

Cross-cultural influences on the MABC-2 test for Developmental Coordination Disorder (DCD):
A Middle Eastern perspective

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Abstract

This study examined specific aspects of the reliability and validity of age band 2 of the Movement Assessment Battery for Children – Second Edition (MABC-2, Henderson, Sugden, & Barnett, 2007) in Egypt. Eighty-nine children participated in the study (54 boys and 35 girls), age between 7 and 10.8 years ($\bar{x}=8.8$ and $sd\pm 1.2$). Cronbach's alpha for each item and item-total correlation were used to determine internal consistency; inter-rater reliability of the MABC-2 estimated using Intra-class Correlation Coefficient (ICC). Correlation coefficients between test items, subdomains, and total test scores were computed to evaluate the validity of MABC-2. Cronbach's alpha for parents and teacher's responses, and total test scores evaluated the level of agreement of the Arabic version of the checklist scores. The alpha value of all eight items together was moderate but acceptable ($r=0.73$). The correlation between each test item and the total score were moderate except for two items. The ICC of inter-rater reliability for each test items was excellent (all above 0.90) except for one item. The correlation coefficients between test items and subdomains were moderate, and the relationships between subdomains and total test scores were strong. There was a strong relationship between teachers and parents responses to the checklist. It was concluded that both the reliability and validity of age band 2 of MABC-2, were acceptable, but some adjustments are needed to improve the psychometric properties of the test for its use in Egypt. Responses to the checklist indicated that teachers were more accurate in their observations than those reported by parents.

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Chapter 1 Introduction

Since the 1970's, most countries worldwide have recognized the importance of providing service to people with disabilities. Many studies have been conducted to enhance the life for people with disabilities, and to facilitate their living as regular people. (Berkeley, Zittel, Pitney, & Nichols, 2001; Brown & Lalor, 2009; Green, D., Barnett, Henderson, Huber, & Henderson, 2002; Staples & Reid, 2010) have concluded that children with developmental coordination disorder (DCD) are unable to understand assessment instructions, especially for traditional motor skill activities employed in assessments such as the Test of Gross Motor Development-Second Edition (TGMD – 2; Ulrich, 2000) and the Movement Assessment Battery for Children-Second Edition (MABC-2).

This inability to understand instructions can negatively impact the child's performance and thus their scores on the MABC-2 checklist.

Developmental Coordination Disorder (DCD) is a motor skill disorder that affects five to six percent of all school-aged children. The ratio of boys to girls varies from 2:1 to 5:1, depending on the group studied. DCD occurs when a delay in the development of motor skills, or difficulty coordinating movements, results in a child being unable to perform many of the common activities for daily living (ADL's) (Polatajko, Fox, & Missiuna, 1995)

By definition, children with DCD have no identifiable medical or neurological condition to explain their coordination problems. Frequently described as "clumsy" or "awkward" by their parents and teachers, children with DCD have difficulty performing

simple motor activities, such as dressing, tying shoe-lace's or going down stairs, and are less able to perform age-appropriate self-care tasks.

Some children may experience difficulties in a variety of areas while others may have problems only with specific activities. Children with DCD usually have normal or above average intellectual abilities, but their motor coordination difficulties can impact their academic progress, social integration and emotional development.

The first description of a syndrome of clumsiness such as DCD was in the 1930s, and was refined to "clumsy child syndrome" in 1975. Children with motor coordination problems have been given a variety of labels over the past few decades including, but not limited to: developmental dyspraxia, minimal brain dysfunction, perceptuo-motor dysfunction, physically awkward, and specific developmental disorder of motor function (Sugden, Chambers, & Utley, 2006).

With health professionals increasingly sharing research evidence across countries and disciplines, this wide variation in the terminology has led to some confusion. Without a consistent label for the disorder, it became difficult to obtain prevalence estimates and to establish diagnostic criteria. As a result, the disorder did not gain legitimacy as a health problem until 1994, when an international panel of experts was convened at a consensus meeting held in Ontario, Canada. At that meeting, a decision was made to recognize "clumsy" children as having Developmental Coordination Disorder. DCD is the term that was subsequently introduced into the Diagnostic and Statistical Manual in 1989 and that has been retained in a subsequent edition of the manual. (Polatajko, H. J., Fox, M., & Missiuna, C., 1995).

Montovani, (2003); Temple, (2007); Lotan, Yalon-Chamovitz, Weiss, (2009) have all investigated the best elements to develop a modified learning environment suitable for children with disabilities. Their investigations noted that, it is mandatory to modify the learning environment to best fit the anticipated class instructions or student age, or even to achieve satisfaction of practicing different kind of physical activities. When dealing with children with disabilities, it is important to modify the surrounding environment either in the classroom or gymnasium setting to fulfill students' needs and minimize risk factors or injury.

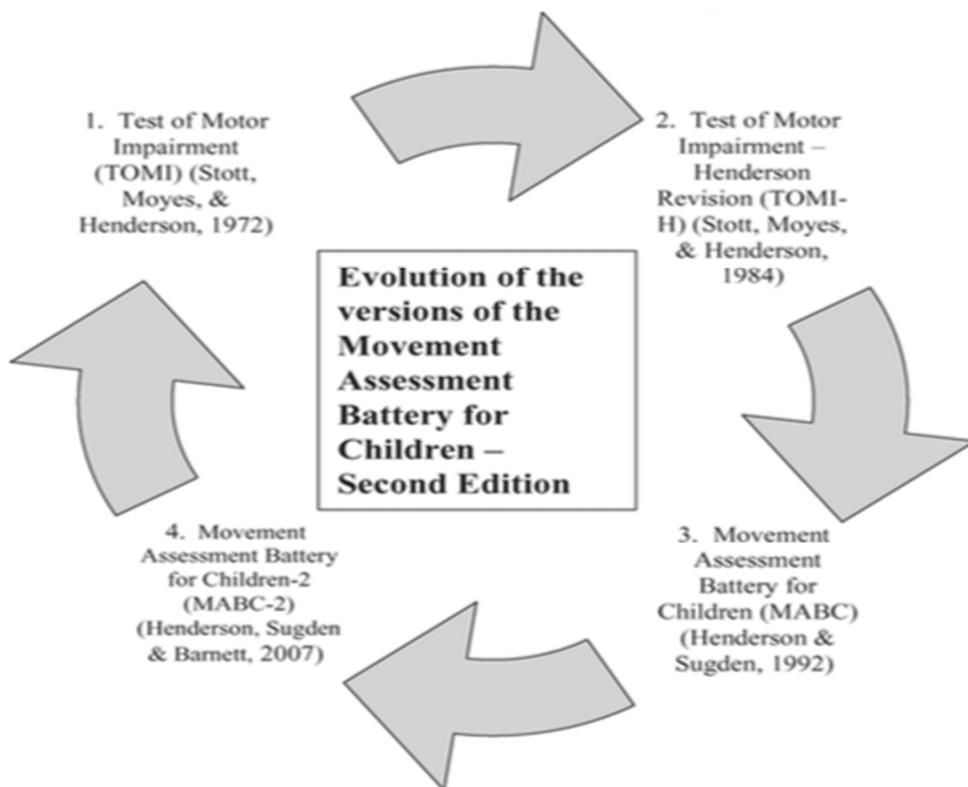
While it was once thought that children with DCD would simply outgrow their motor difficulties, research suggests that DCD persists throughout adolescence into adulthood. (Sugden et al., 2006).

Children with DCD can and do learn to perform certain motor tasks well, however, they have difficulty when faced with new, age-appropriate ones and are at risk for secondary difficulties that can result from their motor challenges. Although there is no “cure” for DCD, early intervention and treatment may help to reduce the emotional, physical and social consequences that are often associated with this disorder. Assessing DCD includes both the test itself (MABC-2) and the use of a checklist, which typically completed by both teachers and parents.

The present study sought to evaluate strengths and weaknesses of the MABC-2 assessment tool in a new socio-cultural context. And to determine the relationship between teachers and parent's observations using the MABC-2 checklist of Egyptian students from schools in the Cairo district, In addition, adding to cross-cultural data of MABC-2 with an Egyptian sample for the first time in the Middle East.

The Movement ABC-2 (Henderson, Sugden, & Barnett, 2007) is a revision of the original Movement ABC (Henderson & Sugden, 1992). The purpose of the revised Test and Checklist was to better describe and identify major impairments in a child's motor performance specifically between ages of 3-16

Figure 1. Evolution of the Movement Assessment Battery for Children— second edition (MABC-2) Brown & Lalor, 2009, p.88



The test covers three separate age bands (3–6 years; 7–10 years; and 11–16 years) each consisting of eight tasks, which assess different motor abilities. These eight tasks are divided into three sub components: Manual dexterity, Aiming and catching, and Static and dynamic balance. For all items, the best out of two trials is recorded.

The aims of the present study were:

- (1) To examine the reliability and validity of age band 2 of the MABC-2 assessment tool in preparation of its standardization in Egypt.
- (2) To evaluate the accuracy and reliability between teachers and parents observations using a new Arabic translated version of MABC-2 checklist.

The results and conclusions of this study might provide further important insights in the future development of school based physical education curricula. In addition will add to the existing database of the MABC-2 with respect to the reliability and validity of the MABC-2.

Research questions:

- 1) What is the level of agreement of the checklist scores of Egyptian teachers and parents regarding the students' scores on the MABC-2?
- 2) Will the age band 2 of the MABC-2 prove to be valid and reliable to be used more widely in Egypt?

Research hypotheses:

- 1) Student scores on the MABC-2 will reliably correlate with the checklist scores of both Egyptian teachers and parents.
- 2) The age band 2 of MABC-2 is reliable and valid to be used in Egypt.

Chapter 2 Literature Review

Introduction:

Since the last decade, the government tends to develop special education schools to contain a large number of people with disabilities. They have developed new premises including assistive devices, modified equipment, and educational environments. Also, they passed law enforcement to fulfill people with disabilities' needs.

In addition to, increasing the number of special education schools nationwide, the government has assured the need to develop the learning component, curricula, and physical activity programs. As a result, special education organizations and the Central Authority for Public Mobilization and Statistics (CAPMS) have looked after the major causes of impairment and recent classifications of types of disabilities in Egypt to have a better understanding of the current statistics of people with disabilities.

Movement batteries and assessments are considered one of the major components in the educational system. School districts have widened the scope of knowledge of movement difficulties screening. Assessment tools used to determine the level of disability; as a result, special education schools tend to employ a number of assessments to differentiate students' abilities.

While there are a variety of assessment tools to test the students' abilities, the notion of validity and reliability arises. To determine the appropriate test, it is required to know whether it is valid and reliable to be used with respect to cultural differences.

Section A: A brief history of the Egyptian context.

Disability services in Egypt have improved greatly over the past several years. In the past, people with disabilities in Egypt and in the Arab world in general, faced many problems and were treated unequally (Alshenawy, 1997). Minimal or no services were offered to them or to their families, and if services were provided, it was considered “charity”.

According to the World Health Organization (2001), approximately 10% of the Egyptian population or about 10 million persons have disabilities. To put that number in perspective, Egypt’s Coptic population is approximately the same size.

Table 1: Number of Persons with Disabilities by Types of Disability in 1996

Total number of people with disabilities	Visual impairment	Hearing impairment	Mental impairment	Mobility impairment
1,060,536	151,510	90,906	515,100	303,020

Central Authority for Public Mobilization and Statistics (1996)

All past regimes have considered the Egyptian disabled population as a marginal minority. The basic rights of people with disabilities were ignored. Not only, their rights, but also they suffered from a lack of assistive equipment and modified environments. After the Egyptian revolution in 2011, it was expected that the future of people with disabilities would change and lie in the hope that some attention might be brought to them in order to meet the global standards and minimum requirements to live a healthy life.

Elshami (2012) stated that, the issue of disability in Egypt is multifaceted, affecting the disabled population itself, as well as other segments of society. For example, if the head of the household or caregiver is disabled, children will be forced to leave school and find work.

Disability also remains culturally stigmatized in Egypt. Logically, people with disabilities should be encouraged to become active members of the society. Instead, cultural norms have often led families to not admit that they have a disabled person in their family. Also, disabled children would stay at home and never deal with the society.

The effects of such marginalization also extended to public and private schools, as their admission protocol rarely accepted students with disabilities, fearing that including those students might have a negative influence on their peers. Additionally, private schools created especially for children with disabilities, typically lacked an acceptable education system, and the extra costs limited low economic families from applying to such schools to cover teaching aids and tutoring.

In general, Egyptian government policies should ensure that people with disabilities would have equal opportunities to engage in the society. In addition, offering full support to people with disabilities with all sorts of educational aids.

Before describing the Egyptian government's effort in special education reform, an overview of the obstacles and problems that face this sector of the education system will be discussed. As mentioned before, there is a lack of information and statistics on the number of children with intellectual disabilities in Egypt. There is a qualitative and quantitative shortage in the special education professionals who can deal with and teach children with intellectual disabilities especially because most of the teachers who work in

the special schools are unqualified. The number of faculties of education that train qualified special education teachers is small. Furthermore, the services do not reach all children with intellectual disabilities nationwide, in particular, children who live in the countryside and remote areas.

