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- **ADHD In Indian Elementary Classrooms: Understanding Teacher Perspectives**
- **An Inter-correlational Study of the Reading Components in Profiling and Generating a Cognitive Equation for the Reading Performance of Students with Autism**
- **Digital Games and Assistive Technology: Improvement of Communication of children with Cerebral Palsy**
- **Effects of Character Education on the Self-Esteem of Intellectually Able and Less Able Elementary Students in Kuwait**
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- **Family Quality of Life from the Perspectives of Individual Family Members: A Korean-American Family and Deafness**
- **Evaluating the Phonology of Nicaraguan Sign Language: Preprimer and Primer Dolch Words**
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International Journal of Special Education

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ADHD IN INDIAN ELEMENTARY CLASSROOMS: UNDERSTANDING TEACHER PERSPECTIVES

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ADHD in India is culturally viewed as a school specific condition. Parents perceive accessing child psychiatric services as stigmatizing and prefer educational interventions for ADHD. There is a crucial need for research that restructures information and intervention paradigms about ADHD within a school context. The objectives of the present study were to understand teacher perspectives in relation to ADHD behaviours as they present in mainstream elementary classrooms. Located in Bangalore Urban district, India, the purposive sample consisted of teachers and students from the elementary section of 5 regular schools. Data was obtained through in-depth interviews, classroom observations and responses to vignettes. Responses were qualitatively analysed for themes and main concepts. Results indicate that teachers use a framework model to locate the construct of ADHD in a developmental context. ADHD behaviours are attributed to parent disciplining styles and environmental factors such as over exposure to electronic media. Teachers respond to classroom challenging behaviours using directive and heuristic strategies. The study highlights the need to recognize cultural complexities in understanding the ADHD construct.

Introduction

A common childhood developmental disorder diagnosed among the elementary school going population is Attention Deficit Hyperactivity Disorder (ADHD). Estimates of ADHD across the world range from 2.2 to 17.8 percent (Skounti, Philalithis & Galanakis, 2007). ADHD as defined by the American Psychiatric Association (2000) is a persistent pattern of inattention and /or hyperactivity- impulsivity that is more frequently displayed or more severe than is typically observed in individuals at a comparable level of development. Typically a triad of difficulties in the areas of attention, activity levels and impulsive behaviours form the core diagnostic features of ADHD.

Students with ADHD exhibit a variety of difficulties with school functioning. Hyperactive-impulsive behaviours that may comprise ADHD often lead to disruptive behaviours in the classroom including walking around the classroom when staying seated is expected, talking out of turn, intrusive verbalizations, not following through on instructions and interrupting teacher instruction (DuPaul, Weyandt & Janusis, 2011). Children with this disorder also have difficulties in sustaining attention and exhibit significantly higher rates of off-task behaviour when passive classroom activities (e.g. listening to teacher instruction and reading silently) are required relative to their non-ADHD classmates (Abikoff, et al., 2002; Junod, DuPaul, Jitendra, Volpe & Cleary, 2006).

Once regarded as a condition that was mostly prevalent in Western contexts, studies conducted on a range of ethnic cultures indicate symptom similarities and the existence of ADHD type behaviour clusters. These suggest that ADHD does exist as a fairly stable behavioural construct (Malhi & Singhi, 2000; Ghanizadeh, Bahredar & Moeini, 2006; Hong, 2007; Karande, et al., 2007; and Einarsdottir, 2008). However, etiological and diagnostic polarised debates surround ADHD and stem from the recognition that there exist problematic boundaries between 'normal' and 'pathological' behaviours (Singh, 2008). Children and their behaviours are located in cultural contexts that frame how behaviours are interpreted and determine what behaviours are considered developmentally appropriate. Cultural frameworks also influence tolerance levels and responses to behaviours that are viewed as inappropriate.

Urban epidemiological studies conducted on school going children and adolescents in India indicate prevalence rates of 10-30% for emotional and behavioural disorders (Kapur, 2005). However the social stigma associated with seeking psychiatric help and low levels of awareness amongst pediatricians, general physicians, teachers and parents about the occurrence of these conditions, translates into child mental health and disability issues going undiagnosed and largely ignored (Khandelwal, Jhingan, Ramesh, Gupta & Srivastava, 2004). There is hence a need to address issues of ADHD identification and treatment from culturally sensitive paradigms (Bussing, Schoenberg, Rogers, Zima & Angus, 1998; Dwivedi & Banhatti, 2005; Wilcox, Washburn & Patel, 2007).

ADHD- Indian Context

Research on ADHD in India is in its nascent stage and initial epidemiological studies indicate that prevalence rates for ADHD vary from 5-10 percent of the general population (Malhi & Singhi, 2000). The incidence is reported to be higher in boys than girls in the ratio of 7:4 (Chawla, Sahasi, Sundaram & Mehta, 1981). Studies conducted have been mostly based on clinic presentations of ADHD and are epidemiological in nature. Problems in school performance as opposed to specific symptoms of ADHD are common reasons for referral to child development centers and clinics (Karande et al., 2007; Wilcox, Washburn & Patel, 2007). Clinic presentations of ADHD reflect a higher level of severity. There is an absence of Indian research studies available on children who may be experiencing sub-clinical or mild levels of ADHD. These children are challenged in classroom settings yet are unlikely to receive any formal or consistent intervention.

Karande et al., (2007) studied children with ADHD and Specific Learning Disability in Mumbai. The study observed that the average age at which children were identified was 11.36 years. There was a gap of 5.8 years between noticing learning and behavioural difficulties and actually making a diagnosis. This delay could be attributed to the observation that teachers and parents in India often take a maturational perspective especially with boys who display behavioural difficulties.

A qualitative study by Wilcox et al., (2007) aimed at analyzing the explanatory models employed by parents whose children have an ADHD diagnosis. It also addressed the relevance of the ADHD diagnostic construct in the Indian setting. The key findings indicated that the majority of referrals were related to problems in academic performance. Parents recognized that their child had difficulties but did not primarily consult with doctors. Most attributed their child's difficulties to learning and memory difficulties, models which emphasized either volitional or non-volitional nature of the condition or blamed themselves or their spouse. Most parents rejected the biomedical model that they were introduced to at the time of the diagnosis being conveyed to them. The study supported the hypothesis that a biomedical psychiatric label may not be an acceptable strategy for meeting mental health needs in Indian culture (Patel & Prince, 2001; Rodrigues, Patel, Jaswal & De Souza, 2003).

Parents were most likely to pursue educational and religious treatments. Educational interventions were perceived as more helpful than other interventions, suggesting the important role that schools in India and teachers specifically play in identifying and providing appropriate intervention for ADHD. Indian society, considers education to be the primary tool to advance one's socio-economic status (Desai, 1972). Education is hence viewed seriously right from early childhood and the emphasis is on engaging in formal scholastic rather than play based learning experiences and demonstrating academic competence (Anandalakshmy, 1998). Parents are hence more likely to respond to academic rather than behavioural concerns their child may have.

Findings about ADHD in the Indian context appear to share certain similarities with Western research literature on the subject. Sayal, Goodman and Ford, (2006) reported that a majority of parents in the UK discuss their concerns with professionals based in education services and stressed on the need to support teachers in their contact with parents. Another UK based study concluded that schools appeared to be under-resourced in coping with ADHD-type behaviours as teachers possessed limited knowledge about the diagnosis and behavioural/educational methods of treatment (Sayal, Hornsey, Warren, MacDiarmid & Taylor, 2006).

Despite the high visibility that ADHD receives in the US media, research studies on ADHD indicate that while teachers are knowledgeable about the typical characteristics of ADHD, they were far less certain about causes, treatment and long-term prognosis (Sciutto, Terjesen & Frank, 2000). Low levels of teacher awareness find resonance in Holst's (2007) qualitative study on early childhood teachers in Denmark. The study focused on how teachers experience and manage challenging behaviour and ADHD. Results

indicated that in general teachers did not have much knowledge about ADHD. Low levels of awareness were attributed to the diagnostic confusion and teachers' concerns about framing environmental conditions as individual child problems which they felt was medicalising what were essentially social and educational problems.

Most available research done across various cultures on ADHD, regards as 'resistance', parent, cultural or teacher views that are not in consonance with the biomedical model. This has probably diluted the focus from engaging at deeper levels with practical issues of education, pedagogy, child rearing and their influence on child mental health models. The review of literature underlined the need for research that acknowledges the influence of cultural interpretations of ADHD in contemporary contexts to ensure that mental health professionals design collaborative interventions of relevance to the populations they serve.

Need for school based interventions

Schools play important roles in the psychosocial development of the child as they constitute frames where developmental domains engage and transform (Noam & Hermann, 2002). Studies suggesting parent preferences for educational interventions over psychiatric interventions for ADHD coupled with stigma associated in accessing psychiatric services strongly indicated the need for research that would help mental health professionals restructure information and early intervention paradigms about ADHD within a school context.

Adding support to this perceived need is Reddy's, (2009) meta-analytic review that compares the efficacy of school-based prevention and intervention programs for children at-risk for or with emotional disorders. This review offers initial support for the idea that prevention and intervention programs implemented in schools are generally effective in alleviating the early onset of emotional and behavioral symptoms.

Research indicates that classroom contexts are a challenge for children with ADHD and their teachers. A key aspect of improving the behaviour of children and young people in schools involves the classroom practice of individual teachers (Hart, 2010) and engaging actively with issues of school mental health. (Reinke, Stormont, Herman, Puri & Goel, 2011). With over 184.7 million pupils at the primary level, India now has the largest elementary student population in the world (Ministry of Human Resource and Development, India, 2006). Teacher implemented mental health interventions are relevant to the Indian context where the number of children who require mental health services far exceed available professionals who can deliver these services and in settings that are not considered stigmatizing.

Early intervention research also suggests that simpler and less intensive interventions may be required for children who are identified early (Sonuga-Barke, Thompson, Abikoff et al. 2006) rather than the more intensive programmes that may be required if problem behaviours escalate in middle childhood.

Present study

As Kuruppuarachchi and Wijeratne, (2004) rightly observe, ADHD was unheard of in developing countries a few decades ago. The low prevalence of child psychiatric disorders in developing countries was attributed to the presence of extended families which acted as a protective factor. The few published Indian studies are indicative of the nascent quality of research in the area.

The present study was part of a research project that sought to understand perspectives of teachers in elementary school towards ADHD type behaviours and incorporating them in designing a suitable classroom intervention programme. A review of relevant literature revealed a near absence of published Indian studies on teacher perspectives in relation to children with emotional and behavioural difficulties and the crucial need to attend to this gap. The study aligned with the view that the teacher is part of the child's complex, ecological system and does have an influence in maximizing potential or in mediating the effects of a stressor (Bronfenbrenner, 1979; Pellegrini & Horvat, 1995).

Teachers in elementary school are the first adults to see children in formal group settings and can identify developmentally inappropriate behaviours in the classroom context. Identification can help initiate early intervention moderating the intensity of ADHD type behaviours. The research questions that this study sought to answer were:

1. What were teachers' understandings of the term ADHD?
2. What were teacher attributions of ADHD behaviours?

3. What ADHD behaviours did teachers report as challenging?
4. How do teachers respond to ADHD type behaviours?
5. How do teachers' differentiate between problematic and pathological behaviour?

Method

The present study was located in Bangalore Urban district. Bangalore is the capital city of Karnataka- a state in Southern India and is often referred to as the IT capital of India. The city's population is more cosmopolitan in nature owing to the meteoric growth of the IT industry in the past decade and the educated, upwardly mobile work force that it has attracted. Currently Karnataka's literacy rate is 75.5% (Education in Karnataka, 2011 Census). This exploratory study adopted a qualitative research design which allowed for teacher voices to be heard and gather data that represented the complex world of the classroom.

Participants

Through purposive sampling, a group of teachers (n=15) and students (n=15) that met inclusion criteria were chosen from the elementary section (Grades 1-5) of schools (n=5). The schools were all privately owned, used English as the language of instruction and covered a range that catered to families from low to upper middle income groups. Class sizes across schools ranged from 35 to 47 (mean= 38 students). The school size in terms of number of students ranged from 600 to 3500 at the upper end. All the teacher respondents were female. The average age of teachers in this group was 37 years and the average number of years of professional experience was 8.7 (minimum 5 years and maximum 18 years) With the exception of one respondent, all teachers in the group were married and had children.

Regarding teacher training and educational qualifications; 3 teachers in the group had completed their 12th grade school leaving exam in addition to a 2 year teacher training certificate course, 12 teachers had completed a graduation degree. While most (n=11) teachers in the group had received a minimum of 1 year of formal teacher training, there were 4 teachers who were graduates but had no professional training inputs.

The average age of students in this group was 8 years, ranging from 6 years to a maximum of 11 years. 14/15 students identified by teachers were male and matched the vignette description of a child with Hyperactive Type ADHD. Only 1 student (female) in the sample matched the vignette description of a child with Inattentive type ADHD. 2 students in the group had received a formal diagnosis of ADHD from a child psychiatrist. There were 4 students and teachers from Grades 1 and 4, 2 students and teachers from grades 2 and 3 and 3 students and teachers from grade 5 respectively. The use of the term ADHD type behaviour in this study for a child is indicative that he/she is exhibiting behaviours that may indicate the presence of ADHD (SDQ hyperactivity score:7). While this in itself is not indicative of a definite diagnosis, it is a fairly robust indicator that behaviours exhibited by the child are at a level that would qualify for a comprehensive formal assessment and a possible future diagnosis of ADHD. Research ethics were adhered to in obtaining informed consent for interviews and observations and in reporting data.

Instruments

The primary respondents were teachers and data was obtained through in-depth interviews, responses to vignettes and questionnaires and classroom observations. Field notes of visits to the schools were also maintained. The use of multiple methods in qualitative research is desired and accepted practice as it adds a sense of depth and rigour to the research process.

In-depth interview While conducting the in-depth interview, a semi- structured interview schedule was used as a guide. The interview guide was designed by adhering to the question framework of specific issues that needed to be explored. Teacher respondents were interviewed individually across 3 sessions of 50 minutes duration each. All interview sessions were audio-recorded and later transcribed.

Vignettes Two vignettes were constructed that described the symptoms of attention difficulties with and without the presence of hyperactivity. These were based on ADHD symptoms as listed out in the Diagnostic and Statistical Manual (DSM-IV) and from the researcher's clinical experiences of typically reported ADHD type behaviours in teacher and parent diagnostic interview sessions. Expert validity was established for these vignettes prior to them being used with the final teacher sample. The purpose of using vignettes in the study was to aid in the quick recognition of a child displaying ADHD type behaviours in a classroom setting.

Teachers were asked to carefully read the two vignettes and indicate whether they had students in their class who would fit either of the descriptions best.

Strength's and Difficulties Questionnaire (SDQ- Goodman, 1997) Teachers rated students they had identified using the vignettes, on the SDQ. This is a brief behavioural screening questionnaire used for children in the age range 4-16 years. Scale specific scores in the range of 7-10 on the Hyperactivity scale are considered abnormal. This questionnaire also has a supplement that measures impact of behaviour problems. The scale has been used effectively to screen children for ADHD and it has been recognized to have good sensitivity for psychiatric caseness.

Classroom Observations These were non-participant and semi structured. Observations were recorded in a narrative manner and in chronological sequence. Each of the teacher respondents had two classroom observations of 45-50 minutes each. These were scheduled on different days at different periods. Actual observations of teacher classroom practices offered opportunities to gather 'live' data thus contributing to the ecological validity of the data given its sensitivity to context.

Procedure

Heads of school chose teachers from their elementary section who in their view fitted the study requirements. Teachers chosen were met in a group in their respective schools and attended a brief explanation about the purpose of the study. Informed consent to participate in the study was sought from teachers following this. Respondents were initially presented vignettes, if the teacher was able to identify a student in her class who displayed a similar set of behaviours as mentioned in the vignette; she was given the SDQ to complete for that student. If a student's scores on the questionnaire met inclusion criteria requirements (score of 7 and above on the hyperactivity scale) that teacher and identified student formed part of the sample. In-depth interviews and classroom observations were conducted with the final sample. Data obtained was recorded and transcribed.

Analysis

Working within the research structure provided by the objectives and the conceptual framework, transcribed data was qualitatively analysed. The analysis utilized open coding to establish themes and main concepts (Miles & Huberman, 1994). Recurring motifs in the text were recognized as themes and sub-themes. An index of central themes and sub-themes was constructed; data was ordered, synthesized and subsequently represented in a matrix. This conceptually ordered matrix aimed to categorize and contextualize data which allowed for cross case analysis and a deeper understanding and explanation of issues that were being studied.

Results

This study adopted a qualitative design. The context provided by SDQ scores and teacher responses to the vignettes indicated presence of hyperactivity and the impact it created in the classroom. Significant themes and categories that emerged from interview data and classroom observations has been presented under the following heads: *Awareness of ADHD, Challenging behaviours, Teacher responses, Attributions and Differentiating normal from pathological behaviours.*

Identified students were screened on the SDQ. Results obtained on the SDQ indicate that while all students scored had scored 7 or above, 53% (n=8) had a score of 10 indicating fairly high levels of ADHD type behaviours as assessed by the teacher. A majority, 66.7% (n=10) of teacher respondents felt that the student's behavioural difficulties were interfering with learning- quite a lot, 26.7% (n=4) described it as interfering 'a great deal'. 53% (n=8) of respondents described the identified child's behaviours interfering with peers only a little while 33.3% (n=5) perceived such behaviours as interfering quite a lot with peers. The majority of teachers (53%, n=8) felt that the student's behaviours placed quite a lot of burden on them and on the class as a whole.

Awareness of ADHD Teacher respondents were asked if in their years of teaching practice they had heard the term ADHD read about it or attended a workshop. With the exception of one teacher, none of the other teachers (n=14) reported any level of familiarity with the term. Teachers were asked about their familiarity with the term 'Hyperactivity' or its popular colloquial usage- 'Hyper'. All the teachers (n=15) reported familiarity with the term and used it in context of children and their classroom behaviour. Most teachers offered multiple explanations for their understanding of the term hyperactive. In response to a probe question of what classroom behaviours suggested its presence, teachers provided behaviour descriptors that appeared to tally with the core clinical diagnostic indicators of ADHD as specified in the

DSM-IV. These behaviours were classified as falling under 3 broad categories: Motoric behaviours, Classroom/Academic functioning and Peer functioning (Table 1).

Table 1: Teacher Descriptors of Student ADHD Type Behaviours

Motoric behaviours	Classroom/Academic functioning	Peer functioning
<ul style="list-style-type: none"> •restless •can't sit still •fidgeting with stationery •making noises •talking out of turn •out of seat frequently •making inappropriate noises •wandering •laughing loudly-out of context 	<ul style="list-style-type: none"> •incomplete work •easily distracted •difficulties concentrating •disturbs others •wastes time •frequent supervision •repeated instructions •does not like written work •hurry to finish 	<ul style="list-style-type: none"> •no true/good friends •plays class clown •gets into arguments •aggressive at times •difficulties in apologizing •difficulties in resolving fights •receives frequent complaints •meddlesome

A few sample responses that teachers provided regarding their understanding of hyperactivity have been listed:

Hyperactive students are more curious, they can never sit in their place, always mobile- but I don't find anything wrong in that, they are active, ask a lot of questions...- Grade 04 teacher

Some parents tell me – their child is hyperactive and I tell them there is no such word- no children are hyper in my class, all of them are fine. Maybe you can use the word mischievous- these are normal children but a little more naughty. Let's say there are 2 children in class one whom we call hyperactive and the other who is this obedient boy- the only thing that is different is that in this hyperactive boy there is a worm or something in his body that heats up his chair and makes him jump like pop-corn.- Grade 01 teacher

Hyper children are normal- just more naughty and playful. If they were so abnormal then I don't think they would be in a regular school.- Grade 02 teacher

Semantically hyperactivity was described variously as naughty, playful, mischievous, more active, less attentive, and more curious- essentially reflecting common descriptive terms for a range of typical childhood behaviours. ADHD type behaviours were also described by 47% (n=7) of the respondents as the 'intelligent' child's response to feeling under stimulated in class. Most teachers (13/15) also appeared to share the belief that the child's behaviours would improve as a function of age, a belief based on their personal and/or professional experiences.

Challenging behaviours Themes that appeared in terms of ADHD type behaviours that teachers reported as challenging, pertained to: *Behaviours that impact on the other, Challenging teacher authority and Teacher age/grade expectations* (Table 2).

Table 2: Challenging ADHD Type Behaviours

Behaviours that impact on the other	Challenging teacher authority	Teacher age/grade expectations
<ul style="list-style-type: none"> •distracting students by taking away their stationery items •making noises •engaging in arguments/conversations with peers while the teacher was giving instructions •answering out of turn •making irrelevant comments •shaking desk or chair, •fidgeting, wandering around class •being aggressive 	<ul style="list-style-type: none"> •talking back to the teacher •not complying with instructions •delays in following through on instructions •breaking class rules 	<ul style="list-style-type: none"> •pouting when given feedback, crying easily, •difficulty in sorting out an argument, •slow pace of written work-not at class expected level, •academic difficulties-gaps in basic concepts, difficulties with writing, spelling and math-current skills in these are below the normal class level •easily irritated or frustrated

Behaviours that a student exhibited in a classroom context that impacted on another's learning, physical or emotional safety were considered the most problematic. Teachers perceived behaviours to be

challenging if it required that they spend more time on an individual basis with the child- a requirement that was often difficult to cater to in the regular classroom.

Teacher Responses Teacher responses to a student's ADHD type behaviours were grouped under the themes of behavioural, environmental and instructional teacher responses (Table 3)

Table 3: Teacher Responses to ADHD Type Behaviours

Behavioural responses	Environmental responses	Instructional responses
<ul style="list-style-type: none"> • warning • threatening • ignoring problem behaviours • non- verbal cue • physical punishments • response cost • rewarding appropriate behaviour • calling out name • confrontation query 	<p>Seating arrangements- closer to teacher's table, next to a good student, on the floor near the blackboard</p> <p>Removing the student from class, seating him in another class, the staffroom, outside Principal's office</p>	<ul style="list-style-type: none"> • frequently calling on the child to answer a question • providing a range of activities within a period • keeping the student constantly occupied • playing a quiz/game spontaneously in class • structured responsibility that allowed for movement- e.g. child is responsible for collecting the books from all the rows and depositing • brisk pace of teaching

Responses teachers employed represented a range; these were not used consistently or over a sustained period of time and were heuristic strategies largely based on what teachers had gathered through their years of experience in managing classrooms.

Attributions All teachers attributed a combination of causes they believed were responsible for these behaviours presenting themselves in children. Only two teachers (13.3%) in the study suggested a biological causal factor. Both these teachers also provided other attributions and did not consider biological factors as acting in isolation in causing ADHD type behaviours. Teachers' attributions of ADHD behaviours were discussed under parent, child and environment factors. A child's ADHD behaviours were most commonly (n=15) attributed to parenting related factors; inconsistencies in parent disciplining practices, limited time that parents spend with their children, absence of extended family members and poor supervision. Approximately half the group (47%, n=7) attributed ADHD type behaviours to the child's temperament which was regarded as transitory in nature.

Among the Environmental Factors, the ethos of the school, its views and practices demonstrated about discipline were regarded as significant by 4 teachers. The majority of teachers (73%, n=11) mentioned the influence of the electronic and entertainment media. Unsupervised television viewing, video games and access to the internet were held as responsible for influencing the way children thought and spoke. Other environmental attributions were to peer group affiliations (n=2) and parent religious affiliation (n=2).

