To illustrate, teachers’ comments and discussions were coded carefully and then divided into main categories and subcategories. Then, these categories and subcategories were used to extract themes and concepts which were finally used to derive the theory (Saldaña, 2009).

Figure2. A code-to-theory model for qualitative inquiry (Saldaña, 2009).



Rigor

The term “rigor” refers to the quality of the research procedures. Shenton (2004) suggested four main criteria that should be considered in rigorous research, which are credibility, transferability, dependability, and confirmability. Moreover, Given (2008) reported that accurate qualitative research should contain the following criteria: “transparency, maximal validity or credibility, maximal reliability or dependability, comparativeness, and reflexivity". This qualitative phase of the study used the following strategies to confirm rigorous qualitative procedure: credibility, transferability, dependability, and confirmability.

Credibility

Credibility refers to "validity in quantitative research that allows others to recognize the experiences contained within the study through the interpretation of participants' experiences" (Thomas & Magilvy, 2011). This study used member checking and peer debriefing to confirm credibility.

Member Checking

Member checking gives the member of the study the right to check the collected data from interviews to verify the accuracy of the transcription and interpretation procedures by correcting, illuminating, improving accuracy, or deleting any words from the transcript (Carlson, 2010). The researcher used the interview audio recording and interview notes to transcribe the data. Then, the transcript was sent to the research assistant in Jordan to obtain participants' verification of the data. Next, the research assistant individually met (face-to-face) each member of the interview to review the transcript and to obtain his or her confirmation of the data. Subsequently, minor changes were applied into primary transcript and the final transcript was confirmed.

Peer Debriefing

"The research methods literature recommends peer debriefing as a process to enhance the credibility of qualitative research.... to facilitate the researcher's consideration of methodological activities and provide feedback concerning the accuracy and completeness of the researcher's data collection and data analysis procedures" (Spillett, 2003). In this study, peer debriefing was accomplished through several meetings with the major advisor, committee members, and other colleagues. By doing that, the researcher was able to increase his knowledge about analyzing and interpreting the interview data. Furthermore, peer debriefing discussion enabled the researcher to recognize deficiency and demerits in the research and then to amend them.

Transferability

Transferability means the ability to use or rely on the results of the study by other researchers (Lincoln & Guba, 1985; Shenton, 2004; Thomas & Magilvy, 2011). Merriam (1998) defines transferability as "the extent to which the findings of one study can be applied to other situations". This study provides a detailed description of the approaches and the strategies that

were used to obtain the study data and a comprehensive explanation of the methods that were used to analyze this data to apply transferability.

Dependability

Dependability is associated with reliability terms in quantitative research. It happens when the researcher is able to describe the audit trail in the study (Thomas & Magilvy, 2011). However, Shenton (2004) reports three important sections that should be included in the audit trail in order to achieve dependability:

- "The research design and its implementation, describing what was planned and executed on a strategic level.
- The operational detail of data gathering, addressing the minutiae of what was done in the field.
- Reflective appraisal of the project, evaluating the effectiveness of the process of inquiry undertaken".

To insure dependability in this study, the researcher maintains an audit trail during the study by describing the main objective of the study, discussing participant selection strategy, describing the data collection methods, explaining the analysis procedures, and discussing the results.

Confirmability

Confirmability refers to objectivity that occurs by establishing credibility, transferability, and dependability (Shenton, 2004; Thomas & Magilvy, 2011). Additionally, confirmability occurs by maintaining reflexivity by providing the reader with a sense of confidence in the results of the study (Thomas & Magilvy, 2011). In this study, confirmability was maintained by establishing the qualitative rigor factors and conducting the focus group in a reflective way by asking those

members to express their own feelings, clarifying their words, and describing their own experiences.

CHAPTER 4: RESULTS

Introduction

The purpose of this study was to examine the effectiveness of using a Jordanian Arabic version of the Cognitive Abilities Screening Test (CogAT) Form Seven in identifying gifted and talented children. The study procedures include obtaining validity and reliability indicators on a population of Jordanian students between five and eight years of age followed by a focus group interview with six elementary and kindergarten teachers in Jordan. This study aimed to address the following three questions:

1- Do the total scores of the Jordanian version of Cognitive Abilities Test, Screening Form (CogAT 7), levels 5/6, 7, and 8, reflect significant reliability?

2- Does the Jordanian version of Cognitive Abilities Test, Screening Form (CogAT 7), levels 5/6, 7, and 8, have a significant validity?

3- Does the Jordanian version of Cognitive Abilities Test, Screening Form (CogA 7), levels 5/6, 7, and 8, efficiently identify gifted and talented students?

Participants Background

First, the target population of this study was gifted and talented students five to eight years old in Jordan. To this end, a total of 280 students, 136 males and 144 females ranging in age from 5 to 8 years ($M = 7.22$, $SD = 1.17$) were randomly selected from 20 elementary schools and kindergartens at the capital city of Jordan, Amman, to represent the target population. While gifted students in these schools have not been identified in Jordan by any formal or informal identification procedures, this study tested all students in their original classrooms and used teachers' nominations of gifted students as an alternative identification method. However,

sample distribution histograms of the pretest and posttest results were extracted to verify the normal distribution of the sample (Figures 3 & 4).

As figures illustrate, the randomly selected sample distributed to some extent on the normal distribution curve, which indicates that the sample represented the targeted population of this study; therefore, this study could generalize its results on all children aged 5-8 years in primary schools and kindergartens in the Jordanian capital, Amman.

Figure3. The Normal Distribution of the Participants' Pre-test Total Score on Arabic Version of CogAT Screening Test.

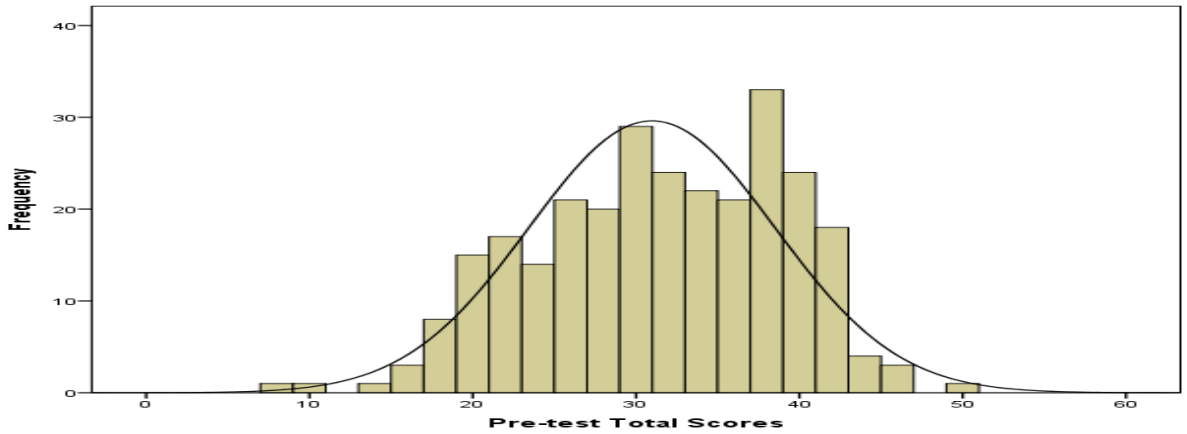
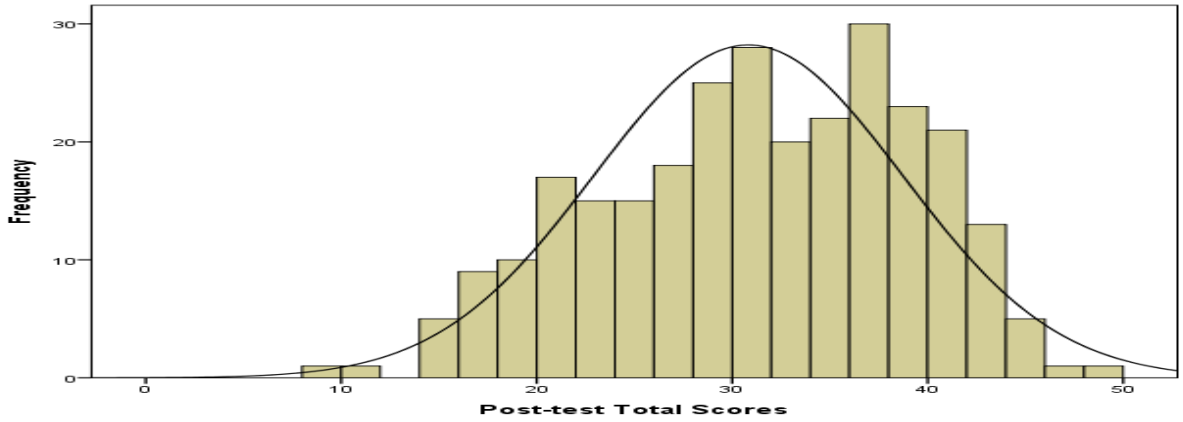


Figure 4. The Normal Distribution of the Participants' Post-test Total Score on Arabic Version of CogAT Screening Test.



Quantitative Results

Reliability Indictors

To answer the first question of this study, "Do the total scores of the Jordanian version of Cognitive Abilities Test, Screening Form (CogAT 7), levels 5/6, 7, and 8, reflect significant reliability?", two types of reliability indicators were computed: (a) test-retest reliability, and (b) internal consistency reliability.

A) Test-Retest Reliability Indicators

The study participants, 280 students, 136 males and 144 females ages 5 to 8 years (M = 7.22, SD = 1.17), were asked to answer the Arabic version of the CogAT Screening Test, levels 5/6 (135 children: 65 females and 70 males), level 7 (71 children: 40 females and 31 males), and level 8 (74 children: 39 females and 35 meals). Then, the reliability coefficient for the total score was computed for the two-time testing. The Pearson Correlation coefficients were computed (Table 6) and indicated significant and high correlations for the total score of the two-time administration (r = .927, p=.01).