A-1: Current Egyptian government effort and law enforcement

Different countries have adopted different policies to achieve these ends. This has included monetary assistance, vocational services and training, anti-discrimination laws, quotas, and equal employment opportunities. (Alshenawy, 1997)

In the United States, for example, the Americans with Disabilities Act (ADA) forbids any employment discrimination based upon disability and requires employers to provide equal opportunities and accommodations for disabled employees.

The Egyptian counterpart to the ADA is the Rehabilitation of Disabled Persons Law, passed in 1975. This regulation gives people with disabilities the right of entry to vocational education and employment, however, it does not outlaw discrimination altogether.

The government uses a quota system to employ people with disabilities in different work opportunities. This quota requires companies with more than 50 employees, to include at least 5% of people with disabilities in the total number of employees. Unfortunately, according to most sources, this quota has not been in effect. Companies tend to include the required percentage of people with disabilities in their payroll without actually hiring any of them. Also, other existing non-profit organizations would hire people with disabilities in their facility as a sort of charity not following the path of integration and employment.

Social Rehabilitation Law No.39 stated:

Every disabled citizen has the right to benefit from rehabilitation services. Any trained person with a disability should be given a license to enroll at manpower offices to enjoy the right provided for him under the provision of medical fitness in case of public services because of his defect, as indicated in the rehabilitation certificate. (The Central Agency for Organization and Administration, Periodic Book No. 11, 2011)

In 1975, the quota for disabled workers was increased from two to five percent for any business with over 60 employees, whether in the public or private sector (Yvette, 2005).

The government took the following steps to develop the education system and to overcome the previous problems. First, they have developed five main special education schools in the Cairo district, which represented the largest number of students with disabilities. Second, the community service agencies assisted the government in developing five other schools through a program from the Central Integrated Welfare Society (CIWS); they developed the whole program including content, equipment, and curriculum. Third, the notion of inclusion now includes students with intellectual disabilities into fifty regular schools in the different districts nationwide beginning with the school year 2001/2002. Fourth, as the Giza district represents a large number of students with movement disabilities, the government has accepted thirty classes for students with special needs in private schools admission (SHEHAB et al., 2004).

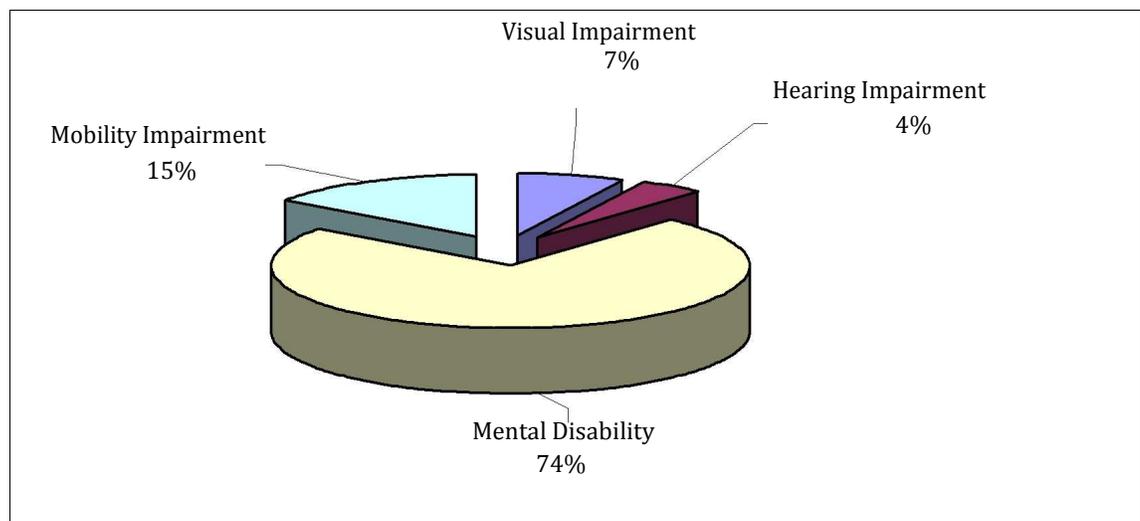
A-2: The spectrum of impairment and disabilities in Egypt:

In Egypt, there are two essential causes of impairments economic and social. As a developing country, Egypt suffers from widespread poverty. In addition to other obstacles such as: unsanitary living conditions, lack of access to safe drinking water, and

inadequate means of garbage disposal. All these factors are the cause of communicable diseases leading to various impairments (Qandil 1989; Teçke et al. 1994).

More specifically, these diseases are major obstacles to the physical and mental development of children, which can lead to permanent impairments (El Safty 1994; Fahmy 2000).

Figure 2: Types of Disability in Egypt in 1996



Central Authority for Public Mobilization and Statistics (1996)

Figure 2 summarizes a classification to different types of disabilities in Egypt reported by the Central Authority for Public Mobilization and Statistics (CAPMS) in 1996. It is realized that 74% of people with disabilities are classified as mental (cognitive) disability. This percentage includes students with autism spectrum disorder (ASD), trauma, developmental coordination disorder (DCD), etc.

The other major cause of impairment in Egypt is malnutrition. As mentioned before, approximately 40% of the Egyptian population lives in poverty. The economic status of many families is not adequate to maintain a healthy life with a good source of healthy nutrition. It affects mostly women and children, which puts them at risk to fall victims of physical and intellectual impairments.

Social causes are also implicated in high levels of impairment. One is endogamous marriage. As Egypt suffers from lack of information and statistics to have an exact number of people with disabilities who have married to relatives in their families, it has been suggested that they account for 67 percent of the total number of people with impairments (El Banna 1989).

People usually prefer to marry cousins for a variety of economic, social and cultural reasons. However, hereditary factors can result in several types of impairments sensory, mental and physical. When first cousins marry, these genetic disorders can easily impact their children.

In the National Research Centre in Egypt, clinical and genetic examinations were carried out on 100 cases of children with intellectual impairments. The findings showed that 90 percent were genetically a result of intermarriage among relatives with 50 percent involving cousin marriages (Nosseir 1989).

In addition, children born by younger and older women have various impairments including low birth weight, lower growth rates and other physical and cognitive conditions. Pregnancy after the age of 37, for example, puts the mother at a higher risk of giving birth to a child with Down's syndrome. These practices further contribute to the

malnutrition of the child and subsequently their likelihood of experiencing impairment (El Safty 1994).

A-3: Egypt's current school system and the demographics of people with disabilities

Lack of awareness of educational programs caused people to treat disabled persons as atypical human beings, and to not care about them. Families typically hid the fact that they had a disabled child at home, because it was considered embarrassment, which negatively affected their child's social skills. In the past 20 years, this picture has changed rapidly; families and the community now view disabilities from different perspective. Experts are trying to develop new programs, including "early detection, early intervention, normalization, training programs for parents and inclusion in Community-Based Rehabilitation (CBR)". (Lababidi & El Arabi, 2002)

In the 1960s, the government established educational amenities to serve people with intellectual disabilities. Twenty years later, community awareness about different disabilities has continued to increase to include a new perspective of caring and recognition. For instance, now Egypt celebrates the International Year of the Disabled (December 15th every year), in addition to offering several new services, such as the establishment of associations by parents of disabled children and various CBR projects in Egypt (Alshenawy, 1997).

This new awareness has produce new opportunities to people with disabilities; engaging them in public activities; voicing their concerns; and advocating. This has also widened the scope of knowledge for different Arab countries and encouraged each country to unite and form organizations that have concrete demands, and to be heard by the whole world

in general, and the individual authorities and foreign organizations in particular (Gaad, 2001).

There are two types of schools that accept children with intellectual disabilities. Firstly, according to the statistics from the Ministry of Education (1998) with reference to special education schools, the statistics are 430 schools for various special needs (visual impairment, hearing impairment, intellectual disabilities) whereas for intellectual disabilities alone, it is 211 schools.

Table 2: The number of special schools by type (a: private and public) and area (b: urban and rural). Data from the Egyptian ministry of education, (2008)

a

Education	Public			Private		
	Schools	Classes	Students	Schools	Classes	Students
Nursery	1	4	12	-	-	-
Elementary	430	1778	4764	13	76	201
Preparatory	125	404	1349	-	-	-
Secondary	-	-	-	-	-	-

b

Education	Urban			Rural		
	Schools	Classes	Students	Schools	Classes	Students
Nursery	1	4	12	-	-	-
Elementary	260	1438	4336	93	316	629
Preparatory	159	369	1266	21	50	134
Secondary	-	-	-	-	-	-

Table 2 provides a brief summary of the number of schools, classes, students of intellectual disability in Egypt. Table 2a indicates that, number of schools increased by 2008 to 556 in public schools and 13 private schools as compared with 420 in urban areas and 114 in rural areas for children with intellectual disabilities alone. Table 2b

summarizes the number of schools in favor of location. It is indicated that, the number of special needs school is higher in Urban areas than Rural areas. Also, number of nurseries for children is limited to only one school in urban areas.

In addition, there are no secondary schools for students with disabilities, neither in rural or urban areas.

Figure 3: illustrates the mean number of people with four types of disabilities (figure 3a), and the incidence of disability per 100,000 of children (figure 2b) in both urban and rural areas of Egypt. Data for 2-a from CAPMS (1996), and 2-b SRC. American uni.EMICS (1997)

Figure 3a:

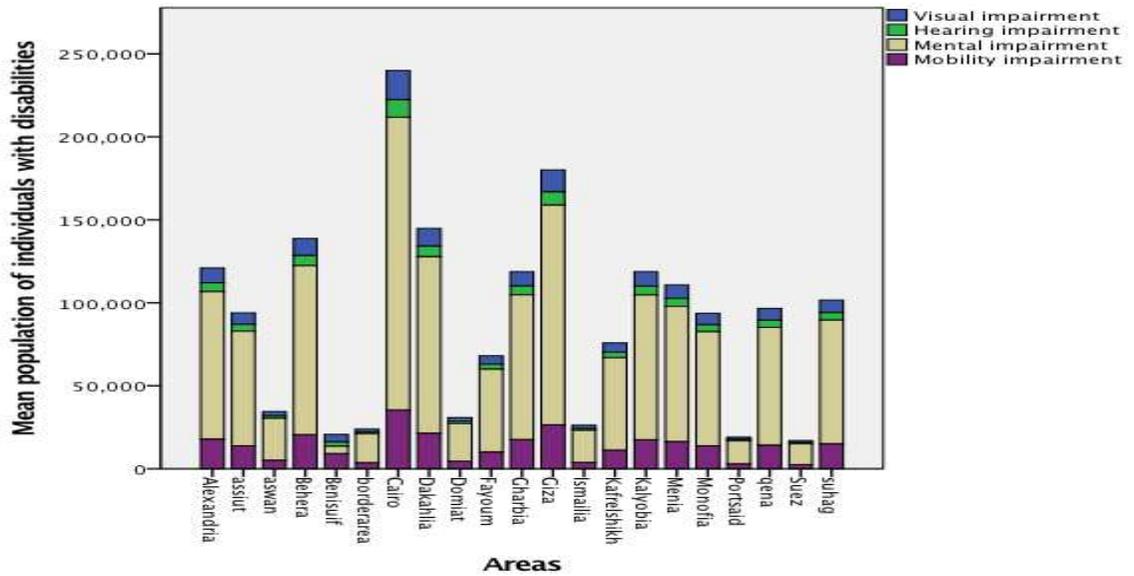


Figure 3b:

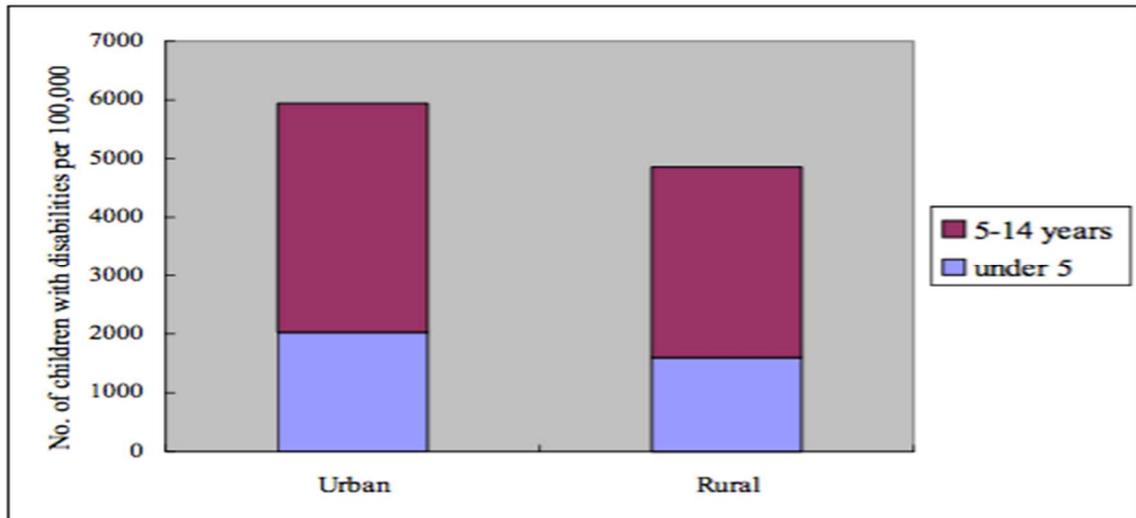


Figure 3-a: illustrates discrepancies between districts in Egypt depending on each location. It should be noted that number of people with disabilities varies depending on the location in Egypt. For instance, Cairo, the most modernized city, contains a large number of people with disabilities, which results from population demography concentrated in the capital of Egypt. While, Beni Suif and Aswan, are considered rural cities, represent fewer number of people with disabilities.