Differentiating Behaviours Teachers' responses to the query on how they would differentiate a student who was being naughty from a student they thought had a more significant difficulty such as that mentioned in the vignette, were examined for themes. These have been visually represented in Figure 1. The core differentiating features that teachers used to identify students with ADHD behaviours in regular classrooms were classified under four specific areas that have been collectively referred to as the *Four A*

Framework. In describing how they used the framework, teachers stressed the comparison of the identified child in the context of observed classroom behaviour norms. The core features of this framework included: *Activity Levels*: Students who were restless, constantly shifting in their places, fidgeting with stationery items, rocking or seen to be walking in class when being seated was expected were viewed as having significant difficulties. Teachers reported that in comparison to other students, those who displayed ADHD type behaviours had higher physical energy levels.

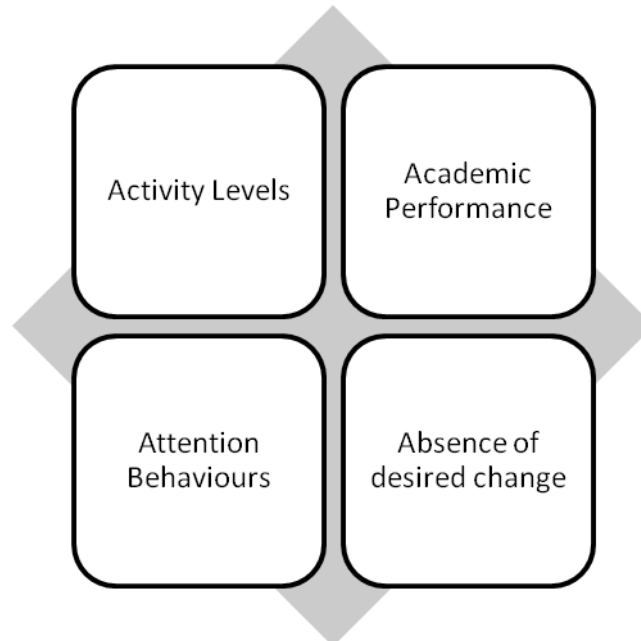


Figure 1: Differentiating Problematic Behaviours-The Four A Framework

Attention Behaviours: Students who were easily distracted by classroom interruptions, had a dreamy or glazed look, did not attend or participate in a class that others found interesting, did not respond immediately to name being called out and needed frequent reminders to stay focused were perceived as displaying attention difficulties .

Academic Performance: Being unable to keep pace with the other students while completing written work in class and poor performance on tests and exams, were crucial indicators as to whether the teachers would call in the child's parents. Academic concerns in combination with behavioural difficulties indicated definite areas of difficulty.

Absence of desired change: If teachers perceived that in response to correction or feedback, there were no lasting observable changes in the student's behaviour, it was viewed as indicating a significant problem.

Discussion

The present study is a significant contribution to child mental health research in India as it attempts to understand how ADHD type behaviours present themselves and are understood in elementary classrooms. Though a majority of students (87%, n=13) had not received a formal diagnosis of ADHD, the study findings indicate that even the presence of ADHD type behaviours were sufficient to be regarded as interfering with a student's learning and peer related social functioning. Earlier research lends credence to these findings and highlights the difficulties children with ADHD experience in social relationships and academic functioning (Semrud-Clikeman et al., 1992; DuPaul & Stoner, 2003; Hinshaw, 2002; Maedgen & Carlson, 2000; Merrell & Boelter, 2001; Landau & Moore, 1991). Impaired functioning across social and educational settings domains represent significant developmental risk factors and can have long term implications on the educational attainment, quality of life, and health status of these children (Mannuzza , Klein, Bessler, Malloy & Hynes, 1997).

The overwhelming majority (93.3%, n=14) of teacher respondents in this study had no awareness of the term-ADHD. Teachers used the term Hyperactivity instead to describe ADHD type behaviours. The prefix of hyper in its common sense connotation of representing 'more/extra' - appeared to characterize

their understanding of the term in its entirety. Steering clear of biomedical child mental health models, teachers' appear to have located the construct of ADHD in a child developmental context. Hyperactivity was viewed as a mixed set of volitional and age specific behaviours that deviated from classroom norms for behaviour. The perception that children with ADHD are also possibly endowed with higher cognitive abilities allowed some teachers to frame it as a positive trait/ability and for others to locate problem classroom behaviours in a child specific context.

More boys than girls were identified as displaying ADHD behaviours. This is in line with research that suggests that gender impacts on symptom manifestation of ADHD (Abikoff, et al., 2002), and that ADHD behaviours are more frequently observed in boys than in girls (Kypriotaki & Manolitsis, 2010). While teachers were unfamiliar with the term ADHD, they provided behaviour descriptors that tallied fairly accurately with the core clinical diagnostic indicators of ADHD as specified in the DSM-IV. The implications of this finding suggest that the set of behaviours symptomatic of ADHD exist as a fairly stable construct in cross cultural contexts (Ghanizadeh, Bahredar & Moeini, 2006; Hong, 2007; Karande et al., 2007; and Einarsdottir, 2008).

However, norms prescribed by a particular culture represent and express core cultural values, tolerances for specific child behaviours and largely determine whether behaviours become classified as abnormal or not (Waxler, 1974; Edgerton, 1976; Murphy, 1976; Kleinman, 1988; Chandra, 1993). Teachers in this study believed that displaying ADHD type behaviours did not necessarily predict a negative developmental trajectory for a child because of the perception that problem behaviours were limited to a childhood period. A possible academic contextual explanation for this belief could be that teachers in elementary sections are just beginning to see deficits in the child's classroom and academic functioning. These however tend to be more defined in middle school and high school contexts when the academic and social demands challenge deficits in executive functioning skills (Brown, 2008).

A child displaying ADHD type behaviours did place demands on a teacher's time and resources and most teachers experienced being burdened at individual and class levels in managing hyperactive behaviours. This is in accordance with research that establishes higher stress levels for teachers who cope with students who display externalizing behaviours (Raschke, Dedrick, Strathe & Hawkes, 1985; Greene, Beszterczey, Katzenstein, Park & Goring, 2002; Reinke et al., 2011) as compared to students who have predominantly inattentive difficulties. Prior related research indicates that behaviours least tolerated by teachers are those that are disruptive in nature; they originate in the student but have an observable, tangible effect on other pupils (Saffran & Saffran, 1984; Arbuckle & Little, 2004). The presence of these behaviours often interferes with establishing and maintaining positive relationships with peers and teachers (DuPaul and Stoner, 2003; Barkley, 2006).

In the present study, teachers were most challenged by behaviours that impacted on the other. The importance teachers assigned to behaviours impacting on the other can be viewed in the larger socio-cultural phenomenon of holism or intersubjective sharing (Clark, 2001). In a classroom context this translates into the teacher being mindful of group processes and the need for regulation amongst its members to ensure a certain degree of functioning. This emphasis on the group as a whole entity and not on individual concerns constructs ways in which the teacher rates the severity of a particular inappropriate behaviour and also determines the nature of her response.

Arguing that the concept of small class size in India is a construct of privilege and power, Gupta (2006) adds that the emphasis on students taking turns to talk, sharing materials, minimizing physical movement and limiting group activity in classrooms that are physically cramped brings in a degree of order in what could otherwise be a very chaotic environment. Teachers also expressed concern about behaviours that challenged their authority as this was in contrast to their traditional roles. Non-compliant behaviour that a student displays is hence likely to be viewed as the student being disrespectful of the teacher. Recognizing that the role of the teacher in India is culturally preserved (Clark, 2001; Gupta, 2003) has implications for how a teacher could effectively respond to such behaviours in the classroom.

From the responses that were employed in the classroom in response to ADHD type behaviours; it was evident that teachers used a variety of strategies. Teachers appeared to subscribe to an Interventionist view that predominantly uses a system of rules, rewards and punishments as opposed to a more child centered Non- Interventionist view (Wolfgang & Glickman, 1986). The need for teachers in Indian classrooms to be focused on class control and group disciplinary measures stems from working with large numbers of students where maintaining a sense of group order is a prerequisite for any instructional

activity (Gupta, 2006). The responses teachers employed were not necessarily consistent or long term in their approach; they dealt with the problem behaviour on hand and were largely heuristic, based on what teachers had gathered through their years of experience and informal consultations with their senior colleagues rather than exposure to formal training experiences.

Classroom preferential seating, engaging the student with work, close supervision, providing frequent reminders and cues and following up on feedback given to child and parent were listed as teacher initiated responses that could have a positive effect on reducing the severity of challenging behaviours. Teachers attributed ADHD type behaviours to a variety of factors. Parental disengagement with children and poor supervision were cited as significant contributing factors. Teachers believed that changes in present day family structures resulted in children functioning in home contexts with a poor sense of boundaries, inadequate consequences for their actions and a limited sense of differentiating appropriate from inappropriate behaviours. Interestingly none of the teachers attributed ADHD type behaviours to teacher- student interactions, teaching styles, pedagogy and classroom management strategies. The teacher appeared to be removed from the contributing matrix.

The findings about teacher attributions in the present study are supported by Arcia et al.'s (2000) study of teacher attributions of ADHD. Elementary teacher respondents in their study attributed ADHD to family environment, neglect, lack of discipline at home and an overprotective mother among others. The powerful role of the electronic and entertainment media- unsupervised television viewing, video games and access to the internet were perceived as responsible for influencing children's cognitions and behaviours in family, social and educational contexts.

In differentiating difficult from pathological behaviours, teachers referred to a child's activity levels, attention levels, academic, and absence of desired change, in comparison to group observed behaviours. These have been presented as the Four A Framework representing core ADHD features. Findings suggest that teachers in elementary classrooms are well placed to identify children who display ADHD like behaviours (Sayal, Hornsey, Warren, MacDiarmid, & Taylor, 2006). In their study, Konantambigi and Shetty (2008), established that even in the absence of information obtained from formal assessments, Indian teachers get a fairly good insight into the learning difficulties and problems of children. This has positive implications in terms of enabling early intervention efforts.

The present study clearly defines the need for a greater appreciation of the cultural complexities and shared belief systems and values that influence how a condition like ADHD is conceptualized and the challenges it presents in terms of designing suitable interventions. Findings on understanding ADHD in this study are supported by previous research that requires clinicians and educationists to be sensitive to the complex cultural frameworks and influences embedded in addressing the condition (Havey, Olson & McCormick, 2005; Singh, 2008; Lee & Stacy, 2008).

Implications

Research findings indicate that school based interventions if timely and consistent can moderate the academic challenges a child with ADHD experiences (Murray, Rabiner & Hardy, 2011). The findings of this research categorically recognize the importance of teacher and cultural perspectives in understanding behavioural disorders and determining classroom practices. In addressing the relevance and need for addressing ADHD in school related contexts, the findings of this study also have implications for school mental health with specific reference to the Indian context. Creating a collaborative space between schools and child mental health professionals is a much needed requirement, defined however by complex challenges. Mental health professionals entering school spaces would need to display a greater sensitivity towards and an appreciation of the complex factors that govern daily classroom teaching practices. Findings of the research have implications for addressing issues of designing effective teacher training programmes, school mental health and enabling schools in supporting required teacher skill sets that can foster positive child mental health.

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References

Abikoff, H. B., Jensen, P. S., Arnold, L. E., Hoza, B., Hechtman, L., Pollack, S., et al. (2002). Observed classroom behaviour of children with ADHD: Relationship to gender and co morbidity. *Journal of Abnormal Child Psychopathology*, 30, 349–360.

- American Psychiatric Association. APA, (1994, 2000). *Diagnostic and Statistical Manual of Mental Disorders*. 4th Edition, Washington D.C., American Psychiatric Association.
- Anandlakshmy, S. (1998). The cultural context. In M. Swaminathan (Ed.), *The first five years: A critical perspective on early childhood care and education in India*. New Delhi: Sage.
- Arbuckle, C., & Little, E. (2004). Teachers' perceptions and management of disruptive classroom behaviour during the middle years (Years five to nine). *Australian Journal of Educational & Developmental Psychology*, 4, 59-70.
- Arcia, E., Frank, R., Sanchez-LaCay, A., and Fernandez, C.M. (2000). Teacher understanding of ADHD as reflected in attributions and classroom strategies. *Journal of Attention Disorder*, 4, 91- 101.
- Barkley, R. A. (2006). *Attention deficit hyperactivity disorder: A handbook for diagnosis and treatment*. (3rd ed.). New York: Guilford Press.
- Bronfenbrenner, U. (1979). *The ecology of human development; experiments by nature and design*. Cambridge, MA: Harvard University Press.
- Brown, E.T. (2008). Executive functions: describing 6 aspects of a complex syndrome. *Attention*, 12-17.
- Bussing, R., Schoenberg, N. E., Rogers, K. M., Zima, B.T., and Angus, S. (1998). Explanatory models of ADHD: Do they differ by ethnicity, child gender or treatment status. *Journal of Emotional and Behavioural Disorders*, 6(4), 233-243.
- Chandra, P. (1993). Cross-Cultural psychiatry and children with deviant behaviors. *American Journal of Psychiatry*, 1 (50), 8-9.
- Chawla, P.L., Sahasi, G., Sundaram, K.R., & Mehta, M. (1981). A study of prevalence and pattern of hyperactive syndrome in primary school children. *Indian Journal of Psychiatry*, 23, 313-22.
- Clarke, P. (2001). *Teaching and Learning- The Culture of Pedagogy*. Sage Publications.
- Desai, A. (1972). Family and community influences in the socialization of the young child. In M. Swaminathan (Ed.), *IAPE Proceedings of the national seminar on an integrated approach to the preschool child*, Bangalore, India.
- DuPaul, G. J., & Stoner, G. (2003). *ADHD in the schools: Assessment and intervention strategies* (2nd ed.). New York, NY: Guilford.
- DuPaul, G. J., Weyandt, L. L., & Janusis, G. M. (2011). ADHD in the classroom: Effective intervention strategies. *Theory into Practice*, 50, 35-42.
- Dwivedi, N. K., and Banhatti, G. R. (2007). ADHD and ethnicity. *Archives of Disease in Childhood*, 92, 76-81.
- Edgerton, R. B. (1976). *Deviance: A Cross-Cultural Perspective*. Menlo Park, CA: Cummings Publishing Company.
- Education in Karnataka. (2010-11). A State level, district-wise analytical report. Published by: Commissioner of Public Instruction, Department of Education, Karnataka.
- Einarsdottir, J. (2008). Teaching children with ADHD: Icelandic early childhood teachers' perspectives. *Early Child Development and Care*, 178, 375-397.
- Ghanizadeh, A., Bahredar, M. J., and Moeini, S.R. (2006). Knowledge and attitudes towards ADHD among elementary school teachers. *Patient Education Counselling*, 63, 84-88.
- Goodman, R. (1997). The Strengths and Difficulties questionnaire: a research note. *Journal of Child Psychology and Psychiatry*, 38, 5, 581-586.
- Greene, W.R., Beszterczey, K.S., Katzenstein, T., Park, K., & Goring, J.(2002). Are Students with ADHD More Stressful to Teach? Patterns of Teacher Stress in an Elementary School. *Journal of Emotional and Behavioral Disorders*, 10 (79).
- Gupta, A. (2003). Socio-cultural-historical constructivism in the preparation and practice of early childhood teachers in New Delhi, India. *Journal of Early Childhood Teacher Education*, 24(3), 163-170.
- Gupta, A. (2006). Early Experiences and Personal Funds of Knowledge and Beliefs of Immigrant and Minority Teacher Candidates Dialog with Theories of Child Development in a Teacher Education Classroom. *Journal of Early Childhood Teacher Education*, 27, 3 18.
- Hart, R. (2010). Classroom behaviour management: educational psychologists' views on effective practice. *Emotional and Behavioural Difficulties*, 15, (4), 353-371.
- Havey, J., Olson, J., McCormick, C., & Cates, G. (2005). Teachers' perceptions of the incidence and management of ADHD. *Applied Neuropsychology*, 12, (2), 120-127.
- Hinshaw, S. P. (2002). Is ADHD an impairing condition of childhood and adolescence? In P. S. Jensen & J. R. Cooper (Eds.), *Attention deficit hyperactivity disorder: State of the science. Best practices*, pp. 5-21, Kingston, NJ: Civic Research Institute.
- Hong, Y. (2007). Teachers' perceptions of young children with ADHD in Korea. *Early Child Development and Care*, 178, 399-414.

- Junod-Vile R. E., DuPaul, G. J., Jitendra, A. K., Volpe, R. J., & Cleary, K. S. (2006). Classroom observations of students with and without ADHD: Differences across types of engagement. *Journal of School Psychology, 44*, 87–104.
- Kapur, M. (2005). An integrated approach to the delivery of child mental health services. *Journal of Indian Association for Child and Adolescent Mental Health, 1*, 1-7.
- Karande, S., Satam, N., Kulkarni, M., Sholapurwala, R., Chitre, A., and Shah, N. (2007). Clinical and psychoeducational profile of children with specific learning disability and co-occurring hyperactivity disorder. *Indian Journal of Medical Sciences, 61*, 639-64.
- Khandelwal, K. S., Jhingan, P. H., Ramesh, S., Gupta, R. K., & Srivastava, V. K. (2004). India mental health country profile. *International Review of Psychiatry, 16*(1–2), 126–141.
- Kleinman, A. (1988). *Rethinking Psychiatry*. New York: The Free Press.
- Konantambigi, R. & Shetty, M. (2008). Teacher identification of learning problems: Comparisons with other measures. In K. Thapa., G. M. Van Der Aalsvoort & J. Pandey (Eds.), *Perspectives on Learning Disability in India- Current practices and prospects*, New Delhi: Sage Publications.
- Kuruppuarachchi, K. A., & Wijeratne, L. T. (2004). ADHD in developing countries. *British Journal of Psychiatry, 185*:439.
- Kypriotaki, M. & Manolitsis, G. (2010). Teachers's evaluations for the detection of primary school children with ADHD. *European Journal of Special Needs Education, 25*(3), 269–281.
- Landau, S., & Moore, L. A. (1991). Social skills deficits in children with attention-deficit hyperactivity disorder. *School Psychology Review, 20*, 235–251.
- Lee, K., & Stacy, P. (2008). AD/HD across cultures: development and disability in contexts. *Early Child Development and Care, 178*(4), 339–346.
- Maedgen, J. W., & Carlson, C. L. (2000). Social functioning and emotional regulation in the attention deficit hyperactivity disorder subtypes. *Journal of Clinical Child Psychology, 29*, 30–42.
- Malhi, P., & Singhi, P. (2000). Editorial- Spectrum of ADHD in children among referrals made to psychology services. *Journal of Indian Pediatrics, 37*, 1256–1260.
- Mannuzza, S., Klein, R., Bessler, A., Malloy, P., & Hynes, M. (1997). Educational and occupational outcome of hyperactive boys grown up. *Journal of American Academy of Child and Adolescent Psychiatry, 36*(9), 1222–7.
- Merrell, K. W., & Boelter, E. (2001). An investigation of relationships between social behaviour and ADHD in children and youth: Construct validity of the Home and Community Social Behavior Scales. *Journal of Emotional and Behavioral Disorders, 9*, 260–269.
- Ministry of Human Resource Development, MHRD. (2006). Selected educational statistics, 2005–2006. Government of India.
- Miles, B. M., & Huberman, M. (1994). *Qualitative data analysis- An expanded sourcebook*. (2nd Ed.), Thousand Oaks: Sage Publications
- Murphy, J. M. (1976). Psychiatric labeling in cross-cultural perspective. *Science, 191*, 1019–1028.
- Murray, W. D., Rabiner, D. L., & Hardy, K. (2011). Teacher management practices for 1st graders with attention problems. *Journal of Attention Disorders, 15*, 639–646.
- Noam, G. G., & Hermann, A. C. (2002). Where education and mental health meet: Developmental prevention and early intervention in schools. *Development and Psychopathology, 14*, 861–875.
- Patel, V., & Prince, M. (2001). Ageing and mental health in a developing country: Who cares? Qualitative studies from Goa, India. *Psychological Medicine, 31*(1), 29–38.
- Pellegrini, A. D., & Horvat, M. (1995). A Developmental Contextualist critique of attention deficit hyperactivity disorder. *Educational Researcher, 24*(1), 13–19.
- Raschke, B. D., Dedrick, V. C., Strathe, I. M., & Hawkes, R. R. (1985). Teacher Stress: The elementary teacher's perspective. *The Elementary School Journal, 85*, (4), 558–564.
- Reinke, M. W., Stormont, M., Herman, C. K., Puri, R., & Goel, N. (2011). Supporting children's mental health in schools: Teacher perceptions of needs, roles, and barriers. *School Psychology Quarterly, 26* (1), 1–13.
- Rodrigues, M., Patel, V., Jaswal, S., & De Souza, N. (2003). Listening to mothers: Qualitative studies on motherhood and depression from Goa, India. *Social Science & Medicine, 57*, 1797–1806.
- Safran, P. S. & Safran, S. J. (1984). Elementary Teachers' Tolerance of Problem Behaviors. *The Elementary School Journal, 85*, (2), 236–243.
- Sayal, K., Goodman, R., & Ford, T. (2006). Barriers to the identification of children with ADHD. *Journal of Child Psychology and Psychiatry, 47*(7), 744–50.
- Sayal, K., Hornsey, H., Warren, S., MacDiarmid, F., & Taylor, E. (2006). Identification of Children at risk of ADHD- A school based intervention. *Social Psychiatry and Psychiatric Epidemiology, 41*, 806–813.

- Sciutto, M.J., Terjesen, M.D. & Frank, A.S.B. (2000). Teachers' knowledge and misperceptions of Attention-Deficit/Hyperactivity Disorder. *Psychology in the Schools*, 37, 115-122
- Semrud-Clikeman, M., Biederman, J., Sprich-Buckminster, S., Lehman, B.K., Faraone, S.V., & Norman, D. (1992). Comorbidity between ADHD and LD: A review and report in a clinically referred sample. *Journal of the American Academy of Child and Adolescent Psychiatry*, 31, 439-448.
- Singh, I. (2008). ADHD, culture and education. *Early Child Development and Care*, 178: 4, 347 —361, DOI: 10.1080/03004430701321555.
- Skounti, M., Philalithis, A. & Galanakis, E. (2007). Variations in prevalence of attention deficit hyperactivity disorder worldwide. *European Journal of Pediatrics*, 166, 117–123.
- Sonuga-Barke, E.J., Thompson, M., Abikoff, H., Klein, R., & Brotman, L.M. (2006). Non pharmacological interventions for preschoolers with ADHD: The case for specialized parent training. *Infants and Young Children*, 19 (2), 142-153.
- Waxler, N. (1974). Culture and mental illness: A social labeling perspective. *Journal of Nervous and Mental Disease*, 159, 379-395.
- Wilcox, E.C., Washburn, R., & Patel, V. (2007). Seeking help for ADHD in developing countries: A study of parental explanatory models in Goa, India. *Social Science and Medicine*, 64, 1600-1610.
- Wolfgang, D.H., & Glickman, C.D. (1980, 1986). *Solving discipline problems: Strategies for classroom teachers*, Boston: Allyn & Bacon.

**AN INTER-CORRELATIONAL STUDY OF THE READING COMPONENTS
IN PROFILING AND GENERATING A COGNITIVE EQUATION FOR THE READING
PERFORMANCE OF STUDENTS WITH AUTISM**

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Reading is a multifaceted process consisting of many interacting components. A plethora of research is available on reading. Yet, there is inadequate exploration, which ascertains the effects of the interaction of different reading components and how they affect the reading performance of students with autism. This inter-correlational research study examined how five different components, namely, Reading Experience, Word Reading, Sentence Reading, Reading Comprehension and Reading Attitude interrelate with each other. We proposed a cognitive equation of reading process that illustrated the effects of these components on 17 Primary 4 students (13 boys and 4 girls, aged between 9 and 10 years) with high-functioning autism, currently attending mainstream schools. Among the five components, the inter-correlation reliability coefficient between Word Reading and Sentence Reading showed significant and positive relationship. Word Reading and Reading Comprehension which showed moderate reliability followed this. Reading Experience correlated reliably with Reading Comprehension. However, Reading Attitude was least correlated with the other components of the reading process. We recommended pedagogical interventions based on the results of this study.

