Prevalence of learning disabilities in Palestinian Adolescents in Seventh to Ninth grades (in West Bank and Gaza Strip)

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Abstract

Aims: The aim of this study was to determine the prevalence of learning disabilities and difficulties in Palestinian children in the seventh to ninth class in West Bank and Gaza Strip.

Method: The study sample consisted of 1337 students selected randomly from seventh to ninth class in West Bank and Gaza Strip. Seven hundred and sixty three were boys (57.1%) and 574 were girls (42.9%). According to class, 41.4% children were enrolled in seventh class, 24.2% were enrolled in eight classes, and 34.3% were enrolled in ninth class.

Instruments: The teachers interviewed children in classes using Al Quds University group learning disability tests. These tests were able to identify learning disability in three academic domains (reading and writing in Arabic and English as a second language and mathematics).

Results: The study showed that 65.2% had no problems in Arabic language, 8.4% of children had learning difficulties in Arabic language, and 26.5% had learning disabilities. For English language, 67.9% of children had no problems, 10.4% had learning difficulties, and 21.9 % had learning disabilities in English language. While 61.7% of children had no any learning problems in mathematics, 11.8% had learning difficulties, and 26.5% had learning disabilities in mathematics.

No statistically significant differences in gender and Arabic, English language scores for mathematics, there were statistically significant differences in gender in mathematics scores toward girls. No statistically significant differences in learning disability in Arabic, English language, and mathematics according to age group of children, sites of the study, or type of school enrollment.

Conclusion:

This study showed that Palestinian children in West Bank and Gaza Strip reported higher rates of learning disabilities compared to community sample and similar to clinical studies. There were statically significant differences in gender and mathematics scores toward girls. However, other soicodemographic variables did not show any significant differences. This highlights the need for more investigation of learning disabilities and subtypes and other risk factors which may contribute to this high prevalence rate. A well prepared programs of evaluation using standardized measures such the team developed in this project and intervention programs should be implemented such as direct instruction method of instruction that has been repeatedly shown to be effective in teaching students with a variety of LD. Also, recommendation for teachers in which a given number of teachers are provided professional development in the educational innovation each year, incrementally increasing the total number of teachers who have been trained in the methods

Also, monitoring and evaluation of for children and adolescents with learning disabilities is a necessity in schools and well prepared programs to improve such children learning abilities. This could be done according to research based results and one of these methods is curriculum-based measures which facilitate student achievement across disabilities and content areas.

Keywords: Palestinian Children, prevalence, learning difficulties, disabilities, IQ.

Introduction

Most countries followed one of the early definitions of learning disability LD originally developed in the United States. The most common definition has been from the U.S. Office of Education (USOE, 1977) or the National Joint Committee for Learning Disabilities suggesting that LD reflect a disorder in one of the basic psychological processes and manifest themselves with a low ability in language and math; the term that excludes children whose performance is the result of emotional disturbances, environmental, or other factors (USOE, 1977, p. 65083).

The Individuals with Disabilities Education Act (Individuals with Disabilities Education Improvement Act; IDEIA, 2004) has been reauthorized, and revised parameters concerning learning disabilities (LD) diagnosis have been established. One of the more dramatic, yet defensible, changes to IDEIA legislation was to eliminate reliance on the Intelligence (IQ)-Achievement discrepancy model as the basis for LD diagnostic decision making. LD diagnosis may now be predicated upon a comprehensive evaluation in which "a variety of assessment tools and strategies" are used "to gather relevant functional, developmental, and academic information" (Section 614 (b) (6); IDEIA, 2004).

Learning disabilities are characterized by (a) unexpected or unanticipated underachievement; (b) a variable pattern of learning difficulties related to literacy skills such as reading, writing, or spelling, or mathematical operations; and (c) underlying deficits in cognitive processes (i.e., attention, planning, or simultaneous and successive processing) or neurological conditions (Dean et al., 2006; Kavale & Forness, 2000; Lyon et al., 2001; Scruggs & Mastropieri, 2002).

Lyon et al. (2003) identified four broad subgroups of LDs: reading disorders, mathematics disorders, reading-mathematics disorder, and disorders of written expression. Reading disorders were further subcategorized into disorders of word recognition, comprehension, and fluency subtypes.