Figure 3-b, illustrates that urban cities account for a larger number of people with disabilities than rural cities. Approximately 6% of 100.000 people have disabilities; 33% of them are under the age of five. While, approximately 4.8% of 100.000 people live in rural cities.

Also noted that, the majority of children with disabilities are between 5-14 years old.

Section B: Learning Environment and Assessment

B-1: Learning environments and physical activity participation:

Since the learning process has so many elements that need be considered in teaching children with disabilities, the learning environment remains the most important aspect to encourage disabled children to practice sports activities. Montovani et. al., (2003) indicated that modified environments and learning settings afford different kinds of rehabilitation and special education activities including the active learning style that encourages children to participate more in the activities.

Also, physical activities in special physical education programs are essential for developing growth and health of DCD children.

In addition, Strong, Malina, Blimkie, Daniels, & Gutin, (2005) recommended that children have to engage in regular physical activities. The advantages of being physically active leads to reduced cardiovascular, diabetes, and hypertension risk factors among children.

Furthermore, there are studies recommending that children should participate in at least 60 minutes per week of moderate physical activity in order to be physically fit. (Blacher & McIntyre, 2005; Carter, 2009; Taylor & Warren, 2011), they noted that being active and to participate in various physical activities is depending on the surrounding environment and its modifications while taking care of other perspectives such as: physical location and its size, presence of social support, and availability of resources and expertise. Therefore, it is important to modify the environment of the learning process. Dunn & Leitshuh, (2010) have explained how to understand the individuals with disabilities. They stated that, although the family dynamics associated with raising a child

with disability are significant, many parents find genuine joy and satisfaction in raising their child.

B-2: Assessment for MABC-2:

After developing the environment appropriate for the needs of people with disabilities, and ensuring that educational services are available to everyone, it is essential to use appropriate assessment tools to determine the level of disability. This also would help in collecting more information and statistics for different types of disabilities. Accurate and valid assessment techniques are imperative to promote global understanding and multicultural relationships of a range of disabilities with respect to DCD (the focus of the present study). The MABC-2 assessment is considered one of the most powerful and accurate tools to best assess children at risk of developmental coordination disorder.

More recent studies have established common standards to develop large data sets investigating developmental disorders. As the number of children at risk of DCD has been increasing, researchers tend to employ different assessments to match different behaviors and diagnostics. In many cases, selecting the appropriate assessment to better identify DCD depends on many factors such as: psychometric properties, universal application, and accessibility.

Mostly, the research has emphasized that finding a translated and validated assessment tool is demanding. More specifically, it's unusual to have an assessment protocol describing adequate and accurate procedures that match different culture settings and behaviors. Also, assessments require adjustments to be employed according to different

types of physical activity programs under review (Bhui, Mohamud, Warfa, Craig, & Stansfeld, 2003; Vallerand, 1989).

Also, validating such an assessment requires an intense effort to develop results that are trusted between and within different cultures one to another. (Bhui et al., 2003). Furthermore, research indicates that more investigations to ensure cultural clarity, pertinence, reliability and validity are needed so that different assessment tools are acceptable in different cultural backgrounds (Cicchetti & Rourke, 2004; Cronbach, 1989; Vallerand, 1989). Unreliable assessments will not only be biased and worthless, but also can lead to an inaccurate diagnosis (Yun & Ulrich, 2002), resulting in failure to determine the level of an individual disability (Henderson et al., 2007).

When assessment tools are both reliable and valid, cross-cultural studies will better differentiate between cultures, and detect similarities between individual profiles.

While, many researchers tend to have a valid and reliable assessment tool to generalize their findings among different cultures, it is mandatory to investigate the psychometric properties of each assessment because it is not consistent across populations. (Yun & Ulrich, 2002)

The MABC-2 manual has included data from different cultural settings, but obviously the inclusion of more cultures will enhance a better understanding of the psychometric properties of the test (Brown & Lalor, 2009).

B-3: Cultural evidence for the validity and reliability of MABC-2:

According to the test manual (Henderson et al., 2007), they stated that some researchers implied that there is no need to test validity and reliability of MABC-2, but

rely on the old version (MABC-1). On the other hand, there are four items were added to the MABC-2 and as a result, it was recommended that the validity and reliability of the second version should also be tested. Furthermore, the assessment has been modified in the second version with changes made to age bands. The age ranges are slightly different for the MABC-2. Therefore, the MABC-2 should be treated as a different test, suggested by Brawn and Lalor (2009). Also, they stated, the test needs to have its own specific measurement properties evaluated and reported.

In order to test the internal consistency of MABC-2, Cronbach's alpha will be employed. Alpha was developed by Lee Cronbach (1951) to provide a measure of the internal consistency of a test or scale; it is expressed as a number between 0 and 1. Internal consistency describes the extent to which all the items in a test measure the same concept or construct and hence it is connected to the inter-relatedness of the items within the test. Internal consistency should be determined before a test can be employed for research or examination purposes to ensure validity.

A study by Chow and Henderson (2003), evaluated the inter-rater and test-retest reliability of the MABC-2 assessment. Authors have translated the checklist from English to Chinese. They recruited 31 teenagers from Hong Kong.

With respect to previous studies, Brown & Lalor (2009) stated that, it is recommended to include more studies in the test manual to assess internal consistency, intra-rater reliability, and test-retest reliability of MABC-2. Researchers recommend to compare the MABC-2 with other well established assessment tools such as the Peabody Developmental Motor Scales-2nd edition (Folio & Fewell, 2000) or the Bruininks-Oseretsky Test of Motor Proficiency, 2nd edition (BOT-2) (Bruininks, R. H., &

Bruininks, B. D, 2005) . Consequently, the measurement properties of the MABC-2 are rather limited. The major weakness of the test's usefulness mainly concerns all aspects of reliability and validity.

Regarding the validity of MABC-2, The test manual illustrates that judging of an expert panel was used to determine the MABC-1 content validity (Henderson et al., 2007). However, findings are based on using MABC-1, there is no evidence that content validity for the MABC-2 was also used. Yun & Ulrich (2002) have implied that most approaches used to assess validity are criterion, content, and construct validity by comparing MABC-2 with other assessment tools on different settings. Other studies used the correlation coefficients between the three subtest standard scores and the total test scores to provide an evidence of construct validity. The results indicated acceptable coefficient values (Henderson et al., 2007).

Ellinoudis, Kourtessis, Kiparissis, Kampas, & Mavromatis (2008) conducted a study to assess the validity of the first version of MABC. They assessed 9 to 12 years old Greek students and, their findings supported the validity of the assessment tool when compared with the three-domain model suggested by Henderson and Sugden (1992).

Evidence of criterion-related validity of the MABC-2 was reported by several studies (Henderson et al., 2007; Kavazi, 2006; Siaperas, Holland, & Ring, 2006). Furthermore, evidence of construct validity of the test is very limited regarding the MABC-2 test manual.

Section C: Cross-cultural differences and similarities

One aim of the present study was to compare differences between different cultures, which have used the MABC-2 assessment tool recently such as studies, conducted in Brazil (Valentini, Ramalho, and Oliveira, 2014), Greece (Ellinoudis et al., 2011), Hong Kong (Jing et al., 2012) & (Chow & Henderson, 2003), Japan (Kita, Suzuki, Hirata, Sakihara, Inagaki, Nakai, 2016), and Australia (Civetta & Hillier, 2008).

Although the MABC-2 assessment is a well-known test used in different countries, no data exists from countries in the Arab region or the Middle East. Therefore, here we have translated the assessment checklist into Arabic to be used in different school systems both in Egypt and potentially the Arab region.

In Brazil, Valentini, et al., (2013) conducted a similar study and translated the checklist into Portuguese, In order to examine the validity and reliability of the MABC-2.

In Greece, Ellinoudis et al. (2011) verified the reliability and validity of age band 1 of the MABC-2 using a Greek version of the MABC-2 checklist.

Another study conducted by Visser and Jongmans (2004), the authors recruited 55 Dutch children aged three years old. Their findings showed that using test-retest reliability were acceptable coefficients. Indicating that item-by-item Pearson correlation coefficient values ranged from 0.49 to 0.70.

Researchers recommend providing the test manual with more evidence regarding cross-cultural differences and similarities in order to generalize the findings across different cultures.

While studies conducted in Europe (Netherland, United Kingdom, and Sweden) (Smits-Engelsman, 1998; Henderson, et al., 2007; Rösblad & Gard, 1998) have

successfully demonstrated reliable findings, it may be necessary to modify the nature of the test items in order to be valid in other cultures, specifically in the Asia-Pacific region.

Unfortunately, of studies mentioned above, only three reported the use of MABC-2 in Hong Kong. This indicates the presence of cultural differences not only within the same region, but also when compared to western countries (Chow, et al., 2006; Livesey, Coleman, & Piek, 2007; Miyahara et al., 1998).

Likewise, the Middle East is lacking such studies on cross-cultural differences and similarities. To the knowledge of the author, no Middle Eastern data of the MABC-2 has been published to date. Previous studies with the MABC based on the cross-cultural comparison of the results of testing of children have been reported in Greece (Ellinoudis, Kourtessis, & Kiparissis, 2008); Spain (Ruiz, Graupera, Gutiérrez, & Miyahara, 2003); Sweden (Rösblad & Gard, 1998); and the Netherlands (Smits-Engelsman, 1998).

Summary:

Unfortunately, all the information about Egypt dates back to 1996. It would be a value for the Egyptian government to update the national demography of the number of people with disabilities, in addition to generating a better classification for different types of disabilities.

The current government is making a huge effort to improve the educational system for children with special needs including those with intellectual disabilities represented by the following: Establishing facilities which did not exist in the schools, to provide new services such as a family reception room, computer labs, communication room, gymnasium etc.

The number of the schools and classes of those with intellectual disabilities along with other children with special needs have increased.

The government has encouraged parents, to send their children with special needs, especially intellectual disabilities children, who are deprived of possible educational opportunities, to such schools. Recently, the number of pupils enrolled in the special schools has been increasing, and the number of teachers as well (Sehab et al., 2004).

Most findings of the previous studies illustrate the need to conduct more research in assessing validity and reliability of the MABC-2 test from cross-cultural perspective. However, some cross-cultural differences of performance in the tests were reported and relevant adjustment of the norms recommended, researchers might consider MABC-2 to be a useful tool for assessment of children motor development in regions not yet representing the Middle East.

Therefore, the study aims to: (1) evaluate the relationship between teachers and parents observations recorded in Arabic translated version of MABC-2 checklist. And, (2) examine the reliability and validity of the MABC-2 assessment.

Chapter 3 Methods

Participants

Volunteer participants comprised 89 children (54 boys and 35 girls), age between 7.0 and 10.8 years ($\bar{x}=8.8$ and $sd\pm 1.2$). Students with multiple or severe disabilities were excluded. Also, seven students were excluded because they were not able to complete all the test items.

Participants were recruited from five special education schools whose principals agreed to participate in the research, plus an additional three private organizations, which had similar curricula for students with disabilities.

In addition, the selection process was based on the number of students with disabilities across the country. As mentioned before, *Cairo*, the capital, has the largest number of people with disabilities, therefore, 50 students between the ages of 6 to 9 years were recruited. Participants were recruited from 5 different special education schools to represent all social levels, from low to high economic neighborhoods schools. Then, nineteen additional students were recruited from a private organization from *City of Al-Fayoum*, which has the second largest number of students with disabilities in the anticipated age band. Finally, 20 students were recruited from a private organization in the *City of 6th of October*, representing a moderate to high socio-economic life style. Written informed consent was obtained from the parents and legal guardians of the participants prior to the start of the study.

Test and checklist Instrument

The Movement Assessment Battery for Children-2 (MABC-2) (Henderson, Sugden, & Barnett, 2007), is a revision of the original Movement Assessment Battery for Children (MABC) (Henderson & Sugden, 1992). It is one of the most widely used assessment tools by occupational therapists (OT's), physiotherapists (PT's), psychologists, and educational professionals (Barnett & Henderson, 1998). The purpose of the MABC-2 is to identify and describe impairments in the performance of children 3–17 years of age. The MABC-2 comprised two parts: A Performance Test and a Checklist. The Performance Test requires children to complete a series of fine and gross motor tasks grouped into three categories: Manual Dexterity, Aiming and Catching, and Balance. Norms are provided for three Age Bands (3:0–6:11 years, 7:0–10:11 years, and 11:0–16:11 years). The Checklist requires an adult (usually a parent, caregiver, or teacher) to rate the child's motor competence on a 30-item checklist.

The MABC –2 Checklist is a complementary tool to alert teachers and parents to the existence of movement difficulties.

Advantages of the test are: Its availability in several European countries, and its cross-cultural validity. The MABC (Henderson & Sugden, 1992) was normed on children from Canada, the United States, and the United Kingdom. Norms have been evaluated in studies completed in other countries including Sweden (Rosblad & Gard, 1998), Japan (Miyahara et al., 1998), Netherlands (Smith-Engelsman, Henderson, & Michels, 1998), Hong Kong (Chow, Henderson, & Barnett, 2001; Chow, Yung-Wen Hsu, Henderson, & Yu, Tzu-Ying, 2006), and Singapore (Wright, Sugden, Ng, & Tan, 1994). Moreover, its simplicity of administration can facilitate large sample screening over a short period.