The hallmark features that distinguish students with autism are distinct and identified by a triad of impairments comprising social impairment; impairment in reciprocal communication; and narrow, restricted, and stereotyped patterns of behaviours and interests (American Psychiatric Association, 1994).

For typical children, the ability to make sense of print by and large progresses in tandem with their ability to grasp the meaning of what they read (Mirenda, 2003; Nation & Norbury, 2005). Conversely, students with high-functioning autism have deficits in comprehending written text (Wahlberg & Magliano, 2004). These students demonstrate effective and sometimes exceptionally good word-recognition skills but poor comprehension capabilities, termed as hyperlexic (Grigorenko, Klin, & Volkmar, 2003; Nation, Clarke, Wright, & Williams, 2006). Despite this, students with high-functioning autism can achieve academic success as their language and cognitive aptitude are less impaired (Minshew, Goldstein, Taylor, & Siegel, 1994). In fact, some of these students have successfully attained tertiary education and work (Burack, Root, & Zigler, 1997).

Undoubtedly, the ability to read and grasp text will enhance learning outcomes and expand communication skills (Nation & Norbury, 2005). This in turn will create the pathway for a better quality of life and ability to function independently in the community. Thus, it is pertinent for students with autism to be able to read and understand text (O'Connor & Klein, 2004). This underlying notion was the driving force that led us to examine the reading process in order to establish a cognitive equation for students with autism. It is our vision that this cognitive equation will shed light on specific reading components and corresponding interventions to enhance reading outcomes of students with autism.

Reading as a Process

Reading is a complex and multi-dimensional process (Alfassi, 2004; Siegel, 1993). It entails a multifaceted set of process components with their respective skills and abilities. According to Siegel

(1993), in acquisition of reading, five process components are crucial: phonology, syntax, semantics, orthography, and working memory (see Figure 1).

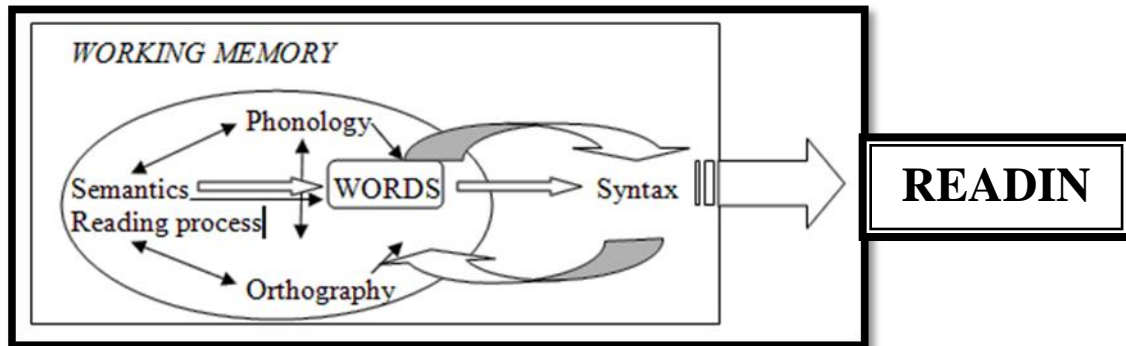


Figure 1. The Five Process Components of Reading (Siegel, 1993)

Moreover, reading is both a psycholinguistic process (Goodman, 1968), where the mind actively processes what is read and sociolinguistic process (Vygotsky, 1978), where several social related factors that have an impact on what one reads, how one reads and how much one understands from reading.

A search on past studies on reading process did not provide us with a cognitive equation specifically for students with autism. Consequently, our study was derived from and built upon the cognitive model of reading process (Chia, 2007a) which encapsulates in a cognitive equation (Chia, 2004, 2007, 2010):

$$RP \rightarrow S \{B[T(D + Cp) + M] + P\} \rightarrow RO$$

Where	RP	is Reading Process
	S	is Setting (where the reading task takes place)
	B	is the Background Knowledge and Prior Experience of the Reader
	T	is Thinking
	D	is Decoding
	Cp	is Comprehension
	M	is Motivation
	P	is Purpose
	RO	is Reading Outcome

As shown in the afore-mentioned equation, reading is a complex process **comprising many interacting components**. Figure 2 below shows the cognitive equation depicted in the form of a diagram.

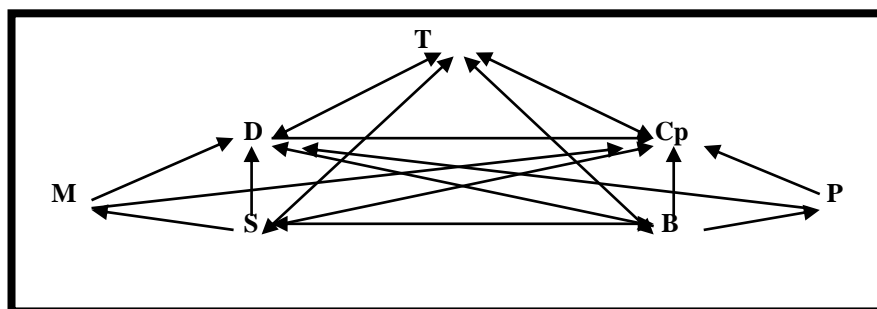


Figure 2. An Adapted Diagrammatic Representation of the Reading Process (Chia, 2004)

Thinking

Chia (2004) states that the fundamental component in the cognitive equation of reading process is **Thinking (Decoding + Comprehension), that is, T (D + Cp)**. The knowledge and verification of one's understanding (*metacognition*) of the text are indispensably imperative to attain a competent level of reading (Mokhtari & Reichard, 2002). A competent reader is able to decode words correctly and fluently to understand the intended message of the text for both meaning of words in isolation or according to the context of the text (Huemer & Mann, 2010). Thinking **T** is fundamental for this process.

In the absence of thinking, comprehension is meaningless and the reader becomes hyperlexic. Children who are able to read but unable to derive meaning from what they have read will not benefit from their reading (Klinger, Vaughn, & Boardman, 2007). The thinking processes and the generated

representations form the cornerstone to boost background information that assists recalling or answering questions at a later stage.

Decoding

Decoding **D** involves aural-visual and visual-oral decoding processes (Chia, 2007a, p.4). A general consensus amongst several researchers (e.g., Frith, 2003; Mayes & Calhoun, 2003a, 2003b; Nation et al., 2006) is that children with autism are adept at decoding, given their strengths in rule-based and rote-learning but less skilled at comprehension which needs meaning-focused skills (Randi, Newman, & Grigorenko, 2010). These children decode words using similar phonological and orthographic representations as their typical counterparts (Newman et al., 2007). Yet, the language profile of children with autism diverges greatly in terms of expansion in vocabulary and word proficiency. Some of them have delays in acquiring their first words whilst others are able to achieve scores in vocabulary that are similar or above those scored by typical children (Lindgren, Folstein, Tomblin, & Tager-Flusberg, 2009). Other factors that impact on word learning in students with autism include social factors (Kuhl, 2007), joint-attention and ability to form a common visual point (McDuffie, Yoder, & Stone, 2006) and associative learning (Parish-Morris, Hennon, Hirsh-Pasek, Golinkoff, & Tager-Flusberg, 2007) influence word reading skills.

Comprehension

The competences required for effective reading comprehension **Cp** extends beyond word reading abilities. A wide array of vocabulary knowledge, background knowledge and usage of cognitive strategies such as summarizing, questioning and monitoring personal understanding help to assimilate key information to derive meaning from the text (Caccamise & Snyder, 2005).

For children with autism, reading with grasping the intended meaning of the text is particularly difficult. They have deficiencies in communication skills (Nation & Norbury 2005), struggles in a broad-spectrum of language areas (Tager-Flusberg & Joseph, 2003), challenges in verbal proficiencies (Mirenda & Erickson, 2000, pp.349–351) and problems in assimilating varied information in context of the material that they reading (Nation et al., 2006). Additionally, they are more literal in their interpretation of language activities (Tager-Flusberg, 1981) and are able to attend to reading comprehension questions that need factual answers. Children with autism had great difficulties in answering questions that require them to predict, deduce, or take perspective based on a given scenario (Griswold, Barnhill, Myles, Hagiwara & Simpson, 2002). However, reading comprehension expands beyond factual interpretations to ability to make inferences from the text.

The challenges that children with autism face corresponds to neuropsychological theories of theory of mind (Baron-Cohen, Leslie, & Frith, 1985), weak central coherence and weak executive functioning (Martin & McDonald, 2003). Their struggles with taking perspectives, understanding and predicting behaviours or expressions affect their ability to infer from a given text (Baron-Cohen et al., 1985). Weak central coherence limits their skills in drawing meaning from a particular context that require inferring capabilities (Martin & McDonald, 2003). The factor that helps one to adjust according to differing situations is executive function. To be proficient readers, children with autism need to adjust to varying scenarios in the text that they are reading with more flexibility (Martin & McDonald, 2003).

Motivation

Motivation M is another imperative component of the cognition reading process. The equation extends to $T (D + Cp) + M$. Besides capability, a competent reader needs the motivation to read. Children may be motivated to read for an external reward that they are anticipating or for sheer personal joy (Wigfield & Guthrie, 1997). Motivation to read can thus be termed as extrinsic or intrinsic motivation (Edmunds & Bauserman, 2006) respectively.

Children who have a choice to select their reading materials are more likely to focus better in reading (Worthy & McKool, 1996). In fact, utilizing self-determination strategy of choice making provides a sense of ownership and commitment to reading (Guthrie & Wigfield, 2000). Another key factor that boosts motivation to read is self-concept (Gambrell, Palmer, Codling, & Mazzoni, 1996). Children who are encouraged positively to read from early years will have a positive self-concept, including their views of reading mastery, the intricacy of reading, and their mind-set towards reading, and feel good about reading. They will in turn read more due to the affirmative stimulus as can be explained through the self-fulfilling prophecy. This will provide the pathway for these children to become effective readers.

A noteworthy inquiry using multiple regression analyses by Taboada, Tonks, Wigfield, and Guthrie (2009) reported statistically significant results while conceding with Pintrich's (2003) notion that internal motivation is the key enabler. They reckoned that internally motivated students are able to make rich connection with the text that they read whilst tapping on their repertoire of background knowledge.

Purpose of Reading

A reader does not read without an aim. Consequently, purpose P expands the equation into $[T (D + Cp) + M] + P$. Knowing about the purpose of reading helps a reader to focus, engage meaningfully and enhance concentration. **The reader reads a particular text with an end in mind to learn, expand knowledge and enhance his/her repertoire of vocabulary (Chia, 2007b).**

Background Knowledge

Besides the purpose of reading, a reader indubitably uses his/her prior knowledge B during the reading process. The cognitive equation broadens to $B [T (D + Cp) + M] + P$. The reader does not decipher every single word for its meaning when he or she reads, but processes the material in chunks and derive a bigger picture of what he or she reads. This is plausible as the reader uses his or her prior knowledge to gain meaning both consciously and sub-consciously. Background knowledge helps the reader to make predictions and synthesize the intent of the text (Salmero'n, Kintsch, & Can'as, 2006).

Setting

Reading process takes place in a setting S (milieu) with varying conditions and the cognitive equation completes with $S \{B [T (D + Cp) + M] + P\}$. The reading process takes place within a particular domain such as the home or classroom and not in isolation. These environments may or may not nurture the reading process. Besides, the mood and experiences within these settings will vary depending on the purpose of reading, markedly, for formal assessment or for pleasure reading (Braunger & Lewis, 2001).

Thus far, we have expounded the entire equation $RP = S \{B [T (D + Cp) + M] + P\}$ as mooted by Chia (2004, 2007 & 2010) for typical readers. The reading outcome (RO) will be contingent on *how well these factors (i.e., S, B, T, D, Cp, M and P) have been developed to play their respective parts* (Chia, 2007, p.7).

However, as the focus of our study was on readers with autism, we hypothesized that the cognitive equation of reading process for readers with autism would be very different from that for readers without autism. The various components of reading process that we chose to measure in our study include reading experience (RE), word reading (WR), sentence reading (SR), reading comprehension (RC) and reading attitude (RA). Hence, we modified the original cognitive equation of reading process put forth by Chia (2010) for the purposes of this study. The modified equation is as follows:

$RP \rightarrow RE \{[WR (SR + RC)] + RA\} \rightarrow RO$ *modified Chia's cognitive equation*

The omitted components in this new cognitive equation are S (Setting) and T (Thinking). It is difficult to measure Setting and Thinking. Furthermore, there is no known assessment tool to measure either of the two components.

Our proposed cognitive equation of reading process for students with autism is as:

$RP \rightarrow RE [(WR) (SR) + RC] + RA \rightarrow RO$ *proposed/hypothetical cognitive equation*

Where **RP** is Reading Process
RE is Reading Experience (to replace Background Knowledge and Prior Experience of the Reader)
WR is Word Reading (also known as Word Recognition, to replace Decoding)
SR is Sentence Reading (also known as Contextualised Word Reading to extend Decoding)
RC is Reading Comprehension (same as Comprehension)
RA is Reading Attitude (to replace Motivation and Purpose)
RO is Reading Outcome

There is a slight difference between Chia's cognitive equation and our proposed cognitive equation. In Chia's (2010), WR correlates well with SR and RC, but SR does not correlate with RC. Also, RA stands apart from WR, SR and RC. Further, RE presumably correlates with WR, SR, RC and RA.

However, in our proposed cognitive equation for reading process, decoding is further divided into WR and SR – also known as contextualised word reading, where a sentence serves as a context to aid in deciphering of a new or unknown word. Together with RC, these three components form the core skills for the reading process. RE and RA are also included in the cognitive equation as important factors that can impact on the overall reading performance.

Reading attitude (RA) dissented further into two sub-categories: attitude towards recreational reading (ARR) and attitude towards academic reading (AAR). When both scores for ARR and AAR merged, they provided the overall percentile rank for the overall reading attitude (ORA) (see McKenna & Kear, 1990, for more details).

Focus of the Study: Students with Mild Autism in Mainstream Classrooms

More children with mild autism and Asperger syndrome are progressively educated in general education classrooms (Griffin, Griffin, Fitch, Albera, & Gingras, 2006). A similar trend is transpiring in Singapore. In 2004, the Prime Minister, Lee Hsien Loong, declared and unveiled the vision of the government in his inaugural speech, *Government that will be open and inclusive in its approach, toward all Singaporeans, young and old, disabled and able-bodied*. ... (Ibrahim, 2004). Thereafter, a hallmark step forward towards inclusion was seen when the Prime Minister urged for heighten mission to integrate those with mild disabilities into mainstream society, starting with the assimilation of students with mild disabilities into mainstream schools (Teo, 2004).

However, the challenges that students with autism face in acquiring reading mastery with understanding may affect their academic outcomes at the mainstream schools. Moreover, educators in the inclusive general classrooms are mostly uncertain on how to impart literacy skills to students with autism (Kluth & Darmody-Latham, 2003). In spite of these drawbacks, we envisage that students with autism can become adept at reading with well-targeted interventions in reading instruction as mooted by O'Connor and Klein (2004).

Purpose of Study

Studies from other regions (e.g., Nation et al., 2006; O'Connor & Klein, 2004) have explored only some of the proposed components in our reading equation. Also, analyses exploring the reading outcomes of students with autism are limited in Singapore. Particularly, no studies have investigated all the variables in the reading equation simultaneously or the reciprocal ways in which the different components interact in relation to the final reading outcomes.

Gaining insight about the different reading components and their effect on the reading outcomes of students with autism is of practical significance to special educators from mainstream and special schools in Singapore. Most importantly, distinguishing the patterns of students' strengths and difficulties in reading will certainly help us to ascertain the specific reading components that require interventions (Singer & Ruddell, 1985).

Method

Aims of the Study

The aims of this study were: firstly, to investigate how the following components of reading as a process – *reading experience, word reading, sentence reading, reading comprehension and reading attitude* – interact with and affect each other; and then to derive a cognitive equation for reading process in order to suggest appropriate interventions for students with autism.

Research Design

Since the study investigated the extent each of the five reading components corresponded with the others based on inter-correlation coefficients, we chose inter-correlational research design. The rationale behind the choice is twofold: firstly, the research method is most appropriate as these reading components are very complex and do not lend themselves to the experimental method and controlled manipulation (Isaac & Michael, 1997); and secondly, this research method permits the measurement of several reading components (variables) and their interrelationships simultaneously and in a realistic setting (Isaac & Michael, 1997; Schmidt & Launsby, 1994).

Participating Subjects

The participating subjects were 17 Primary 4 children (13 boys and 4 girls) diagnosed with autism. We selected the participants through convenience sampling as the latter were willing to partake in the study

and were readily available (Creswell, 2008). Moreover, convenience sampling allowed expeditious data collection. While we acknowledge that the subjects may not be representative of the entire population, this sample provides the essential information in addressing the purpose of our study.

The participants are currently attending mainstream primary schools in different parts of Singapore. Their parents belong to Help@AutismReality – an online parent support group for children with autism. Forty one parents emailed to express their interest to participate in the study. Among the 41 respondents, we selected only 17 children because of their age, average/above average intellectual ability and current level of mainstream primary education.

We obtained written parental consents. The children completed the entire reading assessment consisting of five reading measures at their respective residential homes in the presence of their parents over a period of three weeks. We shared the test results with the parents of these children and gave them the relevant reports.

Instrumentation

We administered the following five formal reading tests:

Rating Scale of Reading Experience (Daniels & Diack, 1976)

This test is one part of the Standard Reading Tests (Daniels & Diack, 1960, 1976) and is the only test of its kind available in the world. It has since been out of print. The test can provide information about the participants' respective reading backgrounds and experience.

Although the instrument is not easily available, we managed to obtain the Rating Scale of Reading Experience that was norm-referenced on the British population in the 1960's and re-norm-referenced in the 1970's from the *Remedial Reading: A Handbook for Teachers* published in 1963 by the Guidance and Special Education Branch, Subiaco, Western Australia. The test-retest reliabilities given are in the range between .65 and .74.

Word Recognition and Phonics Skills Test-Second Edition (WRaPS-2) (Moseley, 2003)

The WRaPS-2 measured the participants' word recognition ability based on their word recognition standardized score expressed in terms of word recognition age equivalent, ten stages of word recognition and the length of a word that is recognized about 80 per cent of the time (Moseley, 2003).

The WRaPS-2 was chosen for test administration in this study because word recognition is *an important measure of children's developing knowledge about written language as well as the major route to meaning, a fundamental pre-requisite for comprehension* (Moseley, 2003:5). A second reason is that the WRaPS-2 provided a diagnostic profile of strengths and weaknesses in phonic skills which indicated whether the participants are sensitive to the appropriate range of cues at a given level of development.

The WRaPS-2 was standardized in 2002-3 on 4775 pupils in 111 schools, after extensive piloting to ensure good item discrimination and equivalence between Forms A and B. The internal consistency reliability of the test is very high, the overall Cronbach's (1951) alpha value being .97 in both Forms A and B. Even in the Reception year, where children are most likely to resort to guessing, the alpha values are .86 and .84. In addition, a word length score (WLS) was calculated to represent the length of word correctly recognized at least 80 per cent of the time. This too proves to be a reliable index, with an alpha value of .87. Its validity as a measure of progress in word recognition is confirmed because it is strongly correlated with performance on each test ($r = .89$ with Form A raw score and .93 with Form B).

Salford Sentence Reading Test-Revised (Vincent & Crumpler, 2002)

This updated, revised version of the Salford Sentence Reading test (Vincent & Crumpler, 2002) consists of Forms X and Y, each containing a series of 13 oral reading sentences of graded difficulty, designed to provide a quick and accurate measure of mechanical reading ability up to the age of 10 years 6 months. The graded sentence reading tests to which *the Salford provided a valid alternative gave reading ages up to 15 years of age, although, as Bookbinder (2000) pointed out, the actual tests in question were not directly standardised on samples or readers of such an age* (Vincent & Crumpler, 2002, p.2). The Salford manual reports correlations of .95 between Forms X and Y and predictive test-retest reliability of over .95.

GAP Reading Comprehension Test-Third Edition (McLeod, 1990)

This test determined the subjects' reading comprehension. This modified cloze test based on Taylor's (1953) cloze technique has proven to be a valid measure of reading comprehension and is more reliable and superior to conventional multiple-choice tests (Bormuth, 1967). Fries (1963), who identified three layers of language meanings, have showed the theoretical basis for the validity of the GAP Reading Comprehension Test (McLeod, 1990) that actually taps reading comprehension. They are meanings carried by the lexical items, meanings carried by the grammatical structures, and social-cultural meanings. Success in replacing words randomly deleted from passages relates to the first two layers and to some extent the third (McLeod, 1990).

According to the manual, *[R]eliabilities were calculated, using the split-half method, on samples of 250 children of three different age groups* (McLeod, 1990, p.3). Table 1 below shows the reliability coefficients.

Table 1: Reliability of the Revised GAP Tests (McLeod, 1990)

Year Group	Form B3 (Pre-Treatment)	Form R3 (Post-Treatment)
8+	.94	.91
9+	.90	.90
10+	.91	.92

Elementary Reading Attitude Survey (McKenna & Kear, 1990)

This chosen test for administration has a pictorial format using the comic strip character Garfield with its natural appeal for children and because of its comprehensibility by the very young (McKenna & Kear, 1990, p.627). It has two subscales: Recreational Reading and Academic Reading. Both subscales use the four-point rating scale with four points being best (Happiest Garfield) and 1 point being worst (Very upset Garfield).

The use of four points was grounded on an extensive body of research (e.g., Case & Khanna, 1981; Chi & Klahr, 1975; Nitko, 1983) suggesting that young children typically can discriminate among no more than five discrete bits of information concurrently. The measure *can be used to make possible initial conjecture about the attitudes of specific students, provide a convenient group profile of a class or a large unit, or serve as a means of monitoring the attitudinal impact of instructional programs* (McKenna & Kear, 1990, p.628).

A large-scale normative study involving 18,138 students in Grades 1 – 6, with the number of girls exceeded by only 5 the number of boys, was conducted in 1989. The proportion of Blacks (9.5%) was within 3% of the national proportion, while the proportion of Hispanics (6.2%) was within 2%.

Cronbach's alpha was calculated at each grade level for both subscales and for the composite score. These coefficients ranged from .74 to .89. It is interesting to note that there are only two exceptions, coefficients were .80 or higher for the Recreational Reading subscale at Grades 1 and 2. According to McKenna and Kear (1990), *it is possible that the stability of young children's attitudes towards leisure reading grows with their decoding ability and familiarity with reading as a pastime* (p.638).

Results of the 5 Reading Components (see Appendix 1)

Table 2 below depicts the summary of the results for RE, WR, SR, RC and RA (ORA):

Table 2. A Summary of Results of the 5 Reading Components

Components	RE	WR	SR	RC	RA (ORA)
Mean	124.06	138.59	137.65	101.65	17.35
SD	2.22	6.53	4.53	8.50	7.82
σ^2	4.93	42.63	20.49	72.24	61.12

Briefly, Table 2 shows the mean, standard deviation (SD) and variance for SD (σ^2) for each of the five components of the reading process. The mean RE age (in months) was 124.06 (SD=2.22; $\sigma^2=4.93$). Eight participants (47%) scored above the mean. Nine (53%) fell short of the mean. The mean WR age (in months) was 138.59 (SD=6.53; $\sigma^2=42.63$). Seven participants (41%) scored above the mean. Ten of them (59%) fell short of the mean. The mean SR age (in months) was 137.65 (SD=4.53; $\sigma^2=20.49$). Seven participants (41%) scored above the mean. Ten of them (59%) fell short of the mean. The mean RC age (in months) was 101.65 (SD=8.50; $\sigma^2=72.24$). Eight participants (47%) scored above the mean. Nine (53%) fell short of the mean. The mean RA percentile rank (based on the results of the overall reading attitude) was 17.35 (SD=7.82; $\sigma^2=61.12$). Nine participants (53%) scored above the mean. Eight (47%) fell short of the mean.