There has been significant debate in the literature about how unexpected or unanticipated underachievement should be operationally defined (Dean et al., 2006; Lyon et al., 2001; Scruggs & Mastropieri, 2002; Siegel, 2003). The Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2000) posits that a discrepancy of two or more Standard Deviations between a child's IQ score and his or her performance score on individually administered, standardized tests in reading, written expression, or mathematics represents evidence of underachievement. The IQ and achievement test score discrepancy criterion for the diagnosis of learning disabilities has been disputed for three primary reasons. First, the degree of discrepancy between a child's IQ and achievement test scores has not been found to effectively differentiate between children who are generally low achievers and those who have learning disabilities (Dean et al., 2006; Lyon et al., 2001). In addition, this criterion has not been found to differentiate between children with mental retardation and children with specific learning problems (Siegel, 2003). Second, existing research has elucidated that it takes several years for a discrepancy between IQ scores and achievement test scores to emerge, preventing identification of children with learning disabilities in the first to third grades (Wagner et al, 2005). Third, immigrant children who are learning English as a second language may show impaired performance on achievement tests because of the fact that they are not administered in their native languages, making it imperative to consider students' English proficiency and instructional history (Wagner et al., 2005).

Many studies have been done on the characteristics, origins, and influence of LD on social adaptation, common ways of coping with LD, and the effect of the educational environment on students' general reactions to such disorders. Despite this, there appears to be general perplexity over the definition of the term across times and settings. For example, in Ireland and the United Kingdom, the term learning disabilities are most frequently used as a synonym for mental handicap (Murphy et al., 2000). In Canada, the term refers to a number of disorders that may affect the acquisition, organization, retention, understanding, or use of verbal or nonverbal information. These disorders affect learning in persons who otherwise demonstrate at least average abilities essential for thinking and reasoning. As such, LD is distinct from global intellectual deficiency (Brown et al., 2003). In the United States, the formal definition of LD has been revised several times to express the notion that LD do not naturally fade with maturity (Einat, 2001; Taymans & Corley, 2001). The most updated definition, crafted by the U.S. National Joint Committee on Learning Disabilities (1990), holds that learning disabilities is a general term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning, or mathematical abilities. These disorders are intrinsic to the individual, presumed to be due to a central nervous system dysfunction, and may occur across the life span (Lenz, Sturomski, & Corley, 1999).

The true prevalence of learning disabilities has significant implications not only for the validity of the diagnosis of LD, but also for the ability to serve children with educational needs. The prevalence of LD also varies by country. A multinational study involving data from 21 countries revealed wide discrepancies in the prevalence of LD (Organisation for Economic Co-operation and Development, 2004). This study found that Finland (9.56%) had the highest percentage of children identified as having LD relative to all other countries, including the U.S. (7.01%). Conversely, Luxembourg (0.53%) had the lowest percentage. In this study, significant effort was undertaken to increase cross-national agreement on the definitions of learning disability categories; however, individual countries had varied definitions, which hampered cross-national comparisons. Regardless of national LD prevalence rate, there has been a consistent increase in the identification of LD (Lyon, 1996; Terman et al., 1996).

The aim of this study was to estimate the prevalence of learning disabilities and difficulties among Palestinian children enrolled in the seventh to ninth class in West Bank and Gaza Strip.

Method

Study subjects

The study sample consisted of 1337 students selected randomly from seventh to ninth classes in West Bank and Gaza Strip schools (Government, private, and United Nations for Refugees Work Agency, UNRWA). Seven hundred and sixty three were boys which represented (57.1%) and 574 of them were girls (42.9%). According to class level, 41.4% children were enrolled in seventh class, 24.2% were enrolled in eight classes, and 34.3% were enrolled in ninth class. According to place of residence, 64.5% live in West Bank and 35.5% live in Gaza Strip. According to type of school, 55% were enrolled in governmental schools, 40.8% enrolled in UNRWA schools, and 4.2% were enrolled in private schools.

According to parental education, 36.9% of the father's finished less than secondary education, 31% had secondary certificate, and 14.9 % had university degree. While, 39% of mothers finished less than secondary education, 35.7% finished secondary education, and 7.3% finished university.