Table 6
Test-retest Correlations Coefficients for the total scores of the two-time administrations

Total Score	Pre-test	Post-test
Pre-test	-	.927**
Post-test	.927**	-

**. Correlation is significant at the 0.01 level (2-tailed).

For the reliability indicators of the sub-tests' scores, which are Verbal, Quantitative, and Nonverbal Batteries, the Pearson Correlation coefficients were computed (Table 7) and indicated significant correlations for the total score of the two-time administration for the Verbal Battery (r

= .845, p=.01), the Quantitative Battery (r = .835, p=.01), and the Nonverbal Battery (r = .761, p=.01).

Table 7
Test-retest Correlations Coefficients for the sub-tests scores of the two-time administrations

CogAT Sub-test	Verbal Battery	Quantitative Battery	Nonverbal Battery
Verbal Battery	.845**	-	-
Quantitative Battery	-	.835**	-
Nonverbal Battery	-	-	.761**

**. Correlation is significant at the 0.01 level (2-tailed).

B) Internal Consistency Reliability Indicators

For the internal consistency reliability, Cronbach's Alpha coefficients were computed for the subtest scores and for the total score. Results indicated that Alpha coefficients were .941 for the subtest scores and .962 for the total score. These results indicate a highly significant internal consistency reliability for the Arabic version of CogAT Screening Test (Table 6).

Likewise, split-half reliability was computed for the subtest scores and for the total score. Results indicated that split-half reliability was .904 for the subtest scores and .927 for the total score. These results indicate a highly significant internal consistency reliability for the Arabic version of CogAT Screening Test (Table 8).

Table 8
Cronbach Alpha and split-half reliability coefficients for subtests and total score of the two-time testing

Reliability Coefficient	Subtests Score	Total Score
Cronbach Alpha	.941	.962
Split-half	.904	.927

Validity Indictors

To answer the second question of this study "Does the Jordanian version of Cognitive Abilities Test, Screening Form (CogAT 7), levels 5/6, 7, and 8, have a significant validity?" two types of validity indicators were computed: (a) content validity indictors, and (b) criterion validity indictors.

A) Content Validity Indictors

The CogAT Screening Test, Form 7, including its levels 5/6, 7, and 8, that was used in this study is a non-verbal test. For this reason, the researcher reviewed the test levels' items one by one to verify the stability of the pictures for the Jordanian culture and to prepare a primary version of the CogAT Screening Test. The researcher found that the pictures that are used in the test were appropriate to use and no changes were needed at that stage, so the original test was used in this study without changes. Then, the researcher prepared a primary Arabic version of the CogAT Screening Test, levels 5/6, 7, and 8 as well as an Arabic version of the instructions and score conversion. The primary revision level aimed to verify that the Arabic version is similar to the English version in terms of:

1. The total number of subtests in each level, which are: a) Verbal Battery, b) Quantitative Battery, and c) Nonverbal Battery.
2. The total number of questions in each subtest and the overall total number of questions in each level as follows:
    - Level 5/6: 14 questions in each subtest with 42 questions total.
    - Level 7: 16 questions in each subtest with 48 questions total.
    - Level 8: 18 questions in each subtest with 54 questions total.
3. The availability of the Arabic translated administration guideline for each level.

4. The availability of the Arabic translated score key guideline for each level.
5. The availability of the Arabic translated conversion and interpreting results guideline for each level.

As a result, the primary revision level found that the Arabic version of the CogAT Screening Test, Form 7, Levels 5/6, 7, and 8, is similar to the original version of the test based on the above criteria.

Subsequently, a doctoral student from Wayne State University, who is proficient in both Arabic and English, translated all test materials from Arabic language into English language (Back Translation). This translation version was compared with the original English version to verify the translation's similarity to the original test, and they generally matched each other.

Finally, a final version of the Arabic CogAT Screening Test, levels 5/6, 7, and 8 was sent to five experts in the field of gifted and talented education, and ten teachers from elementary schools and kindergartens in Jordan. Experts and teachers asked to review the test in terms of the cultural appropriateness of use, the clarity of the application guidelines, and the accuracy of extracting results based on the following standards:

- The suitability of pictures and figures to the Jordanian culture.
- Translation matching (non-literal translation) with the original test, so teachers can easily read and understand the procedural guidelines when they administer the test.
- The clarity of extraction and interpretation of the results based on the test manual of norms and score conversion.

To compute content validity, percentages of agreements among experts, teachers, and overall were computed by using a one/two scale for each item on the tests where one refers to the

appropriateness of use and two refers to the inappropriateness of use. Moreover, experts and teachers were asked to give any suggestions, comments, or modifications for any item, if necessary. Subsequently, the total number of agreement was divide by the total number of items and multiplied by 100 for each revision and for overall revision (Table 9).

Table 9
The percentages of agreements among experts, teachers and the overall by the revision level.

Level of Revision	Experts Revision	Teachers Revision	Overall Revision
Suitability of Jordanian culture	99.7%	99.5%	99.6%
Translation matching	100/%	100%	100%
Extracting and interpreting the results	100%	100%	100%

First, the results indicate that almost all reviewers (experts 99.7% agreement, teachers 99.5% agreement, and overall 99.6% agreement) agreed that pictures and figures for all test levels are suitable with the Jordanian culture. Moreover, the results indicate that reviewers unanimously (100% agreement) agreed that the translation (non-literal translation) matches the original test, and teachers could easily read and understand the procedural guidelines when they administer the test. Finally, the results show that all reviewers unanimously (100% agreement) agreed that teachers could clearly extract and interpret the results based on the test manuals.

B) Criterion validity indictors

To compute criterion validity, two equivalent methods of identifying gifted students ages 5-8 years in Jordan must be compared to measure the correlation between these methods. In Jordan

there are no methods used to identify gifted children at this age. For this reason, this study used the teachers' nomination method as an equivalent method for identifying gifted students in elementary schools and kindergartens in Jordan. Furthermore, this study assumed that significant correlations coefficients would be found between the Arabic version of the CogAT Screening Test results and teachers' nomination.

Teachers were asked to nominate gifted students from the entire sample based on criteria that was explained to them before applying the test (see chapter 3). Using this criteria, teachers nominated 19 students as gifted students (M = 7.17, SD = 1.17); then, this method was compared with results from the Arabic version of CogAT, which also was used to identify gifted students in the same sample.

The results of the Pearson Correlation (Table 10) found that there was no significant correlations (r = -.434, p=.05) between the Arabic version of the CogAT Screening Test results and teachers' nomination for gifted students.

Table 10
Correlations Coefficients between the Arabic version of CogAT Screening Test results and teachers' nomination for gifted students.

Identification Method	Teacher Nomination	CogAT Results
Teacher Nomination	-	.434*
CogAT Results	.434*	-

*. Correlation is significant at the 0.05 level (2-tailed).

To illustrate, from the 19 students (M = 7.17, SD = 1.17) who were nominated by teachers as gifted students, the Arabic version of the CogAT Screening Test results found only nine students (M = 7.27, SD = 1.12) eligible for a comprehensive evaluation for gifted education services. The other nominated students were found not eligible for further evaluation. Indeed, the Arabic

version of CogAT Screening Test results found five other students (M = 7.06, SD = 1.31), who were not nominated by teachers, eligible for a comprehensive evaluation for gifted education services.

By comparing the results between the Arabic version of the CogAT Screening Test results and teachers' nominations for gifted students, the Arabic version of CogAT found that among the study sample (280 students) there were 13 students (4.6%) eligible for comprehensive evaluation for gifted education services Screening Test while the teachers' nominations for gifted students suggested that 19 students (6.7%) were eligible for comprehensive evaluation for gifted education services.

Qualitative Results

Participants Background

The second phase of the study, conducted by using qualitative method via focus group interview with 6 teachers, met the following criteria:

- Participants are teachers in an elementary school or kindergarten in Jordan in the academic year 2014/2015.
- Participants must have participated on one or more of the study procedures, such as reviewing the test, administering the test, or nominating gifted students.
- Participants consented to take part in the focus group interview.

Analysis Procedures

The data collected at this stage of the study was obtained from the focus group interview with six teachers who participated on this study. The researcher analyzed the data by implementing the domain coding procedure. Domain coding is used to discover the knowledge and experiences of participants about a specific topic. Usually, the domain coding procedure is followed by the

taxonomic coding procedure (Saldaña, 2009). Because of the nature of the study and the limitation of the qualitative data, this study used the domain coding procedure to identify the pattern of the participants' response, extract themes, and clarify the cover terms. Saldaña (2009) reported that "depending on the nature and goals of your study, you may find that one coding method alone will suffice, or that two or more are needed to capture the complex processes or phenomenon in your data." A domain analysis was completed for the focus group members' responses and discussion where a semantic relationship was applied and then a cover term discovered.

Analysis of Focus Group Data

The focus group interview was held based on the qualitative interview protocol (Appendix C), and it aimed to discuss the following questions:

1. Tell us about your experience of participating in this study, either if you reviewed the test, nominated talented students, or participated in the test administration.
2. Give us your own opinion about the appropriateness of using the Arabic Version of CogAT in identifying gifted children in Jordan.
3. Do you feel the Arabic Version of CogAT results would be helpful for you as a teacher? Moreover, why?
4. What suggestions you might add to improve the using of the Arabic Version of CogAT in identifying gifted children in Jordan?