Inter-correlation Reliability Coefficients of the 5 Reading Components

Table 3 shows the inter-correlation Reliability Coefficients among the five components, i.e., RE, WR, SR, RC and RA, of reading process based on the results of this study.

Table 3. Inter-correlation Reliability Coefficients of the 5 Reading Components

	RE	WR	SR	RC	RA
RE	-	0.48	0.43	0.68	0.20
WR	0.48	-	0.91	0.82	0.27
SR	0.43	0.91	-	0.76	0.22
RC	0.68	0.82	0.76	-	0.06
RA	0.20	0.27	0.22	0.06	-

Reliability states the consistency and constancy of a measure. Cronbach Coefficient Alpha (Cronbach, 1951) measures internal consistency or reliability of a psychometric test score. Cronbach's alpha is a test reliability technique that requires only a single test administration, as in the case of this study, to give a unique estimate of the reliability for a given test. Cronbach's alpha will usually rise as the intercorrelations among test items increase, and hence is an internal consistency estimate of reliability of test scores. Table 4 provides a guide on Cronbach's Alpha Reliability Coefficient Index.

Table 4. Cronbach's Alpha Reliability Coefficient Index (George & Mallery, 2003)

Cronbach's alpha	Internal Consistency
$\alpha \geq 0.9$	Excellent
$0.8 \leq \alpha < 0.9$	Good
$0.7 \leq \alpha < 0.8$	Acceptable
$0.6 \leq \alpha < 0.7$	Questionable
$0.5 \leq \alpha < 0.6$	Poor
$\alpha < 0.5$	Unacceptable

Among the five components, the inter-correlation reliability coefficient $r = 0.91$ between WR and SR was very significant and showed a very strong positive relationship. That was followed by the inter-

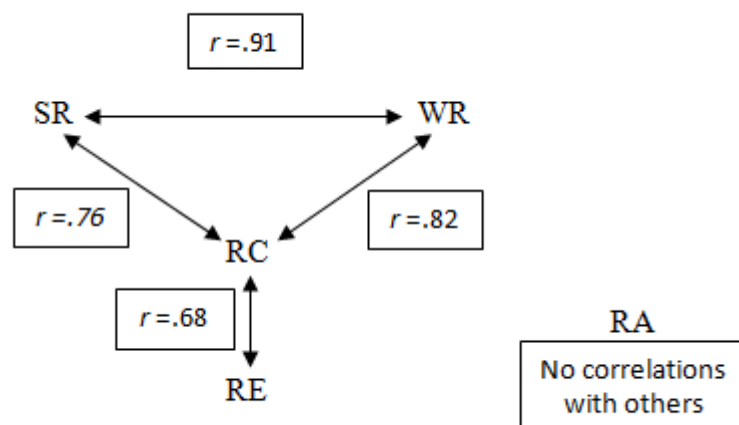
correlation reliability coefficient $r = 0.82$ between WR and RC showing moderate reliability. The next to follow was the inter-correlation reliability coefficient $r = 0.76$ between SR and RC suggesting low reliability.

There was rather low reliability between RC and RE with $r = 0.68$. However, the inter-correlation reliability coefficients between WR and RE with $r = 0.48$ and SR and RE with $r = 0.43$ showed unacceptably low reliability.

The inter-correlation reliability coefficients between RA and each of the other four reading components were rather insignificant and showed unacceptably low reliability: between RA and RE with $r = 0.20$; between RA and SR with $r = 0.22$; and between RA and WR with $r = 0.27$. The most insignificant or poorest relationship noted was between RA and RC with $r = 0.06$. In other words, RA was least correlated with the other components of the reading process.

The inter-correlations among and between the five components of reading can be represented in the following Figure 3.

Figure 3. Inter-correlations among the Five Reading Components



The inter-correlations among the five reading components can also be represented in the following cognitive equation:

$RP \rightarrow \{RC [(WR) (SR) + RE] + RA\} \rightarrow RO$ *cognitive equation based on this study*

Where RA is Reading Attitude (to replace Motivation and Purpose)
 RC is Reading Comprehension (same as Comprehension)
 RE is Reading Experience (to replace Background Knowledge and Prior Experience of the Reader)
 RO is Reading Outcome
 RP is Reading Process
 SR is Sentence Reading (also known as Contextualised Word Reading to extend Decoding)
 WR is Word Reading (also known as Word Recognition, to replace Decoding)

This cognitive equation for reading is very different from Chia's modified cognitive equation for neuro-typical readers without ASD as shown here:

$RP \rightarrow RE \{[WR (SR + RC)] + RA\} \rightarrow RO$ *modified Chia's cognitive equation*

It is also different from our proposed/hypothetical cognitive equation for readers with ASD as shown below.

$RP \rightarrow RE [(WR) (SR) + RC] + RA \rightarrow RO$ *proposed/hypothetical cognitive equation*

Inter-correlation Reliability Coefficients of Reading Attitude

Within the RA component, the results suggested there were good inter-correlations, which range from .84 to .97, among its three constituent components: Attitude towards Recreational Reading (ARR), Attitude towards Academic Reading (AAR), and Overall Reading Attitude (ORA) (see Table 5).

Table 5. Inter-correlation Reliability Coefficients of the Reading Attitude

	ARR	AAR	ORA
ARR	-	0.84	0.97
AAR	0.84	-	0.94
ORA	0.97	0.94	-

Summary of the Results

Findings from this study suggested that Reading Attitude (RA) of the participating students with ASD did not appear to matter much on their performance in Reading Comprehension (RC). In fact, there was no reliable correlation with any of the other five reading components.

An interesting observation made in analysing the results was that Reading Experience (RE), which is often held as an important factor that would impact on the reading performance, did not correlate with Word Reading (WR) and Sentence Reading (SR), but it correlated with rather low reliability with Reading Comprehension ($r = .68$). However, Reading Comprehension (RC) correlated with Word Reading ($r = .82$) with moderate reliability and with Sentence Reading ($r = .76$), with low reliability. Both Word Reading and Sentence Reading correlated significantly with each other ($r = .91$).

Discussion*Correlation of Reading Attitude with the rest of the Reading Components*

The inter-correlation reliability coefficients between Reading Attitude (RA) and each of the other four components were rather weak. The results of this study corresponded with findings from other studies (e.g., Colle, Baron-Cohen, Wheelwright, & van der Lely, 2008; Diehl, Bennetto, & Young, 2006) that showed that persons with autism face challenges in understanding narrative texts.

Narrative text may be particularly demanding for students with autism as it requires readers to interpret problems, find solutions and determine intents and views involving a whole chain of happenings and episodes pertaining to the plot of the story (Stein, 1986). The difficulties in attending to narrative text may be due to challenges in the development of theory of mind and inference skills (Colle et al., 2008).

Moreover, persons with autism (e.g., Grandin, 1995; Shore, 2000; Willey, 1999) have conveyed that their way of thinking is more literal than abstract. As such, non-fiction reading texts are easier to read than fiction texts which require 'abstract thinking' and 'out of the box' imaginative thought processes. Factual imagination results in imagining of facts (Chia, 2011a) which students with autism are adept at as they have strong visual memory.

Counterfactual imagination that depicts a scenario that has not happened but might with different permutations defy literal thinking (Chia, 2011a). According to Chia (2011a), children with autism have difficulties to generate options that are unconventional and different from reality due to inadequate counterfactual thinking. The counterfactual reasoning usually formulates when children partake in pretend play (Harris, 2000; Riggs & Peterson, 2000). However, this is an area of impairment in children with autism as they have challenges in untruthful belief activities (Baron-Cohen et al., 1985) and with pretend play (Wing, Gould, Yeates, & Brierley, 1977). In short, the difficulties that students with autism face in understanding narrative texts in turn affect their reading attitude.

Correlation between Reading Experience and Reading Comprehension

One of the important results is that Reading Experience (RE) correlated rather reliably with Reading Comprehension (RC) with $r = .68$. The results are in tandem with past studies which reported that reading comprehension can be enhanced when students' background knowledge and repertoire of reading experiences are effectively tapped (Carr & Thompson, 1996; Spires & Donley, 1998). Further, Carroll (1993) surmised that reading experience would inevitably increase vocabulary knowledge leading to a consequential effect on reading comprehension. Hence, in order for the students to have positive educational outcomes in schools, educators need to intervene and enhance their reading experiences to ensure better reading comprehension.

Correlation of Reading Comprehension with Word Reading and Sentence Reading

The results showed that Reading Comprehension (RC) correlated with Word Reading ($r = .82$) with moderate reliability and with Sentence Reading ($r = .76$) with low reliability. The findings of this research parallels to past studies (e.g., Nation et al., 2006; Patti & Lupinetti, 1993) that have reported the paradox of positive word reading with weak comprehension. Children with autism displayed strengths in single-word reading comprehension, for both abstract and concrete words (Eskes, Bryson, & McCormick, 1990). However, their degree of comprehension of the semantics of sentences is rather deficient as reflected in the results of this research study. These children have difficulty in integrating and synthesising text to understand the key message of a given text. The term 'hyperlexia' discussed earlier, where supreme decoding skills combined with poor comprehension is apparent in students with autism (Nation et al., 2006).

Yet, the reading comprehension abilities in these children are not totally deficient. Collectively, studies (e.g., Goldstein et al., 1994; Patti & Lupinetti, 1993) have reported a wide range of findings pertaining to reading abilities of children with autism that developed on a continuum. In general, decoding and reading comprehension were on a spectrum of performance scales with reading comprehension fairing below decoding skills (Snowling & Frith, 1986).

The participating children in this study are all currently studying in mainstream schools. In Singapore, children with mild autism are educated in mainstream schools. These children with average to above average intelligence are referred to as 'high-functioning' (Howlin, 2000) and tend to exhibit less acute deficits, especially in the area of language (Ozonoff, South & Miller, 2000). It is, therefore, not surprising that the results indicated Reading Comprehension (RC) as correlated with Word Reading with moderate reliability and with Sentence Reading with low reliability. This clearly indicates that children with autism who are presently studying in mainstream schools do not exhibit severe impairment in comprehension skills but that their comprehension skills are lower than word reading or sentence reading skills which matched earlier studies (Mirenda & Erickson 2000; Nation et al. 2006; O'Connor and Klein 2004).

Correlation between Word Reading and Sentence Reading

Word Reading and Sentence Reading correlated significantly with each other ($r = .91$). Congruent with past research (e.g., Grigorenko et al., 2003; Nation, 1999; Silberberg & Silberberg, 1967), children with autism are able to progress in the usage of phonemic structure of words and display an extraordinary obsession with letters and prints despite challenges in language and communication. Earlier researchers (e.g., Frith, 2003; Mayes & Calhoun, 2003a, 2003b; Nation et al., 2006) conceded that these students are adept at word reading. Good word reading would provide more opportunities for these students to gain higher levels of vocabulary and eventually sentence reading. Besides, results from neuroscience investigations have confirmed that children with autism are also able to manage text at the sentence level (Kana, Keller, Cherkassky, Minshew, & Just, 2006). Thus, timely interventions focusing on linguistic processing activities at the sentence level will facilitate children with autism in their learning in the mainstream schools.

Conclusion*Limitations of the Study*

It was difficult to recruit 30 children with autism as initially proposed for sampling research (Creswell, 2008). Parents and schools were not receptive for their children and students respectively to partake in research. As a result, this study investigated a small number of students ($N = 17$) – selected based on convenience sampling – currently studying in mainstream schools. Hence, there is inherent sampling bias and this sample is not representative of the entire population comprising children with autism.

There is thus a need to generalize and infer about the whole population with caution. This is especially so given the heterogeneous pattern of reading skills in children with autism. Further study with a larger sample size is required to ascertain the external validity of the current findings.

Limitations of the Research Design

In order to measure complex variables (*reading components*) and their interrelationships concurrently, Isaac and Michael (1997) advocated employing correlational research design. However, they acknowledged the presence of the following limitations in using this study design (p.53): Firstly, it only identifies what goes with what – it does not necessarily identify cause-and-effect relationships. It is important to note that correlational research is not causal research. In other words, we cannot make

statements concerning cause and effect on the basis of this type of research. There are two major reasons why we cannot make cause and effect statements: The first reason is that we do not know the direction of the cause. The other reason is that there is a possibility of other variables' involvement which we are not aware. Secondly, it is less rigorous than the experimental approach because it exercises less control over the independent variables. Thirdly, it is prone to identify spurious relational patterns or elements which have little or no reliability or validity. Fourthly, the relational patterns are often arbitrary and ambiguous. Fifthly, it encourages a *shot-gun* approach to research, indiscriminately throwing in data from miscellaneous sources and defying any meaningful or useful interpretation.

Implications of the Study for Practitioners

The stated findings have practical implications for children with autism who have profiles similar to the 17 students in this study. To impart educational goals, educators need to take note of inherent abilities, cognitive and meta-cognitive abilities, sensory factors, adaptive behaviour capacities and socio-emotional behavioural abilities (Chia, 2007) of children with autism. These children will benefit from varied and comprehensive instructional interventions that match their literacy level (Mirenda, 2003). With better insight about the interactions among the five components in the cognitive equation for reading process for children with autism, we are able to propose specific interventions in relation to the components in the reading process.

Strategies to Promote Reading Experience

When children with autism have prior knowledge about a given text, they are more likely able to comprehend (Kintsch, 1998). These children do not have many opportunities to gain from experiences whether in school, home or community (Kluth & Chandler-Olcott, 2008). Educators can enhance background knowledge through various modes. Firstly, as children with autism are visual learners as explained by Grandin (1995), use of picture walks and visual maps promotes understanding (Harvey & Goudvis, 2000). American Speech-Language-Hearing Association (2006) recommends use of visual aids such as semantic maps and Venn diagrams to organize text and promote understanding. Secondly, providing content overview prior to reading (Colasent & Griffith, 1998) is a useful tool. Concrete titles and abstract can also help retrieve background knowledge (Wahlberg & Magliano, 2004).

Priming which is pre-practice has proven to be a valuable strategy to aid classroom learning of children with autism. Priming the background knowledge for a given reading text activates thinking process, since children gear towards linking to what they know to new data, details and information. Priming comprise reviewing salient information, data or activities that a child with autism will most likely face challenges before the task is presented (Wilde, Koegel, & Koegel, 1992). Priming lessens anxiety, promotes predictability and enhances the prospects of accomplishment and success (Myles & Simpson, 2003).

Providing opportunities to write scripts grounded on experiences from personal lives will develop reading experience (Staskowski & Creaghead, 2001). These scripts will create a pool of general and prior knowledge base that children with autism can retrieve when reading texts.

Strategies to Promote Reading Attitude

A positive experience with narrative text will enhance the reading attitude of children with ASD. They will benefit from shared book readings (Kamps, Barbetta, Leonard, & Delquadri, 1994). Repetitive and regular reading of texts will facilitate schema building that forms the cornerstone for positive narrative and expository text understanding (Englert & Hiebert, 1984; Mandler & Johnson, 1977). Shared book reading sessions can facilitate generalization through usage of everyday experiences that the children encounter.

Story retelling is another tool that can effectively harness the recognition of narrative schemas in a story (Roth & Baden, 2001), improve comprehension, organize oral narratives, and create positive reading attitude. Story retelling can be done creatively through use of visual cues like props, puppets, felt cutouts and pictures (Staskowski & Creaghead, 2001). As children with autism are strong in visual cognitive processing (American Speech-Language-Hearing Association, 2006; Lanter & Watson, 2008), educators can facilitate retelling of stories by dividing textual schemas and making them clear through visual aids and cues.

Strategies to Promote Word Reading and Sentence Reading Skills

One way to enhance word and sentence reading skills of children with autism is to encourage and stimulate phonological awareness. Many children with autism have innate abilities in sight word reading. They can effectively benefit from phonetic-analysis interventions and phonics instruction (Vacca, 2007). Phonics instruction teaches children to evaluate the structures of words and divide them into pronounceable sounds and syllables (Mastropieri & Scruggs, 2007). Hence, phonological awareness instruction in children with autism will facilitate word and sentence reading skills (Lanter & Watson, 2008).

Teaching approaches such as rhythm and movement, tactile letter recognition, alphabet books, word and letter sorts, and sight word recognition will also help to extend phonemic awareness skills in students with autism (Kluth & Chandler-Olcott, 2008). Grandin (1992a) mooted using associative letter-to-sound pictures to educate about grapheme-phoneme correspondences. Other studies (Eikeseth & Jahr, 2001; Fossett & Mirenda, 2006; Koppenhaver & Erickson, 2003) recommend picture-to-text matching. The linking of words to pictures strategy will expand sight word recognition, word reading and sentence reading.

Strategies to Promote Reading Comprehension

For children with autism to achieve successful educational outcomes in mainstream schools, strategies must be in place to assist them in Reading Comprehension, given the challenges that they face as discussed under literature review.

Children with autism tend to read through given passages rapidly with minimal pauses or rereading (O'Connor & Klein, 2004). Teachers working with these children need to develop text-monitoring skills in them. Think-aloud strategy is an effective tool to help students to make predictions, inquire, clarify and summarise (Baker, 2002; Gately, 2008; Lanter & Watson, 2008). Teachers can explicitly show to children with autism how the former derive meaning from text while they read. They can utilise the technique of supportive dialogue prior to, during and after reading. They can explain how they retrieve their background knowledge in order to infer by associating the text to their experiences. Moreover, they can also read the text aloud and model their own thinking process while reading. In order to demonstrate effective comprehension techniques, teachers can halt where necessary while reading the text to share specific ideas, meanings or thoughts.

Another way to enhance reading comprehension skills in children with autism is to use concrete poems (Chia, 1995, 1996b, 2009; Poh, 2009). The poems are articulated using letters that are visually depicted, arranged, and, even coloured. These pictures help those with autism and specifically hyperlexia to make links between the target word and its symbolism. O'Connor and Klein (2004) together with Wahlberg and Magliano (2004) found that text comprehension in children with autism can be improved with the technique of cueing to recall prior knowledge and working out the anaphora.

Graphic cues with the aid of visually cued instruction may improve reading comprehension (Quill, 1997). This is because visually cued instruction can tap on the strengths of children with autism. Mirenda (2003) recommended integrating multiple instructional approaches according to the stages of literacy progress of children with autism. These can include games, differentiated activities and use of technology. Similarly, Moore and Calvert (2000) suggested earlier that the use of information and computer technology tools like animations and graphics could enhance the interest and motivation of children with autism to learn vocabulary.

Further, to improve reading comprehension, Broun (2004) proposed that print materials should match as close as possible to experiences of children with autism. This will assist them to comprehend the text better. Besides, employing strategies like graphic organisers, concept maps and mind-maps could assist in comprehension. Additionally, Faggella-Luby and Deshler (2008) performed a review of interventions and reported that reading comprehension develops positively when readers explicitly learn specific tactics. These include triggering experiences and background knowledge, summarizing the gist of the text and using questioning techniques.

Finally, to harness their special interest, teachers could provide text that will invoke the children's personal interest and motivation. Nonetheless, these special interests should encompass age and socially appropriate texts (Kluth & Darmody-Latham, 2003).

Recommendations for Future Studies

To address the limitations in the current research design, we recommend multiple regression analyses for future studies in this area. This is to show causality and the extent of the relationship among the 5 components in the cognitive reading process. Multiple regression analyses would allow us to examine more sophisticated research hypotheses pertaining to the relationship of the 5 components in the cognitive reading process. Moreover, that also would provide us the flexibility of better analysis of the varied components in the cognitive reading process.

Qualitative data using semi-structured interview with the 17 participating children would provide the opportunity to explore the extent and nature of the children's feelings and thoughts about reading. The findings would certainly substantiate the data from this inter-correlational research.

Both quantitative and qualitative data collection methods may be utilised in future studies to promote the data triangulation of the methods. This will provide comprehensive and holistic data on the relationships among the five components of the reading process (Creswell, 2008).

Still, while planning and implementing the interventions, it is essential to bear in mind the heterogeneous pattern of reading skills in children with autism.

References

- Alfassi, M. (2004) Reading to learn: Effects of combined strategy instruction on high school students. *The Journal of Educational Research*, 97(4), 171–184.
- American Psychiatric Association. (1994). *Diagnostic and statistics manual of mental disorders* (4th ed.). Washington, DC: American Psychiatric Association.
- American Speech-Language-Hearing Association. (2006). Guidelines for speech-language pathologists in diagnosis, assessment, and treatment of autism spectrum disorders across the life span. Available from www.asha.org/policy.
- Baker, L. (2002). Metacognition in comprehension instruction. In C.C. Block & M. Pressley (Eds.), *Comprehension instruction: Research-based best practices* (pp. 77–95). New York: Guilford.
- Baron-Cohen, S., Leslie, A. M., & Frith, U. (1985). Does the autistic child have a *theory of mind*? *Cognition*, 21(1), 37–46.
- Bookbinder, G.E. (2000). *Salford Sentence Reading Test*. London, U.K.: Hodder and Stoughton.
- Bormuth, J. R. (1967). Comparable cloze and multiple-choice comprehension test scores. *Journal of Reading*, 10, 291–299.
- Braunger, J. & Lewis, J. P. (2001). *Building a knowledge base in reading* (2nd Edition). Newark, DE: International Reading Association and National Council of Teachers of English.
- Broun, L. T. (2004). Teaching students with autistic spectrum disorders to read: A visual approach. *Teaching Exceptional Children*, 36, 36–40.
- Burack, J. A., Root, R., & Zigler, E. (1997). Inclusive education for students with autism: Reviewing ideological, empirical, and community considerations. In D. J. Cohen & F. R. Volkmar (Eds.), *Handbook of autism and pervasive developmental disorders* (2nd ed., pp.796–807). New York: Wiley.
- Caccamise, D., & Snyder, L. (2005). Theory and pedagogical practices of text comprehension. *Topics in Language Disorders*, 25(1), 5–20.
- Carr, S. C., & Thompson, B. (1996). The effects of prior knowledge and schema activation strategies on the inferential reading comprehension of children with and without learning disabilities. *Learning Disability Quarterly*, 19(1), 48–61.
- Carroll, J. B. (1993). *Human cognitive abilities: A survey of factor-analytic studies*. New York: Cambridge University Press.
- Case, R., & Khanna, F. (1981). The missing links: Stages in children's progression from sensorimotor to logical thought. In K. W. Fischer (Ed.), *Cognitive development: New directions for child development* (pp.21–32). San Francisco: Jossey-Bass.
- Chi, M.T., & Klahr, D. (1975). Span and rate of apprehension in children and adults. *Journal of Experimental Psychology*, 19, 434–439.
- Chia, N.K.H. (1995). Words without meaning. *Montessori Education*, 7(3), 18–19.
- Chia, N.K.H. (1996b). Making sense of words. *Montessori Education*, 7(4), 38–39.
- Chia, N.K.H. (2004). $R=T(D+C)+M$... and what else? *The Society for Reading and Literacy News Magazine*, 17(3), 3-9.
- Chia, N.K.H. (2007). Bridging reading and writing: A cognitive equation of literacy. *ASCD Review*, 13, 5-12.

