

Children as informants of handwriting performance (self-reports and perceived self efficacy)

Abstract

Objective: This study investigated whether or not to consider the school age children (both normally developed and with dysgraphia) as reliable self-informants of their handwriting performance.

Method: A literature review was conducted of available evidence related to comparisons between different functional measurement tools and methods in handwriting skills with school aged children.

Results: Results indicate that school age children are aware of their handwriting difficulties, and are able to report them.

Conclusion: This information obtained from children may provide a better understanding of the child's development, and can contribute to the identification of handwriting problems when combined with information gathered from other resources, such as parents, teachers, or any other handwriting evaluation measurements/tools. Consequently, this study suggests that children are considered a reliable and valuable resource of information. This information can be collected and used to improve and facilitate their handwriting performance and participation in occupational therapy intervention in class and in daily living.

Keywords: handwriting, school-aged children, self-report, occupational therapy

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Hassan Izzeddin Sarsak

Department of Occupational Therapy, School of Rehabilitation Sciences, University of Jordan, Jordan

Correspondence: Hassan Izzeddin Sarsak, Department of Occupational Therapy, Batterjee Medical College, Jeddah, KSA, Email h.sarsak@ju.edu.jo hassan.sarsak@bmc.edu.sa, sarsakhassan@gmail.com

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Introduction

Handwriting is an essential means of communication and a complex occupational skill/task for school age children accomplished after the child has achieved and integrated perceptual-motor performance components. The perceptual-motor performance components include in-hand manipulation skills, eye-hand coordination, visuomotor integration, kinesthesia, proprioception, and motor planning.^{1,2} Factors that affect handwriting performance in children may be intrinsic (the perceptual-motor performance components) or extrinsic, relating to environmental/biomechanical issues. Extrinsic factors include sitting position, chair/desk height, writing instrument used, type of paper used and its placement on the desk, environmental lighting and noise, blackboard distance when copying, and volume of handwriting the child is expected to complete.³ Elementary school children usually spend up to 50% of the school day engaged in writing assignments, some of which are performed under time constraints. A child's ability to write legibly, quickly and efficiently, enables him or her to achieve both functional written communication and academic advancement.⁴ Another study reported that the development of writing ability is not only important in building a child's self-esteem, but is considered an essential element for success in school.³ Children spend 31 to 60% of their school day performing handwriting and other fine motor tasks, and difficulty in this area can affect their academic achievement. Illegible handwriting can cause poor performance in other higher-order skills such as spelling and story composition. Despite the use of computers, handwriting remains an important developmental skill for a child to master. Handwriting is a necessary life skill used in writing a letter or telephone message, completing an application form, or writing a cheque.³

"Handwriting difficulty, or dysgraphia, was defined by Hamstra-Bletz and Blote (1993) as a disturbance or a difficulty in the production of written language related to the mechanics of handwriting".⁵ There are two types of dysgraphia: the acquired dysgraphia which is the

loss of previously intact writing function, and the developmental dysgraphia which is the failure of normal development of writing skills. Developmental dysgraphia may contribute significantly to a child's learning difficulty or learning disability.⁶ An abnormal development or an acquired loss in the skill of writing may be related to abnormalities of penmanship or of writing, such as spelling or a combination of both of these factors.⁶ The common feature of dysgraphic children is that even with the proper amount of instruction and practice; they still have poor progress in the acquisition of the fine motor task needed for handwriting. Most of the time, they complain about their writing and that they are not capable of producing a good quality script. Dysgraphic handwriting lacks consistency which is not because of carelessness or ignorance.⁷ Several studies have found that dysgraphia is accompanied with poor handwriting legibility, slow writing speed, and lower perceived self-efficacy.⁷ Children with dysgraphia need more time to finish handwriting assignments. A study reported that slow and normal speed hand writers respond to handwriting demands through different perceptual-motor systems. In normal speed hand writers, the upper-limb speed and dexterity seem to play an important role, while slow hand writers rely more on visually directed processes, including sequence memory and visual motor integration.⁸ Students with poor handwriting are usually referred to the occupational therapist (OT). The OT should identify which components seem most influential to a child's handwriting performance. Additionally, to assess and define poor handwriting, the OT can use two main outcomes: handwriting's product legibility and performance time.⁵ When task analysis is made, and the problem is identified, these components should be evaluated to gain a better and more comprehensive understanding and to be able to intervene. It is important that careful evaluation of a child's handwriting performance be performed before remediation using both formal and informal methods (e.g. classroom observation, teacher consultation). The instrument chosen should best match the child's area of handwriting difficulty in order to facilitate the implementation of an effective treatment strategy. Also, a quantitative scoring system

is critical in identifying the problem areas to be targeted during remediation, in monitoring a child's progress after intervention, and in communicating the results more clearly. The handwriting treatment approaches include kinesthetic and visual-motor training, task-oriented self-instruction method, occupational therapy services (individual or group sessions), special education, and physiotherapy. An eclectic and comprehensive approach has greater effectiveness when combinations of techniques are used to improve handwriting performance.³

Research has shown that children may provide useful information about their handwriting skills and difficulties. There are different factors we need to keep into consideration when assessing self-reports that influence the reliability and consistency of information obtained from the school age children as self-informants, such as the chronological age, the gender, the presence or absence of any learning difficulty or disability and its relation to self-efficacy, time constraints (i.e., sometimes when increasing the amount of time in a writing task, the number of handwriting errors decreases), and the sample size of the study.³ The purpose of this study was to investigate whether or not to consider this kind of information as a vital and reliable source of data when compared and combined with other resources. Furthermore, this study aimed to evaluate if the children are aware or not of their handwriting problems, and if they are able to report them or not. We hypothesized that data obtained from school-aged children are useful, reliable, and could bring unique information to handwriting evaluation process. Additionally, we hypothesized that they perceive their handwriting problems and are able to report them.