Instruments

The data was collected from students by teachers by using the following questionnaires:

Demographic questionnaire

Demographic information about the participants was obtained using a survey developed by the authors. This questionnaire includes sex, age, place of residence, father and mother education.

Learning disability and IQ tests

Al Quds University group (Thabet, Dajani, Abdallah, 2010 in press) had developed and tested group-screening tests.

Arabic Language

It consists of 11 tests with 68 questions and 365 units. Questions included the following: 1) Open and merge of tones which consisted of 25 sentences in which the child will chose the missed word from few words in a bracket, 2) Understanding reading of words consists of paragraph and the child had to answer 8 multiple choice questions, 3) Dictation of 40 words, 4) Copy and comprehension: in the first part the child was asked to listen to the teacher reading a paragraph and then he asked to write the paragraph again and the second part included comprehension about the child school , 5) Listening: in which 150 words were shown and the child should chose the names of animal in two minutes, 6) Words: in which the child is give 100 wrong words concerning food, and he had to choose the words concerning the food, 7) Listening, the teacher will read the 10 sentences above the picture and child will chose the right of 4 pictures, 8) Listening: the teacher will read a paragraph and then he will ask the child 8 questions, 9) Reading of words: in this test there are 10 sentences and the child will chose the right picture for the sentence, 10) Listening: the teacher will read a paragraph and then he will ask the child 9 questions, 11) Understanding reading of words: which consist of paragraph read it very carefully and have to answer 9 questions.

English Language

It consists of 4 tests with total number of 80 questions containing 179 units. It includes 1) Listening and Linguistic wealth in which the child will listen to his teacher naming in English a word which is correct for one of the 4 pictures, for 51 words; 2) Reading in which the child will read correctly 75 words, 3) Dictation, 4) Reading 20 words, 5) Reading 20 words; 6) Reading in which the child will chose the right picture. It consists of 17 questions, 7) Listening, and 8) Reading.

Mathematics

It consists of 8 tests with total number of 122 questions containing 209 units. Questions included the following: 1 and 2) Numbers, 3) Exercises including basic additions, subtractions, and multiply; 4) Exercises, 5) Figures; 6) Arithmetic questions 7) Triangles, and 8) Sentences and pictures.

Intelligent quotient (IQ)

7th grade -A form

1. General information test-30 questions.
2. Arithmetic consequences test -30 questions.
3. Domino test-30 questions.
4. Cubic's test-30 questions.

7th grade -B form

1. General information test-30 questions.
2. Fill the logical picture-30 questions.
3. Arithmetic consequences test -30 questions

8th grade -A form

1. General information test- 30 questions.
2. Arithmetic consequences test - 30 questions.
3. Domino test- 30 questions.
4. Cubic's test- 30 questions.

8th grade-B form

1. General information test-30 questions.
2. Fill the logical picture-30 questions.
3. Arithmetic consequences test-30 questions.

9th grade-A form

1. General information test- 30 questions.
2. Arithmetic consequences test - 30 questions.
3. Domino test- 30 questions.
4. Cubic's test- 30 questions.

9th grade-B form

1. General information test- 30 questions.
2. Fill the logical picture- 30 questions.

Arithmetic consequences test - 30 questions

Procedure of the study

The study team held meetings and conducted training for 6 hours to 50 teachers working in schools in West Bank and Gaza Strip. We explained to them the aim of the study and gave them prepared list of number of children to be interviewed in each class. A cover letter was send to each child's parent asking for their agreement and permission from them to include and interview their children in the study. Sociodemographic information questionnaire was send to parents and was collected the returned ones from children. Each interview with the targeted child lasted for 120 minutes. Children marks in the tested subjects (Arabic, English, and Mathematics) were given by school administration. The data collection was carried out from April to May 2005.

Statistical analysis

For this study we used SPSS ver. 16 to analyze the data. Descriptive statistics were used to summarize the pattern of learning disabilities for the total students sample.

This was calculated after recoding the learning disability into three categories (no disability, learning difficulties, and learning disabilities). Means and standard deviations of different study subjects scores were calculated. The significance of differences in frequencies for various combinations of LDs within and between groups was determined using $\chi 2$. Differences between means of subjects were tested

using t independent test. Correlations between means were tested using Pearson Correlation Coefficient test. The p value was considered significant if $p = < 0.05$.