Disadvantages of the test are: It is rather large age range (loss of specificity) and its unfavorable proportion of test items versus time required for test administration (8 items/20-30 min). Unlike other movement skill tests, such as BOT-2 (Bruininks, R. H., & Bruininks, B. D, 2005), which measures the child's strengths and weaknesses over a wide range of skills, the Movement-ABC is limited to the movement skills within a certain age band. The Movement-ABC is a product-oriented test and refers to a norm. In the revised version (Henderson et al., 2007) qualitative observations have been added. However, they do not have an impact on the score and are meant to specify the difficulties that children encounter when performing a movement skill task. Following the Movement ABC checklist, the age range of Movement-ABC 2 checklist is extended (ages 5 to 12) and focuses on how a child manages everyday tasks encountered in school and at home. The checklist has a motor and a non-motor component that provides information on direct and indirect factors that might affect movement.

By way of summary the advantages of the MABC-2 are:

- Large age range
- Consistent scoring system using standard scores and percentiles
- Ecological Intervention Manual to assist with intervention planning
- User-friendly manual, including colored pictures of task set-up
- User-friendly score sheet, including tips regarding administration
- Scoring tables are easy to find in a separate appendix

Translation of the checklist into Arabic:

In the present study, a double-back reverse independent translation procedure was

employed (Vallerand, 1989). This procedure involved 2 translators (English and Arabic speakers) and required two independent translations from English to Arabic. Then two subsequent independent translations from Arabic to English were completed. The translators did not have access to the original English version of the MABC-2. A final translated and edited score sheet was developed based on the Arabic version of the MABC-2. No changes on the motor items and scoring system were made. Also, Pearson Inc. approved the Arabic translation in 2015.

Procedures

Two assistants were trained by the researcher (MH) to administrate the age bands 2 of MABC-2 test. The trainee testers learned the test guidance (Arabic version) and then carried out a series of practice assessments on 6 students who did not take part in the study. The research administrator (MH) clarified any problems of administration during training period before the test started. Each child was tested on all eight items of the MABC-2 by (MH) and one of the trained assistants.

The Arabic translation of the MABC-2 checklist was distributed to the teachers and parents of the 89 volunteer children from the cooperating schools in the surrounding districts of Cairo. Approval sought from the school governing authority and from the parents of the children for participating in the study. All data collected were coded to maintain the anonymity of all participants.

All children identified by both teachers and parents as possibly at risk for DCD, were assessed using the MABC-2 age appropriate test according to the MABC-2 manual instructions (Henderson et al., 2007). The traffic light system for total test scores

described in the test manual illustrates the following: (see Appendix B, figure 7)

- Red zone is corresponding with a total test score of any score up to and including 56, which is described as (there is a significant movement difficulty). Described $\leq 5th$ percentile range ranking
- Amber zone is corresponding with a total test score of any score between 57 and 67 inclusive, which is described as (the child is at risk of having a movement difficulty). Described between the *5th percentile and 15th percentile*
- Green zone is corresponding with a total test score of any score above 67, which is described as (no movement difficulty detected). Described $\geq 16th$ percentile.

Figure 7 in appendix b shows that, 79.78% of the sample falls in the red zone ($\leq 5th$ percentile), which denotes a significant movement difficulty. 13.48% of the sample falls in the amber zone (*5th percentile and 15th percentile*), and 6.74% in the green zone.

The test manual denotes that DCD falls within a percentile ranking of $\leq 15\%$. For the 89 participants in the present study, approximately 93% of the sample is at risk of DCD, however, the majority were ranked less than the 5th percentile, which reflects other possible movement issues.

To assess the inter-rater reliability of MABC-2, one tester assessed children while the other tester observed. Both testers scored each child's motor performance simultaneously but independently. The testers reversed their roles when half of the children completed the MABC-2 test.

After recording each student's checklist and MABC-2 Assessment, the researcher compared the Egyptian students' scores with that of students from the data already available from other countries

Design and Analysis

First, Pearson product correlations were computed to determine the relationship between the checklist scores generated by the teachers and the parents.

Second, with a suitable sample size ($n=89$), to test the reliability of MABC-2 assessment, the correlated Item-total correlation and Cronbach's alpha coefficient were employed to evaluate the internal consistency reliability. In addition, inter-item correlations were used to determine strengths and weaknesses within the test items. The Intra-class Correlation Coefficient (ICC) was used to examine inter-rater reliability in this study based on the ten raw scores of the eight test items (the raw scores of preferred and non-preferred limbs were not combined according to the test manual). ICC below 0.2 indicates poor reliability, those between 0.2 and 0.5 were acceptable, and those above 0.6 were good (Landis & Koch, 1977).

Third, to assess the validity of MABC-2, Correlation coefficients were computed to test the relationship between each test item and the total score of the test. In addition, the MABC-2 items standard scores were correlated with each other and with the subdomain total score. Then the MABC-2 subdomain total scores were correlated with the total test scores.

Chapter 4 Results and Discussion

The aims of the study were: First, to determine the impact of using an Arabic translation of MABC-2 assessment tool in Egypt comparing checklist scores of both teachers and parent's observations, and actual student performance assessment on the MABC-2 as the criterion score, Second, to evaluate the strengths and weaknesses of the MABC-2 Checklist in a new socio-cultural context by assessing reliability and validity of MABC-2 assessment. The results and conclusions of this study might provide important insights in the future development of school based physical education curricula. In addition will add to the wider database of the MABC-2 with respect to the reliability and validity of the MABC-2.

This chapter reports the results as follows:

- The relationship between total test scores, teacher responses, and parent's responses in the checklist.
- The MABC-2 reliability in Egypt.
- The MABC-2 validity in Egypt.

Checklist comparisons between teachers and parents:

This study analyzed the influence of using an Arabic version of MABC-2 checklist in Egypt using teachers and parents' responses. Therefore, correlation coefficients were used to evaluate the relationship between the total test scores, teacher responses and parents' responses in the checklist. Then the relationship between teacher and parents responses is computed as well.

Figure 4 illustrates the correlation between teachers' responses and total test scores (4a), and the correlation between parents' responses and total test scores (4b).

Figure: 4a

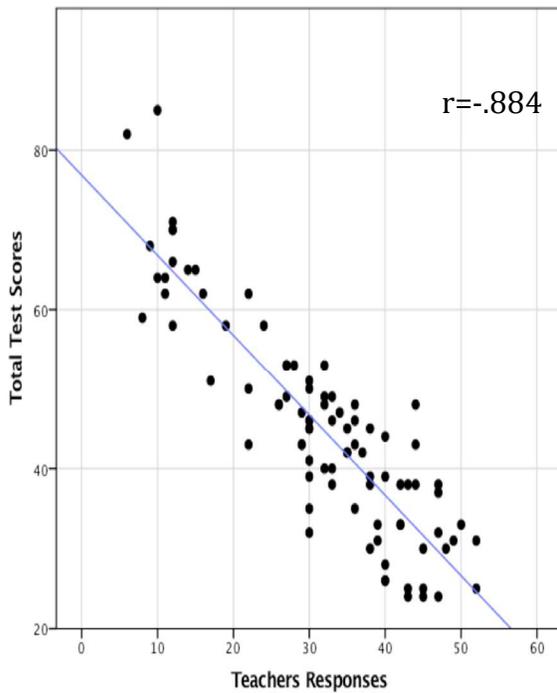


Figure: 4b

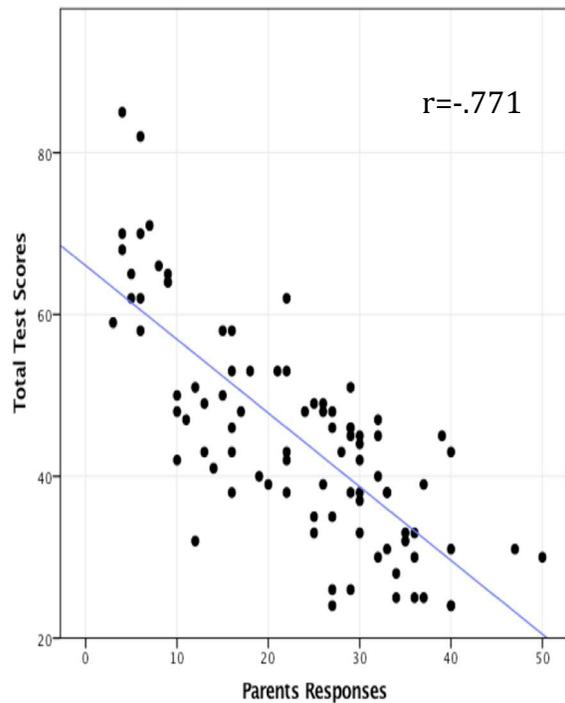
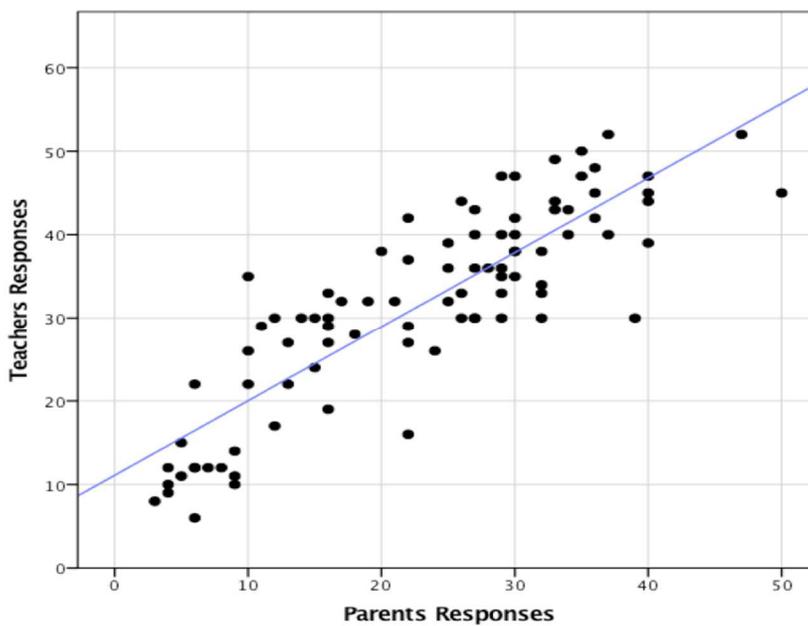


Figure 4a illustrates that the correlation value to assess the relationship between the teacher's checklist responses and the total test scores for the MABC-2. The scatterplot shows a strong negative correlation between the teachers' scores and the total test scores. $r = -0.88$, $n=2$, $p<0.001$. An increase in teacher checklist score was correlated with a decrease in total test scores. According to the test manual, increases in the MABC-2 test scores indicate no movement difficulties, which result in low teacher checklist responses. On a similar note, the higher scores a student record for the assessment, the lower the

checklist score a teacher records. Therefore, the relationship between them is negatively correlated. Figure 4b illustrates the scatterplot for the parents' checklist scores with the MABC-2 assessment test scores. Here the correlation was also negative. $r = -0.77$, $n=2$, $p < 0.001$. Figure 4c shows the correlation between teachers and parents checklist responses. The scatterplot shows a strong positive relationship between the two variables, $r = 0.85$, $n=2$, $p < 0.001$

Figure 4c: correlation between parents and teachers responses



To conclude, the relationship between teachers' responses and the total test scores was higher than that of the parents and the total test scores. ($r=-.88$ compared to $r=-.77$). This difference in correlations and values relationship might be explained because teachers observe the children in a variety of physical activity settings at school; the parents less so at home. Although difference between teachers and parents, is not especially large.

Reliability of MABC-2:

The Corrected item-total correlation and Cronbach's alpha coefficient evaluated the internal consistency (reliability) based on the standard scores of the eight items and total test score (the standard scores of preferred and non-preferred limbs were combined according to the test manual). Coefficients below 0.2 indicates poor reliability, those between 0.2 and 0.5 were acceptable, and those above 0.6 were good (Landis & Koch, 1977).

Table 3: The internal consistency of MABC-2 (N =89)

Items	Standard score of each item $\bar{x}(SD)$	Corrected Item-total correlation	Cronbach's alpha coefficients if item deleted
Placing pegs	4.85(2.13)	0.56**	0.70
Threading lace	3.64(1.73)	0.62**	0.70
Drawing trail	1.84(1.70)	0.40**	0.73
Catching with two hands	7.03(2.45)	0.65**	0.69
Throwing beanbag onto mat	9.51(4.49)	0.83**	0.64
One-board balance	8.11(2.90)	0.66**	0.68
Walking Heel-To-Toe	3.48(1.24)	0.08	0.75
Hopping on mats	6.61(4.34)	0.73**	0.70

** Correlation is significant at the 0.01 level

Table 3 illustrates means and standard deviation of standard scores of the eight MABC-2 test items. Also, it indicates the correlation between each item and the total test score, and Cronbach's coefficient if a particular item was deleted. The results showed that the Cronbach's alpha for all test items was acceptable ($r=0.73$). This result showed a higher internal consistency than the Greek data (Ellinoudis, et. al, 2008), which reported an internal consistency of MABC-2 ($r=0.72$), as acceptable. However, correlation coefficients between the test subdomains were moderate to poor, due to the relative small number of items ($n=8$) of MABC-2 test. Also, Jing Hua, et al. (2012) evaluated the internal consistency of MABC-2 in Hong Kong. Their results showed that the internal consistency between the MABC-2 items reach a level deemed acceptable ($r=0.50$). In addition, in a Japanese study Kita, Suzuki, Hirata, Sakihara, Inagaki, Nakai, (2016), reported an internal consistency ($r=0.60$) between test items.