- Chia, N.K.H. (2007a). About reading and failure to read. *The Society for Reading and Literacy News Magazine*, 17(3), 3-9.
- Chia, N.K.H. (2007b). Bridging reading and writing: A cognitive equation of literacy. *ASCD Review*, 13, 5-12.
- Chia, N.K.H. (2009). Hyperlexia: A severe listening/reading comprehension deficit. In N.K.H. Chia & M.E. Wong (Eds.), *Series on Special Educational Needs in Mainstream Schools* (Paper No.2). Singapore: Pearson Education/Prentice-Hall.
- Chia, N.K.H. (2010). *Reading disabilities and disorders: Selected papers*. Singapore: Cobee Publishing House.
- Chia, N.K.H. (2011a). Teaching Singaporean children with autism spectrum disorders to understand science concepts through autistic logic analysis/synthesis (ALA/S). *Journal of the American Academy of Special Education Professionals*, Spring/Summer(2), 79-89.
- Colasent, R., & Griffith, P. L. (1998). Autism and literacy: Looking into the classroom with rabbit stories. *The Reading Teacher*, 51(5), 414-420.
- Colle, L., Baron-Cohen, S., Wheelwright, S., & van der Lely, H.K. (2008). Narrative discourse in adults with high-functioning autism or Asperger syndrome. *Journal of Autism and Developmental Disorders*, 38, 28-40.
- Creswell, John W. (2008). *Educational research: planning, conducting, and evaluating quantitative and qualitative research* (3rd ed.). Upper Saddle River, NJ: Pearson Education.
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16(3), 297-334.
- Daniels, J.C., & Diack, H. (1960). *The graded test of reading experience*. London, UK: Chatto and Windus.
- Daniels, J.C., & Diack, H. (1976). *The standard reading tests*. Hertfordshire, UK: Hart-Davis Educational Limited.
- Diehl, J. D., Bennetto, L., & Young, E. C. (2006). Story recall and narrative coherence of high-functioning children with autism spectrum disorders. *Journal of Abnormal Child Psychology*, 34, 87-102.
- Edmunds, K.M., and Bauserman, K.L. (2006). What teachers can learn about reading motivation through conversations with children. *The Reading Teacher*, 59(5), 414-424.
- Eikeseth, S., & Jahr, E. (2001). The UCLA reading and writing program: An evaluation of the beginning stages. *Research in Developmental Disabilities*, 22, 289-307.
- Englert, C. S., & Hiebert, E. H. (1984). Children's developing awareness of text structure in expository materials. *Journal of Educational Psychology*, 76, 65-74.
- Eskes, G. A., Bryson, S. E., & McCormick, T. A. (1990). Comprehension of concrete and abstract words in autistic children. *Journal of Autism and Developmental Disorders*, 20, 61-73.
- Faggella-Luby, M. N., & Deshler, D. D. (2008). Reading comprehension in adolescents with LD: What we know; what we need to learn. *Learning Disabilities Research & Practice*, 23, 70-78.
- Fossett, B., & Mirenda, P. (2006). Sight word reading in children with developmental disabilities: A comparison of paired associate and picture-to-text matching instruction. *Research in Developmental Disabilities*, 27, 411-429.
- Fries, C. 1963. *Linguistics and reading*. New York : Holt, Reinhart & Winston.
- Frith, U. (2003). *Autism* (2nd ed.). Oxford, UK: Blackwell.
- Gambrell, L.B., Palmer, B.M., Codling, R.M., & Mazzoni, S.A. (1996). Assessing motivation to read. *The Reading Teacher*, 49, 2-19.
- Gately, S.E. (2008). Facilitating reading comprehension for students on the autism spectrum. *Teaching Exceptional Children*, 40(3).
- George, D., & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference. 11.0 update* (4th ed.). Boston: Allyn & Bacon.
- Goodman, K. S. (1968). The psycholinguistic nature of the reading process. In K.S. Goodman (Ed.), *The psycholinguistic nature of the reading process* (pp. 13-26). Detroit, MI: Wayne State University.
- Grandin, T. (1992a). An inside view of autism. In E. Schopler and G. B. Mesibov (Eds.), *High functioning individuals with autism*. (pp. 105-126). New York: Plenum Press.
- Grandin, T. (1995). *Thinking in pictures and other reports from my life with autism*. New York, NY: Vintage.
- Griffin, H. C., Griffin, L. W., Fitch, C. W., Albera, V., & Gingras, H. (2006). Educational interventions for individuals with Asperger syndrome. *Intervention in School and Clinic*, 41, 150-155.
- Grigorenko, E. L., Klin, A., & Volkmar, F. (2003). Annotation: Hyperlexia: Disability or superability? *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, 44(8), 1079-1091.

- Griswold, D. E., Barnhill, G. P., Myles, B. S., Hagiwara, T., & Simpson, R. L. (2002). Asperger syndrome and academic achievement. *Focus on Autism and other Developmental Disabilities*, 17(2), 94–102.
- Guidance and Special Education Branch (1963). *Remedial reading: A handbook for teachers*. Subiaco, WA: The Author.
- Guthrie, J. T., & Wigfield, A. (2000). Engagement and motivation in reading. In M. Kamil & P. Mosenthal, D. Pearson, & R. Barr (Eds.), *Handbook of reading research*. Mahwah, N.J.:Earlbaum. 49(7), 518–533.
- Harris, P.L. (2000). *The work of imagination*. Oxford, UK: Blackwell.
- Harvey, S., & Goudvis, A. (2000). *Strategies that work: Teaching comprehension to enhance understanding*. York, ME: Stenhouse.
- Howlin P. (2000). Outcome in adult life for more able individuals with autism or Asperger Syndrome. *Autism*, 4, 63–83.
- Huemer, S. V., & Mann, V. (2010). A comprehensive profile of decoding and comprehension in autism spectrum disorders. *Journal of Autism and Developmental Disorders*, 40(4), 485–493.
- Ibrahim, Z. (2004, 13 August). Let us shape our future together. *The Straits Times*, p. 1.
- Isaac, S., & Michael, W.B. (1997). *Handbook in research and evaluation for education and the behavioral sciences (3rd ed.)*. San Diego, CA: EdITS.
- Kamps, D. M., Barbeta, P. M., Leonard, B. R., & Delquadri, J. (1994). Classwide peer tutoring: An integration strategy to improve reading skills and promote peer interactions among students with autism and general education peers. *Journal of Applied Behavior Analysis*, 27(1), 49–61.
- Kana, R. K., Keller, T. A., Cherkassky, V. L., Minshew, N. J. & Just, M. A. (2006). Sentence comprehension in autism: Thinking in pictures with decreased functional connectivity. *Brain*, 129, 2484–2493.
- Kintsch, W. (1998). *Comprehension: A paradigm for cognition*. Cambridge, MA: University Press.
- Klinger, J., Vaughn, S., & Boardman, A. (2007). *Teaching reading comprehension to students with learning difficulties*. New York: Guilford Press.
- Kluth, P., & Chandler-Olcott, K. (2008). *A land we can share: Teaching literacy to students with autism*. Baltimore, MD: Paul H Brookes Pub Co.
- Kluth, P., & Darmody-Latham, J. (2003). Beyond sight words: Literacy opportunities for students with autism. *The Reading Teacher*, 56(6), 532–535.
- Koppenhaver, D., & Erickson, K. (2003). Natural emergent literacy supports for preschoolers with autism and severe communication impairments. *Topics in Language Disorders*, 23(4), 283–292.
- Kuhl, P. (2007). Is speech learning ‘gated’ by the social brain? *Developmental Science*, 10(1), 110–120.
- Lanter, E., and L. R. Watson. (2008) Promoting literacy in students with ASD: The basics for the SLP. *Language, Speech, and Hearing Services in Schools* (39), 33–43.
- Lindgren, K., Folstein, S., Tomblin, J. B., & Tager-Flusberg, H. (2009). Language and reading abilities of children with autism spectrum disorders and specific language impairment and their first-degree relatives. *Autism Research*, 2, 22–38.
- Mandler, J. M., & Johnson, N. S. (1977). Remembrance of things parsed: Story structure and recall. *Cognitive Psychology*, 9, 111–151.
- Martin, I., & McDonald, S. (2003). Weak coherence, no theory of mind, or executive dysfunction? Solving the puzzle of pragmatic language disorders. *Brain and Language*, 85, 451–466.
- Mastropieri, M. A., & Scruggs, T. E. (2007). *The inclusive classroom: Strategies for effective instruction* (3rd ed.). Upper Saddle River, NJ: Pearson Prentice Hall.
- Mayes, S. D., & Calhoun, S. L. (2003a). Ability profiles in children with autism: Influence of age and IQ. *Autism*, 6, 65–80.
- Mayes, S. D., & Calhoun, S. L. (2003b). Analysis of WISC-III, Stanford-Binet: IV, and academic achievement test scores in children with autism. *Journal of Autism and Developmental Disorders*, 33, 329–341.
- McDuffie, A., Yoder, P., & Stone, W. (2006). Fast-mapping in young children with autism spectrum disorders. *First Language*, 26, 421–436.
- McKenna, M.C., & Kear, D.J. (1990). Measuring attitude toward reading: A new tool for teachers. *The Reading Teacher*, 43(8), 626–639.
- McLeod, J. (1990). *The GAP reading comprehension* (3rd ed.). Melbourne, Australia: Heinemann.
- Minshew, N. J., Goldstein, G., Taylor, H. G., & Siegel, D. J. (1994). Academic achievement in high functioning autistic individuals. *Journal of Clinical and Experimental Neuropsychology*, 16, 261–270.
- Mirenda, P. (2003). ‘He’s not really a reader...’: Perspectives on supporting literacy development in individuals with autism. *Topics in Language Disorders*, 23(4), 271–282.

- Mirenda, P., & Erickson, K. (2000). Augmentative communication and literacy. In A. Wetherby & B. Prizant (Eds.), *Autism spectrum disorders: A transactional developmental perspective* (pp. 333–367). Baltimore: Paul H. Brookes.
- Mokhtari, K., & Reichard, C. A. (2002). Assessing student's metacognitive awareness of reading strategies. *Journal of Educational Psychology*, 94(2), 249–259.
- Moore, M., & Calvert, S. (2000). Brief report: Vocabulary acquisition for children with autism: Teacher or computer instruction. *Journal of Autism and Developmental Disorders*, 30, 359–362.
- Moseley, D. (2003). *Word recognition and phonics skills test* (2nd ed.). London, UK: Hodder and Stoughton.
- Myles, B., & Simpson, R. (2003). *Asperger syndrome: A guide for educators and parents* (2nd ed.). Austin, TX: PRO-ED.
- Nation, K. (1999). Reading skills in hyperlexia: A developmental perspective. *Psychological Bulletin*, 125, 338–355.
- Nation, K., Clarke, P., Wright, B., & Williams, C. (2006). Patterns of reading ability in children with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 36(7), 911–919.
- Nation, K., & Norbury, C. F. (2005). Why reading comprehension fails: Insights from developmental disorders. *Topics in Language Disorders*, 25, 21–32.
- Newman, T. M., Macomber, D., Naples, A. J., Babitz, T., Volkmar, F., & Grigorenko, E. L. (2007). Hyperlexia in children with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, 7, 760–774.
- Nitko, A.J. (1983). *Educational tests and measurement: An introduction*. New York: Harcourt Brace Jovanovich.
- O'Connor, I. M., & Klein, P. D. (2004). Exploration of strategies for facilitating the reading comprehension of high-functioning students with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, 34(2), 115–127.
- Ozonoff, S., South, M., & Miller, J. (2000). DSM-IV defined Asperger Syndrome: Cognitive, behavioral, and early history differentiation from high-functioning autism. *Autism*, 4, 29–46.
- Parish-Morris, J., Hennon, E., Hirsh-Pasek, K., Golinkoff, R., & Tager-Flusberg, H. (2007). Children with autism illuminate the role of social intention in word learning. *Child Development*, 78(4), 1265–1287.
- Patti, P. J., & Lupinetti, L. (1993). Brief report: Implications of hyperlexia in an autistic savant. *Journal of Autism and Developmental Disorders*, 23, 397–405.
- Pintrich, P. R. (2003). A motivational science perspective on the role of student motivation in learning and teaching contexts. *Journal of Educational Psychology*, 95, 667–686.
- Poh, P.T.C. (2009). Impact of concrete poetry on children with moderate language delay in terms of their acquisition of word recognition. *Journal of the Reading Specialist*, 1(1), 13–23.
- Quill, K. A. (1997). Instructional considerations for young children with autism: The rationale for visually cued instruction. *Journal of Autism and Developmental Disorders*, 27, 697–714.
- Randi, J., Newman, T., & Grigorenko, E. L. (2010). Teaching children with autism to read for meaning: Challenges and possibilities. *Journal of Autism and Developmental Disorders*, 40(7), 890–902.
- Riggs, K.J., & Peterson, D.M. (2000). Counterfactual thinking in preschool children: Mental states and causal inferences. In P. Mitchell & K.J. Riggs (Eds.), *Children's reasoning and the mind* (pp.87-99). Hove, UK: Psychology Press.
- Roth, R., Baden, B. (2001). Investing in emergent literacy intervention: A key role for speech-language pathologists. *Seminars in Speech and Language*, 22, 163–173.
- Salmerón, L., Kintsch, W., & Canas, J. J. (2006). Reading strategies and prior knowledge in learning from hypertext. *Memory and Cognition*, 34, 1157–1171.
- Schmidt, S.R., & Launsby, R.G. (1994). *Understanding industrial designed experiments* (4th ed.). Colorado Springs, CO: Air Academy Press.
- Shore, S. (2000). *Beyond the wall: Personal experiences with autism and Asperger syndrome*. Shawnee Mission, KS: Autism Asperger Publishing Co.
- Siegel, L. S. (1993). Phonological processing deficits as the basis of a reading disability. *Developmental Review*, 13(3), 246–257.
- Silberberg, N. E., & Silberberg, N. C. (1967). Hyperlexia: Specific word recognition skills in young children. *Exceptional Children*, 34, 41–42.
- Singer, H., & Ruddell, R. B. (1985). *Theoretical models and the processes of reading* (3rd ed.). Newark, DE: International Reading Association.
- Snowling, M. J., & Frith, U. (1986). Comprehension in 'hyperlexic' readers. *Journal of Experimental Child Psychology*, 42, 392–415.

- Spires, H. A., & Donley, J. (1998). Prior knowledge activation: Inducing engagement with informational texts. *Journal of Educational Psychology*, 90, 249–260.
- Staskowski, M., & Creaghead, N. A. (2001). Reading comprehension: A language intervention target from early childhood through adolescence. *Seminars in Speech and Language*, 22(3), 185–195.
- Stein, N. L. (1986). Knowledge and process in the acquisition of writing skills. In E. Z. Rothkopf (Ed.), *Review of research in education*, 13 (pp. 255–258). Washington, DC: American Educational Research Association.
- Taboada, A., Tonks, S. M., Wigfield, A., & Guthrie, J. T. (2009). Effects of Motivational and Cognitive Variables on Reading Comprehension. *Reading and Writing: An Interdisciplinary Journal*, 22(1), 85–106.
- Tager-Flusberg, H. (1981). Sentence comprehension in autistic children. *Applied Psycholinguistics*, 2, 5–25.
- Tager-Flusberg, H., & Joseph, R. (2003). Identifying neurocognitive phenotypes in autism. *Philosophical Transactions of the Royal Society of London Series B-Biological Sciences*, 358(1430), 303–314.
- Taylor, W.L. (1953). Cloze procedure: A new tool for measuring readability. *Journalism Quarterly*, 30, 415–433.
- Teo, L. (2004, 19 September). \$220m school aid for disabled kids. *The Straits Times*, p. 1.
- Vacca, J. S. (2007). Autistic children can be taught to read. *International Journal of Special Education*, 22(3), 54–61.
- Vincent, D., & Crumpler, M. (2002). *Salford sentence reading test* (Revised). London, UK: Hodder and Stoughton.
- Vygotsky, L.S. (1978). *Mind and society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.
- Wahlberg, T., & Magliano, J. P. (2004). The ability of high-functioning individuals with autism to comprehend written discourse. *Discourse Processes*, 38(1), 119–144.
- Wigfield, A., & Guthrie, J.T. (1997). Relations of children's motivation for reading to the amount and breadth of their reading. *Journal of Educational Psychology*, 89(3), 420–432.
- Wilde, L. D., Koegel, L. K., & Koegel, R. L. (1992). *Increasing success in school through priming: A training manual*. Santa Barbara: University of California.
- Willy, L.H. (1999). *Pretending to be normal: Living with Asperger's syndrome*. Philadelphia, PA: Jessica Kingsley.
- Wing, L., Gould, J., Yeates, S.R., & Brierley, L.M. (1977). Symbolic play in severely mentally retarded and autistic children. *Journal of Child Psychology and Psychiatry*, 18, 167–178.
- Worthy, J., & McKool, S. S. (1996). Students who say they hate to read: The importance of opportunity, choice, and access. In D. J. Leu, C. K. Kinzer, & K.A. Hinchman (Eds.), *Literacies for the 21st century: Research and practice. 45th yearbook of the National Reading Conference* (pp. 245–256). Chicago: National Reading Conference

Appendix 1

Results of the 5 Reading Components

Subjects (N = 17)	Chronological Age (in years & months)		Reading Experience (in years & months)		Graded Word Reading (in years & months)		Sentence Reading (in years & months)		Reading Comprehension (in years & months)		Reading Attitude (in %ile rank)		
	Yrs:Mths	Mths only	Yrs:Mths	Mths only	Yrs:Mths	Mths only	Yrs:Mths	Mths only	Yrs:Mths	Mths only	ARR	AAR	ORA
S1M	9:10	118	10:03	123	10:11	131	11:01	133	8:03	99	13	36	20
S2M	10:03	123	10:06	126	11:08	140	11:07	139	9:03	111	17	36	23
S3M	10:06	126	10:03	123	12:06	150	12:02	146	9:08	116	9	26	13
S4F	9:08	116	10:00	120	11:05	137	11:03	135	7:06	90	13	36	20
S5M	9:11	119	10:01	121	10:10	130	11:02	134	7:03	87	5	18	7
S6M	10:05	125	10:04	124	11:11	143	12:00	144	8:06	102	26	41	31
S7M	10:07	127	10:09	129	12:01	145	11:09	141	9:03	111	17	36	23
S8F	10:01	121	10:05	125	11:06	138	11:08	140	8:08	104	9	22	11
S9F	9:09	117	10:04	124	10:11	131	11:03	135	8:01	97	9	26	13
S10M	9:08	116	10:03	123	10:09	129	11:00	132	7:04	88	13	36	20
S11M	10:02	122	10:05	125	11:05	137	11:02	134	8:02	98	21	41	28
S12M	10:07	127	10:06	126	12:02	146	11:11	143	9:03	111	3	26	8
S13M	10:04	124	10:01	121	11:07	139	11:05	137	8:02	98	17	31	20
S14M	10:05	125	10:03	123	11:01	133	10:11	131	8:03	99	5	22	8
S15F	10:01	121	10:05	125	11:05	137	11:04	136	8:05	101	3	22	7
S16M	10:08	128	10:06	126	12:05	149	11:11	143	8:11	107	26	36	28
S17M	10:03	123	10:05	125	11:09	141	11:05	137	9:01	109	9	31	15
Mean		122.24		124.06		138.59		137.64		101.65	12.65	30.71	17.35
Standard Deviation		3.95		2.22		6.53		4.53		8.50	7.25	7.23	7.82
Variance (SD)		15.57		4.93		42.63		20.49		72.24	52.49	52.22	61.12

Key: M=Male; F=Female; ARR=Attitude towards Recreational Reading; AAR=Attitude towards Academic Reading; ORA=Overall Reading Attitude

**DIGITAL GAMES AND ASSISTIVE TECHNOLOGY:
IMPROVEMENT OF COMMUNICATION OF
CHILDREN WITH CEREBRAL PALSY**

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This paper aims to analyze the frequency of occurrence of different forms of communication in nonspeaking children during activities with digital games. The participants in this study were three children with multiple disabilities, whose limitations were due to cerebral palsy. All the children had severe oral communication disabilities. Three digital games were developed by the Research Group of Computational Modeling of SENAI/CIMATEC for this population: Food Safety, Public Safety and Sustainable City. This research group has qualified people who have different areas of training and experience. From analysis of the footage, by recording the observation, it was possible to identify the occurrence of five categories of communication; vocal and non-verbal was the one that stood out. Additionally, we analyzed the expansion of the children's communication individually in each session, thus allowing us to identify the ongoing progress of this variable. The digital games encouraged the use of different forms of communication in nonspeaking children with multiple disabilities resulting from cerebral palsy. This paper discusses the importance of analyzing the different possibilities of expression for these children with cerebral palsy in order to plan more effective treatments in the area Augmentative and Alternative Communication, using digital games and assistive technology.

Communication is important and necessary for social interaction. It is by means of communication that individuals interact with others and exchange information with their socio-cultural environment. However, one of the barriers to the communication process is the absence of speech to express oneself orally (Sameshima, & Deliberato, 2009). Communication difficulties may be present in people with cerebral palsy, among other limitations, depending on the brain damage. Thus, professionals and researchers from the area of Special Education have been concerned with identifying and developing these children's communication abilities (Almeida, Piza, & Lamônica, 2005; Deliberato, Gonçalves, & Macedo, 2009; Zangari, 1994). According to Sameshima and Deliberato (2009), the concern involves mainly the need to identify the various communication possibilities of nonspeaking special needs individuals, in order to contribute to the selection of strategies and the encouragement of the development of communicative exchanges as well as social interaction processes for people with specific speech difficulties.

Limongi (1998) discusses the concepts of language and communication. The concept of language may be expressed as the result of a sensory and intellectual process aiming to organize thoughts as well as the ability to manipulate those symbols - which implies a communicative intention. Communication can be understood as the transfer of symbols from the mind of an individual to the mind of another through speech, writing, drawing, use of gestures or expressions. In interpersonal communication, Del Prette and Del Prette (2001) argue that the content of a message may be transmitted verbally, through speech or writing, in addition to the non-verbal

component (gestures, body language, head movements, facial expression) and paralinguistic features (tone of voice, intonation, speech velocity).

A small portion of people is unable to communicate through speech due to neurological, physical, emotional and cognitive factors. Such group may contain people with cerebral palsy. Cerebral Palsy is an injury to one or some parts of the brain that can happen during pregnancy, birth or after birth, while the child's brain is still in the process of maturation. The motor impairment is the main characteristic of Cerebral Palsy, however, other manifestations may be present, such as visual impairment, cognitive impairment, speech disorders (Bobath, 1990).

In the case of nonspeaking individuals affected by Cerebral Palsy, their communication with the environment may be established through facial expressions, head movements, and vocalizations. According to Millikin (1996) a message may be classified as verbal (presenting a linguistic code), non-verbal (transmitting messages without using a structured linguistic code), vocal (production of sound) and non-vocal (not involving production of sound). Thus, the literature has described the different forms of communication of children and teenagers who are either nonspeaking or have communication problems (Ferm, Ahlsén, & Björck-Akesson, 2005; Mclean, Brady, & Mclean, 1996; Nunes & Hanline, 2007; Zangari, 1994).

For example, Deliberato (2009) described the expressive oral skills of an 11-year-old student with cerebral palsy, during the implementation of a program in the area of supplemental and alternative communication. The 12-session recording allowed categories of analysis to be identified: verbal expression, non-verbal expression, and verbal expression accompanied by non-verbal communication – with non-verbal expression being the most frequent category. In another study, Sameshima and Deliberato (2009) identified the following expressive abilities in three nonspeaking teenagers (between 13 and 16 years old) with cerebral palsy during activities with board games: verbal without help/vocal; verbal with help/non-vocal; non-verbal/vocal; non-verbal/non-vocal; non-verbal/non-vocal + non-verbal/vocal; verbal without help/vocal + non-verbal/vocal; non-verbal/vocal + verbal with help/non-vocal; and non-verbal/non-vocal + verbal with help/non-vocal. The types most frequently utilized by the teenagers for communication were: non-verbal/non-vocal; verbal with help/non-vocal; and non-verbal/non-vocal + non-verbal/vocal.

These studies (Deliberato, 2009; Sameshima & Deliberato, 2009), as well as others (Almeida, Piza, & Lamônica, 2005; Nunes, & Hanline, 2007) call attention to the different forms of communication of nonspeaking people with cerebral palsy, showing the importance of needs assessment and selecting the best strategies to increase communication. In this sense, one theme that has been growing considerably in research and practice in recent years is that of Augmentative and Alternative Communication (Deliberato, Gonçalves, & Macedo, 2009). According to Nunes and Hanline (2007), Augmentative and Alternative Communication (AAC) and can be understood as the different forms of communication (use of gestures, facial and corporal expressions, graphic symbols) that can establish face-to-face communication for individuals who are unable to use oral language.