Group members' discussion and responses, in addition to the interviewer's notes, were transcribed carefully. Then, the interview transcript was sent to the focus group members to verify their responses in order to fulfill the member check strategy. From this interview, five main domains emerged: teachers' experience, CogAT appropriateness of use, CogAT results

benefits, teachers' recommendations, and reality of gifted services in Jordan. Based on the interviewer's notes about the interview, teachers' responses to the questions revealed a deep understanding of the study subject and the reality of gifted services in Jordan. During the interview, the teachers seemed excited, and the discussion was successful regardless of disagreements or the agreements that may have happened between the teachers about a specific topic. During the interview, some of the teachers needed the interviewer to ask about explanations, examples, or more details about what was being said.

Domain I: Teachers' experience

During discussion of the first question, the discussion focused on the experience of teachers in this particular study, so they were asked to describe this experience through examples, comments, or personal perspective. Based on the data collected from this discussion, two subdomains emerged that describe the cover term (Teachers' experience). The first subdomain that expresses the cover term (Teachers' experience) was clarified throughout the question discussion by using some terms to share their experience, observations, and opinions about participating in this study. Moreover, teachers used some terms to illustrate their own values, attitudes, and beliefs about the giftedness concepts.

The terms that supported the cover term are underlined in the following responses from the first question discussion into the two subdomain categories that demonstrate the domain analysis based on the cover term, "Teachers' experience".

Question from the study Interview protocol that attributed to domain:

"Tell us about your experience of participating in this study, either if you reviewed the test, nominated talented students, or participated in the test application."

First Question Discussion

***Interviewer**: well, my first question is that could you tell us about your experience of participating in this study, either if you reviewed the test, nominated talented students, or participated in the test application?*
***Teacher1**: Hello, every one. My name is ..... , and I am a first grade teacher. Ok, yes I participated in this study at the administration stage and also I nominated one of my students as a gifted child. In general, the topic, I mean the gifted and talented student's topic itself got my attention because of course this topic, here in Jordan, is not widespread even gifted students have their own schools so this matter is not widespread in all areas.*
***Interviewer**: Yes.*
***Teacher1**: but the topic in general about a study for gifted students and the wanted to administrate it in Jordan encourage me in appositive way to participate in this study and become one of the members of this project. Well, the test, when I applied it, I felt that the test itself is interesting and students enjoyed this thing, they loved this thing, ohhhh, in general the word was beautiful for the students when I told them let me see you guys what you can do, let me see who can do better in this test, I found that there is an interest from students toward this topic. For them, it is the first time of having such experience.*
***Interviewer**: Would you explain further?*
***Teacher1**: Ok, first of all my feelings toward this research were not the same before and after participating in this study. To be honest, the topic itself attracted me and I wanted to see if I really have gifted students in my class so I might be able to help them. In my opinion it was an excellent experience, it was an excellent test.*
***Interviewer**: Good. Same question.*
***Teacher2**: Hey, I am also a first grade teacher. My role in this study was reviewing the test items to make sure that they are appropriate to use in Jordan and to compare the original tests' administration guidelines and key scores with the Arabic version. However, I really liked the test items. At the begging, I was wondering if this test would be hard test for first grade students, but when I reviewed the test, I found that the test is ranging from easy to difficult, which is perfect.*
***Interviewer**: Do you want to add anything else.*
***Teacher2**: No, thanks.*
***Interviewer**: All right, good.*
***Teacher3**: My role was in administrating the test in my school. The test was interesting because it was administrated inside the classroom and for all students. Well, I did not nominate any of my students because I do not think I have gifted students in my class, however, I applied the test twice and I have a positive experience out of my participation. Well, I really liked the test guidelines, they are easy to follow and clear, so I applied the test.*
***Teacher1**: Yes, I agree, those was good.*
***Interviewer**: Would you tell us more.*
***Teacher3**: I would say that it is a good experience that I had.*
***Interviewer**: Thank you. Whose next.*
***Teacher4**: Hey, it is my turn, laughing, Ok, I am a second grade teacher, and I applied the test and nominated gifted students as well. By saying gifted students, I have a different perspective about giftedness than the definition that you explained to us before doing the study. I was expecting that a gifted student is a student who have superior ability and I do not need to identify*

any of them because in my opinion, anyone can tell who is gifted and who is not, but after participating in this study, I can tell that is not easy as I thought it is.
***Interviewer**: Could you give us an example.*
***Teacher4**: Sure, I have a student. He is in my opinion was a normal student if I can say that, but after seeing what he did on the test, I was shocked. He got the higher grade among some students whom I thought they are better than he is. That was unpredictable. So, I think it is important to do such tests.*
***Interviewer**: Ok.*
***Teacher5**: Hello everyone. I am a third grade teacher. I would like to say that students were interested on this test. They looked like they want to answer the test in addition they were like they want to try this new thing that they have ever experienced before. It was my first time, as a teacher or even when I was studying at university, of participating in a research study, and in my opinion, it was a great opportunity for me to involve in research that may be beneficial for others. Moreover, I believe, and here I would like to agree with my colleague over there that my thoughts about giftedness were different before and after participating in this research.*
***Interviewer**: would you like to say more about this point.*
***Teacher5**: uhhh, I was like gifted students are super heroes in everything, like math, language, sport, and they need no body to assist them, but after knowing about this test and how it used to discover gifted students I realized that I may have gifted students who need me to give them a hand.*
***Interviewer**: Great, last one with same question. Would you prefer to hear the question again?*
***Teacher6**: No, no, thank you I still remember it.*
***Interviewer**: Good, go ahead.*
***Teacher6**: ok, first, the test itself in some parts was good, and I think the diversity of the questions may help me as a teacher to know the potentials of my students. On the other hand, applying the test was not easy as it should be. I mean some students directly understood what they should do, but there were some students who could not understand the questions and I do not think they understood why they are doing the test. That issue took me so long to explain the questions over and over. Actually, I think some students just answer the questions randomly, just guessed the answers.*

Table 11.1
Domain Analysis for the First Question from the Focus Group Discussion, subdomain 1.

Included Terms	Semantic Relationship	Sub Domain	Cover Term
topic itself got my attention	Terms used to	Describe experiences, observations, and Opinions	Teachers' Experience
encourage me in appositive way			
the test itself is interesting			
there is an interest from students toward this topic			

the topic itself attracted me			
it was an excellent experience			
it was an excellent test			
I really liked the test items			
the test is ranging from easy to difficult, which is perfect			
The test was interesting			
I really liked the test guidelines, they are easy to follow and clear			
say that it is a good experience that I had			
students were interested on this test			
applying the test was not easy as it should be			

Table 11.2
Domain Analysis for the First Question from the Focus Group Discussion, subdomain 2.

Included Terms	Semantic Relationship	Sub Domain	Cover Term
My feelings toward this research were not the same before and after participating in this study.	Terms used to	Describe Values, Attitudes, and Beliefs	Teachers' Experience
I wanted to see if I really have gifted students in my class			
I did not nominate any of my			

students because I do not think I have gifted students in my class			
I have a different perspective about giftedness than the definition that you explained to us before doing the study			
After participating in this study, I can tell that is not easy as I thought it is			
I think it is important to do such tests.			
They were like they want to try this new thing that they have ever experienced before			
It was my first time, as a teacher or even when I was studying at university, of participating in a research study			
My thoughts about giftedness were different before and after participating in this research.			
After knowing about this test and how it used to discover gifted students I realized that I may have			

gifted students who need me to give them a hand			

Domain II: CogAT appropriateness of use

During discussion of second question, the discussion focused on the appropriateness of the use the Arabic version of CogAT in identifying gifted student at an early age, so teachers were asked to give their opinion about the validity of using this test. Based on the data collected from the discussion of this question, the domain CogAT appropriateness of use was emerged. Moreover, teachers used some terms to illustrate their own opinion and thoughts about the validity of the test by describing the reasons behind these opinions.

The terms that supported the cover term are underlined in the following responses from the second question discussion that demonstrate the domain analysis based on the cover term, "CogAT appropriateness of use".

Question from the study Interview protocol that attributed to domain:

"Give us your own opinion about the appropriateness of using Arabic Version of CogAT in identifying gifted children in Jordan."

Second Question Discussion

Interviewer*: Ok, that is good. My second question is to give us your own opinion about the appropriateness of using Arabic Version of CogAT in identifying gifted children in Jordan, and I would like to start where we finished, so Mrs. …… go ahead.*
Teacher6*: you know what, regardless of my opinion about applying the test, I believe this test is appropriate to use and its items are good and able to identify gifted students because this test is going in order from easy questions at the begging to hard at the end, so yes I believe it is useful and appropriate to use.*
Interviewer*: ok, thank you. What about you.*
Teacher5*: well, I think anything would be appropriate to use because we have nothing. Laughing. I mean it. Tell me what we have guys to use in elementary school in the whole country. We do have nothing, so I believe we all have to support this effort and working in creating tools to use,*

***Interviewer**: I am sorry for the interruption, but I would like to focus on this test. Do you believe this specific test, which is CogAT, is appropriate to use in Jordan?*
***Teacher5**: Yes, I do, it is a good test, easy to administrate, and the questions are all pictures so students do not have to read anything especially young students who do not know reading yet, so yes I think it is good.*
***Interviewer**: what about you.*
***Teacher4**: I agree with them. I think it is appropriate to use in Jordan.*
***Interviewer**: would you like to tell us more?*
***Teacher4**: maybe if we have another test to compare with, I will be able to give you a deep answer, but I agree we do have nothing and this a first test I have seen that aims to identify gifted students in second grade, so yes it is good and we need more tools and instruments like this test.*
***Voice**: (I could not recognize the voice and what is being said)*
***Interviewer**: Ok, …. No,no, that is fine, go ahead.*
***Teacher3**: Is it the same question if I agree or not.*
***Interviewer**: yes, it is, we need to hear your opinion about the appropriateness of using this test in Jordan.*
***Teacher3**: ok, ok, yes I think it is appropriate to use in Jordan especially because all items are pictures and it did not take long time to apply, so yes.*
***Interviewer**: anything else.*
***Teacher3**: laughing, that is enough.*
***Interviewer**: Ok, good. Yes.*
***Teacher2**: Because I reviewed the test in both languages, I mean the administration guide and key score because the test itself is the same, I believe the test is a very good one, and it is absolutely appropriate to use in Jordan because the guidelines give teachers all information that they need of how to apply the test and how to score it and even how to extract the results. Therefore, it is a very good test that I recommend to use.*
***Interviewer**: ok, last one in this question.*
***Teacher1**: I do not want to say more than what they said, but I do agree that this test is a very good test and it is appropriate to use. However, I want to mention that what I liked the most about the test is the age of the students because you know and have said we do need such evaluation as early as we could and because this test starts from the age of five, it was a good thing. Another thing I think the test it is appropriate to use because it is go directly to students, I mean the students answer it not checklist for parents or teacher like other test that I know for this age.*

Table 12
Domain Analysis for the Second Question from the Focus Group Discussion.