Nunnally and Bernstein (1994) suggested that the Cronbach's alpha value of a scale was related to the number of items (the larger the number of items, the higher the value). Additionally, the deletion of the item (Walking heels-To-Toe) resulted in the higher internal consistency (the alpha values increased from 0.73 to 0.75 if that item was deleted). The alpha values for the rest of the items ranged from (0.64 to 0.73), all of which were less than the Cronbach's alpha value of the MABC-2 (0.73).

Similar findings were reported in an Australian study by Civetta and Hillier (2008), where the alpha values of the test increased when the items of 'Posting coins', 'Drawing trail' and 'Walking heels raised' were omitted. Also, Jing et al., (2012) reported similar findings. Their results showed that if the item 'Walking heels raised' was deleted, the Cronbach's alpha coefficient increased from (0.50 to 0.52).

The item-total correlation was employed to evaluate the relationship between the assessment' items scores (n=8) with the total test scores. The results revealed a positive moderate correlation for five of the eight items (placing pegs (0.56), threading lace (0.62), drawing trail (0.40), catching with two hands (0.65), one-board balance (0.66)) with the total test scores. Positive strong correlations were present in two of the eight items (throwing a beanbag onto a mat (0.83), hopping onto mats (0.73)) and the total test scores. On the other hand, the correlation for the test item (walking heel-to-toe) with the total test score was low (0.08). Furthermore, Appendix D, Table, illustrates the inter-item correlations used to evaluate the relationship between the item (walking heel-to-toe) with the other items. Results showed that the (walking heel to toe) item is negatively correlated with two out of eight items (catching with two hands and hopping onto mats). Also, there are low correlations for six of the eight test items scores.

Overall, the results seem acceptable with the exception of the (walking heel-to toe) item. With respect to the low correlation of this item with total test score, the results suggested that the MABC-2 test might be in need of further refinement in order to improve its psychometric quality when used with an Egyptian population.

Intra-rater reliability

Table 4 illustrates means and standard deviation of raw scores of each item in MABC-2, recorded by raters one and two. (Rating 1) represent scores by (MH), and (Rating 2) is the scores of the testing assistants. Also, the table summarizes the intraclass

correlation coefficient (ICC) and confidence intervals (CI) for both ratings.

With respect to inter-rater reliability, the Arabic-speaking testers in this study were responsible to explain and test the test items to the participants, which may differ from their counterparts in other countries. However, these differences in their use of language or style of presentation were not reflected in the level of agreement reached on the children's scores. The ICCs for most items obtained in this study reflected excellent inter-rater reliability (0.9). Only one item ('Walking heel-to-toe') reflected a relatively low value for inter-rater reliability (0.86). All reveal a significant level ($p < .01$). This finding was similar to Chow and Henderson (2003) study, their findings illustrated that the inter-rater values for 'Walking heels raised' were lower due to the difficulties for testers to count the number of successful steps when some children walk very rapidly along the line. Also, the Jing Hua, et al., (2012) study revealed similar findings, the ICC for items (Drawing trail and Walking heel-to-toe) in their study were below (0.90).

Table 4: The Intraclass Correlations coefficient for inter-rater reliability of MABC-2 (N = 89).

Item	Raw score of each item \bar{x} (sd)		ICC	ICC 95%CI	
	Rating 1	Rating 2		Lower	Upper
Placing pegs with preferred hand (completion time in seconds)	66.00(37.15)	64.71(36.28)	0.99*	0.997	0.999
Placing pegs with non-preferred hand (completion time in seconds)	77.51(43.63)	76.65(42.57)	0.99*	0.998	0.999
Threading lace (completion time in seconds)	68.40(41.83)	69.56(42.58)	0.99*	0.997	0.999
Drawing trail (number of errors)	8.30(5.30)	9.54(5.94)	0.95*	0.883	0.978
Catching with two hands (number of correct catches out of 10)	2.34(2.70)	2.38(2.77)	0.99*	0.994	0.998
Throwing beanbag onto mat (Number of correct catches out of 10)	5.61(3.09)	5.64(3.11)	0.99*	0.996	0.998
One-board balance with preferred leg (number of seconds balanced)	10.58(6.73)	11.89(7.17)	0.97*	0.911	0.988
One-board balance with non-preferred leg (number of seconds balanced)	6.78(6.23)	6.16(5.54)	0.98*	0.966	0.989
Walking Heel-To-Toe (number of correct steps)	6.84(2.31)	6.39(2.34)	0.86*	0.785	0.911
Hopping on mats with right leg (number of correct jumps/hops out of 5)	2.98(2.18)	2.96(2.10)	0.99*	0.991	0.996
Hopping on mats with left leg (number of correct jumps/hops out of 5)	2.43(2.13)	2.39(2.04)	0.98*	0.983	0.993

* Correlation is significant at the 0.01 level.

Validity of MABC-2:

Correlation coefficients were employed to find the relationship between each subdomain of the test separately with the total test scores.

Table 5 reports the correlation matrices for (5a) 3 items for Manual Dexterity, (5b) 2 items for Aiming and Catching, (5c) 3 items for Balance.

a

	Placing pegs	Threading lace	Drawing trail	Manual dexterity total standard score
Placing pegs	—	0.70**	0.42**	0.91**
Threading lace	0.70**	—	0.21*	0.80**
Drawing trail	0.42**	0.21*	—	0.67**

* P<.05, ** P<.01

b

	Catching with two hands	Throwing beanbag onto mat	Aiming and Catching total standard score
Catching with two hands	—	0.62**	0.83**
Throwing beanbag onto mat	0.62**	—	0.95**

* P<.05, ** P<.01

c

	One-board balance	Walking Heel-To-Toe	Hopping on mats	Balance total standard score
One-board balance	—	0.02	0.42**	0.76**
Walking Heel-To-Toe	0.02	—	-0.07	0.16
Hopping on mats	0.42**	-0.07	—	0.88**

* P<.05, ** P<.01

Table 5a illustrates the coefficients within the manual dexterity subdomain, and its three related test items (placing pegs, threading lace, and drawing trail). The results showed that the correlation between placing pegs and threading lace was (0.70), and between placing pegs and drawing trail was (0.42). Both coefficients were moderately correlated. The coefficient between threading lace and drawing trail was low (0.21). Although coefficients were acceptable but moderate within the manual dexterity subdomain items, but all three items (placing pegs (0.91), threading lace (0.80), and drawing trail (0.67)) were strongly correlated with the total subdomain (manual dexterity) score.

Table 5b illustrates the correlation values between test items (catching with two hands and throwing beanbag on mat) and the total subdomain (aiming and catching) score were employed. The correlation coefficient between the two items were moderately correlated (0.62) but strongly correlated with the total subdomain score (0.83, 0.95) respectively.

Table 5c summarizes the correlation between the subdomain (balance) and its three items (one-board balance, walking heel-to-to, and hopping onto mats). The results illustrated that test item (walking heel-to-toe) was negative and correlated low with (hopping onto mats) (-0.07). Also, the correlation with (one-board balance) (-0.02) was negative and low. In addition, the correlation between one-board balance and hopping onto mats was moderate (0.42). However, (walking heel-to-toe) was weakly correlated (0.16) with the total subdomain score (balance), but the other two items (one-board balance and hopping onto mats) were strongly correlated to the total subdomain score

(0.76) and (0.88) respectively.

Table 6: Correlations between scores on the three test subdomains and the total score.

	Manual dexterity	Aiming and catching	Balance	Total test scores
Manual dexterity	—	0.36**	0.33**	0.66**
Aiming and catching	0.36**	—	0.55**	0.84**
Balance	0.33**	0.55**	—	0.83**

* P<.05, ** P<.01

Table 6 summarizes the correlation between the three subdomains scores and the total test scores. Results within subdomains (manual dexterity, aiming and catching, and balance) were significantly correlated with one another but only to a moderate degree. The correlation between (manual dexterity) and (aiming and catching) was (0.36). The correlations between (manual dexterity) and (balance) was (0.33). The correlation between (aiming and catching) and (balance) was (0.55). This result was expected because the three subdomains are supposed to be independent measures of different aspects of movement. If correlations were too high, subdomains would be measuring the same characteristics. Conversely, if the correlations were low, subdomains would be measuring irrelevant abilities (Simons et al., 2008). Also, the correlation values between (manual dexterity, aiming and catching, and balance) domains were moderate to strong with the total test score (0.66, 0.84, 0.83 respectively).

The results of the present study supported the findings of Henderson et al., (2007) who reported that Manual Dexterity correlations with Aiming and Catching (0.26), Balance (0.36), and total test score (0.76). The Aiming and Catching section correlated with Balance (0.25), and the total test score (0.65). The Balance section correlated with

the total test score (0.73). Therefore moderate coefficients are acceptable because MABC-2 was designed to cover a wide range of competencies. The fact that the components correlated well with the total score provides more evidence for the validity of the test.

Ellinoudis et al., (2011) reported similar findings in their study, their results indicated that manual Dexterity correlates with Aiming and Catching (0.26), Balance (0.48), and total test score (0.74). The Aiming and Catching section correlates with Balance (0.28), and the total test score (0.70). The Balance section correlates with the total test score (0.71).

To conclude, data from the present study and that from Greece (Ellinoudis et al., 2011), Hong Kong (Jing et al., 2012; Chow & Henderson, 2003), Japan (Kita et al., 2016), and Australia (Civetta & Hillier, 2008), all report similarities and differences in reliability and validity of MABC-2. A variety of cultural variation may also be present not just for the item comparisons of MABC-2, but possibly resulting from the scope and nature of a wide range of physical activities and skills depending on different characteristics of each culture.

Summary discussion:

Correlation coefficients between teachers and parents responses for the MABC-2 checklist illustrated that, However, the correlation coefficient between teachers' responses and the total test scores was higher than the value reported between parents' responses and total test scores, but this difference could be explained as teachers determine the children movement difficulties more efficiently than the parents. Also, the relationship between teachers and parents' responses, and the total test scores were positive and strong.

Regarding the reliability and validity of using MABC-2 assessment test in Egypt, The study results showed an acceptable internal consistency of the test items. The results of the present studyt shows a higher cronbach's alpha than for other countries Greece, China, and Japan (Ellinoudis et al., 2008; Jing et al., 2012; Kita et al., 2016). Inter-item correlations evaluated the relationship between test items and the total test scores. Here the results of the present study showed a low correlation between the test item (walking heel-to-toe) and the total test scores, similar to results reported by Civetta and Hillier (2008), suggested that removing the item (walking heel-to-toe) would increase the alpha values of the test scores. Intra-class correlation coefficients evaluated the inter-rater reliability. Results reflected high correlation coefficients between raters' scores in (placing pegs, threading lace, drawing trail, catching with two hands, throwing beanbag onto mat, one-board balance, walking heel-to-toe, and hopping on mats) (0.99, 0.99, 0.99, 0.95, 0.99, 0.99, 0.97, 0.98, 0.86, 0.99, 0.98) respectively, similar results reported in Chow and Henderson (2003), the correlation coefficient value was moderate in the item (walking heel-to-toe) (0.80).

To evaluate the MABC-2 validity, correlation coefficients were employed to test the relationship between the test items, subdomains, and the total test scores. The results reflected acceptable validity of the MABC-2. The correlation coefficients between subdomain scores were moderate, but reported a higher correlation when evaluated with the total test scores. Illustrating that each subdomain is measuring different motor tasks, therefore, it was acceptable to have moderate coefficients. Similar results were reported in the test manual (Henderson et al., 2007) and (Ellinoudis, et al., 2008) study; they stated that, there are moderate correlation coefficients between the three subdomains of the MABC-2 (manual dexterity, aiming and catching, and balance). Also, there were strong correlation coefficients between the three subdomains and the total test score of the MABC-2.

Chapter 5 Summary and Conclusions

The present study examined for the first time the use of the MABC-2 in Egypt. The validity and reliability varies as to different cultural contexts. The research findings have demonstrated the applicability of using the MABC-2 in UK, the Netherlands, Hong Kong, Japan, Greece, and Australia. The present results represent the use of the MABC-2 for Egypt and possibly for other Middle Eastern countries. The following conclusions are warranted:

1) The present study demonstrated for the first time that the MABC-2 is a reliable and valid tool to be used with an Egyptian sample.

2) The Arabic translation of the MABC-2 checklist was used to evaluate the level of agreement between teachers and parents responses with respect to the total score of the MABC-2 assessment. Teachers appear more sensitive to the observation of movement difficulties than parents.

3) The validity and reliability of MABC-2 in this study shows similar findings to other countries Hong Kong, UK, the Netherlands, Australia, Japan, and Greece.