Results

Means and standard deviations of students' grads in Arabic, English, and mathematics according to school record

From the records of the students in school, the general grade (GPA) of the students was 72.4 (SD = 18.3), Arabic language grade as first language mean was 70.1 (SD = 19.5), mean English language grade as the second language was 65.9 (SD = 19.4), and mean mathematics grade was 66.4 (SD = 15.8).

Table 1: Means and Standard Deviations of the student's GPA subjects according to school records

Subjects	Mean	SD
Arabic Language	70.1	18.3
English Language	65.9	19.5
Mathematics	66.4	19.4
General	72.4	15.8

Means and standard deviations of students' grads in Arabic, English, and mathematics according to study sample

The results of the study showed that mean Arabic language grade was 165.9 (SD = 95.2), mean English language grade was 80.6 (SD = 61), and mean Mathematics grade was 104 (SD = 33.1).

Prevalence of learning difficulty and disability

Using the previous cut-off point for learning difficulty and disability (Thabet et al, 2010 in press) the study showed that 65.2% of subjects had no problems in Arabic language, 8.4% had learning difficulties, and 26.5% had learning disabilities. For English language, 67.9% had no problems, 10.4% had learning difficulties, and 21.9% had learning disabilities. While, 61.7% had no learning problems in mathematics, 11.8% had learning difficulties, and 26.5% had learning disabilities.

Gender differences in rate of learning subjects

In order to differentiate between scores of learning subjects according to sex, T independent test was performed. The study showed that mean Arabic Language in girls was 165.64 compared to 166.18 in boys. No statistically significant differences in gender in Arabic language scores (t= 0.97, p = 0.09). For English language, mean scores for boys was 81.18 compared to 79.77 for girls. No statistically significant differences in gender and English language scores (t= 0.39, p = 0.69). For mathematics, girls scored mean of 107.76 compared to 101.32 of boys. There were statistically significant differences in gender in mathematics scores toward girls (t= -3.36, p = 0.001).

Age differences in learning difficulties and disabilities

In order to find the differences between the age groups of children in rate of learning disabilities and difficulties, chi square test was applied, 7.8% of children aged 11-13 years had learning disability in Arabic Language, 18.1% of age group 14-15 years had learning disability, and 0.3% of children 16 years and old had learning disability. No statistically significant differences in learning disability in Arabic Language according to age group of children (χ^2 = 2.5, p = 0.63).

Chi square test was performed, 12.5% of children aged 11-13 years had learning disability in English Language, 9.38% of age group 14-15 years had learning disability, and no one of children 16 years and old had learning disability. No statistically significant differences in learning disability in English Language according to age group of children (χ2 = 4.3, p = 0.36).

Chi square test was performed, 10.34% of children aged 11-13 years had learning disability in mathematics, 14.73% of age group 14-15 years had learning disability, and no one of children 16 years and old had learning disability. No statistically significant differences in learning disability in mathematics according to age group of children (χ^2 = 3.6, p = 0.45).

Differences between the two sites in rate of learning disabilities and difficulties

In order to find the differences between the two sites in rate of learning disabilities and difficulties, chi square test was done. The results showed that 6.8% of children from Gaza Strip reported learning difficulties in Arabic language compared to 1.6% in West Bank, 20.6% of children from Gaza reported learning disability compared to 5.8% from West Bank. This did not reached statistically significant differences (χ^2 =0.19, df =2, p =0.91).

For English language, 5.2% of children from Gaza Strip reported learning difficulties compared to 5.2% from West Bank, 10.4% of children from Gaza reported learning disabilities compared to 11.4% from West Bank. These differences did not reached statistically significant differences (χ^2 = 2.13, df =2, p =0.34).

This also was applied for mathematics in which 5.6% of children from Gaza compared to 6.6% from West Bank reported learning difficulties and 5% of children from Gaza Strip reported learning difficulties compared to 6.9% from West Bank, and 10% of children from Gaza reported learning disabilities compared to 16.5% from West Bank. This did not reached statistically significant differences (χ^2 =0.66, df = 2, p = 0.91).