Assistive Technology is one area that heavily uses AAC. Through the development of resources such as communication boards with pictorial symbols or vocalizers, computers with specific software, and other tools, Assistive Technology helps encourage the communication functionality of people with severe speech disorders, thus enabling them to increase their learning and social interaction (Bersch, 2009; Cook & Hussey, 1995).

The term Assistive Technology was officially coined in 1988 as an important legal element in the U.S. legislation, which comprises, with other laws, the ADA - American with Disabilities Act (United States, 2004). This U.S. law considers Assistive Technology as the equipment used to increase, maintain or improve functional capabilities of people with disabilities; such services being those that directly assist a disabled person in the use such resources (Bersch, 2009).

Galvao Filho (2009) argues that the Assistive Technology, especially in Brazil, is a new term still used to identify the entire arsenal of resources and services that contribute to provide or enhance functional abilities for people with disabilities and therefore promote social inclusion. According to Oliveira, Garotti and Sa (2008), the first computer equipment for that use was created in the 60s by Malling and Clarkson. The use of this technology in Brazil occurred in the 70's by means of a communication system imported from Canada. Studies examining the use of assistive technology with children with cerebral palsy are still scarce and needed in Brazil (Galvão Filho, 2009) and abroad (Campbell, Milbourne, Dugan, & Wilcox, 2006). Campbell et al. (2006) identified 104 articles published on Assistive Technology from 1980 to 2004, six of which focused on the use of a computer and just one focused on augmentative and alternative communication.

According to the Assistive Technology approach to help people who are physically impaired and its application in the context of AAC, digital games can be produced and applied in playful activities with children with severe speech disorder in order to expand communication. According to Levy (2004), games are intellectual technologies, understood as elements that rearrange and modify memory, attention, creativity and imagination; and help to determine the mode of perception and intellection by which the subject knows the object. When interacting with video games, these cognitive functions are intensified every day, which allows children, teens and adults to discover new forms of knowledge. Digital games are resources available within the digital technologies of information and communication, to be characterized as recreational activities, are tools that can enable the mediation of learning, and help to determine the mode of perception and intellection by which the subject knows the object. In interaction with video games, these cognitive functions are intensified every day, which allows children, teens and adults to discover new forms of knowledge. Digital games are resources available within the information and communication digital technologies that, when used as recreational activities, are tools that can enable the mediation of learning. Digital games can be used by all individuals, including those who have some type of disability. In this case, digital games can be developed in accordance with the child's special needs, adapted to various contexts, and applied to different treatment objectives. With the help of technology in encouraging functional communication, digital games can act as a motivating and challenging element for the development of cognitive and social skills.

According to Vygotsky (1984), games facilitate the development of language, thought, and attention. Play influences children's learning, teaching them how to act in certain situations and stimulating their capacity for discernment and problem-solving. For Huizinga (2001), a game can be defined as a playful activity that is much wider than a physical phenomenon or psychological reflex, showing three characteristics: (1) it is a free and voluntary activity, never imposed; (2) it can function as an escape from daily life into an imaginary world; (3) it can create order and be order itself. In this way, games in their different forms function in the Zone of Proximal Development (Vygotsky, 1984), by mediating the construction of distinct concepts and encouraging the development of cognitive, communicative, affective, and motor functions. The mediator that interacts with the child intervenes and provokes the emergence of internalization processes on both the inter- and intra-psychic levels, allowing for the design and redesign of these processes, which are transmitted from the collective to the individual.

Given these considerations, the importance of digital games for the encouragement of communication and social interaction among people with disabilities is clear, and the necessity of increasing scientific knowledge in this area can be seen. It is within this context that this project aimed to analyze the frequency of occurrence of communication in nonspeaking children with cerebral palsy during activities with digital games. The specific objectives are: (a) to analyze the frequency of occurrence of different categories of communication with each child in the study, (b) identify the frequency of occurrence of communication of children with cerebral palsy during the activity with digital games in each session; (c) analyze the frequency of occurrence of communication in each digital game; (d) analyze the level of agreement with the researcher's assessment when compared with that of outside observers regarding the categories of communication in each activity with the digital game.

Method

Participants

The sample for this study was selected through an interview with the speech therapist, from medical records and from the application of diagnostic activities involving board and digital games. Participants were selected based on the following criteria: (1) cerebral palsy; (2) nonspeaking; (3) children between 8–12 years of age; (4) parental consent to participate in the research.

Thus, three children participated in the study, each one with multiple disabilities resulting from cerebral palsy. The children – two male and one female – were between 8 and 12 years old. The children are Brazilian and attended the same institution where the research was conducted. Table 1 shows the main characteristics of those children.

Participant PA is eight years old, lives with her parents, has an older brother (12 years old), attends regular school, is in the second grade, has no familiarity with computers, and has been assisted by the institution since the age of six. Participant PD is 10 years old, lives with his parents and two brothers, is not familiar with computers, is in the first grade in a regular school, and has been assisted by the institution since age eight. Participant PH is 12 years old, lives with his parents and a sister who has Down syndrome, attends the third grade in a regular school, is taking a course in the use of computers, communicates partially using LIBRAS (Brazilian sign language), and has been assisted by the institution since he was three.

Table 1. Characteristics of the participants in the study

Participant	Age	Gender	Economic Classification*	Characteristics and limitation
PA	8	Female	C	Cerebral palsy, nonspeaking, light hearing impairment and light motor impairment.
PD	10	Male	D	Cerebral palsy, nonspeaking, moderate hearing impairment, light visual impairment and moderate motor impairment.
PH	12	Male	D	Cerebral palsy, nonspeaking, moderate hearing impairment and moderate motor impairment in the limbs.

*Note ** The Brazil Economic Classification Criterion (<http://www.abep.org>) is a free instrument that measures the purchasing power of consumers and has been used to classify the Brazilian population in economic terms in the following classes: A1, A2, B1, B2, C, D or E.

This research followed the guidelines of Resolution 196/1996 of the National Health Council regarding Regulatory Standards and Guidelines for Research Involving Human Beings, and was approved by the Ethics in Research Committee of the Department of Health of the State of Bahia (n. 368/2009). In addition to the authorization of the institution, the children's parents signed a Statement of Free and Informed Consent allowing their children to participate in this study.

Empirical space

The research was carried out in a state public institution, located in the state of Bahia, Brazil, which serves people with cerebral palsy and other developmental disorders. The institution aims at the rehabilitation and social inclusion of people with disabilities. It has a multidisciplinary team, with a multidisciplinary approach through average and high complexity actions. They conduct studies and research related to disability issues, and provide training field for graduation and professional development. At the institution, the research was conducted in the Department of Children and Youth Neuroevolutionary Rehabilitation at the play therapy room.

Tools

Recording of Observation. Based on the studies of Deliberato (2009) and Sameshima and Deliberato (2009), this observation record aimed to evaluate the occurrence of the different types of communication in nonspeaking children. It has five categories that are operationally defined as follows: (1) *Non-verbal* – use of gestures, facial expressions, head movements, and smile; (2) *Non-verbal with help* – uses alternative communication resources through gestural indications; (3) *Vocal* – emits vocalizations, emissions of vowels and/or voice intonation; (4) *Vocal with help* – emission of vocalizations together with the use of alternative communication resources; (5) *Vocal and non-verbal* – use of vocalizations together with gestures, facial expressions, and smile.

Field Journal. A notebook present in all the sessions, used to describe the children's communication during the activities with the digital games, thus complementing the scenes captured by the video camera. Notes on the child's interaction with the mediator, with the equipment and with the activities carried out by means of digital games were also recorded.

Digital Games. Three digital games – characterized as casual, with simple narratives, requiring answers to one problem at a time from the player – were developed through the project *Development of Accessible Entertainment Tools for People with Special Needs on the Platform of Alternative Augmentative Communication*, which is coordinated by the third author of this paper. Before the development of the games, a visit to the institution was made in order to verify the disability that would be the focus of this study. With this definition (cerebral palsy) as a starting point, a survey was performed among the professionals who accompanied these children in the institution, together with the children's medical records, in order to identify their needs and limitations. As all the children participating in the study had some degree of hearing loss (severe, light, and moderate), it was decided that the games would not have sound effects. Based on this diagnostic, the microelectronic team developed the games. The three digital games created and used for the treatment have the following themes: *Sustainable City*, *Public Safety*, and *Food safety*.

The digital games were performed on a PDA – Personal Digital Assistant – with a free, open-source Linux operating system. This PDA uses an ARM 9 processor with low computational power as compared to modern tablets and smart phones. The free license for use and the possibility of redistribution and modification of the source code are advantages of using the Embedded Linux operating system as opposed to other operating systems. The games are accessed through a light touch on the icon directly on the touch screen. The programming language used is C++ with the DirectFB graphics library. The DirectFB library provides graphics

acceleration, handling of events from input devices (such as the keyboard and mouse), and a windows system. Based on these free platforms, which are widely utilized by programmers, the communication software was developed for free distribution for improvement. The player goes to the menu of the portable electronic device and then clicks on the icon that gives access to the games menu. Each game is described below.

Food Safety Game. The food game involves a screen with three plates and various pictures of healthy foods. This game aims to teach the children about the importance of healthy food and a balanced diet, with a variety of foods: carbohydrates, fruits, vegetables, proteins, and drinks. Each food group has a color that fills the background of the image of each food item. The child must put the food items into the appropriate spaces, matching the food's background color to the correct space with the same color. The pictures must follow the same strategy as that of PCS – Picture Communication Symbols – that is, they are labeled with the written word as well. For example: an image of rice with the word *rice* written right above it. The background of the images has a standard color – that is, unique. Each time the game is played, the player sees the food items in a different sequence. Upon completing this phase, a plus sign indicates that the player has won. In addition to this, there is the option of a button for the following action (leaving the game). To play, the child must drag the food items to their respective plates. If placed in the correct spot, the background color of the food matches the color of the compartment. If placed in the wrong spot, the food item does not stay; it automatically returns to the scroll bar.

Sustainable City Game. The player must perform a selective trash collection, removing garbage that appears in the river and putting each item in the appropriate container for each type of material. Each type of garbage (paper, glass, plastic, and metal) must be placed in the correct basket. This game shows three scenes that demonstrate the conditions of the environment (polluted, more or less polluted, and unpolluted). Upon beginning the game, the child sees a clean environment, and is responsible for the conservation of this environment. The screen shows buildings, clouds, a river, and various types of trash (metal, paper, glass, and plastic). In the upper part of the screen there is a scroll bar that shows the state of the environment, depending on the performance of trash collection by the child. When the game begins, the garbage items begin to appear in the river and the child must collect them, using the containers corresponding to each type of trash. If the child puts all the items in the correct places, he or she manages to keep the environment unpolluted and wins the game. The bar in the top center of the screen stays completely green and a plus sign appears to show that the child has won the game.

Public Safety Game. The player must solve a puzzle. During the interaction, the player may be challenged to put together a picture of nine or sixteen pieces. The challenge is to form the images (pictures) showing correct attitudes for environmental conservation. In the beginning of the game, an image is shown with environmentally unfriendly behaviors. When the child puts together the puzzle, it forms an image in which an environmentally friendly and safe situation appears. In screen 1, an image quickly appears of a dirty city with garbage on the ground, a pedestrian walking through the middle of the street, and a car parked in the pedestrian crossing. Screen 2 shows a child appears thinking about a clean and organized environment. In screen 3, the child appears sad. In screen 4, the background is an image of a clean environment, and on top of this image, in the center, are three squares, each one indicating the number of pieces to be used in the puzzle (four, nine, and sixteen). Upon clicking on one of these squares, screen 5 appears with the standard image of a clean environment in the top left of the screen, the same as the scene imagined by the child. In the rest of the space, there is a frame with this image in puzzle form. The student must put the puzzle together, using the image that appears in the top left corner of the screen as a reference. To turn the pieces, the student must click on the *turn* icon and on the piece, and so on, until he or she succeeds in putting together the puzzle, at which point the plus sign appears to show that he or she won the game. The child can then continue to the next challenge (a greater number of puzzle pieces) or exit the game.

The Mediation

During the mediation, only one child, the mediator (speech therapist) and the researcher (the first author – as an observer) were in the room. First, the specialist explained the proposal and the operation and rules of the digital games to familiarize the child with the activity. The specialist then guided the child through instructions, questions, hints, and feedback, using examples from the child's daily life and any mediation necessary to develop the activity. The child's expression was observed so that the mediator could intervene. The instructions were given through pictures, use of non-verbal communication, and demonstration of an example. The children had autonomy of access in all stages of the games.

The interaction with the game occurred through the child's touch on the PDA screen – initially by imitation, then by trial and error, and finally through intentional action. Non-verbal communication acted as the mediating language, in that the children sought the approval of their actions on the screen and in the eyes and gestures of

the mediator, thus contributing to different forms of communication between the subject and the mediator as well as to the performance of the activity.

Data collection and analysis process

First, the children were observed and the institution's speech therapist and team of professionals were interviewed in order to select the participants in the study and learn about their characteristics, needs, and limitations. Prior to the mediation with digital games the children were introduced to equipment in order to promote their familiarity with it. During this period, we observed the children's enthusiasm about the possibility of using the equipment.

The digital games were then developed, having in view the communication and motor needs of the children participating in this research. The activities with the three digital games were performed during five sessions with each child, each one lasting approximately 20 minutes. The activities with the games were performed with the children individually, according to a schedule and with the aforementioned mediation.

The video footage was analyzed by Observation Recording. The notes about the sessions in the Field Journal were written both during and after the activities. The data collected were analyzed by means of absolute frequency, considering the occurrence of each child's communication during the activities, as well as the categories of communication in each game. The rate of agreement of the evaluations of the footage carried out by the researcher, was tested in approximately 25% of the situations with two external observers (IC/A and IC/B).

Results

In order to identify the progression of communication in every child, there was also an assessment in each session. Figure 1 illustrates the increased communication for participant PA.

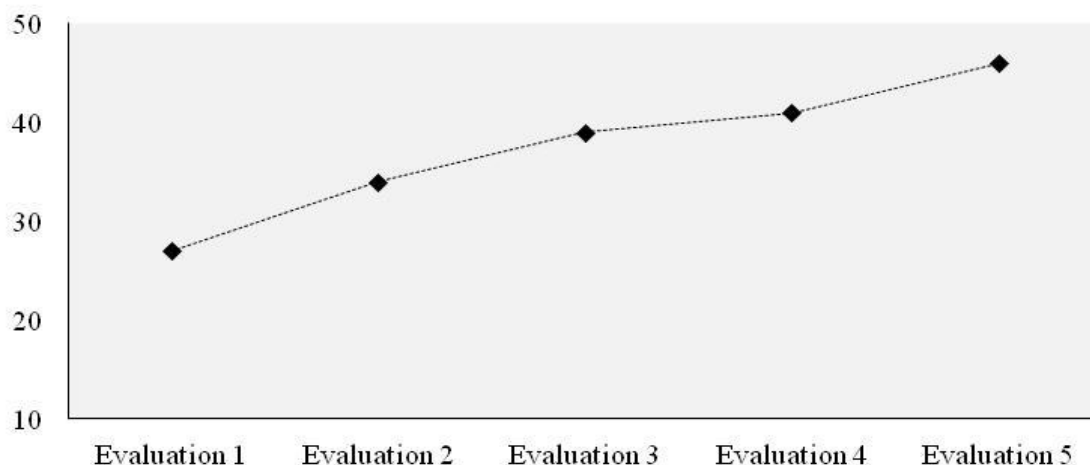


Figure 1. Occurrence of PA's communication during the activities with digital games.

We can see in Figure 1 that PA's communication increased during the sessions with digital games. PA used various forms of communication such as gestures, facial expressions, body language, smile, nod, move the eyes, according to the categories analyzed in the Recording of Observation. Figure 2 shows the occurrence of communication for participant PH.

Figure 2 indicates that participant PH increased his form of communication during the sessions with the digital games. The participant communicated using the different categories observed in the *Recording of Observation*. It is important to note the progress of the last sessions. Figure 3 shows the performance of participant PD in sessions with digital games.

In Figure 3 we can see that the increase in the frequency of occurrence of PD's communication was continuous during the session. We can observe that the major gains occurred especially in the initial sessions, even though there was a slight progress in the last meetings.

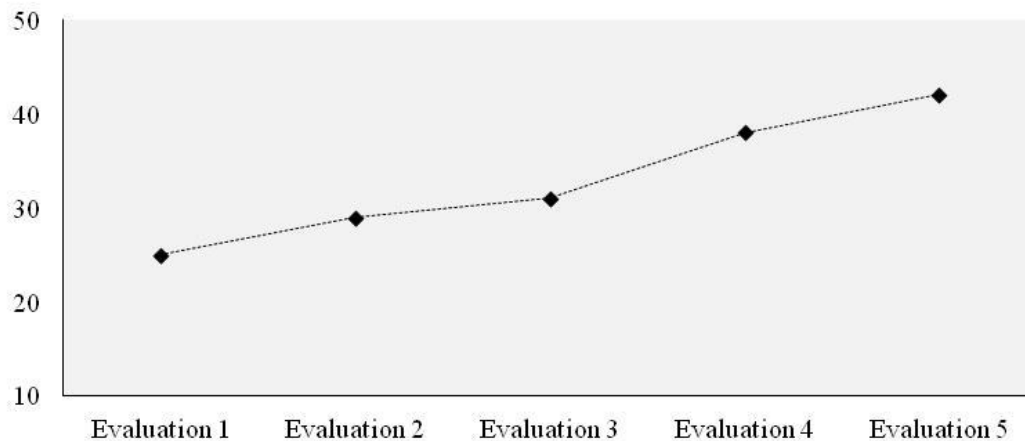


Figure 2. Occurrence of PH's communication during activities involving digital games.

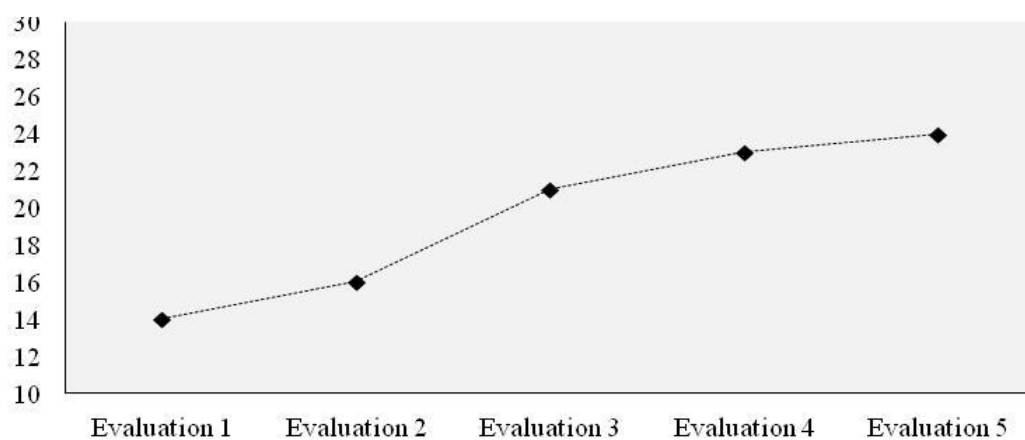


Figure 3. Occurrence of PD's communication during activities involving digital games.

These observations enabled the different forms of the participants' communication during the activities with the digital games to be identified. Table 2 shows the occurrence of each category of communication in each child.

The results in Table 2 show that *PA* was the child who most utilized the various categories of communication, with *PD* having the lowest frequency of occurrence of the various forms of communication. Table 2 shows the occurrence of each type of communication used by the children during each digital game. It can be seen that the type most frequently utilized by the children was *Vocal and non-verbal*, followed by the categories *Non-verbal*, *Vocal with help*, and *Non-verbal with help*. The category least frequently used by the children was *Vocal*.

Table 2. Frequency of communication in each child participating in the study

Communication	Participant			Total
	PA	PH	PD	
Vocal and non-verbal	76	66	30	172
Non-verbal	37	33	23	93
Vocal with help	37	33	21	91
Non-verbal with help	20	18	13	51
Vocal	17	15	11	43
Total	187	165	98	

From analysis of the video footage, it was possible to identify the frequency of occurrence of communication by categories and by digital games. Table 3 shows the frequency of these categories in each digital game.

Table 3. Use of communication categories in each digital game

Categories	Digital Games		
	Food Safety	Sustainable City	Public Safety
Vocal and non-verbal	68	58	46
Non-verbal	33	29	31
Vocal with help	33	29	29
Non-verbal with help	18	15	18
Vocal	15	13	15
Total	167	144	139

As seen in Table 3, although the different types of communication were used in all three games, it was in the *Food Safety* game that the greatest frequency occurred, followed by *Sustainable City* and finally *Public Safety*. The *Vocal and non-verbal* category was the most frequent in all three digital games.

The rate of agreement on the evaluation of the films performed by the researcher, was tested by two external observers (IC / A and IC / B). Table 4 presents the results of the rate of agreement on the communication categories of each digital game.

The results of the rate of agreement in each game were satisfactory, indicating the reliability of the results. The category with the highest level of agreement between the two observers was *Non-verbal with help* in the game *Sustainable City*.

Table 4. Index of Compliance with external observers

Percentage of agreement in the Food Security game					
	Non-verbal	Non-verbal with help	Vocal	Vocal with help	Vocal and non-verbal
IC/A	72.7	77.1	65.3	61.1	55.5
IC/B	71.4	72.9	61.5	55.5	55.5
Percentage of agreement in the Sustainable City game					
	Non-verbal	Non-verbal with help	Vocal	Vocal with help	Vocal and non-verbal
IC/A	82.8	96.8	66.7	91.7	84.6
IC/B	62.1	91.2	66.7	66.7	69.2
Percentage of agreement in the Public Safety game					
	Non-verbal	Non-verbal with help	Vocal	Vocal with help	Vocal and non-verbal
IC/A	63.2	82.4	61.1	75.0	80.0
IC/B	77.4	75.7	55.6	100.0	93.8

Discussion

This study analyzed the frequency of occurrence of communication in nonspeaking children with multiple disabilities resulting from cerebral palsy during activities with digital games. The observation of the occurrence of communication in activities with games is important so that professionals who work with these individuals can be aware of their educational needs, establish goals for treatment, and plan actions, as other studies have pointed out (Sameshima & Deliberato, 2009).

The results show that the three children, considering their characteristics, established different forms of communication during the activities with the digital games and showed progress during the sessions. This result is consistent with the findings of the studies of Almeida, Piza and Lamônica (2005), Deliberato (2009) and Sameshima and Deliberato (2009), which were also carried out with children with cerebral palsy and severe speaking disorders. When studying about games, Vygotsky (2007) seeks to analyze their importance for the process of learning and development, indicating that this feature may create a Zone of Proximal Development (ZPD) because when children play, they use previously acquired knowledge and build others; they articulate their everyday and scientific concepts. The games are a small part of this child's construction activity that is transferred to the adolescent.

The communication category that was most frequently utilized (*Vocal and non-verbal*) suggests that treatments in this area of Alternative Communication should explore the various ways a child can express himself or herself with their environment. The absence of speech does not mean that an individual cannot interact with the environment. The mediator must identify and enhance the possibilities of each one, thus encouraging these

peoples' development and independence. The expansion of the communication of children with speech disorders has been proven through various interventions, revealing the importance of implementing effective strategies in the development of this population (Nunes & Hanline, 2007; Sameshima & Deliberato, 2009).

The three digital games that were developed for the children enabled the occurrence of communication in the participants of the study to be observed. In addition, the movement of hands and feet, the spark in the eyes and the smiles of the children expressed their curiosity, enthusiasm, and motivation about the possibility of using the device and the games installed on it. This clearly shows that Assistive Technology can contribute to the education and increase of communication of nonspeaking children, through the creation of computer devices and accessories that meet the needs of this clientele (Amaral-Lauand & Mendes, 2008).