4) Using the MABC-2 assessment tool for an Egyptian sample of children may help in better detecting of disabilities in general and DCD in particular. With respect to lack of medical reports and diagnosis to students at risk of DCD, the assessment could be considered as a screening tool.

5) The MABC-2 could be a useful tool to enhance the practical interventions for students with DCD. The assessment results could be used to better determine the potential outcomes for students.

6) Practical interventions would be enhanced if different age bands of the MABC-2 were used as a reference to determine the expected movement abilities based on each student's age. The test results could have a great influence on motor goals and annual reports. As the test scores would describe movement deficits. Thus, teachers could set-up reasonable and accurate task goals. In addition to determine the time needed to overcome a specific movement difficulty.

7) The Arabic version of the MABC-2 checklist could be used to evaluate differences between teachers from various disciplines. For instance, the art teacher might detect the motor difficulty in drawing trails better than the PE teacher or the coach.

Limitations

Several limitations should be noted for the present study:

1) Although the study uses the MABC-2 checklist and test, teachers or parents may express subjective as well as objective opinions when completing the checklist.

2) For some examiners using the MABC-2, the amount of information on the scoring sheet might be overwhelming. In addition, learning the scoring system and the administration of the test requires a considerable amount of training.

3) No Egyptian research studies concerning assessment of students with disabilities have been reported to date. This study is a first.

4) Medical records for the students recruited into this study were unavailable and participants likely had a range of special needs. No information was available as to other possible diagnoses such as ADHD, ASD, and etc. children with DCD often present with a range of co-occurring problems.

Recommendations for future studies:

- Although, MABC-2 has been shown to be valid and accurate for use in Egypt, future studies should employ other assessment tools in order to compare the present results with assessment tools such as BOT-2, TGMD-2, etc.
- This study assessed only age band 2, which includes children from 7 to 10 years old. Other age bands should be tested and evaluated in terms of reliability and validity.
- The study results illustrated no gender differences in the sample, however a larger sample (>89) may help to identify possible gender differences if they are present. Also, including students from different areas of Egypt (rural and urban) might reveal different results.
- In terms of generalization, future studies could use the MABC-2 in different countries within the Middle East to test validity and reliability of both the MABC-2 assessment and the checklist. It should recognize cultural differences within the Middle East.
- The present study findings suggested modifying one of the MABC-2 test items (walking heel-to-toe). As the reliability of the MABC-2 would be higher if this item was deleted. Such a modification might enhance the psychometric properties of the test.
- Conduct cross-cultural studies to test differences between countries employing MABC-2 assessment, using student's scores and checklist observations in the test.

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Appendix A

The shape of data distribution:

In the qqplot (figure 5), most points are clustered around the line and included in the 95% confidence interval. In addition, the histogram (figure 6) indicates an approximate symmetric distribution.

Table 7:

Mean and Standard Deviations of students' total test score

<i>M</i>	<i>SD</i>
45.08	13.45

N=89

Figure 5: QQ-plot of data distribution of MABC-2 scores

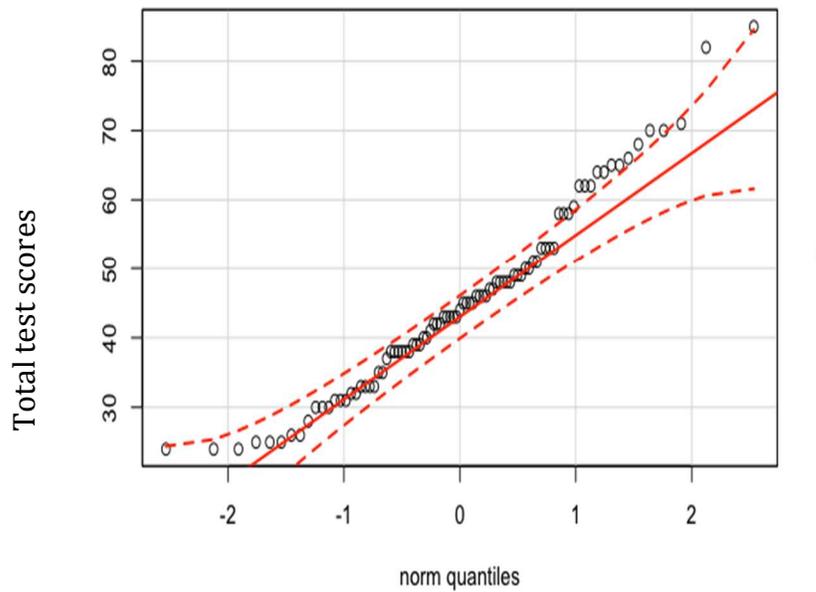
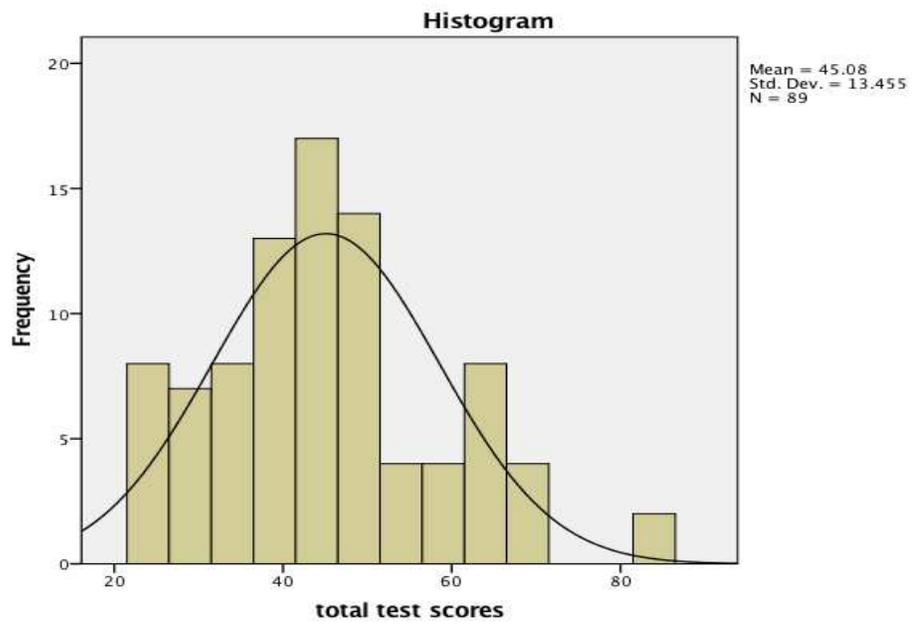
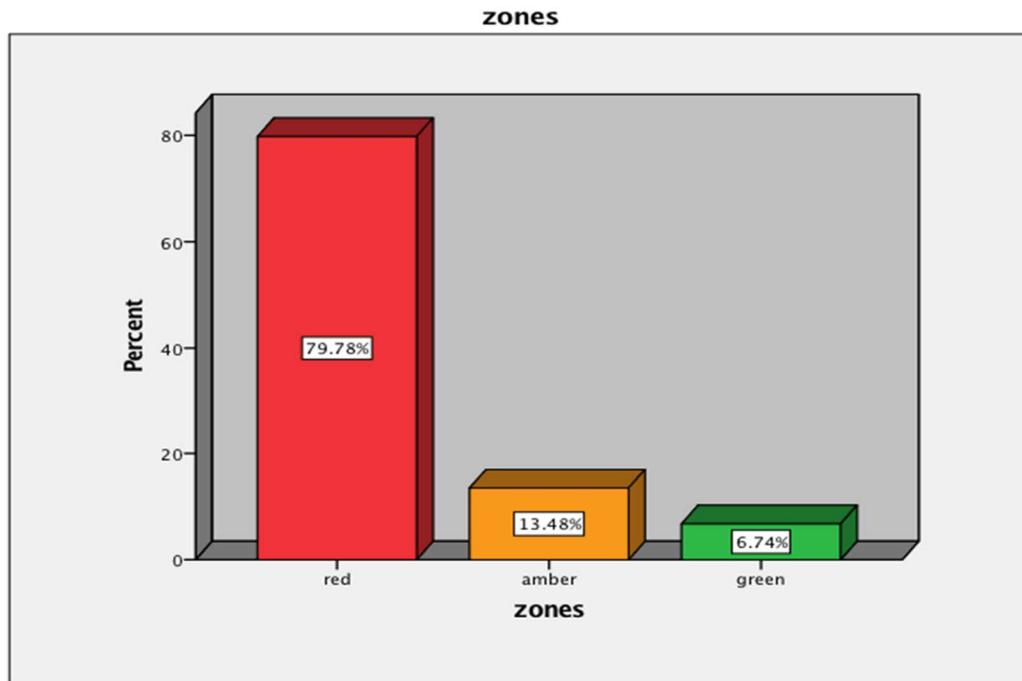


Figure 6: Histogram of data distribution of MABC-2 scores



Appendix B

Figure 7: number of students' percentage in scale zones



Worth mentioning, the traffic light system for total test scores described in the test manual (Henderson et al., 2007), illustrates the following:

- Red zone is corresponding with a total test score of any score up to and including 56, which is described as (there is a significant movement difficulty).
- Amber zone is corresponding with a total test score of any score between 57 and 67 inclusive, which is described as (the child is at risk of having a movement difficulty).
- Green zone is corresponding with a total test score of any score above 67, which is described as (no movement difficulty detected).

In this study, total test scores results (graph 8) showed that, 79.78% of the sample falls in the red zone, which denotes a significant movement difficulty.

Also, 13.48% of the sample falls in the amber zone, and 6.74% in the green zone.

Appendix C

Table 8: Number of Disability by Area

Areas	Visual impairment	Hearing impairment	Mental impairment	Mobility impairment
Cairo	17648	10589	176475	35295
Alexandria	8895	5337	88950	17790
Port said	1408	845	14075	2815
Suez	1253	752	12525	2505
Domiat	2270	1362	22700	4540
Dakahlia	10648	6389	106475	21295
Kalyobia	8730	5238	87300	17460
Kafr elshikh	5575	3345	55750	11150
Gharbia	8735	5241	87350	17480
Monofia	6888	4133	68875	13775
Behera	10198	6119	101975	20395
Ismailia	1933	1160	19325	3865
Giza	13243	7946	132425	26485
Beni suif	4510	2706	4510	9020
Fayoum	5003	3002	50025	10005
Menia	8150	4890	81500	16300
Assiut	6908	4145	69075	13815
Suhag	7470	4482	74700	14940
Qena	7103	4262	71025	14205
Aswan	2533	1520	25325	5065
Border area	1768	1061	17645	3535

The Faculty of Physical Therapy, Cairo University. Country Profile Study on Persons with Disabilities in Egypt. (1996)

Appendix D

Table 9: Inter-item correlation between MABC-2 test items

Items	Placing Pegs	Threading Lace	Drawing Trail	Catching	Throwing Beanbag	Balance	Walking	Hopping
Placing Pegs	1.000	.699	.424	.151	.280	.252	.018	.239
Threading Lace	.699	1.000	.213	.301	.419	.261	.055	.297
Drawing Trail	.424	.213	1.000	.154	.212	.155	.026	.124
Catching	.151	.301	.154	1.000	.620	.331	-.032	.341
Throwing Beanbag	.280	.419	.212	.620	1.000	.458	.003	.502
Balance	.252	.261	.155	.331	.458	1.000	.019	.425
Walking	.018	.055	.026	-.032	.003	.019	1.000	-.067
Hopping	.239	.297	.124	.341	.502	.425	-.067	1.000

Appendix E

Gender differences:

Figure 8: *t*-test scores for differences between male and female in MABC-2 scores

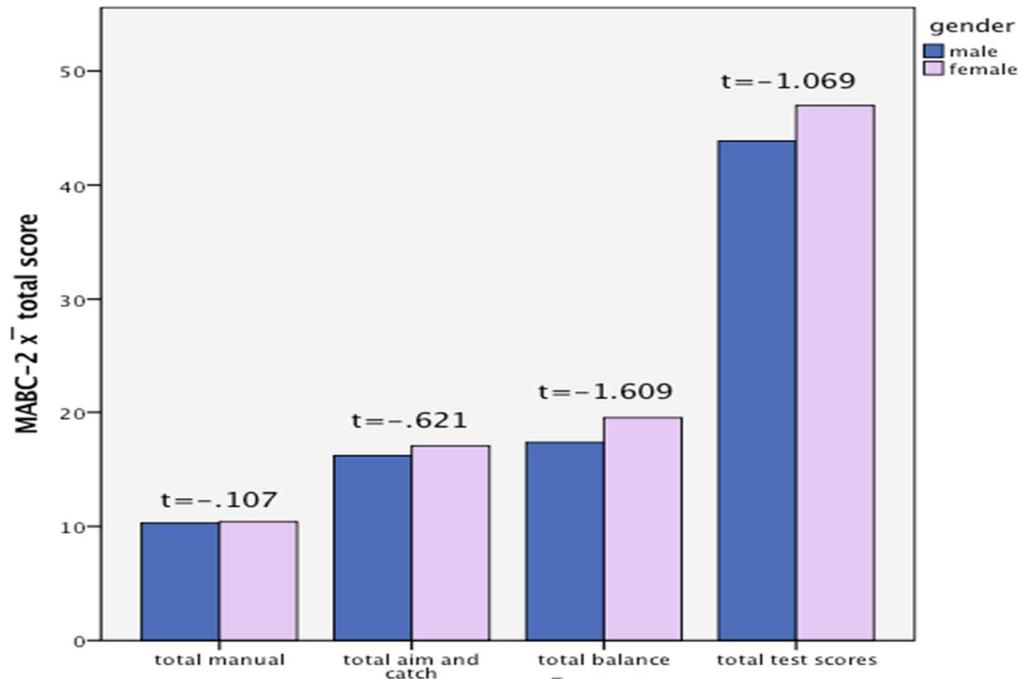


Figure 8 summarizes the mean differences between male and female for the three test subdomains and the total test score. As can be seen from figure 5, the scores for male and female participants (54 boys and 35 girls) were essentially the same. None of the *t*-tests comparing the gender differences were significant.