Included Terms	Semantic Relationship	Cover Term
I believe this test is appropriate to use	Terms used to	Describe the test appropriateness (CogAT appropriateness of use)
its items are good and able to identify gifted students		
I believe it is useful and appropriate to use		
it is a good test, easy to administrate		
I think it is appropriate to use in Jordan		
it is good and we need more tools and instruments like this test		
I think it is appropriate to use in Jordan		
I believe the test is a very good one, and it is absolutely appropriate to use in Jordan		
it is a very good test that I recommend it		
this test is a very good test and it is appropriate to use		

this test start form the age of five, it was a good thing		
I think the test it is appropriate to use because it is go directly to students		

Domain III: CogAT results benefits

The third question discussion focused on the benefits that might be provided by using the Arabic version of CogAT. Teachers were asked to give their opinion about the results' accuracy and uses, so they used examples, comments, or personal statements that describe these opinions. Based on the data collected from the discussion of this question, the benefits of the test's result domain emerged that describe the cover term (CogAT results benefits).

The terms that supported the cover term are underlined in the following responses from the third question discussion into a domain category that demonstrate the domain analysis based on the cover term.

Question from the study Interview protocol that attributed to domain:

"Do you feel the Arabic Version of CogAT results would be helpful for you as a teacher? Moreover, why?"

Third Question Discussion

Interviewer*: Ok, the third question is "Do you feel the Arabic Version of CogAT results would be helpful for you as a teacher? Moreover, why?" Anyone would like to start. Yes, please.*
Teacher4*: I believe if I had the results of the test, I would be able as teacher to design an educational framework that fit my students' ability separately, so that would be easy for me to explain my lessons so I am sure that most of the students will understand it.*
Teacher6*: I agree with that, the results would be very helpful in designing programs that fit those children's personality and potentials, so if I had gifted children in my class, the way that I explained things to them would be different from the rest of the class. For example, I know that one of the most common characteristics of gifted children that they are asking too many question and they need to know the answers even if these answers would be higher than their ages, so by*

knowing that those kids are gifted I have to be patient and address their question accurately and adequately.
***Interviewer**: Well, ok, please go ahead.*
***Teacher5**: I think results would help me a lot because if I knew that I have a gifted child, I would know that his ability is higher than the others are, so if I give him a task that is lower than his ability that means that I do not develop his giftedness. By saying that, when I know the results, I will be able to modify the curriculum for him based on these results so I could develop his giftedness.*
***Interviewer**: What you think over there.*
***Teacher3**: I agree with them and more because when I applied the test, I was really interested on knowing the results because I wanted to know if I have gifted children or no.*
***Interviewer**: Why you wanted to know the results, could you tell us more.*
***Teacher3**: Basically, I wanted to know the results because as they said that would be helpful in providing services that they need, so if I have gifted children, I would know which programs or curriculums that they might need.*
***Interviewer**: Ok, what about you.*
***Teacher1**: I think that knowing the results is very important for teachers, parents, the child himself, and even of the school. As a teacher, I would like to know my students' abilities whether if they are talented or not, because this test, as I know gives indicators even for students who are the lowest level of thinking than their peers. By knowing that, I would be able, to give those children educational tasks that fits their potential, but in the normal situation and without the knowledge of these results only category that will get the benefits of the education in my opinion, would be normal students while gifted students will not benefit because the lessons less than their potential and students with educational challenges also will not benefit because the lessons of the highest potential. On the one hand, on the other hand parents would like to know the results as well in order to know how to care for their children at home. For example, if a child is talented and his family, not even school know that this child is gifted, how they will be able to develop the talent he has, whether at home or at school, as well as the same child should know the test results because that will give him more confident or even know his true abilities.*
***Interviewer**: Thank you, last one in this question.*
***Teacher2**: Well, yes I believe that the results would be helpful for me as a teacher because it kind of gives me clear image of what I have in my class. That actually would be great because it will help me in giving my students all they need to learn, to be whatever they want to be in future. In fact this a very important principle for me in education.*
***Interviewer**: Ok.*
***Teacher2**: One more thing, I am sorry.*
***Interviewer**: No, no, please go ahead.*
***Teacher2**: I would like to give these results to the Ministry of Education, so they might give those kids some of their rights.*
***Interviewer:** Anything else.*
***Teacher2**: That is all.*

Table 13
Domain Analysis for the Third Question from the Focus Group Discussion.

Included Terms	Semantic Relationship	Cover Term
if I had the results of the test, I would be able as teacher to design an educational framework that fit my students' ability	Terms used to	Describe the benefits of the test's result (CogAT results benefits)
the results would be very helpful in designing programs that fit those children's personality and potentials		
I think results would help me		
when I know the results, I will be able to modify the curriculum for him based on these results		
if I have gifted children, I would know which programs or curriculums that they might need.		
I think that knowing the results is very important for teachers, parents, the child himself, and even of the school		
I would be able, to give those children educational tasks that fits their potential		
parents would like to know the results as well in order to know how to care for their children at home		
the same child should know the test		

results because that will give him more confident or even know his true abilities		
I believe that the results would be helpful for me as a teacher		
That actually would be great because it will help me in giving my students all they need to learn		

Domain IV: Teachers' Recommendations

The final question discussion focused on the suggestions that teachers might have in order to improve the Arabic version of CogAT. Teachers were asked to provide any improvement suggestions that might increase the test's validity, application, or reliability. Based on the data collected from the discussion of this question, the suggestions domain emerged that describe the cover term (Recommendations).

The terms that supported the cover term are underlined in the following responses from the forth question discussion into a domain category that demonstrate the domain analysis based on the cover term.

Question from the study Interview protocol that attributed to domain:

"What suggestions you might add to improve the using of Arabic Version of CogAT in identifying gifted children in Jordan."

Fourth Question Discussion

Interviewer*: ok that is good. Do you have any suggestions you might add to improve the using of the Arabic Version of CogAT in identifying gifted children in Jordan?*

Teacher1*: Just one thing I want to say, which is that this test has pictures in all questions, but I was thinking if it has some kind of materials or tools where students can do thing by their hands that would be even more useful or we might know more about students' abilities.*
Interviewer*: Anything else.*
Teacher1*: No, thank you.*
Interviewer*: Any suggestions.*
Teacher2*: I believe that the test takes long time of application, and I think if we have a computer-based test that would be much easier for both of students when they answer the test and for teachers when they score it.*
Interviewer*: Ok. Right here.*
Teacher3*: First, for the questions, I fell that there are some questions, which are repeated more than one time but in another shape, so there is no need to repeat these questions and maybe we could have some other questions instead.*
Interviewer*: Could you give us an example about this point.*
Teacher3*: I can't remember and I don't have the test with me, but what I am saying is that those questions are not exactly the same, but I think they measure the same thing. That was my point.*
Interviewer*: Ok, that is good. Thank you. Over there.*
Teacher4*: I don't have specific suggestions, but I agree with the computer-based test. That makes sense to me because it would motivate children to answer the test and do the best they could because they love anything in a computer or touch pad.*
Interviewer*: Good. What about you.*
Teacher5: *I don't have anything to add, but I disagree with the computer-based idea. I mean the idea itself is good, but we don't have the technology to use it. In fact, there is no computer lab in my school.*
Teacher2*: There is enough computers in mine.*
Teacher5*: Ok, but not all schools like yours. You know there are many schools don't have chairs for students to set on. How they could provide computers. You know what I mean?*
Teacher2*: Yeah.*
Interviewer*: Anything else here.*
Interviewer*: Ok. Last one.*
Teacher6*: Ok. There are couple of things. First, I agree with computerized the test. Then, the pictures should be bigger for the students especially for students who have vision problems. Finally, I suggest that we should talk with our ministry and encourage them to use such tests because it is very important to identify gifted students at an early age, and those kind of test would help us a lot as teacher to do so because by myself I can't do it or I will not be able to do it without using professional instruments.*
Interviewer*: Great. That was the last question in this interview. Do you have anything to say before we finish.*
Teacher2*: I would like to thank you and thank the researcher for bringing in this subject because we need, not only in Jordan but also in all third world countries, such these tests that help us in improving the educational setting for our students, so thank you again.*
Teacher5*: That is right. You know Dr. that giftedness's services start when they students become seventh grader then they will be taken to the Jubilee school or King Abdullah schools for excellence, but before that we do have nothing for gifted students, so yeah this test was good and I wish we could use it in Jordan in the near future.*

Table 14
Domain Analysis for the Forth Question from the Focus Group Discussion.