The children showed the greatest frequency of communication with the *Food Safety* game. One hypothesis for this could be the fact that the game's theme is part of the children's daily routine. This also raises the issue of the importance of treatment activities considering their subjects' interest in and familiarity with the theme. This is reinforced in the study of Deliberato (2009), in which the author calls attention to the importance of such care in the selection of strategies and themes during treatments in the area of AAC with the goal of encouraging conversation in its users.

In analysis of the mediation process and the observations of the activities, it was noted that the children interacted with the digital games, being challenged and motivated to seek new responses, asking for help from the mediator, who observed and interacted with the game and with the child through questions, hints, and feedback. For Vygotsky (1984), mediation is the process of intervention of an element in an interaction, causing it to cease being direct and become mediated instead. According to Oliveira (1998, p.27), the *presence of mediating elements introduces an extra link in the relationship between the organism and the environment, making it more complex. Throughout the development of the individual, mediated relationships come to predominate over direct relationships*. Thus, it was observed that the use of mediation enabled the child to express the various forms of communication identified in this study.

Despite the relevance of the activities and procedures, the work of the mediator is of fundamental importance for the children and for treatment with digital games. The mediator must respect the response time of each individual and be trained from the professional point of view in theoretical and practical fundamental resources of AAC and Assistive Technology in order to work more effectively in the development of communication in nonspeaking children (Deliberato, 2009; Zangari, 1994).

Technological resources can provide recreational opportunities and are instruments that help in mediating between the child and the real world. The computer has the ability to work with these elements. In particular, for a child with cerebral palsy who cannot speak, this feature still has the possibility of alternative communication and may lead to a more satisfying interaction with the world, favoring significant expressions of thought, which, because of motor impairment, the oral language (speech) and graphic language (writing) are damaged, but the thoughts, feelings and desires are in process of construction (Oliveira, 1998). This result suggests the importance of Assistive Technology for communicative exchanges, as well as the possibility of using such resources as an educational procedure as well as to encourage the development of these children's social skills repertoires. The improvement of the social skills repertoire since childhood may later favor inclusion in the labor market, considering the various interpersonal demands that the work context requires from workers with and without disabilities (Hughes, Kim, & Hwang, 1998; Pereira-Guizzo, Del Prette, & Del Prette, 2012).

Conclusion

The digital games favored nonspeaking children with Cerebral Palsy with the use of different forms of communication such as, body and facial expressions, vocalizations and gestures. This shows the importance of the attention professionals should pay to every gesture expressed by nonspeaking children with Cerebral Palsy, because a simple look, a smile, or a nod may trigger the process of interaction.

The results also suggested the importance of assistive technology for communicative, social inclusion and improved quality of life, enabling people with Cerebral Palsy access to computer and other devices that promote their interaction with people, and the possibility of using such resources as educational procedures and promoting the development of those children. We must also point out that the mediation was an important aspect in the development of activities with games and in the use of digital equipment. The mediator must meet the response time of the nonspeaking individual with Cerebral Palsy, identifying his characteristics and tastes, planning activities that stimulate and develop the child.

Considering the limits of this study, such as the absence of a baseline as a control condition of the experimental procedure, new research could: (a) increase the sample size; (b) carry out more sessions for mediation and, consequently, for analysis of the communication; (c) analyze the difference in the communication increase in playful activities with and without digital games; (d) increase the methodological design to strengthen the internal and external validity of the research. In addition, future studies could use the digital games as a proposal for new treatments for the development of communication in nonspeaking children, thus testing the effectiveness of the program.

References

- Almeida, M. A., Piza, M. H. M., & Lamônica, D. A. C. (2005). Adaptation of the picture exchange communication system in a school context. *Pró-Fono Revista de Atualização Científica*, 17, 233-240.
- Amaral-Lauand, G. B., & Mendes, E. G. (2008). Tecnologia assistiva: uma proposta de caracterização e classificação. In: M. A. Almeida, E. G. Mendes, & M. C. P. I. Hayashi (Eds.), *Temas em Educação Especial: Múltiplos olhares* (pp. 392-402). Araraquara: Junqueira & Marin; Brasília: CAPES – PROESP.
- Bersch, R. (2009). Tecnologia assistiva: recursos e serviços. In: D. Deliberato, M. J. Gonçalves, & E. Macedo (Eds.), *Comunicação alternativa: Teoria, prática, tecnologias e pesquisa* (pp. 181-187). São Paulo: Memnon Edições Científicas.
- Bobath, K. (1990). *A deficiência motora em pacientes com paralisia cerebral*. São Paulo: Manole.
- Campbell, P. H., Milbourne, S., Dugan, L. M., & Wilcox, M. J. (2006). A review of evidence on practices for teaching young children to use assistive technology devices. *Topics in Early Childhood Special Education*, 26, 3-13.
- Cook, C., & Hussey, E. (1995). *Assistive technologies: Principles and practice*. St. Louis, Missouri, EUA, Mosby – Year Book, Inc.
- Del Prette, A., & Del Prette, Z. A. P. (2001). *Psicologia das relações interpessoais: Vivências para o trabalho em grupo*. Rio de Janeiro: Vozes.
- Deliberato, D. (2009). Uso de expressões orais durante a implementação do recurso de comunicação suplementar e alternativa. *Revista Brasileira de Educação Especial*, 15, 369-388.
- Deliberato, D., Gonçalves, M. J., & Macedo, E. C. (Eds.) (2009). *Comunicação alternativa: teoria, prática, tecnologias e pesquisa*. São Paulo: Memnon Edições Científicas.
- Ferm, U., Ahlsén, E., & Bjorck-Akesson, E. (2005). Conversational topics between a child with complex communication needs and her caregiver at mealtime. *Augmentative and Alternative Communication*, 20, 19-40.
- Galvão Filho, T. A. (2009). A Tecnologia assistiva: De que se trata? In: G. J. C. Machado, & M. N. Sobral (Eds.), *Conexões: Educação, comunicação, inclusão e interculturalidade* (pp. 207-235). Porto Alegre: Redes Editora.
- Hughes, C., Kim, J. H., & Hwang, B. (1998). Assessing social integration in employment settings: current knowledge and future directions. *American Journal on Mental Retardation*, 103, 173-185.
- Huizinga, J. (2001). *Homo Ludens: O jogo como elemento da cultura*. São Paulo: Perspectiva.
- Lévy, P. (2004). Pela ciberdemocracia. In: D. Moraes (Ed.), *Por uma outra comunicação: mídia, mundialização cultural e poder*. Rio de Janeiro: Record.
- Limongi, S. C. O. (1998). *Paralisia Cerebral: Processo terapêutico em linguagem e cognição*. Carapicuíba. São Paulo: Pró-Fono.
- McLean, L. K., Brady, N. C., & Mclean, J. E. (1996). Reported communication abilities of individuals with severe mental retardation. *American Journal of Mental Retardation*, 100, 580-591.
- Millikin, C. C. (1996). Symbol systems and vocabulary selection strategies. In: S. L. Glennen, & D. C. De Coste (Eds.), *Handbook of Augmentative and Alternative Communication* (pp.97-148). San Diego, CA: Singular Publishing Group.
- Nunes, D., & Hanline, M. F. (2007). Enhancing the Alternative and Augmentative Communication: Use of a child with autism through a parent-implemented naturalistic intervention. *International Journal of Disability, Development and Education*, 54, 177-197.
- Oliveira, A. I. A., Garotti, M. F., & Sá, N. M. C. M. (2008). Tecnologia de ensino e tecnologia assistiva no ensino de crianças com paralisia cerebral. *Ciências & Cognição*, 13, 243-262.
- Oliveira, M. K. (1998). *Vygotsky aprendizado e desenvolvimento: Um processo sócio-histórico*. São Paulo: Scipione.
- Pereira-Guizzo, C. S., Del Prette, A. & Del Prette, Z. A. P. (2012). The Evaluation of a professional social skills program for unemployed people with physical disability. *Psicologia: Reflexão e Crítica*, 25, 265-274.
- Sameshima, F. S., & Deliberato, D. (2009). Habilidades expressivas de um grupo de alunos com paralisia cerebral na atividade de jogo. *Rev Soc Bras Fonoaudiol*, 14, 219-224.
- United States. (2004). *The Americans with Disabilities Act: Questions and answers*. Washington, DC: Equal Employment Opportunity Commission.

- Vygotsky, L. S. (1984). *A formação social da mente*. Trad. José Cippolla Neto Etalii. São Paulo: Martins Fontes.
- Vygotsky, L. S. (2007). *Pensamento e linguagem*. Trad. M. Resende. Rio de Janeiro: Relógio D'Água.
- Zangari, C. (1994). Changes in speech behavior by children receiving AAC service. *International Society for Augmentative and Alternative Communication*, 10, 27-59.

EFFECTS OF CHARACTER EDUCATION ON THE SELF-ESTEEM OF INTELLECTUALLY ABLE AND LESS ABLE ELEMENTARY STUDENTS IN KUWAIT

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This research study investigates effects of character education activities on the self-esteem of intellectually able and less able students in the lower elementary level in Kuwait. The participants were 39 students in grade three with an average age of eight years old. Students were first divided into two ability subgroups (intellectually able vs. intellectually less able), based on their IQ scores on the Kuwaiti Raven Standard Progressive Matrices (RSPM). The Rosenberg Self-Esteem Scale (RSS) was also administered before and after a five-week implementation of the program. The experimental group received character education, and the control group received traditional English lessons with no specific character education. The results revealed that the intellectually able students who received character education showed a higher self-esteem rating than the intellectually less able. The character education program had benefited the intellectually able more than the intellectually less able students.

Character education is a developmental curriculum aimed at teaching learners to make knowledgeable and responsible choices by acquiring the knowledge, skills, and abilities needed (CEP, 2010). Character education programs focus on social, emotional and personal development. In these programs, children learn to value themselves, respect others, be responsible, cooperate with other individuals, solve problems, and be honest and trustworthy (Hall, Holder, Matthews, McDowell, Pyne, Walker, & White, 1998). Children learn to accept themselves through recognizing their good characteristics. Learning interpersonal relationships also helps children to accept themselves and have good friendships. Over some years, self-esteem has become an established theme in psychological literature (Rodewalt & Tragakis, 2003), being defined as the representation of the person's general feeling about him/herself (Kutob, Senf, & Shisslak, 2010). Having a positive self-evaluation motivates the person to make wise choices that could lead to success (Powell, 2009). Self-esteem is an important factor in people's emotions and a big part of human behavior. At the elementary level, children start to develop judgments about their physical, social, emotional and cognitive attributes. Students are strongly affected by their social environment and think of themselves in terms of social relations which is a generalized self-portrait. In this stage, children describe themselves in terms of emotions and how they are influenced by others' behaviors (Snowman & Biehler, 2000). School character education programs figure largely in teaching self-esteem activities. Most teach self-esteem related lessons, either directly under the self-esteem title or through character traits related to self-esteem like respect, responsibility, self-confidence, self-evaluation and others. In addition, school counselors find it crucial to work with students' self-esteem. Character education can be easily addressed from the emotional intelligence perspective (Mayer & Cobb, 2000).

Raising a child with moral standards is very difficult (McDaniel, 1998) and highly targeted these days. Lawrence Kohlberg has developed a major theory of moral reasoning. He identified six stages of moral development divided into three levels: (1) pre-conventional, (2) conventional, and (3) post-conventional (Crain, 1985). Kohlberg sees moral development as *the increasing ability to differentiate and integrate the perspectives of self and other in making moral decisions* (McDaniel, 1998, p. 1). Accordingly, many schools have adopted moral development as a goal, and have begun enhancing values, such as kindness, fairness, honesty, responsibility and similar traits, talking about understanding to respect differences, developmental discipline, and cooperative learning. Children taking part in character and moral education programs learn to be more respectful, understanding and considerate to one another (Gage & Berliner, 1998). They can be more helpful,

understanding, and responsible. This can connect to Gardner's work on multiple intelligences and Goleman's emphasis on emotional intelligence. Gardner argues that an emphasis on IQ alone discards other important characteristics of the person: social and interpersonal capacities for sympathy, empathy, and other regard. These traits are crucial to students' personal and social development (Carr, 2000). Daniel Goleman (1995) in turn has been very interested in emotional intelligence that is concerned with affective aspects of the child. Emotional intelligence focuses on educating the child to develop affective strategies. This is reflected in schools which are teaching character education. Emotional education plays an important part in children's experiences. Emotions are very important in life, and learning how to deal with them and handle them is the key to emotional intelligence. When counselors work with children, they are encouraging them to uncover their emotions and aim to help them manage certain emotional states that relate to unhappy feelings or are socially problematic (Radford, 2003). Thus, emotional intelligence (learning how to perceive, control, and evaluate emotions [Goleman, 1995]) increases when a child can control and manage his or her emotional life (Radford, 2003). Radford urges educators to focus on emotional development of their students, and consider how it should be supported to achieve an emotionally balanced life. Teaching values and social skills enhances a child's performance in life (Goleman, 1995).

In brain-based learning, the brain cannot function (learn) when a child is experiencing stress or anxiety. That is why character education is useful in establishing a healthy emotional environment. Moreover, the teaching process of personal and social values is supported by social learning theory. Teaching is important in children's lives because it encourages them to learn from a significant model (teacher) (Gage & Berliner, 1998). Children learn the desired values by observing their teachers behaving appropriately. Rational behaviors are then motivated by the teacher, so learning will take place. Thus, learning and observing these positive characteristics can help children build their social skills which can then affect their self-esteem (Mosley & Sonnet, 2002).

Literature Review

Many approaches have been proposed to study self-esteem. Although the literature covers a variety of such research, this review will focus on three main topics: character education and self-esteem, moral reasoning and gender differences, and character education, self-esteem and intellectual abilities. Research has considered moral education as part of character education sharing similar attributes and skills. Literature shows that teaching character education can improve the levels of self-esteem (Allred, 2008; Snyder et al., 2010; Watson, 2006; Goodwin, Costa, & Adonu, 2004; and others). This effect of character education varies according to intellectual abilities and gender differences. Literature deals with these topics in different contexts, but this paper will focus on the effect of character education on self-esteem with relation to intellectual abilities and gender differences.

Character Education and Self-Esteem

There has been little research on the effects of character education on self-esteem in the Arab world; however, similar research to the effect of character education is worth mentioning. The results of two character education programs certainly merit discussion in relation to the present study. In a study by Allred (2008), the findings revealed that a positive action system improves a child's academic and character aspects. The study concerned a developmental curriculum to teach character education and included the following concepts: self-concept, healthy body and mind, self-management, getting along with others, being honest, and developing social and personal skills. Teaching positive actions encouraged the students to acquire social and emotional development which helped them improve decision-making skills. Positive behaviors yield positive feelings about one-self, and the concepts discussed in this program are the base of achieving academic and life success. Its implementation results in students' feeling good and happy about themselves and who they are, and what they do. In another study by Snyder et al., the findings showed that a positive action program positively affects both behavior and academic performance (Snyder et al., 2010), as well as self-esteem. Similarly, character education has many positive results in elementary school.

The Child Development Project (CDP) is another character program adopted by some American schools (Watson, 2006). It promotes students' social, emotional, ethical, and intellectual development. The effect of the program was examined in the elementary level, and showed a long term positive effect on students' self-esteem. These students showed positive views about their school and themselves; they linked this positive view to their success, moral, and personal values. In Eidie's (1993) research study, the findings revealed that self-esteem and value-oriented living are strongly related. Character programs teach children how to behave positively. Values-education programs are mainly designed to foster students' self-esteem. Clearly, predictions indicate a relationship between values and self-esteem, but no direct relationship has been observed (Goodwin, Costa, & Adonu, 2004).

In addition, Srikala and Kumar (2010) examined the effect of life skills education (LSE) on adolescents. Life skills were defined as positive behaviors that help students deal effectively with everyday life. Decision making, problem solving, interpersonal skills, coping with feelings and self-awareness are all part of the life skills education. Their study was conducted on 605 students from two secondary schools in comparison with 423 adolescents from nearby schools outside the LSE program. The program was evaluated after one year of the study and it showed a positive effect on students' self-esteem for those receiving LSE. It also showed positive changes in classroom behavior and interaction.

Donegan and Rust (1998) examined the effectiveness of Vernon's Thinking, Feeling, Behaving Curriculum (1989) on 41 second-graders. Two experimental and control groups were investigated using the Behavioral Academic Self-Esteem (BASE) and McDaniel-Piers Young Children's Self-Concept Scale in a pre-test/post-test setting. Vernon's program was introduced to the experimental group for a period of 15 weeks. The results showed gains in the self-concept of students in the experimental group. In summary, Vernon's (1989) curriculum was partially effective in improving students' self-esteem.

A study by Martin, Marsh, McInerney, Green and Dowson, (2007) examined the effects of two interpersonal relationships – teacher-student and parent-child – in achievement, motivation and self-esteem. The sample was 3450 secondary students ranging from 12 to 18 years in six Australian schools. The results showed a positive correlation between relations and general self-esteem. The interpersonal relationships were strongly associated with students' self-esteem.

A correlational study by Parker, Nelson and Burns (2010) examined the occurrence of behavioral problems in classrooms with a character education program called *Smart Character Choices* (SCC). The results showed that the SCC program reduced the occurrence of behavioral problems in classrooms. In a related study, Houlston and Smith (2009) examined the impact of peer-counseling on bullying behaviors in a North London girls' school. The results indicated that a peer-counseling support scheme can improve self-esteem of peer supporters. The peer support scheme describes the student's potential to help other children. Peer supporters go through training before they work with other students. Peer-counseling can change the students' views of bullying in the school. Peer-counseling is supporting students in befriending, resolving conflicts, and mentoring. These are common ingredients of character education programs. Also while receiving character education, students are encouraged to help each other and motivate positive behaviors and help reduce undesired ones; this can also be categorized under peer-support and will most likely improve self-esteem of peer-supporters.

Moral Reasoning and Gender Difference

Further research has studied the effect of gender differences on moral reasoning. Rothbart, Hanley and Albert (1986), for example, tested Gilligan's theory which focuses on gender differences in moral reasoning. The theory proposed that males tend to consider moral dilemmas in terms of justice and rights, while females are more concerned with care for and relationship to others. The results showed that both males and females used both moral orientations while females tended to focus more on care considerations. These findings were supported by Friedman, Robinson and Friedman's (1987) study.

Gupta and Puja (2010) examined the moral judgment ability of 200 pre-adolescent children, ages between 8-11 years, at public school. The findings showed that gender has insignificant impact on moral judgment ability of children. Likewise, Daniels, D'Andrea, and Heck (1995) investigated possible differences in the moral development of male and female youths. The results exhibited statistically no significant gender difference in moral development.

Gender difference of moral reasoning was also studied in Kuwait. Al-Ansari (2002) investigated the effects of gender and education on the moral reasoning of Kuwaiti students. The results showed no significant gender differences. Similarly, Al-Rumaidhi (2008) examined the moral reasoning patterns of Kuwaiti males and females adolescents. The results showed that gender has no significant influence on their moral reasoning.

Character/Moral Education, Self-Esteem and Intellectual Ability

The intellectual abilities of highly able and able children can lead to advanced social and emotional problem-solving skills. Teaching highly able students to develop their social aspects can foster their self-esteem and leadership skills (Silverman, 1993). Elmore and Zenus (1994) examined the effect of teaching inter-personal skills, including cooperative learning strategies on the self-esteem of high, moderate and low gifted achievers'. The findings indicated a significant increase in self-esteem after implementation of the program although students at the higher and lower achievement levels had trouble adjusting to the program. Students with a moderate achievement level were the most adaptable in the program. Intellectually less able students tended to

work alone because they were scared by able students who might expose their inferiority. They did not answer problems; instead they waited for gifted/able students to give their answers. Throughout the program, their cooperative skills improved and they were more involved in discussions. The findings revealed that less able students benefited most from the social and emotional development program. Another study by Knepper, Obrzut and Copeland (1983) examined the social and emotional problem-solving skills of 60 intellectually gifted/able and average students in the elementary level. The findings supported the view that intellectually gifted score higher on interpersonal and intrapersonal cognitive problem-solving skills than intellectually average children.

Derryberry, Wilson, Snyder, Norman and Barger (2005) examined the moral judgment of a group of intellectually able youths compared to a group of college students who were intellectually less able. The college group was older in age and life experiences than the intellectually able group. The results showed significant advances of moral judgment for the intellectually able group. Another study by Lee and Kubilius (2006) examined the level of emotional intelligence, moral judgment, and leadership for gifted students. A major finding was that intellectually gifted students scored higher on adaptability than intellectually average students, while lower scores were achieved when investigating stress management and impulse control ability. On the other hand, gifted students scored highly on moral judgment and their levels were comparable to people with higher degrees, masters or professional degree. They also showed high leadership skills.

In a study conducted by Vialle, Heaven and Ciarrochi (2007), the findings indicated that the level of self-esteem did not significantly differ between gifted and non-gifted students. Similarly, gifted students and non-gifted students showed approximately equal self-esteem levels in a study conducted by Hoge and Renzulli (1991). On the other hand, in another study gifted students were friendlier and showed good leadership skills and had higher self-esteem when compared to average ability students (Kenny, Archambault & Hallmark, 1995).

To sum up, research related to this topic is limited in Kuwait and is either related to character education implementation (e.g., Douglas, 2005) or self-esteem in relation to religious (e.g., Abdel-Khalek, 2011) and psychological factors (e.g. Al-Fayez, Ohaeri, & Gado, 2012). There is no research in Kuwait dealing with character education and self-esteem at the same time. Moreover, the Kuwaiti curriculum does not emphasize character traits such as responsibility, self-discipline, and cooperation, but emphasizes citizenship education and teaching students in Arabic social studies, how to be *good citizens* without operationally defining the traits of a good citizen. On the other hand, many private schools develop their own character education programs or adopt programs that are already published. However, character education, when taught, is delivered using the same approach for all students. It does not take into account different ability levels and how to address their needs. Therefore, the current study examines which ability group benefits more from character education programs.

The Current Research

Research aims and questions

The purpose of the current research was three-fold: (1) to investigate effects of character education on third grade students' self-esteem in Kuwait, (2) to examine the difference in self-esteem level between intellectual ability groups when being exposed to character education activities; and (3) to examine the difference in self-esteem level between boys and girls when being exposed to character education activities. Therefore, the **following** are the specific **research questions** addressed in this study:

1. Do character education activities have a positive effect on Kuwaiti students' self-esteem?
2. Is there interaction between self-esteem level and the two intellectual ability subgroups in the experimental group?
3. Do character education activities have differential effects on boys' and girls' self-esteem?

Method

Design and participants

The study adopted the quantitative experimental design with pre- and post-test comparison. Two conditions were established. The first condition, the character education condition, consisted of students who participated in a character education program. The second condition consisted of students who participated in English language activities that did not include a character education program and this served as a control condition. The first independent variable of the study was character education activities. On the operational level, these activities were based on Rational Emotive Behavior Therapy (REBT), and taught students self-acceptance, dealing with their feelings, dealing with beliefs and behaviors, problem solving and decision-making techniques,

and interpersonal relationships (Vernon, 1989). The second independent variable was intellectual ability (able and less able).

Thirty-nine students, aged 7 years and 6 months to 8 years and 6 months with an average of 8 years from Grade 3 were selected from one private bilingual school in Salmiya city in Kuwait. This grade is considered as a transitional stage for students to start understanding their social context. The participants were chosen from two class sections, and these sections were assigned to one of two research groups: experimental (N=20) and control (N = 19).