Appendix F

Movement assessment battery for children -2 checklist

Name of child:

gender: M / F

Age:

Class/ Grade:

School:

Address:

Name of respondent:

Profession: Teacher Therapist Parent other

Date of assessment

Red zone	≥42	≥ 25	≥17	≥13	≥10	≥7	≥3	≥2
Amber zone	41	24	16	12	9	6	2	
	40							
	39							
	38							
	37							
	36							
	35							
	34							
Green zone	33 or less	19 or less	11 or less	8 or less	5 or less	3 or less	0	0
Age	5	6	7	8	9	10	11	12

Motor competence: section A section B total motor score A+B=

Find the child's motor score in the column appropriate for his/her age and determine

whether it falls in the Red Amber or Green Zone (tick one)

Non-motor factors that might affect movement

Do you think the characteristics noted in section C prevent the child from demonstrating his/her movement capability? (circle one): not at all/ a little/ a great deal

How important will it be to consider these factors when planning an intervention program? (circle one): not at all/ somewhat / very.

Section A: movement in a static and/or predictable environment

0= very well 1= just ok 2= almost 3= not close NO= Not observed		
A.1 self-care skills		
A.1.1	Maintains balance while standing to pull on articles of clothing (e.g. trousers, skirt).	
A.1.2	Puts on articles of clothing over the head (e.g. T-shirt, sweater).	
A.1.3	Fasten buttons (e.g. on shirt, coat)	
A.1.4	Washes and dries hands.	
A.1.5	Pours liquid from one container to another (e.g. from a jug to a beaker).	
A.2 classroom skills		
A.2.1	Manipulates small objects (e.g. blocks, beads, sheets of paper).	
A.2.2	Forms letter using a pencil or pen	
A.2.3	Uses scissors to cut paper	
A.2.4	Walks around the classroom avoiding fixed/stationary objects and persons	
A.2.5	Transports objects (e.g. books, pots of pens) around the room without dropping them	
A.3 PE/recreational skills		
A.3.1	Jumps keeping two feet together on take off and landing	
A.3.2	hops on either foot	
A.3.3	Throws a beanbag or ball so that another stationary child can catch it	
A.3.4	Uses stationary gym/playground equipment (e.g. climbing frame, slide)	
A.3.5	Crosses the gym/playground avoiding collision with stationary objects/ persons	
Section A total		

Section B: movement in a dynamic and/or unpredictable environment

0= very well 1= just ok 2= almost 3= not close NO= Not observed		
B.1 self-care/ classroom skills		
B.1.1	Maintains balance when frequent adjustments are required (e.g. sitting on a bench then relocating as other children sit down; standing in a line among moving children)	
B.1.2	Moves around a busy classroom collecting in/ giving out objects (e.g. books, pens)	
B.1.3	Carries a tray/drink around a room avoiding moving persons (e.g. in the dinning hall)	
B.1.4	Keeps time to a musical beat by clapping hands or tapping feet	
B.1.5	Moves body in time with music or other people (e.g. marches in line, dances in group)	
B.2 classroom skills		
B.2.1	Catches a ball using a two-handed catch	
B.2.2	Hits/strikes a moving ball using a bat or racquet	
B.2.3	Throws a ball while in the move so that another child can catch it	
B.2.4	Continually bounces and keeps control of a large playground ball	
B.2.5	Participates in a team game using skills of throwing, catching, kicking, or striking	
B.3 PE/recreational skills		
B.3.1	Rides a bicycle without stabilizers	
B.3.2	Participates in dodging and chasing game	
B.3.3	Maintains balance in water among other children (e.g. standing in the swimming pool)	
B.3.4	Uses non stationary gym/playground equipment (e.g. swings, scooters)	
B.3.5	Crosses the gym/playground avoiding collision with moving objects/ persons	
Section B total		

Global ratings

Overall, do you think this child has a movement difficulty? Yes/no

If yes, do these difficulties adversely affect the child's: (please circle)

Classroom learning not at all a little a great deal

PE/recreational activities not at all a little a great deal

Self esteem not at all a little a great deal

Social interaction not at all a little a great deal

Section C: Non-motor factors that might affect movement

		YES	NO
C.1	Disorganized (e.g. scattered clothes slows up dressing after PE; puts on shoes before socks)		
C.2	Hesitant/ forgetful (e.g. slow to start complex actions; forgets what to do in the middle of an action sequence)		
C.3	Passive (e.g. hard to interest; requires much encouragement to participate)		
C.4	Timid (e.g. fearful of activities such as jumping/climbing; constantly asks for assistance)		
C.5	Anxious (e.g. trembles; becomes flustered in a stressful situation)		
C.6	Impulsive (e.g. starts before instructions are complete; impatient of detail)		
C.7	Distractible (e.g. looks around; responds to irrelevant noises)		
C.8	Overactive (e.g. squirms and fidgets; moves constantly when listening to instructions, fiddles with clothes)		
C.9	Overestimates own ability (e.g. tries to make tasks more difficult; tries to do things too fast)		
C.10	Underestimates own ability (e.g. complains of task difficulty; anticipates failure before starting)		
C.11	Lacks persistence (e.g. gives up quickly; is easily frustrated)		
C.12	Upset by failure (e.g. looks tearful; refuses to try task again)		
C.13	Unable to get pleasure from success (e.g. fails to respond to praise)		
Other (please specify)			

Additional information (optional)

Please indicate whether the child is known to have a generalized learning difficulty and/ or a difficulty in : attention speech/language literacy social adjustment emotional control

Thank you for completing this checklist. Please return it to:

Name:

Address:

Postcode:

Instruction for use

Rating sections A and B

For each of the 15 statements in these sections, there are four alternative responses that describe how well the child deals with the task:

0	1	2	3
Very well	Just ok	Almost	Not close

To decide which rating applies to a child proceed as follows:

1. Decide whether the child can or cannot do the task
2. If they can do it, then consider whether they perform 'very well' or 'just ok'
3. If they cannot do it, then consider whether they are 'almost' there or are 'not close'

Select the response for each question that best describes the child being assessed and enter the score on the checklist accordingly

It is important that the person completing the checklist tries to obtain a rating on all items. If, however, the rater has not had the opportunity to observe the child performing a particular activity (for example in the swimming pool or the school playground), it is permissible to ask another adult with appropriate knowledge to estimate the level of performance based on how the child manages similar activities. If it is really not possible to obtain a rating for an item then the letters 'no', indicating not observed, must be entered in the box alongside.

Help with making decisions

For most items in the checklist, the procedure described above is relatively easy to implement, as the dividing line between ‘can do’ and ‘cannot do’ will be obvious. For some items, however, the dividing line might not be so clear. The following considerations might help the user with decision-making.

Consistency

Consider item B.2.1 ‘catches a ball using two-handed catch’. On a single trial, it is relatively easy to decide whether a child can catch a ball or not. However, in everyday life, it is the consistency with which a child can perform this skill over many trials that will determine whether he can participate in team or playground games and it is with this in mind that decision should be made. So, if we think of a child as being able to catch over and over again with confidence, it will be easy to rate this item as being performed ‘very well’ (0). Conversely, there will be children who are truly ‘not close’ (3). In between, we will have children who can catch, but do not so fluently and still drop the ball from time to time (1), and others who make the occasional catch but are a long way from being consistent (2).

Efficiency

Consider item A.2.4 ‘walks around the classroom avoiding fixed/stationary objects or persons’. All the children over the age of 5 can walk around the classroom unaided unless

they are wheelchair-bound or have a physical disability that seriously affects their balance. However, the children we are concerned with are often described as ‘tripping over their own shadows’. They may also bump into things or knock things over frequently. So, for this item, the decision about ‘can so/cannot do’ must focus upon the efficiency with which the child performs the task as opposed to a strict interpretation of ‘can do/cannot do’. In this case, it might be best to think of ‘not close’ as being equal to ‘with great difficulty’. Similarly, when considering the item A.2.1 ‘manipulates small objects’, all children over the age of 5 can manipulate small objects, unless they have a severe physical disability. However, the children we are concerned with lack accuracy and fluency. They fumble; they drop things and are often very slow. Again, therefore, we might equate ‘not close’ with ‘has great difficulty’.

Avoidance

Some children will avoid tasks that they find difficult. If the adult completing the checklist is aware that the child avoids activities such as ‘uses stationary gym/ playground equipment’ (A.3.4), and feels they have a good idea of his ability, then it is permissible to estimate the level of performance the child would demonstrate on that task. Thinking of how the child manages the component skills required to perform the task would help with such an estimate (e.g. running, jumping, climbing).

Global rating of the child’s motor competence and its impact

After completing sections A and B, the rater is invited to: provide an overall judgment as to whether the child has a movement problem or not; and judge the extent to which the

perceived movement difficulty is affecting the child's classroom learning, PE/recreational activities, self esteem and/or social interaction (see bottom of page 3)

Rating section C

To complete this section, it is important that the rater thinks about the factors listed in section C in relation to a movement context. For example, observe the child during handwriting or an art lesson, in PE or in the playground, and decide whether any of the descriptors apply during these times. Tick the appropriate box to indicate 'YES' or 'NO'. Because the list of factors that might affect a child's movement is not exhaustive, we have left a space for further comments the rater might wish to add.

After completing section C, turn to the front cover and make an overall decision as to: (a) whether the non-motor difficulties the child is experiencing prevents him from demonstrating his or her true capability; and (b) whether they will need to be taken into account in future intervention programs.

Additional information (optional)

On the bottom of page 4, we provide space to note any other difficulty the child is known to have. An overview of how a child is developing is useful when planning an intervention program.

Appendix G
Movement assessment battery for children -2 checklist (Arabic Version)

قائمه لبطارية تقييم الحركة للأطفال (2)

اسم الطفل: الجنس: ذكر/ انثي

العمر: المرحلة الدراسية:

المدرسة:

العنوان:

اسم مدون القائمه:

المهنة: المدرس المعالج الوالد آخر

تاريخ التقييم:

الاحمر	≥42	≥ 25	≥17	≥13	≥10	≥7	≥3	≥2
البرتقالي	41	24	16	12	9	6	2	
	40							
	39							
	38							
	37	23	15	11	8	5		
	36	22	14	10	7	4		
	35	21	13	9	6	3		
34	20	12	8	5	4	1		
الاخضر	33 او اقل	19 او اقل	11 او اقل	8 او اقل	5 او اقل	3 او اقل	0	0
العمر	5	6	7	8	9	10	11	12

الكفاءة الحركيه: القسم A القسم B مجموع النقاط = A + B

□ بحث عن الدرجة المماثلة لكفائه الطفل/ الطفلة الحركيه في العمود المناسب وقم □ تحديد ما إذا كانت تقع في المنطقة
البرتقالي الأحمر أو الأخضر (اختر واحده)

العوامل الغير الحركية التي قد تؤثر على الحركة
هل تعتقد أن الخصائص التي تم ملاحظتها في القسم C قد تمنع الطفل من القدرة على الحركة؟
(اختر واحدة): لا / قليلا / كثيرا
مدى أهمية النظر في هذه العوامل عند التخطيط للبرامج التطبيقية؟ (اختر واحدة): لا على الإطلاق / الي حد ما
/ هام جدا.