Included Terms	Semantic Relationship	Cover Term
some kind of materials or tools where students can do thing by their hands	Is way to	improve the test (Recommendation)
computer-based test		
have some other questions		
pictures should be bigger		

Domain V: Reality of Gifted Services in Jordan

From the overall discussion, an important domain emerged that described the reality of services provided to gifted students. Teachers shared many comments, examples, and suggestions that describe the cover term (Reality of Gifted Services in Jordan).

The terms that supported the cover term are highlighted in the previous responses from the overall discussion that demonstrate the domain analysis based on the cover term, "Reality of Gifted Services in Jordan".

Table 15
Domain Analysis for the Overall Focus Group Discussion.

Included Terms	Semantic Relationship	Cover Term
I think anything would be appropriate to use because we have nothing	Terms used to	Describe the services in Jordan (Reality of Gifted Services in Jordan)
Tell me what we have to use in		

elementary school in the whole country. We do have nothing		
maybe if we have another test to compare with, I will be able to give you a deep answer, but I agree we do have nothing		
we need more tools and instruments like this test		
I would like to give these results to the Ministry of Education, so they might give those kids some of their rights		
we don't have the technology to use		
there is no computer lab in my school.		
schools don't have chairs for students		
we should talk with our ministry and encourage them to use such tests		
giftedness's services start when they students become seventh grader		
they will be taken to the Jubilee school or King Abdullah schools for excellence		

we do have nothing for gifted students		

Establishing Rigor

This study contained a qualitative analysis, so it was crucial to establish rigor. Rigor was established by using different methods, such as member checking, peer debriefing, triangulation, and trustworthiness. Credibility was established by using triangulation in which many references and approaches were used to collect the data and analyze the data sets.

Transferability means the ability of other researchers to use or rely on the results of the study (Lincoln & Guba, 1985; Shenton, 2004; Thomas & Magilvy, 2011). This study provides a detailed description of the procedures used for collecting and analyzing the data to establish transferability. Furthermore, to insure dependability in this study, the researcher maintains an audit trail during the study by describing the main objective of the study, discussing participant selection strategy, describing the data collection methods, explaining the analysis procedures, and discussing the results.

In addition, this study used member checking and peer debriefing to ensure credibility. For the member checking, the interview data was reviewed by the focus group members, and they confirm the content of the interview transcript. Additionally, the researcher held several meetings with the major advisor, committee members, and other colleagues to discuss the analysis procedures used in this study to ensure peer debriefing. Finally, to ensure confirmability, this study established the qualitative rigor factors and conducted the focus group in a reflective way by asking the study members to express their own feelings, clarify their words, and describe their own experiences.

CHAPTER 5: DISCUSSION, SUMMARY, AND RECOMMENDATIONS

Introduction

The purpose of this study was to examine the effectiveness of using a Jordanian Arabic version of the Cognitive Abilities Screening Test (CogAT) Form Seven in identifying gifted and talented children. The study procedures utilized mixed approach research that included obtaining validity and reliability indicators on a population of Jordanian students between the ages of five and eight years followed by a focus group interview with six elementary and kindergarten teachers in Jordan. The data was analyzed and answers to the research questions were addressed. This chapter provides further explanations about the research questions and discusses the rationale of the results.

This study tried to provide a valid and reliable instrument that may be used in identifying young gifted children in Jordan, which is especially important due to the shortage of identifying services at this level. For example, the gifted and talented services in Jordan do not exist until students reach seventh grade (MOE, Gifted and Talented Dept.) which is considered as a late intervention that may affect young children's abilities and potentials. Therefore, this study took a place for the following reasons:

1- The lack of appropriate instruments that identify gifted children in kindergarten and elementary schools in Jordan.

2- Early intervention for identifying gifted children at an early age and develop their abilities and potentials.

3- Drawing attention to the need of changing the current criteria that is used to identify gifted children in Jordan.

4- To bring attention to changing the gifted educational paradigm in Jordan and keep up with the new global paradigm that supports students as learners and knowledge constructors.

5- The ability of CogAT test of identifying gifted children at early ages regardless of their academic performance, mental abilities, language skills, and cultural backgrounds.

6- Provide a valid and reliable instrument to identify gifted children in Jordan that might be helpful in developing professional programs and services.

Discussion

The study tried to address the following questions:

1- Do the total scores of the Jordanian version of Cognitive Abilities Test, Screening Form (CogAT 7), levels 5/6, 7, and 8, reflect significant reliability?

2- Does the Jordanian version of Cognitive Abilities Test, Screening Form (CogAT 7), levels 5/6, 7, and 8, have a significant validity?

3- Does the Jordanian version of Cognitive Abilities Test, Screening Form (CogA 7), levels 5/6, 7, and 8, efficiently identify gifted and talented students?

This study used a Mixed Method Research MMR, which included the Quantitative method to extract reliability and validity indicators for the Jordanian version of the CogAt test, and the Qualitative method to examine the test's effectiveness. The study participants were 280 students, 136 males and 144 females, ages 5-8 from schools and kindergartens in the capital city of Jordan, Amman, as well as six elementary and kindergarten teachers from the same city.

Quantitative Methods

The first step in this study was translating the CogAT Screening Test from the English language to the Arabic language. This translation was reviewed by five experts in the field of gifted education in Jordan and ten teachers who participated in the study and percentages of agreements between reviewers were computed. The results indicate that almost all reviewers (experts 99.7% agreement, teachers 99.5% agreement, and overall 99.6% agreement) agreed that pictures and figures for all test levels are suitable with the Jordanian culture. Moreover, the results indicate that all reviewers unanimously (100% agreement) agreed that the translation (non-literal translation) matched the original test, and teachers could easily read and understand the procedural guidelines when they intend to administer the test. Finally, the results show that all reviewers unanimously (100% agreement) agreed that teachers could clearly extract and interpret the results based on the test manuals.

By reviewing the percentages of agreements achieved from the revisions, we could conclude that the Arabic version of CogAT Screening Test matched the original English version. Reviewers were positive in unanimously agreeing that the translation in Arabic is similar to the English version under the criteria provided by the researcher. Basically, these results tell us that the Arabic version of test is absolutely valid to use in the Jordanian culture. The reviewers found that all the pictures used in the original test are appropriate and fit the culture in Jordan. In my opinion, the test's author was felicitous in choosing the test's images and pictures even though I personally objected to using some pictures, such as American Football because this game is not popular in Jordan. I think reviewers agreed to use such pictures and considered them as valid pictures based on global technology factors. As illustrations, the American Football game is not a popular game in Jordan, but children in Jordan and many other countries know this game very

well from television, the internet, and other media tools. For that reason, I believe that modern technology, including smart phones, tablets, and TVs, where everyone could easily connect to the internet, crosses the boundaries of cultural privacy and makes the whole world a small village.

Also, these results tell us that no additional training is needed for teachers to be able to use new instruments. All reviewers agreed that the instructions of the test and scores' extractions and interpretation guides are clear and easy use. Therefore, old-fashioned tests and instruments that require many hours of training to apply and extract the results are over now. The CogAT test proves that carefully reading the instructions is sufficient for teachers to be able to run the test and gather valid results.

Secondly, all students were tested using the Arabic version of CogAT Screening Test twice. The collected data was analyzed and reliability and validity indicators were computed. For the reliability, two types of reliability indicators were computed (a) test-retest reliability, and (b) internal consistency reliability. Hence, the test-retest results indicated significant and high correlations for the total score of the two-time administration ($r = .927$, $p=.01$). On the other hand, the internal consistency reliability results indicated significant and high correlations where the split-half reliability was .904 for the subtest scores and .927 for the total score and the Alpha coefficients were .941 for the subtest scores and .962 for the total score.

By reviewing the reliability indicators results, I could conclude that the results reflect significant and highly reliable correlations. Therefore, these results increase the user trust about using the Arabic version of CogAT. Moreover, the results met the research assumptions mentioned at the beginning of this research and addressed the first question in this study. However, I believe that these correlations were high for couple of reasons. First, the test on its

original version has acceptable reliability indicators that were increased over the test revisions. Furthermore, since this test is widely used in the USA and many other countries, many studies have reviewed it and compared it with other tests used for the same objectives, and these results also indicates moderate to high correlations that make this test reliable. In other words, the number of revisions to and studies about this test give a strong indication that other studies will provide similar results. The other reason behind these results could be attributed to the sample size. To illustrate, this study has a small sample size, in one city in Jordan, and increasing the size sample and expanding the region of the study could affect these results

Finally, the criterion validity results indicated that there were no significant correlations ($r = .434$, $p=.05$) between the Arabic version of CogAT Screening test results and teachers' nomination for gifted students. As an illustration, of the 19 students who were nominated by teachers as gifted students, the Arabic version of CogAT Screening Test results found that only nine students are eligible for a comprehensive evaluation for gifted education services. The other nominated students were found not eligible for the same evaluation. Indeed, the Arabic version of CogAT Screening Test results found five other students, who have not been nominated by teachers, eligible for a comprehensive evaluation for gifted education services.

By reviewing the criterion validity results, the study found that teachers' nominations of gifted children did not associate with the CogAT results. That means, teachers nominated non-gifted students, or they missed some gifted students and considered them as non-gifted. However, by looking carefully at these results, one would notice that even though the correlation between the two identification methods were not significant, the value of this correlation was not too low. These results tell us that teachers were able to identify some of the gifted students in the sample. However, these results did not meet the assumptions of the study. This study assumed

that the teachers' nominations and the study results would reflect sufficient correlations. The reason behind this assumption is the quantity of research that investigated this topic and indicated that teacher nominations are a valid method in identifying gifted students.