Learning problems according to type of schools

In order to find the differences between types of schools (Governmental, UNRWA, and private schools) chi square test was done. The results showed that 3.87% of children from governmental schools reported learning difficulties in Arabic language , 8.71% students from UNRWA schools reported difficulties, and non in the privates schools reported learning difficulties. For learning disabilities, 8.71% of students from governmental schools reported learning disabilities compared to 17.10% in UNRWA schools and 0.65% of students from private schools reported disability. There were no statistically significant differences in difficulties and disabilities in Arabic Language (χ^2 = 2.5, df = 4, p = 0.69).

The results showed that 3.87% of children from governmental schools reported learning difficulties in English language , 8.71% students from UNRWA schools reported difficulties, and non in the privates schools reported learning difficulties. For learning disabilities, 9.84% of students from governmental schools reported learning disabilities compared to 10.88% in UNRWA schools and 1.04% of students from private schools reported disability. There were no statistically significant differences in difficulties and disabilities in Arabic language (χ^2 = 5.3, df = 4, p = 0.25).

The results showed that 14.02% of children from governmental schools reported learning difficulties in mathematics , 8.71% students from UNRWA schools reported difficulties, and non in the privates schools reported learning difficulties. For learning disabilities, 9.97% of students from governmental schools reported learning disabilities compared to 17.10% in UNRWA schools and 2.49% of students from private schools reported disability. There were no statistically significant differences in difficulties and disabilities in Arabic language (χ^2 = 2.18, df = 4, p = 0.70).

Relationships between IQ scores and student's scores in Arabic and English Language, and Mathematics

In order to find the relationships between the IQ scores and

tested subjects, Pearson correlation test was performed. The results showed that there no correlation between the scores of student in Arabic language and IQ test (first part and second part). This was also applicable to English Language and Mathematics.

Table 3: Prevalence of learning difficulties and disabilities

Subjects	Normal	Learning difficulties	Learning disabilities
Arabic Language	65.2	8.4	26.5
English Language	67.9	10.4	21.9
Mathematics	61.7	11.8	26.5

Discussion

The aim of this study was to estimate the prevalence of learning disabilities and difficulties in Palestinian children in the seventh to ninth class in West Bank and Gaza Strip.

The study showed that 8.4% of children had learning difficulties, and 26.5% had learning disabilities in Arabic Language, 10.4% had learning difficulties, and 21.9 % had learning disabilities in English language. While, 11.8% of children had learning difficulties, and 26.5% had learning disabilities in mathematics. No gender differences in rate of learning difficulties and disabilities in English and Arabic Language was detected. However, there were statically significant differences in gender and mathematics scores toward girls. These differences could be the cultural factors in Palestinian society and protection of girls by families and girls are studying more than boys due to inability to leave the homes as boys did any time they wish. Another factor could be due to the repeated exposure of traumatic events in boys during Al Aqsa Intifada and boys are more than girls in exposure to violence and adversities. Previous studies showed that school performance was low in children with high trauma and PTSD (Al Majdalway and Thabet, 2009). Mayes and Calhout et al., (2007) in a study of for the total clinical sample (n = 485), 317 of the children 65% had learning disability in reading, mathematics or written expression. Among children with a learning disability, the most frequent learning disability type was written expression alone 50%, which was significantly more prevalent than any of the other six learning disability types alone or in combination with each other.

The high level of LD in this sample could be due to the fact that the diagnosis was primarily conducted by teachers, but teachers are described as a population that lacks the necessary skills to accomplish this task. As a consequence, there is likely a mix between true LD cases and slow learners or low achievers in general, if teachers use variable means to evaluate students. Barriers to the successful identification by teachers are a lack of specialized training and the existence of relevant materials to identify children as having LD. Also, overcrowded classrooms in Palestinian territories prohibit individualized attention to all children and thus coping with underachievement is difficult. Furthermore, issues of poverty, health, low levels of motivation, negative attitudes towards school and social stigma associated with low achievement are the causes of dropout rates in West Bank and Gaza Strip.