القسم A: الحركة في بيئة ثابتة و / أو يمكن التنبؤ بها

جيد جدا= 0 موافق=1 تقريبا=2 غير موافق=3 لم تتم ملاحظة=NO	
A.1 مهارات الرعاية الذاتية	
A.1.1	يحافظ على التوازن أثناء الوقوف لتغيير الملابس (مثل السراويل، تنورة).
A.1.2	القدرة علي وضع الملابس من اعلى الرأس (مثل تي شيرت، لوفر).
A.1.3	ط الأزرار (على سبيل المثال قميص، ومعطف)
A.1.4	غسل وتجفيف اليدين
A.1.5	ب السائل من حاوية إلى أخرى (على سبيل المثال من ريق إلى كوب).
A.2 مهارات الفصل الدراسي	
A.2.1	التعامل مع الأجسام الصغيرة (مثل المكعبات، والخرز، و الورق).
A.2.2	استخدام قلم ر ا □ أو جاف في كتابة الحروف
A.2.3	استخدام المقص لقطع الورق
A.2.4	المشي داخل الفصل الدراسي مع تجنب الا □ طدام في الأشياء الثابتة او الأشخا □
A.2.5	نقل الأشياء (مثل الكتب، والأواني الأقلام) في جميع أنحاء الفصل دون إفلاتها5
A.3 المهارات الترفيهية او الرياضية	
A.3.1	القفز مع حفظ القدمين معا عند الارتقاء والهبوط
A.3.2	الحجل □ استخدام احدي القدمين
A.3.3	رمي كرة من الثبات الي طفل آخر يمكنه تلقفها
A.3.4	استخدام معدات رياضية / ترفيهية (مثل تسلق الالعاب الثابتة، الترحلق)
A.3.5	عبور الصالة الرياضية / الملعب مع تجنب الا □ طدام □ أجسام/ اشخا □ ثابتة
مجموع درجات القسم A	

القسم B: الحركة في بيئة متحركة و / أو لا يمكن التنبؤ بها

جيد جدا= 0 موافق=1 تقريبا=2 غير موافق=3 لم تتم ملاحظة=NO	
B.1 مهارات الرعاية الذاتية / مهارات الفصل الدراسي	
B.1.1	يحافظ على تكرار الاداء عندما يطلب مئة مرات متعددة (مثل الجلوس على مقاعد البدلاء ثم التنقل مثل الأطفال الآخرين ، انتظار الدور في الصف قبل اداء المهارة)
B.1.2	التحرك داخل الفصل الدراسي و الانسيابية في جمع / اعطاء الادوات (مثل الكتب والأقلام)
B.1.3	حمل الصينية / الشراب في جميع أنحاء غرفة مع تجنب الا <input type="checkbox"/> طدام مع أشخا <input type="checkbox"/> تتحرك (على سبيل المثال في قاعة الطعام)
B.1.4	يحافظ على ملازمة الايقاع الموسيقي <input type="checkbox"/> التصفيق <input type="checkbox"/> اليدين أو ضرب الارض <input type="checkbox"/> القدمين
B.1.5	التحرك <input type="checkbox"/> الجسم في الوقت المناسب مع الموسيقى أو مع أشخا <input type="checkbox"/> آخرين (مثل المسيرات المنظمة، او يرقص مع المجموعة)
B.2 مهارات الفصل الدراسي	
B.2.1	مسك و لقف الكرة <input type="checkbox"/> استخدام اليدين
B.2.2	يضرب الكرة اثناء الحركة <input type="checkbox"/> استخدام المضرب
B.2.3	رمي كرة من الحركة الي طفل آخر يمكنه تلقيها
B.2.4	مسك و رمي كرة كبيرة <input type="checkbox"/> استمرار والمحافظة على السيطرة عليها
B.2.5	المشاركة في لعبة جماعية <input type="checkbox"/> استخدام مهارات الرمي، واللقف، والركل، أو الضرب
B.3 / المهارات الترفيهية او الرياضية	
B.3.1	ركوب دراجة <input type="checkbox"/> دون مثبتات توازن
B.3.2	المشاركة في العاب المراوغة والمطاردة
B.3.3	ان يحافظ على التوازن في الماء مع الأطفال الآخرين (مثل الوقوف في حمام السباحة)
B.3.4	يستخدم معدات غير ثابتة الصالة الرياضية / ملعب (مثل المرجحات والدراجات ثنائية العجل)
B.3.5	عبور الصالة الرياضية / الملعب مع تجنب الا <input type="checkbox"/> طدام <input type="checkbox"/> أجسام/ اشخا <input type="checkbox"/> متحركة
مجموع درجات القسم B	

تحديد المستوي بشكل عام

<input type="checkbox"/> شكل عام، هل تعتقد أن هذا الطفل لديه <input type="checkbox"/> عوامة في الحركة؟ نعم / لا
إذا كان الجواب نعم، هل هذه الصعوبات تؤثر سلبا على الطفل: (اختر واحدة)
التعلم داخل الفصول الدراسية لا على الاطلاق قليلا قدرا كبيرا
المهارات الترفيهية او الرياضية لا على الاطلاق قليلا قدرا كبيرا
الثقة في النفس لا على الاطلاق قليلا قدرا كبيرا
التفاعل الاجتماعي لا على الاطلاق قليلا قدرا كبيرا

القسم C: مهارات غير ركية يمكن ان تؤثر علي ركة الطفل

YES	NO		
		غير منظم (مثل الملابس المبعثرة او البطيء في خلع الملابس) عد الانشطة، يلبس الأحذية قبل الجوارب)	C.1
		التردد / النسيان (على سبيل المثال البطيء عند البدء في اعمال معقدة؛ نسي ما يجب القيام به في منتصف تسلسل العمل)	C.2
		السلبية (على سبيل المثال (يتطلب الكثير من التشجيع للمشاركة)	C.3
		القلق (مثل الخوف من الأنشطة مثل القفز / التسلق، يسأل باستمرار عن مساعدة)	C.4
		الهيجان (ان يرتجف، يصبح ثائرا في الوضع المجهدة)	C.5
		مندفع (مثل ان يبدأ قبل تعليمات المدرس او عدم الصبر عند الاستماع للتفايل)	C.6
		تشتت (على سبيل المثال ينظر حوله، ويستجيب للأصوات غير ذات صلة)	C.7
		النشاط الزائد (مثل ان يتحرك باستمرار عند الاستماع إلى التعليمات، و التشنج او العصبية، و العبث في الملابس)	C.8
		المبالغة في قدراته الخاصة (على سبيل المثال يحاول جعل المهام أكثر صعوبة، تحاول أن تفعل أشياء سريعة جدا)	C.9
		التقليل من قدراته الخاصة (على سبيل المثال، يشكو من صعوبة المهمة؛ وتوقع الفشل قبل البدء)	C.10
		يفتقر إلى الثبات (على سبيل المثال يستسلم بسرعة، هو الإحباط سهولة)	C.11
		الاستياء من الفشل (على سبيل المثال البكاء ، يرفض تكرار الاداء مرة أخرى)	C.12
		غير قادر على الاستمتاع بالنجاح (على سبيل المثال فشل في الرد على الثناء)	C.13
غير ذلك (يرجى التحديد)			

معلومات إضافية (اختياري)
يرجى تحديد ما إذا كان الطفل يعرف أي صعوبة في: التعلم او/و صعوبة في: الانتباه اللغة/التخاطب
الأمية
التكيف الاجتماعي الجوانب العاطفية

نشكركم على استكمال هذه القائمة و يرجى إعادتها إلى:
الاسم:
العنوان:

تعليمات للاستخدام

درجات القسم A و B

لكل واحدة من الخمسة عشر جملة الموضحين في كل قسم، هناك أربعة ردود أو استجابات التي تصف مدى مستوي الطفل مع كل اداء:

3	2	1	0
لا يستطيع	تقريبا	جيد	جيد جدا

أن يمكنك ان تقرر أي تصنيف ينطبق على الطفل اتبع الاتي:

1. تقرر ما إذا كان الطفل يستطيع أو لا يستطيع القيام بالاداء
2. إذا كان يستطيع ان يفعل ذلك، قم بالنظر عما إذا كان الأداء "جيد جدا" أو "جيد فقط"
3. إذا كان لا يستطيع أن يفعل ذلك، قم بالنظر عما إذا كان الاداء "تقريبا" أو "لا يستطيع"

اختر اكثر الاجابات ملائمة لمستوي الطفل الذي تقوم بتقييمه ثم اكتب النتيجة في المربع المقابل لكل بند

من المهم أن يقوم المقيم بتحديد درجات جميع البنود و محاولة استكمالها جميعا، ومع ذلك، ان لم يستطع تحديد الاداء في بعض الانشطة (على سبيل المثال في حمام السباحة أو فناء المدرسة)، فإنه يجوز أن يسأل شخص بالغ آخر يعرف الطفل لتقدير مستوى ادائه على ملاحظة في أنشطة مماثلة. إذا كان حقا لا يمكن الحصول على تقدير مستوي الطفل للعنصر فيجب ان يضع (لم تتم ملاحظة= NO) في المربع المقابل للبند

المساعدة في اتخاذ القرارات

النسبة لمعظم البنود في القائمة، الإجراء الموضح أعلاه هو الاسهل نسبيا للتنفيذ، حيث أن الخط الفاصل بين "تستطيع أن تفعل" و "لا تستطيع أن تفعل" سوف يكون واضحا لبعض البنود، ولكن الخط الفاصل قد لا يكون واضحا جدا في الاعتبارات التالية

الاتساق

بعد النظر في البند B.2.1 "مسك و لقف الكرة" استخدام اليدين بعد الاداء لمرة واحدة فقط فانه من السهل نسبيا أن تقرر ما إذا كان الطفل يستطيع التقاط الكرة أو لا. ومع ذلك لا يمكن تحديد ما اذا كان الطفل سيقوم بتكرار الاداء نفس الشكل و المستوي اذا ما طلب منه مرات متعددة او اثناء ادائه لها خلال المشاركة مع فريق. ومن هذا المنطلق ينبغي ان تقرر ما اذا كان الطفل قادرا علي ممارسة الاداء مرارا وتكرارا فسيكون من السهل أن نقيم الاداء ب "جيد جدا" (0). و ايضا تقييم "لا يستطيع" (3) للاطفال الغير قادرين علي ممارسة الاداء و مع بعض الحالات لدينا أطفال يمكنهم مسك الكرة بشكل غير احترافي كان تقع الكرة من بين يديه في هذه الحالة ندون الدرجة "جيد" (1)، و هناط اخرين يمكنهم ممارسة الاداء و لكن لا يمكنهم تكرار الاداء باستمرار، و في هذه الحالة ندون الدرجة "تقريبا" (2)

الكفاءة

بعد النظر في البند A.2.4 "المشي داخل الفصل الدراسي مع تجنب الاطدام في الأشياء الثابتة او الأشخا" يمكن لجميع الأطفال فوق سن خمس سنوات التجول في الفصول الدراسية دون مساعدة إلا إذا كان الطفل يستخدم كرسي متحرك أو يعاني من إعاقة جسدية تؤثر بشكل خطير علي التوازن. ويمكن ايضا ان يتعثر الاطفال كثيرا او الاطدام في اشياء داخل الفصل، و في هذه الحالات فإن القرار حول "يمكن ذلك / لا يستطيع أن تفعل" يجب أن يركز على كفاءة الطفل دلا من التفسير المتشدد "لا يمكن أن يفعل / لا يفعل". في هذه الحالة، قد يكون من الأفضل التفكير في "تقريبا" أنها تساوي "صعوبة كبيرة". والمثل، عند النظر في هذا البند A.2.1 "التعامل مع الأجسام

الصغيرة (مثل المكعبات، والخرز، و الورق) جميع الأطفال فوق سن خمس سنوات يمكنهم التعامل مع الأشياء الصغيرة، إلا إذا كان لديهم إعاقة جسدية شديدة. ومع ذلك، فإن الأطفال تشعر بالقلق من عدم الدقة والطلاقة أو أنهم يقوموا بالحركة وغالبا ما تكون طيبة جدا. مرة أخرى، لذلك فإننا يجب نحدد الاداء ب" لديه عوّة كبيرة" دلا من "لا يستطيع"

العزوف

عض الأطفال تتجنب المهام التي وجدوا فيها عوّة مثل البند (A.3.4) استخدام معدات رياضية / ترفيهية (مثل تسلق الالعب الثابتة، التزلج). إذا كان المقيم يري ان الطفل يمكنه اداء المهارة او المطلوب منة و لكنه لم يقم ذلك سبب العزوف عن المشاركة او سبب اخر، فيمكن للمقيم ان يضع المستوي الذي هو يعرفه عن الطفل علي ان يضع في الاعتبار مستوي مقدرة الطفل علي الممارسة الحقيقية للاداء (مثل الجري والقفز وتسلق).

التصنيف بشكل عام من خلال الكفاءة الحركية للطفل وتأثيرها

عد الانتهاء من الاقسام A , B يمكن للمقيم ان يحدد الحكم شكل عام علي مستوي الطفل ما اذا كان يعاني من مشكلة حركية مع تحديد مدي تاثير هذه المشكلة علي مستوي الطفل خلال التعلم داخل الفصل الدراسي او ممارسة الانشطة الترويحية و الرياضية او التفاعل الاجتماعي او الثقة في النفس (انظر أسفل الصفحة 3)

درجات القسم C

لإكمال هذا القسم، من المهم أن يفكر المقيم في العوامل المذكورة في القسم (C) في ما يتعلق سياق الحركة. على سبيل المثال، مراقبة الطفل أثناء الكتابة أو درس الرسم أو في الملعب، وتقرر ما إذا كان أي من هذه المواقات قد تنطبق النشاط الحركي للطفل. وضع علامة في المربع المناسب 'نعم' أو 'لا'. هناك مساحة متروكة لاي ملاحظات يمكن إضافتها عد الانتهاء من هذا القسم.

عد الانتهاء من القسم C، وانتقل إلى الصفحة الاولى و قم باتخاذ قرار شامل ل: (أ) ما إذا كانت الصعوبات غير الحركية التي يمر بها الطفل تمنعه من الاداء حسب قدرته الحقيقية. و (ب) ما إذا كانت سوف تؤخذ في الاعتبار عند استخدام برامج تعليمية مستقبلية.

معلومات إضافية (اختياري)

في الجزء السفلي من الصفحة 4، هناك مساحة متروكة لكتابة اي ملاحظات اخري عن اي صعوبات يمكن ان يواجهها الطفل مما يساعد علي الاستفادة من تطور الاداء في التخطيط لبرامج مستقبلية