In my opinion, these results could be attributed to the lack of understanding by teachers of the giftedness definition and the gifted identifying criteria. This study explained to teachers a specific criteria to nominate gifted students that include nominate students that teachers that they believe they are gifted based on the following definition: "Children with outstanding talent who perform or show the potential for performing at remarkably high levels of accomplishment when compared with others of their age, experience, or environment" (National Society for the Gifted and Talented adopted from the United States Department of Education definition, 1993). Moreover, this study asked the teachers to identify students in their classes that they think are gifted regardless of their language skills, achievement performance, intellectual ability, and/or gender. A lack of understanding of the above criteria and the presumptions by teachers about the students "Academic Level" could be the reason behind this result.

However, the overall results gathered from the quantitative phase of this study reflect sufficient indictors that the Arabic version of the CogAT Screening Test is valid and reliable. These results increase the confidence of users about the validity of using of the test results and the reliability of this test, so this test will give similar results when using it again for the same reasons.

Qualitative Methods

This phase of the research tried to provide qualitative data from teachers who participated in the study about the effectiveness of using the Arabic version of the CogAT Screening Test in identifying gifted children in Jordan. A focus group interview with six teachers who participated in the study was conducted to address the third question of this study. The collected data was analyzed by using the "Codes to Theory" model for qualitative inquiry to extract themes and concepts.

This study used domain coding procedures to analyze the data collected from the teachers' interviews. A domain analysis was completed for the focus group members' responses and discussion where a semantic relationship was applied and then a cover term discovered. From this interview, five main domains emerged: teachers' experience, CogAT appropriateness of use, CogAT results benefits, teachers' recommendations, and reality of gifted services in Jordan. Based on the interviewer's notes about the interview, teachers' responses to the questions revealed a deep understanding of the study subject and the reality of gifted services in Jordan.

Teachers' experiences

The main purpose of asking teachers about their own experience in participating in this particular study was to provide more information about the test from those who are going to use it in the field. Teachers' experiences and feedback were valuable information about the effectiveness of using this test because they described this test based on their observations regardless of what other studies and research have indicated. Overwhelmingly teachers reported positive feedback and comments about applying the test and using it in identifying gifted students in elementary schools and kindergartens in Jordan. Two subdomains emerged while discussing teachers' experiences: teacher's experiences, observations, and Opinions; and teachers'

values, attitudes, and beliefs. In general, these subdomains described teachers' experiences with CogAT Screening Test in Jordan through either application of the test in the schools, nomination of gifted students, or reviewing the test items during the translation stage.

Teachers' responses reflected a deep understanding of the test objectives. Most of the teachers expressed their satisfaction about the idea of using this test to identify gifted students. For example:

Teacher1*: but the topic in general about a study for gifted students and the wanted to administrate it in Jordan encourage me in appositive way to participate in this study and become one of the members of this project. Well, the test, when I applied it, I felt that the test itself is interesting and students enjoyed this thing. it was an excellent experience; it was an excellent test.*
Teacher2*: I really liked the test items. At the begging, I was wondering if this test would be hard test for first grade students, but when I reviewed the test, I found that the test is ranging from easy to difficult, which is perfect.*
Teacher3: *I have a positive experience out of my participation. I would say that was a good experience that I had. I really liked the test guidelines, they are easy to follow and clear.*

At the same time, many of their responses indicated misunderstanding of interpreting giftedness before and after their participation in this study. For example:

Teacher1*: Ok, first of all my feelings toward this research were not the same before and after participating in this study. To be honest, the topic itself attracted me and I wanted to see if I really have gifted students in my class so I might be able to help them.*
Teacher4: *I have a different perspective about giftedness than the definition that you explained to us before doing the study. I was expecting that a gifted student is a student who have superior ability and I do not need to identify any of them because in my opinion, anyone can tell who is gifted and who is not, but after participating in this study, I can tell that is not easy as I thought it is.*
Teacher5*: my thoughts about giftedness were different before and after participating in this research. After knowing about this test and how it used to discover gifted students I realized that I may have gifted students who need me to give them a hand.*

Based on the discussion, teachers' responses reflect lack of experience and knowledge of working with gifted students. That lack could be a result of the shortage of training and courses that they receive from schools about this topic. For example:

Teacher5: *It was my first time, as a teacher or even when I was studying at university, of participating in a research study, and in my opinion, it was a great opportunity.*
Teacher3*: I did not nominate any of my students because I do not think I have gifted students in my class.*
Teacher1*: I wanted to see if I really have gifted students in my class.*

CogAT appropriateness of use

The second main objective of interviewing teachers was to discover their opinion about the appropriateness of using the CogAT test in Jordan in terms of cultural differences, test items, translations, and the ability of the test in discovering gifted children. Overall, teachers agreed that the test is valid to use and believed that the above criteria were applied appropriately. For example:

Teacher6: *I believe this test is appropriate to use and its items are good and able to identify gifted students. I believe it is useful and appropriate to use.*
Teacher5*: It is a good test, easy to administrate.*
Teacher4: *I agree with them. I think it is appropriate to use in Jordan.*
Teacher3: *I think it is appropriate to use in Jordan.*
Teacher2: *I believe the test is a very good one, and it is absolutely appropriate to use in Jordan.*
Teacher1: *This test is a very good test and it is appropriate to use.*

Some teachers explained the reasons of their opinion. For example, one of the teachers said that: “this test starts at the age of five, it was a good thing”. To understand this statement, we should clarify that the identification process in Jordan starts at the age of thirteen. Many teachers during the discussion conveyed their concerns about this method. This teacher particularly thinks that the CogAT test is valid to use just because it starts at an early age. In fact, I think that successful identification procedures must take into consideration the concept of Early Intervention, so I would agree with this statement and would consider any early procedure as a valid and successful procedure.

Furthermore, another teacher stated, “I think the test it is appropriate to use because it is go directly to students”. To interpreter this statement, we should know that in Jordan, the

identification process, if there is any identification process for young children, most likely comes from teachers and parents in the form of checklists. The fact that CogAT test goes directly to children is a new concept in Jordan. Teachers in general, including myself as a former teacher there, are not used to identify gifted children by applying instruments that go directly to the children themselves. Currently, the sole procedure at this age would be asking teachers and parents if they think that this child is gifted. For this reason, teachers might find any new methods of identification useful and appropriate to use.

CogAT results benefits

The focus group interview, also, aimed to know how the test results could help the teachers. Teachers were asked to explain the benefits they might have by using these results. The teachers interviewed agreed that the results would be helpful in many ways. They indicated many benefits that they could have if they had the results. For example:

Teacher4: *I believe if I had the results of the test, I would be able as teacher to design an educational framework that fit my students' ability. The results would be very helpful in designing programs that fit those children's personality and potentials.*
Teacher5: *I think results would help me. When I know the results, I will be able to modify the curriculum for him based on these results.*
Teacher3: *I wanted to know the results because as they said that would be helpful in providing services that they need, so if I have gifted children, I would know which programs or curriculums that they might need.*
Teacher2: *I believe that the results would be helpful for me as a teacher. That actually would be great because it will help me in giving my students all they need to learn.*

Most importantly, some of the teachers explained their own reasons of how they could use these results. One teacher reported that "knowing the results is very important for teachers, parents, the child himself, and even of the school." Basically, this teacher gave four important benefits that may occur: for teachers, parents, children, and schools. This strong argument, I believe, provides excellent strategies for and benefits of using the test result. As an illustration,

during the discussion most of the teachers focused on using the results inside the classrooms and curriculums. They explained how they could design curriculums that may fit their students' abilities and potentials. However, the statement provided above was explained by the same teacher who gave a theoretical framework of who can get benefits from the results and how. For teachers, this specific teacher indicated that:

"*As a teacher, I would like to know my students' abilities whether if they are talented or not, because this test, as I know gives indicators even for students who are the lowest level of thinking than their peers. By knowing that, I would be able, to give those children educational tasks that fits their potential, but in the normal situation and without the knowledge of these results only category that will get the benefits of the education in my opinion, would be normal students while gifted students will not benefit because the lessons less than their potential and students with educational challenges also will not benefit because the lessons of the highest potential*."

Moreover, the following benefits for parents, children, and schools were indicated by the same teacher:

"*Parents would like to know the results as well in order to know how to care for their children at home. For example, if a child is talented and his family, not even school know that this child is gifted, how they will be able to develop the talent he has, whether at home or at school, as well as the same child should know the test results because that will give him more confident or even know his true abilities*."

Teachers' Recommendations

In addition, teachers were asked to provide any suggestions, comments, or recommendations that could be applied to the Jordanian version of CogAT Screening Test that might make this test better able to achieve its intended goal. In fact, teachers were able to provide some suggestions and recommendations in order to make this test useful. For example:

Teacher1: *I was thinking if it has some kind of materials or tools where students can do thing by their hands.*
Teacher2: *I think if we have a computer-based test.*
Teacher6*: Pictures should be bigger.*

Actually, the discussion upon this topic increased my belief that teachers fully understand the objectives of this test. As an illustration, one of the teachers stated that "Pictures should be bigger", this teacher clarified the reason behind this suggestion "for students who have vision problems." This reason is a strong indicator that this teacher understood that the identification process is a right for all students, including students who have medical, mental, or physical conditions. This kind of belief is unusual in country such as Jordan where the whole identification process was built on achievement performance and nominations.

On the other hand, some teachers criticized the content of the test. One teacher stated that "I fell that there are some questions, which are repeated more than one time but in another shape". However, this statement also reflects a deep understanding of the aim of each question. This information, in my opinion, should be taken in consideration by the test developers when developing the test. The opinion of this teacher and many other teachers is as strong as any statistical data gathered from research.