Our results inconsistent with the United States LD prevalence rates which ranges from 2 to 10 percent (APA, 2000) and reading disabilities affect at least 80 percent of the LD population (Lerner, 1989; Lyon, 1995), though percentages can vary as a function of criteria used, ranging, for example, from 5 to 17.5 percent in children of school age (Katusic et al., 2001). This also was seen in study of carried out by Jimenez and Cadena (2007) to estimate the prevalence rates and identification criteria for LD in Guatemala and Spain (Canary Islands). With regard to the Guatemalan teacher-identified children 17% were /identified as having a specific LD. Of these, 8% were dyslexics and 9 % also showed spelling disabilities. Of the Spanish children, 5% were identified as having a specific LD; approximately 2% were dyslexics and 3 percent also had spelling disabilities. Our results is consistent with other studies of clinical children showing a mean reading disability prevalence of 32 percent (range 19–47 percent) and a mean mathematics disability prevalence of 37 percent, with a range of 18–60 percent (Mattison et al., 2001, 2002; Swanson et al., 2000).

The results of this study showed that there were no correlation between the scores of students in Arabic language, English language, mathematics and IQ test. These findings suggest that, although reading disorders are increasingly believed to have a biological origin (Kaplan et al, 2002; Olson, 2002), not only linguistic variables but also cultural and environmental variables can play important roles in the frequency and characterization of reading problems.

Conclusion and clinical implications

This study showed that Palestinian children and West Bank and Gaza Strip reported higher rates of learning disabilities compared to community sample and similar to clinical studies. There were statically significant differences in gender and mathematics scores toward girls. However, other soicodemographic factors did no show any significant differences. This highlights the need for more investigation of learning disabilities and subtypes and other risk factors which may contribute to this high prevalence rate. A well prepared programs of evaluation using standardized measures such we developed in this project and intervention programs should be implemented such as direct instruction method of instruction that has been repeatedly shown to be effective in teaching students with a variety of LD. It includes fast-paced, well sequenced, highly focused lessons. Students are usually instructed in small groups and are given several opportunities to respond in unison and individually, with immediate feedback using specific correction procedures. Teachers using this methodology follow specific stages of instruction. Teachers (1) model (provide the correct response), (2) lead (have students say the correct answer with the teacher), and (3) test (give immediate and delayed probe on the task initially attempted). Skills are taught until the students' exhibit task mastery and are subsequently reviewed and practiced. Also, curriculum-based measures and written expression facilitate student achievement across disabilities and content areas. This method enabled educators to make appropriate instructional changes. When curriculum-based measures and written expression data are routinely collected, teachers can easily examine data related to student performance and make instructional changes accordingly.

Also, recommendation for teachers in which a given number of teachers are provided professional development in the educational innovation each year, incrementally increasing the total number of teachers who have been trained in the

methods, which includes provisions for monitoring the effects of the innovation on the actual practice of teachers who receive the professional development, with continuing support for those who do not implement with high fidelity, a "trainer-of-trainers" model, in which one group of teachers is trained in the innovation, and then provide training to subsequent groups, in which several high performing teachers are concentrated in a few schools, with explicit instructions to assist each other in the implementation of the reforms and to subsequently provide support to less-competent teachers who would be placed in the same schools. Also, a core group of model schools nurture leaders in the reforms, who later form another school and mentor a new group of teachers.

The results of this study have demonstrated that monitoring and evaluation of for children and adolescents with learning disabilities is a necessity in schools and well prepared programs to improve such children learning abilities. This could be done according to research based results and one of these methods is curriculum-based measures which facilitate student achievement across disabilities and content areas.

References

American Psychiatric Association (2000) Diagnostic and Statistical Manual ofMental Disorders, 4th edn, Text Revision. Washington, DC: APA.

Dean, V. J., Burns, M. K., Grialou, T., & Varro, P. J. (2006). Comparison of ecological validity of learning disabilities diagnostic models. *Psychology in the Schools, 43*, 157–168.

Individuals with Disabilities Education Improvement Act (2004). Retrieved August 31, 2005 from www.ed.gov/about/offices/list/osers/osep/index.html

Kaplan, D. E., Gayan, J., Ahn, J., Won, T. W., Pauls, D., Olson, R. K., et al. (2002). Evidence for linkage and association with reading disability. *American Journal of Medical Genetics, 70*, 1287–1298.