Method

A research has been made in the following databases: Ovid (MEDLINE, PsychINFO, and Global Health), and CINAHL. Search terms (keywords) used: school age children, self-reports, dysgraphia, and handwriting. Some articles and studies were selected and reported to support the idea of having children act as self-informants, and to examine if the children are aware enough of their handwriting deficits and are able to report them properly.

Results

In this study, we examined and focused on the information obtained from the children (typically developing children or children with dysgraphia) as self-informants.

A study by Engel Yeger et al.,⁵ evaluated 42 2nd and 3rd graders in a quiet room in a school in Israel; 21 children with dysgraphia (15 boys, 6 girls; mean age: 8±0.62 yrs) and 21 normally developed children (control participants: 15 boys, 6 girls; mean age: 8±0.47). This study examined the relationships between different outcome measures: Handwriting Proficiency Screening Questionnaire (HPSQ), Children's Questionnaire for Handwriting Proficiency (CHaP), Computerized Penmanship Evaluation Tool (ComPET), Hebrew Handwriting Evaluation (HHE), and Perceived Efficacy and Goal Setting System (PEGS). This study showed that school age children can be reliable self-informants. They were aware of their handwriting difficulties and were able to report them. These results give us an insight and lead us to a better understanding of the children's handwriting difficulties in handwriting. Consequently, this would facilitate and enhance the effectiveness of OT intervention strategies.⁵ Another two studies made in the USA by Rattan et al.,⁹ examined the internal consistency of the Child Neuropsychological Symptom Inventory (CNSI), and

the stability of children's responses two weeks later. "The CNSI is a 40-item self-report measure with respondents required to recognize symptoms rather than describe them".⁹ Examples of the items: easily upset, easily distracted, speech difficulties, vertigo, learning problems, recent memory problems, poor judgment, difficulty achieving and maintaining sleep, and recent dysgraphia. Study I included 708 normal children (383 males, 315 females); age range: 7.0 to 16.9 years (Mean age=11.76 years, SD=2.46). All children were attending regular educational programs and were reported to be free of learning, neurological, and/or psychological difficulties. They were administered the CNSI in the classroom by their teacher. Before completing the questionnaire, instructions were read. The examiner then read each item to eliminate possible reading difficulties and provided enough time for children to respond. Results of this study indicated that the CNSI is a stable instrument for assessing children's self-report of neuropsychological symptomology. Study II included 58 normal (23 males, 35 females) third (N=18) (Mean age=8.72 years, SD=0.51), fourth (N=16) (Mean age=9.89 years, SD=0.39), fifth (N=15) (Mean age=10.3 years, SD=0.30), and sixth (N=9) (Mean age = 11.90 years, SD = .30) grade children. All children completed the 40-item CNSI. Same procedures were performed as in study I, and these same procedures were repeated during a second administration two weeks later. In general, the results of this study indicated that as children age increases, they become more reliable informants of self-report information.⁹

Discussion

Our hypotheses that data obtained from school-aged children are useful, reliable, and could bring unique information to handwriting evaluation process, and that they perceive their handwriting problems and are able to report them were confirmed. Children can provide reliable and valid information and responses.⁵ Self-efficacy is the person's belief about his or her ability and capacity to successfully accomplish a given task or to deal with the challenges of life. Research examined the writing self-efficacy beliefs of 6th- to 10th-grade students and reported that self-efficacy was found to play a primary role in predicting student writing performance. Students with learning disabilities were found to overestimate their ability to complete specific writing tasks. Several studies found gender differences, with boys rating their confidence higher than girls, although actual performance did not differ. On the other hand, grade-level differences in perceived efficacy for writing were found in some studies, but not in others. Most studies emphasized that those working with young adolescents need to pay more attention to the importance of self-efficacy and other motivational beliefs when dealing with academic functioning.¹⁰ Both children with and without attention deficit and disruptive behavior disorders are found to provide useful information about their feelings, behaviors, and interest in school related activities. These findings suggest that children are more self-aware than previously thought, and this information should inform our clinical and research practice. Furthermore, children are able to play an important role in a comprehensive pediatric evaluation and can reliably and validly self-report their health-related quality of life and functional activities of daily living (i.e., physical abilities, self-care, and handwriting) when given the opportunity to do so with an age-appropriate instrument.¹¹ Additionally, a more recent study confirmed that school-aged children are reliable reporters of common health-related symptoms that may affect functional performance and activities of daily living for children.¹²

Conclusion

In conclusion, findings of the studies demonstrate that school age children are considered an appropriate, a reliable, and a valuable resource of information. They are aware of their handwriting difficulties, and are able to report them. This information obtained from them may provide a better understanding of the child's development, and can contribute to the identification of handwriting problems when combined with information gathered from other resources, such as parents, teachers, or any other handwriting evaluation measurements/tools. Consequently, the selection of the proper outcome measures that most likely fit the child and the combination of gathered information from a variety of resources in a complementary and comprehensive way will facilitate the handwriting improvement and participation, and will help in choosing the most appropriate occupational therapy intervention techniques/strategies applied in class and in daily living.

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Conflict of interests

Author declares that there is no conflict of interest.

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