Reality of Gifted Services in Jordan

The overall discussion led to the discovery of an important theme that describes the reality of gifted services in Jordan. By connecting all of the pieces together, teachers were logically able to describe the reality in the field and to report their feelings and opinions about this reality. For example:

Teacher5: *I think anything would be appropriate to use because we have nothing. I mean it. Tell me what we have guys to use in elementary school in the whole country. We do have nothing.*
Teacher4: *Maybe if we have another test to compare with, I will be able to give you a deep answer.*
Teacher2: *I would like to give these results to the Ministry of Education, so they might give those kids some of their rights.*
Teacher5*: We don't have the technology to use it. In fact, there is no computer lab in my school. Many schools don't have chairs for students.*
Teacher6: *we should talk with our ministry and encourage them to use such tests.*

Teachers expressed their own experiences and opinions with the education system in Jordan regarding gifted services. These opinions reflect a serious need in Jordan to adopt new criteria in identifying gifted children, especially young gifted children. However, many of the teachers could not give any negative or positive feedback about the test at some points because they do not have any other test with which to compare. For example, one of the teachers stated, "Tell me what we have guys to use in elementary school in the whole country". This statement indicates that young children in elementary schools and kindergartens are completely ignored by the educational system in Jordan regarding their rights to receiving services if they need them.

Additionally, teachers expressed their actual demands in the field. For example, one of the teachers stated that "we need more tools and instruments like this test". This statement refers to the need in the field for valid instruments that might be used to identify gifted children. Moreover, teachers should be a part of designing and planning the gifted education services in the future.

In general, teacher's discussion and their responses to the interview questions led to strong agreement by teachers as to the effectiveness of using the Arabic Jordanian version of CogAT Screening Test. There were many statements throughout the discussion that support this theme. Teachers expressed their satisfaction about the test items and guidelines. Moreover, they unanimously agreed that the test is appropriate to use in Jordan. Also, much positive feedback and many affirmative comments were provided by teachers about the ability of this test in identifying young gifted children.

Summary

By taking into consideration the study limitations mentioned previously, this study concludes the following:

- The Arabic version of the CogAT Screening Test Form Seven, Levels 5/6,7, and 8 was supported by significant validity and reliability indicators.
- The Arabic version of the CogAT Screening Test Form Seven, Levels 5/6,7, and 8 validity and reliability properties support its use to identify kindergarten and elementary schools' gifted children in Jordan.
- The Arabic version of the CogAT Screening Test Form Seven, Levels 5/6,7, and 8 was effective for the screening stage of the comprehensive identifying process.

Future Research and Recommendations

In the light of this study's results, this study recommends the following:

- Future research that might study the Arabic version of the CogAT Screening Test Form Seven, Levels 5/6,7, and 8 validity and reliability indicators on a bigger sample.
- Future research to obtain norms for the Arabic version of the CogAT Screening Test Form Seven, Levels 5/6,7, and 8
- Future research that could obtain validity and reliability indicators for other levels of the the CogAT Screening Test Form Seven.
- Future research that could obtain validity and reliability indicators for the complete version the CogAT Test Form Seven that may be used for the evaluation stage.
- More research in the area of identifying and evaluating gifted students in Jordan.

Appendices

Appendix A

Riverside Publishing Company Permission

Houghton Mifflin Harcourt

3800 Golf Road, Suite 200 • Rolling Meadows, Illinois • 60008-4015 • Telephone: 800.767.8420 • Fax: 630.467.6207

Agreement Date: May 16, 2014

Reference No.: G14301415

Request from:
Wayne State University
Ali Alodat
Department of Education
Detroit, MI 48202

Internal Use
Transaction No :

Advance Royalty Fee: Gratis
Due By: June 16, 2014

RPC Product:	*Cognitive Abilities Test™ (CogAT®)*, Form 7
Title Number:	1482593, 1482594, 1482595, 1482744, 1482745, 1482746
Requested Use:	**Translation** of RPC Materials into Arabic for research study
Selection Description:	Translation of CogAT 7 Screening Form Test Booklets for Levels 5/6, 7, and 8 (1482593, 1482594, 1482595) Translation of CogAT 7 Screening Form Directions for Administration Levels 5/6, 7, and 8 (1482744, 1482745, 1482746)
Description of research:	"The Effectiveness of the Jordanian Arabic Version of the Cognitive Abilities Screening Test (CogAT 7) in Identifying Gifted and Talented children in Kindergarten and Elementary School" to be conducted in Jordan.

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AGREEMENT made this 16th day of May, 2014 between Wayne State University (hereinafter referred to as "Assignor") and The Riverside Publishing Company, 3800 Golf Road, Suite 200, Rolling Meadows, Illinois 60008-4015 (hereinafter referred to as "Proprietor").

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WHEREAS, Assignor wishes to obtain Proprietor's permission to translate all components of the Publication (the "Work") into the Arabic language ("the Translated Material") as part of Assignor's research study to be conducted in Jordan; and

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ACCEPTED AND AGREED BY:

Wayne State University

5/23/14
Signature Date

Ali M Alodat
Print Name and Title

The Riverside Publishing Company

6/11/14
Signature Date

Janet A. Wiedemann, Manager, Contracts & Permissions

Appendix B

IRB-HIC Expedited Approval by the human Investigation Committee at Wayne State University

WAYNE STATE UNIVERSITY

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Detroit, Michigan 48201
Phone: (313) 577-1628
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http://irb.wayne.edu

NOTICE OF EXPEDITED APPROVAL

To: Ali Alodat
Teacher Education
5425 Gullen Mall; 241 Educatio

From: Dr. Deborah Ellis or designee D. Ellis/AB.
Chairperson, Behavioral Institutional Review Board (B3)

Date: March 03, 2015

RE:

IRB #:	125814B3E
Protocol Title:	The Effectiveness of the Jordanian Arabic Version of the Cognitive Abilities Screening Test (CogAT, Seven) in Identifying Gifted and Talented Children in Kindergarten and Elementary School
Funding Source:	
Protocol #:	1412013678
Expiration Date:	March 02, 2016
Risk Level / Category:	45 CFR 46.404 - Research not involving greater than minimal riskResearch not involving greater than minimal risk

The above-referenced protocol and items listed below (if applicable) were **APPROVED** following *Expedited Review* Category (#7)* by the Chairperson/designee *for* the Wayne State University Institutional Review Board (B3) for the period of 03/03/2015 through 03/02/2016. This approval does not replace any departmental or other approvals that may be required.

- Revised Protocol Summary Form (received in the IRB Office 2/3/2015)
- Protocol (received in the IRB Office 12/23/2014)
- Research Informed Consent for Adults - Arabic (English version for reference)
- Research Informed Consent for Parents - Arabic (English version for reference)
- Oral Assent Script - Arabic (English version for reference)
- Participant in Interview Contact Letter - Arabic (English version for reference)
- Invitation to Review the Arabic Version of CogAT and Subtests
- Data Collection Tools: Open-end questions for the focus group interview, and Focus Group Interview Protocol, Directions for Administration CogAT - Form 7/Level 7 - English and Arabic Versions, Directions for Administration CogAT - Form 7/Level 8 - English and Arabic Versions, Directions for Administration CogAT - Form 7/Level 5/6 - English and Arabic Versions, Cognitive Abilities Test - Form 7/Level 7, Cognitive Abilities Test - Form 7/Level 8, Cognitive Abilities Test - Form 7/Level 5/6 - English and Arabic Versions,CogAT - Form 7/Levels 5/6-8 Scoring Key - English and Arabic Versions, and CogAT - Form 7 - Norms and Score Conversions Guide - English and Arabic Versions

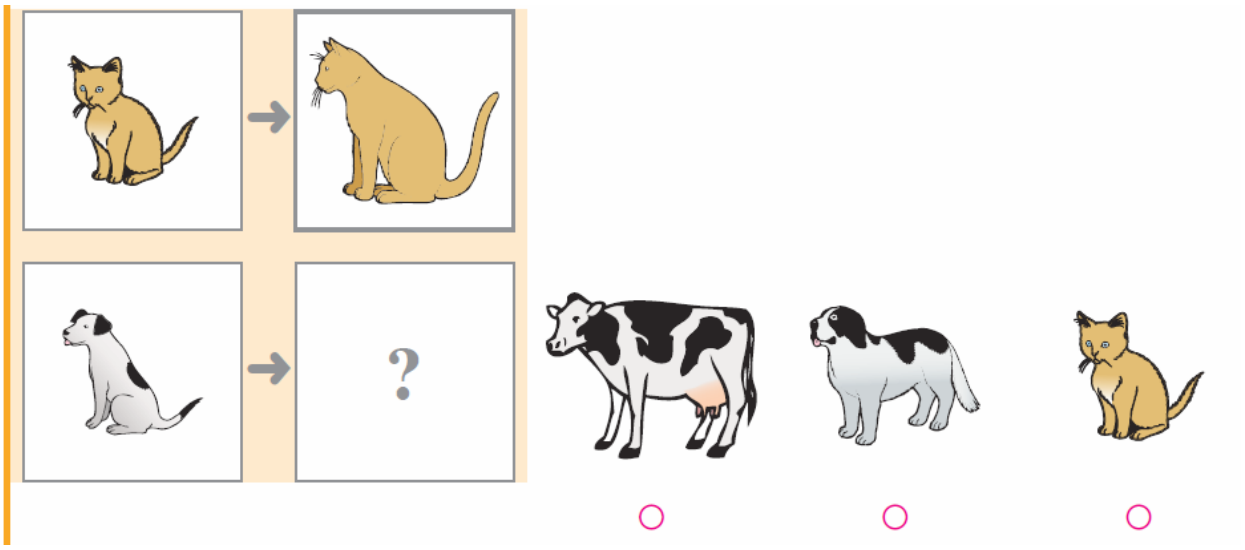
° Federal regulations require that all research be reviewed at least annually. You *may* receive a *"Continuation Renewal Reminder"* approximately two months prior to the expiration date; however, it is the Principal Investigator's responsibility to obtain review and continued approval ***before*** the expiration date. Data collected during a period of lapsed approval is unapproved research and can never be reported or published as research data.