Katusic, S. K., Colligan, R. C., Barbaresi,W. J., Schaid, D. J., & Jacobsen, S. J.(2001). Incidence of reading disability in a population-based birth cohort, 1976–1982, Rochester, *Minnesota. Mayo Clinic Proceedings, 76,* 1081–1092.

Jimenez, J. E., & de la Cadena, C.C. (2007). Learning Disabilities in Guatemala and Spain: A Cross-National Study of the Prevalence and Cognitive Processes Associated with Reading and Spelling Disabilities. *Learning Disabilities Research & Practice, 22 (3),* 161–169.

Lerner, J. (1989). Educational interventions in learning disabilities. Journal of the *American Academy of Child and Adolescent Psychiatry, 28*, 326–331.

Lindgren, S. D., De Renzi, E., & Richman, L. C. (1985). Cross-national comparisons of developmental dyslexia in Italy and the United States. *Child Development, 56,* 1404.

Lyon, G. R. (1995). Toward a definition of dyslexia. *Annals of Dyslexia, 45*, 3–27.

Lyon, G.R. (1996). Learning disabilities. *The Future of Children, 6 (1),* 54-76.

Lyon, G. R., Fletcher, J. M., Shaywitz, S. E., Shaywitz, B. A., Torgesen, J. K., Wood, F. B., et al. (2001). Rethinking learning disabilities. In C. E. Finn, A. J. Rotherham, & C. R. Hokanson (Eds.), Rethinking special education for a new century (pp. 259–287). Washington, DC: Thomas B. Fordham Foundation.

Lyon, G. R., Fletcher, J. M., & Barnes, M. C. (2003). *Learning disabilities.* In EJ. Mash & R.A.Barkley (Eds.), Child psychopathology (2nd ed.). New York: The Guilford Press

Mattison, R. E. (2001) 'Learning Disabilities in Special Education Students Referred for Psychiatric Consultation'. *Journal of the International Academy for Research in Learning Disabilities*, 19, 11–19.

Mattison, R. E., Hooper, S. R. and Glassberg, L. A. (2002) 'Three-Year Course of

Learning Disorders in Special Education Students Classified as Behavioral Disorder', *Journal of the American Academy of Child and Adolescent Psychiatry, 41,* 1454–61.

Olson, R. K. (2002). Dyslexia: Nature and nurture. *Dyslexia, 8,* 143–159.

Organisation for Economic Co-operation and Development. (2004). *Equity in education: Students with learning disabilities, learning difficulties, and disadvantages, statistics and indication*. Danvers, MA: OECD.

Siegel, L. S. (2003). IQ-discrepancy definitions and the diagnosis of LD. *Journal of Learning Disabilities, 36*, 2–3.

Swanson, J. M., Hanley, T., Simpson, S., Davies, M., Schulte, A., Wells, K., Hinshaw, S, Abikoff, H., Hechtman, L., Pelham, W., Hoza, B. Severe, J., Molina, B., Odbert, C., Forness, S., Gresham, F., Arnold, L.E., Wigal, T. Wasdell, M. and Greenhil, L. L. (2000) 'Evaluation of Learning Disorders in Children With a Psychiatric Disorder', in L. L. Greenhill (ed.) Learning Disabilities: Implications for Psychiatric Treatment, pp. 97–128. Washington, DC: American Psychiatric Press.

Terman, D., Larner, M., Stevenson, C., & Behrman, R. (1996). Special education for students with disabilities: Analysis and recommendations. *The Future of Children,* 6 (1), 4-24.

Ziegler, J. C., & Goswami, U. (2005). Reading acquisition, developmental dyslexia, and skilled reading across languages: A psycholinguistic grain size theory. *Psychological Bulletin, 131*, 3–29.

U.S. Office of Education. (1977). Assistance to states for education of handicapped children: Procedures for evaluating specific learning disabilities. *Federal Register, 42,* 65082–65085.

Wagner, R. K., Francis, D. J., & Morris, R. D. (2005). Identifying English language learners with learning disabilities: Key challenges and possible approaches. *Learning Disabilities Research & Practice,* 20, 6–15.