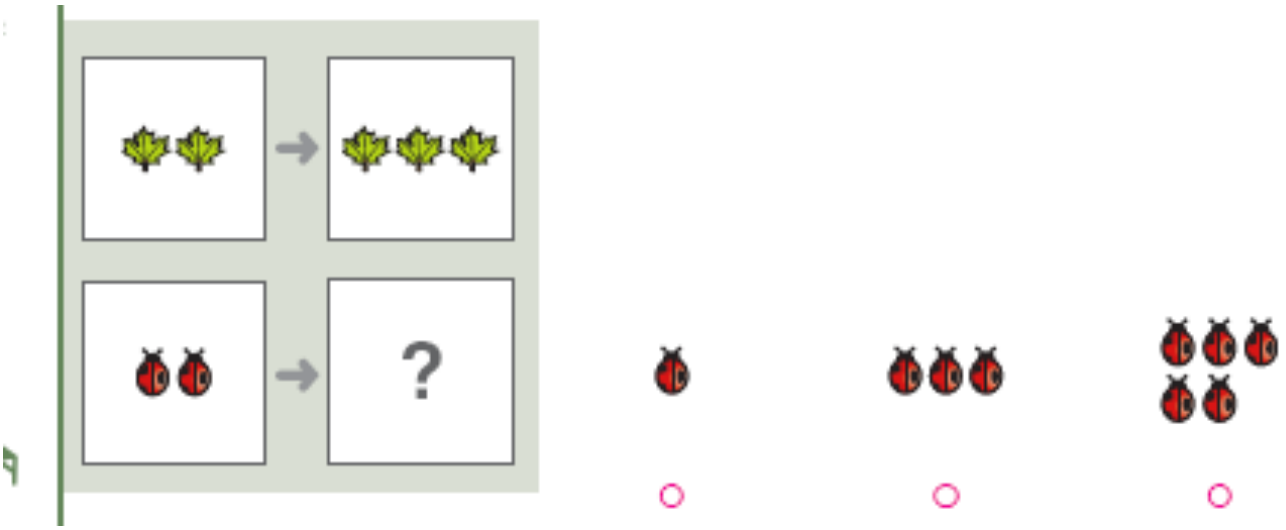
° All changes or amendments to the above-referenced protocol require review and approval by the IRB **BEFORE** implementation.

° Adverse Reactions/Unexpected Events (AR/UE) must be submitted on the appropriate form within the timeframe specified in the IRB Administration Office Policy (http://www.irb.wayne.edu//policies-human-research.php).

Appendix C

Cognitive Abilities Test Example Questions





Appendix D

Focus Group Interview Protocol

Introduction

Introduce yourself and tell the group what is the grade you are teaching.

Thank participants for agreeing to participate in the study.

Purpose of the Study

As you all know and have experienced, the purpose of this study is to examine the effectiveness of using a Jordanian Arabic version of the Cognitive Abilities Screening Test (CogAT) Form Seven in Identifying Gifted and Talented children. You are invited because each of you has participated in administrating the test in schools, review the test to verify its accuracy with the Jordanian culture, or nominated gifted children among children who took the test. In this this focus group interview, I wish to obtain reflections about your experience of participating in this study.

Expectations for Participation

Today we will discuss your experience and feeling about your participation in this study and your opinion about the appropriateness of using Arabic Version of CogAT in identifying gifted children in Jordan.

Please keep in mind that there are no right or wrong answers. It's possible that each of you at this table will have differing points of view. Also, unlike at our typical meetings, we don't have to reach any kind of consensus today; I just want to hear what your ideas are. Feel free to share your point of view, even if it differs from what others have said. If you want to follow up on something that someone has said, or if you want to agree, disagree, or give an example, please do so. Keep in mind that I'm just as interested in your concerns or negative experiences as we are

your successes and your positive experiences. Also, don't feel like you have to respond to me all the time. Feel free to have a conversation with one another about these questions. I am here to ask questions, listen, and make sure everyone has a chance to share. I'm interested in hearing from each of you. So if you're talking a lot, I may ask you to give others a chance. And if you aren't saying much, I may call on you. I just want to make sure I hear from all of you.

Just as a reminder, I am going to be both taking notes and tape-recording this interview, because I don't want to miss any of your comments. Following our meeting today, I will review the audio-tape and my notes to create a written transcript of the focus group. After I make the transcript, I will circulate it to each member of this team for review, and you will have a chance to clarify any points before the transcript is finalized.

I will take great care to hold your comments in the strictest confidence. No names will be used in any of the reports in this study in any form. Finally, I welcome any information you might say in this interview, but I need to ask that you not give the students' name when you describe your specific experiences. Once I have received your feedback on the transcript, I will erase the audio-tape. Again, thank you for your time.

Do you have any questions before we begin?

I anticipate that this will take approximately an hour. We'll begin by going around the room one at a time to learn a little more about each other. One final thing, feel free to get up and get some more refreshments during the interview!

Interview Questions

5. First question: Tell us about your experience of participating in this study, either if you reviewed the test, nominated talented students, or participated in the test application.

6. Second question: Give us your own opinion about the appropriateness of using Arabic Version of CogAT in identifying gifted children in Jordan.
7. Third question: Do you feel the Arabic Version of CogAT results would be helpful for you as a teacher? Moreover, why?
8. Ending question: What suggestions you might add to improve the using of Arabic Version of CogAT in identifying gifted children in Jordan?

Generic Probes

- Neutral agreement or acknowledgement:

- Um-hm, Oh I see

- Reflecting in form of a question

- So you tried using social stories?

- Asking for more info

- Could you tell me more about why …?

- Would you explain further?

- Would you give an example of what you mean?

- Tell us more.

- Ask for clarification on internal differences in what person said

- You said earlier that… but just now you told me…?

- Asking for an opinion

- You said that… what do you think about that?

- Asking for clarification of the meaning of a term

- You used the word… What did you mean by that? Can you give me some examples?

Final comments

Thank you for your contribution to this study. This was a very successful interview, and your honesty and forthright responses will be an enormous asset to my work. Again, I very much appreciate your involvement.

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ABSTRACT

THE EFFECTIVNESS OF THE JORDANIAN ARABIC VERSION OF THE COGNITIVE ABILITIES SCREENING TEST (COGAT, SEVEN) IN IDENTIFYING GIFTED AND TALENTED CHILDREN IN KINDERGARTEN AND ELEMENTRAY SCHOOL

by

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A great debate has been occurring in the field of gifted education regarding the validity of the identification procedures. Many scholars have called to change the current criteria that has been used to identify gifted students based on their intellectual abilities. The new trend in the field is calling to adopt comprehensive evaluation procedures that start with screening all students especially at an early age.

This study aimed to examine the effectiveness of using a Jordanian Arabic version of the Cognitive Abilities Screening Test (CogAT) Form Seven in identifying gifted and talented children between the ages of five and eight years. This study has three main Procedures: a) the translation of the CogAT test, b) the quantitative producer, which includes the reliability and validity indictors' extraction, and c) the qualitative producer, which includes the focus group interview to examine the effectiveness of using the Arabic version of CogAT in indentifying gifted students in Jordan.

A sample of 280 students was randomly chosen from public and private elementary schools and kindergartens in the city of Amman, the capital city of Jordan, and used teachers' nomination for gifted students. Moreover, six teachers were also randomly chosen to conduct a focus group interview. Those teachers participated in either reviewing the test, administering the test, or nominating gifted children. Teachers attended a focus group discussion, and they were asked to discuss four open-end questions.

The results indicated significant and high reliability correlations for the total score of the two-time administration (r = .927) and highly significant internal consistency reliability correlations where Alpha coefficients were .941 for the subtest scores and .962 for the total score and split-half reliability was .904 for the subtest scores and .927 for the total score. Furthermore, the content validity results demonstrated unanimous agreement among reviewers (6 experts and 10 teachers) about the translation match of the original test, suitability to Jordanian culture, and extracting and interpreting the results. One the other hand, the criterion validity results showed that there were no significant correlations (r = .434) between the Arabic version of CogAT Screening Test results and teachers' nomination of gifted students.

Finally, the focus group discussion results indicated strong agreement by teachers of the effectiveness of using the Arabic Jordanian version of CogAT Screening Test. Specifically, teachers expressed their satisfaction about the test items and guidelines. Moreover, they unanimously agreed that the test is appropriate to use in Jordan. Also, many positive comments and feedback were provided by teachers about the ability of this test in identifying young gifted children.

AUTOBIOGRAPHICAL STATEMENT

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Ali Alodat earned his Bachelor of Educational Science degree in Special Education from the University of Jordan in 2003. He received his Master of Educational Science degree in Special Education in 2009 from the University of Jordan. In 2012, he joined the doctoral program in Special Education at Wayne State University. Mr. Alodat has been the recipient of numerous honors and awards including the Thomas Rumble Fellowship from the Graduate School at Wayne State University for the academic year 2014/2015, the Hubert and Elsie Watson Scholarship from the College of Education at Wayne State University for the winter semester 2014, Dr. Tonso Annual Scholarship from the College of Education at Wayne State University for the Fall semester 2015, and the College of Education Dean's Scholarship from the College of Education at Wayne State University for the Fall semester 2015.

While pursuing his degree, Mr. Alodat worked as Assistant Director of Special Education at Global Educational Excellence in Detroit, Michigan and Teacher Assistant in the College of Education at Wayne State University. Mr. Alodat has presented a paper about special education of persons with intellectual disabilities in Jordan at the YAI international conference in New York City, and a paper about inclusive education within the Jordanian legal framework in the Fifth Annual Midwest Graduate Research Conference at University of Toledo. Additionally, Mr. Alodat has published research in the International Journal of Academic Research in Business and Social Sciences.