Tools

Raven's Coloured Progressive Matrices (Raven's CPM). The Kuwaiti version of the Raven's CPM is a non-verbal test of intellectual ability and is regarded as being relatively free of accumulated knowledge (El-Korashy, 1987). According to Raven et al. (1998), the Raven's CPM test gives an indication of the level of analogical thinking and abstract thought that a person has achieved. The Raven's CPM is designed for young children ages 5:0-11:0 years and older adults. The test consists of 36 items in three sets (A, Ab, B), with 12 items per set. The reliability and validity of the CPM was studied on Kuwaiti children. The Raven's CPM was administered to a sample of 152 elementary Kuwaiti students with ages ranging between 6 and 10.5 years old. The internal consistency coefficients for sub-sets of the test ranged from .46 to .91, and split reliabilities were .87 during the first administration and .82 for the second administration. The test-retest reliability after one month was .79 (El-Korashy, 1987).

The Rosenberg Self-Esteem Scale (RSS, 1989). This scale was designed to measure students' self-reported global self-esteem, and has been widely used in social sciences. The scale is a ten item Likert scale with items answered on a four point scale - strongly agree, agree, disagree, and strongly disagree. The items are self-worth statements ranging from negative to positive wording (Ang, Neubronner, Oh & Leong, 2006). The RSS was administered in English. The items were read and explained to all the students, and then emphasized when necessary.

The original sample for which the scale was developed consisted of 5,024 high-school juniors and seniors from 10 randomly selected schools in New York State (Rosenberg, 1965), and when administered to measure global self-esteem of college students and community members, it showed alpha reliability from .80 to .90, and construct validity from .72 to .76 (Robins, Hendin, & Trzesniewski, 2001). Many studies were conducted of the validity and reliability of the RSS. Silbert and Tippet (1965) administered RSS on college students (N=44) using Guttman scaling. The convergent validity showed 0.56 with interviewers' ratings of self-esteem and the reliability was 0.85. Albo, Núñez, Navarro and Grijalvo (2007) studied the validity of RSS on university students. They found that the internal consistency of the scale was between .85 and .88. The test-retest correlation value scored .84. RSS also had good internal consistency in a different context. When administered to 98 African-American single mothers the scale showed internal consistency of .83 alpha coefficients (Hatcher & Hall, 2009).

Procedure

This research consisted of three phases: pre-treatment, treatment, and post-treatment as follows:

The first phase: pre-treatment included administration of the Raven's Coloured Progressive Matrices (RCPM) to the experimental and control groups, and pilot testing of the character education activities. Both experimental groups were divided into two intellectual ability subgroups based on the students' IQ scores on the RCPM (El-Korashy, 2007). An educational specialist administered the RCPM to all participants at the beginning of the process. After obtaining the total raw scores, percentile ranks, and age equivalent the students were classified on the basis of Raven's Coloured Progressive Matrices (El-Korashy, 2007). According to RCPM, there are 5 percentile classifications. Students in the 91st percentile and above are the well above average group, 71st-90th percentile are above average, 31st-70th percentiles are average, 11th-30th percentiles are below average, and 10th percentile and below are well below average. In this present paper, students were categorized by percentiles in two broad subgroups as 'intellectually able' and 'intellectually less able' for two main reasons: (1) the small sample size; and (2) the concepts of 'able' and 'less able' are broad, so that the two groups would quite reasonably contain most, if not all, student participants. Accordingly, students in the 71st and above percentiles were categorized as 'intellectually able', while students in the 70th and below percentiles were categorized as 'intellectually less able'. The results showed that 23 students were between the 75th and 95th percentile, while 16 were 50th percentile and below. None of the student participants' percentiles was between 51st and 74th. The dependent variable was the students' self-esteem level. There were many debates on the nature of self-esteem, but it could be defined as the student's overall evaluation of himself including positive feelings and

satisfaction (Manning, 2007). RCPM does not have a specific duration, but the average duration of the test was 45 minutes. The items were read and explained to all the students, and then emphasized when necessary.

Regarding the character education activities, two groups activities, 'Just Different' and 'I Can Try', were pilot tested with 20 students in a school with the same age group to examine the pace, duration, and the level of the lesson. The pilot testing was conducted at the beginning of the academic year to rule out maturity bias.

The second phase: this is the phase of implementation of the character education program. The study involved collaboration between two researchers (one of the authors as teacher-researcher), one English teacher, external observer, a school principal, and two education advisors in a private school in Kuwait. The teacher and the teacher-researcher were females to avoid gender bias. The teacher based in the school had several years of experience in teaching English as a second language. The external observer was a third grade teacher, who visited the two groups twice throughout the implementation phase to observe their teaching techniques. The observer had five years of experience in elementary education, and used the Teaching Observational Checklist that was developed by Al-Hroub (2010) (see Table 1) to observe the teaching techniques of both teachers and ensure the fidelity of the teaching of the two programs. The teaching mechanics included the duration of the lesson, the pace and clear voice of the teacher, teacher involving all the students in the class, teacher taking students' questions and input seriously, being open for questions and additional answers, giving time after the question, motivating the students, and ensuring that the students understood the lesson. The observer noted that both lessons were fairly implemented. It was clear from the noted observation that the character education teacher had a challenging start to the program because the pace of the lesson started slowly then gradually increased to the right pace.

Table 1. Teaching Observation Checklist

•Begins and ends class on time.	•Invites alternative or additional answers.
• Teaching at about right . . . slow . . . fast..... pace.	•Involves a large proportion of the class.
•Sees that everyone hears questions and answers.	•Makes sure that students are paying attention.
•Treat students' questions seriously.	•Calls students by name.
•Calls on non-volunteers as well as volunteers.	•Gives motivational cues.
•Allows time after question for formulation of good answers.	•Makes sure that comments or questions have been heard by all.
•Allows time after answer to consider it.	•Checks to see whether answer has been understood.

The researcher-teacher of the character education group is one of the authors, who has had several years of teaching experience and has practiced teaching character education. The character education activity (Table 2) was run daily for 30 minutes, of which 15 minutes were devoted to discussion and 15 minutes to the stimulus activity (Vernon, 1989). This period was divided between talking about the objective of the lesson, doing the activity, and discussing it with the students. The intervention period required five weeks excluding the teacher sessions and treatment period. The activities were run in an interactive manner; in that they were student-centered where students were encouraged to brainstorm and communicate with their friends whenever possible. The first week students engaged in five activities related to self-acceptance. The first activity was *Just Different*. First the objective of the activity was explained: *To recognize that just because people are different doesn't mean they are better or worse* (Vernon, 1989). The material needed for this activity was pencils. The procedure took about 15 minutes and started by introducing the activity and asking each child to get a pencil he used and to talk about it in front of the class. The student talked about differences that made his pencil special. Then, they examined their pencils and came up with special features to identify their pencils. After that, they placed all the pencils in one basket and mixed them together. Then, the teacher asked each student to find his pencil from the

basket. The discussion phase (15 minutes) followed by asking questions related to the activity. The teacher stressed the importance of differences, and consequently there was no need to compare ourselves to others and judge accordingly (Vernon, 1989). The second week had *feelings* as a theme and involved activities focusing on how to deal with our feelings and face them. The theme of the third week was 'Beliefs and Behavior' and it focused on the importance of checking out the belief before taking it as a fact. The following week highlighting the topic *Problem Solving/Decision Making* and covered ways to solve problems and how to choose a good solution and make better decisions. The last week was about *Interpersonal Relationships*, with emphasis on seeing the positive traits in oneself and avoiding judging oneself and others; every person is special and unique.

The control group received traditional English reading lessons under the theme *Making a Difference*. The stories were *Roadrunner's Dance* and *My Brother Martin*. The teacher started the session by introducing the lesson's objective. The students then explored the new vocabulary and put the words into context. Brainstorming next took place regarding the title of the story. The story is general and does not necessarily relate to moral themes. The students read the story and then the teacher asked questions to test comprehension of the information. At the end of the session, the students summarized the story.

The third research phase was the group re-testing of the RSS, which was administered by the same researcher. Sufficient time was given, with an average of 15 minutes, to allow the students in the pre- and post-tests to read and understand the items before responding to them.

Table 2. Character Education Activities per week

Group of Activities	Week 1:	Week 2:	Week 3:	Week 4:	Week 5:
	Self-Acceptance	Feelings	Beliefs and Behavior	Problem Solving/Decision Making	Interpersonal Relationships
Activity 1	Just Different	Face Your Feelings	Facts and Beliefs	What Happens When...	Judgment Machine
Activity 2	Nobody Likes Me	I Think, I Feel	Beliefs, Feelings, and Behaviors	Once Upon a Time	Face the Facts
Activity 3	Put Downs	How Strong	Checking It Out	For Better or Worse	Glad to Be Me
Activity 4	So They Say	Thermometer of Emotions	Stop, Go, and Caution	The Ripple Effect	It's Me!
Activity 5	I Can Try	I Feel, I Do	Options	React and Respond	One of a Kind

Data Analysis

Data analysis of a two-way, within-between analysis of variance (ANOVA) was conducted. One factor was the method of training, and the second factor was time. The training method was the *between* factor, because the study examined the differences between groups using different training methods. Time, was the *within* factor, because the study measured each group twice by pre- and post-treatment survey. Therefore, the study observed the difference within each group over time. The two-way, within-between ANOVA yielded the following results.

Results

The students' raw scores on the RSS were calculated and analyzed. Standard deviations and means were calculated before and after the character education program was implemented. The mean difference was significant between the ability groups. The mean of the intellectually less able group decreased in the post-treatment when receiving the traditional instructional program, while it increased while receiving the character building program.

Table 3 presents the number of cases, and mean and standard deviations for both treatment groups in the pre- and post-treatment. The results show that whereas the first group made, on average, a regression of 0.53 points (21.00–21.53) after they received the traditional teaching, students in the second group showed, on average, a slight progress of 0.20 points (22.00–21.80) after they received the character building program. The intellectually able group who received the traditional instructional program showed a progress of 1.22 points (22.33–21.11) between pre-treatment and post-treatment surveys. On the other hand, the intellectually less able group showed a slight regression of 0.53 points (19.8–21.90) after they received the traditional instructional program. Alternatively, after the intellectually able group received the character building program, a regression of 0.71 points (22.50–23.21) was found, while the intellectually less able showed a progress of 2.33 points after the character building program.

Table 3. Descriptive Statistics for the Pre- and Post-Treatment Surveys for the Two Experimental Groups

Program	Intellectual Ability Group	Pre-Treatment Survey			Post-Treatment Survey			Pre- and Post-Mean Difference
		N	Mean	SD	N	Mean	SD	
Traditional Instructional Program	Able	9	21.11	5.25	9	22.33	3.81	1.22
	Less Able	10	21.90	3.28	10	19.80	3.33	-2.10
	Total	19	21.53	4.22	19	21.00	3.70	-0.53
Character Building Program	Able	14	23.21	4.63	14	22.50	5.92	-0.71
	Less Able	6	18.50	3.51	6	20.83	4.58	2.33
	Total	20	21.80	4.77	20	22.00	5.49	0.20

The character building program might contribute to the students' self-esteem, but that effect might differ across different intellectual ability groups. Table 4 shows the outcomes of the two-way ANOVA that yielded an interaction effect for the two intellectual ability group's difference, $F(5.35) = .027$, $p < .05$, such that the average peak was significantly higher for the intellectually less able group than for the intellectually able group. The main effect of a character building teaching approach, as compared to the traditional teaching group, was slightly higher but it was non-significant, $F(.822) = .371$, $p > .05$. However, the interaction effect, as indicated earlier, was significant at the $p < .05$ level.

Table 4. Tests of Within-Subjects Effects for the Two Experimental and Interaction Groups

Source	Mean Square	<i>F</i>	Sig. (df = 35)
RSS	.612	.072	.789
RSS * Experimental Group	6.94	.822	.371
RSS * Experimental Group* Ability Group (interaction)	45.16	5.35	.027*

*Significant at $p < .05$ level

As shown above, the interaction between pre/post-treatment, experimental groups and intellectual ability groups was significant. This could be due to the considerable positive changes of the interaction between the experimental group and the less able group, but there was a negative change for the control group (see Table 3).

Figure 1 illustrates the findings of Table 3 and represents the difference between the two experimental groups. It was clear that the mean self-esteem decreased between pre- and post-treatment in the traditional instructional program. On the other hand it showed an increase in the mean self-esteem of the character building program.

Figure 2 illustrates the findings of Table 4 and represents the effect of character education on students' self-esteem by their intellectual ability groups. At the beginning of the implementation, there was a big gap in the mean self-esteem level between the intellectually able and less able groups. The intellectually able self-esteem level started at 23.21 and intellectually less able group started at 18.50 making the difference between the groups 4.71. After the treatment, the intellectually able mean self-esteem slightly decreased to 22.50, while the intellectually less able group increased to 20.83. Due to the character education program, the gap between the two ability groups started to close, the difference being 1.67 at the end of the treatment.

Figure 3 illustrates the effect of gender difference on the self-esteem score. The pre-survey mean score of boys in the group receiving character education was 20.8, while girls scored 24.8. In the post-survey, males in the character education group scored higher than girls with a mean score of 22.27 while girls' score dropped to 21.2. Girls scored higher as well in the pre-survey traditional instruction group with a mean score 22.4, while boys scored 20.56. In the traditional instructions group boys' self-esteem score increased to 20.89 while girls' scores decreased to 20.9.

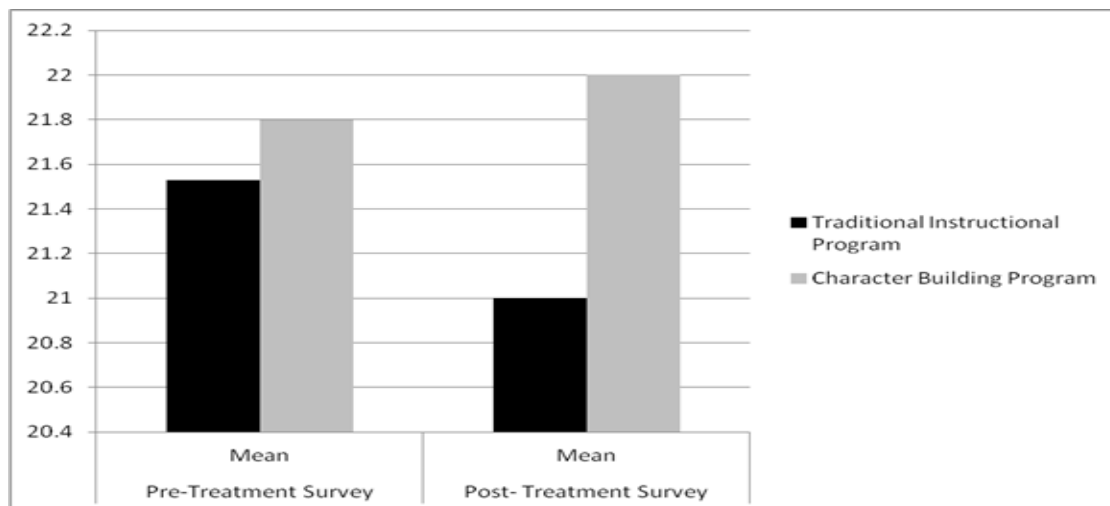


Figure 1. Comparison Between the Traditional Instructional Program and Character Education Program Groups in the Pre- and Post-Survey

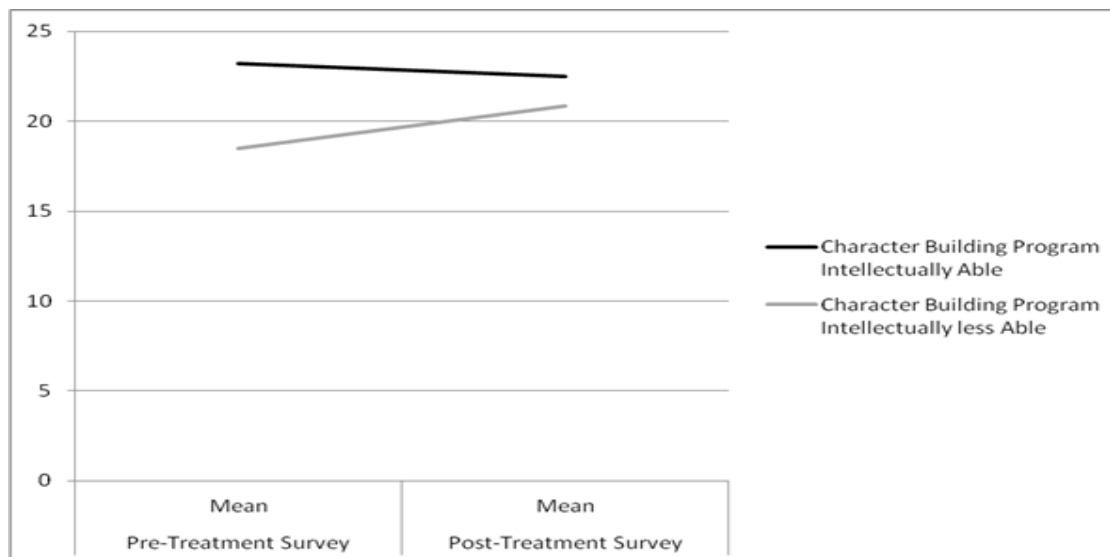


Figure 2. Effect of Character Education Program by Intellectual Ability Groups

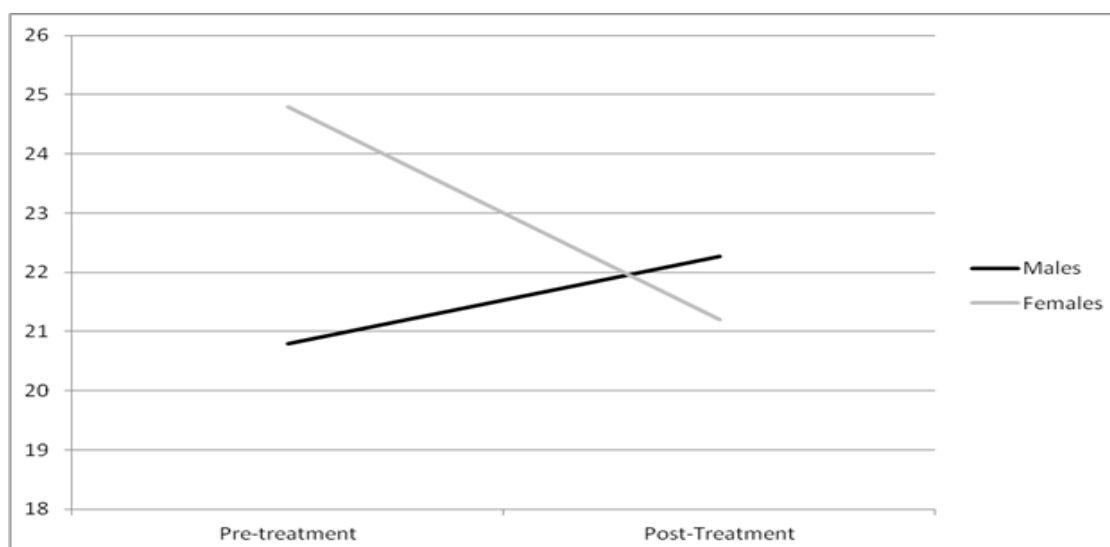


Figure 3. Effect of Gender Differences on Self-Esteem

Discussion and Conclusion

The findings revealed a slight difference between the experimental and control groups. Students who received character education showed slight progress in their self-esteem score, whereas students in the traditional instructional group did not show any progress in their self-esteem. In fact, students in the non-treatment group showed a regression in their self-esteem scores based on the RSS tool. It is important to note that this regression might be because they did not receive skills to maintain or increase their self-esteem. There was a positive aspect of this, which was an improvement in self-esteem for students who received character education. It indicates that more in-depth studies should be conducted to examine that specific purpose.

On the other hand, the two intellectual ability groups showed different results, as character education enhanced the less able students' self-esteem. A statistically significant increase in their self-esteem was reported. Given that there are more within-group differences than between-group differences, the character education program seemed to be more useful for less able students. According to the results, less able students showed lower self-esteem during the pre-treatment test than the able students. This could be related to the fact that the students were in a heterogeneous class. A study argued that when able and less able students were grouped together, higher ability students seemed to have higher self-esteem (Knepper, et al., 1983) because they were outperforming the intellectually less able, who had lower self-esteem because in relation to academic achievements the intellectually able students were achieving better (Kenny et al., 1995). Intellectually less able students benefited more from a social and emotional development program because it helped them mingle with other students, and it, indirectly, taught ways to participate in discussions (Elmore & Zenus, 1994).

Previous literature also indicated that students with high intellectual ability frequently have high self-confidence and leadership skills (Berkowitz & Hoppe, 2009). Similarly, students who have high intellectual ability have more advanced emotional and social problem-solving skills than intellectually average students (Knepper, Obrzut, & Copeland, 1983). Also, students who perform well at school tend to have higher self-esteem than intellectually less able students (Kutob et al., 2010). One observation of the findings was that intellectually less able students are more in need of raising their self-esteem and gaining self-confidence. In contrast this group of students in the traditional instruction group showed a regression after they were exposed to this program. It suggested that the traditional program was not challenging enough to their social and emotional skills to build their self-esteem or enhance their confidence.

Unlike the traditional instruction program, the character building program was surprisingly not useful for the able students. This may have been because intellectually able students already have higher self-esteem than intellectually less able students. Linking this finding to previous studies, Berkowitz and Hoppe (2009) found that teaching character building skills to high performing students was challenging because they needed striking techniques to motivate their learning. Likewise, moral judgment in students with high intellectual abilities was more advanced than average students (Derryberry et al., 2005). In a study conducted by Vialle et al (2007), teachers described intellectually gifted students as being well adjusted and experiencing fewer behavioral and emotional problems than intellectually average students. Gifted or able students did not show deficits in their self-esteem; self-esteem of gifted students could increase when they are labeled as gifted/able (Hoge & Renzulli, 1991).

It is interesting to note the gender data collected from the study. Boys receiving character education had an increase in their self-esteem score at the end of the implementation. On the other hand, girls in the same group noted a decrease in their self-esteem. This can be linked to Gilligan's theory of the effect of gender differences on moral reasoning (1993). The increase in boys' self-esteem might be due to the knowledge they received from the character education activities. They experienced taking decisions and making judgments concerning what is right or wrong. This aligned to Kohlberg's theory of moral development. In the conventional morality level, stage 3 is about moral reasoning from good interpersonal relationships (Kohlberg, 1971). Our finding also supported Gilligan's theory that males tend to consider moral dilemmas in terms of justice and rights, while females were more concerned in care and relationship to others (1993). Moreover, they learnt to solve their problems and to deal with their emotions. The decrease that occurred in girls' self-esteem score could be explained according to the hypothesis that they tend to work with moral dilemmas on the basis of care and relationship to others (Gilligan, 1993). Gilligan suggested that females can move in their thinking from the conventional to the post-conventional mode because they stop considering their responsibilities and think according to their values of care (Crain, 1985). In addition, girls might have doubts in their moral reasoning when they start observing boys' moral development. It is highly recommended for future research to pay more attention to gender difference effects on moral reasoning and self-esteem.

Taken together, these findings provide some important preliminary considerations regarding character development, particularly that of low intellectual ability students. Teaching character or social and emotional skills enhances students' general self-esteem. This is particularly true for intellectually less able students. This suggests that character education benefited the intellectually less able group more than the intellectually able. So this finding was observed throughout the program implementation and statistically proved by the results obtained. Extensive research in this field would be required to support or defeat the present findings.

Although most of the intellectually able group exhibited a higher self-esteem level than the intellectually less able, teaching character education helps maintain that standard and enhances the self-esteem of the intellectually less able. In relation to the above suggestion, character education can foster self-esteem in students with average and low abilities. Teaching these students social and emotional skills will allow them stand-up for themselves in different settings. This might also positively affect their performance because it gives them self-motivation (Kutob et al., 2010). Children with high self-esteem operate positively and are able to influence their surroundings, while students with low self-esteem can be easily led by others and avoid difficult situations and challenges (Wiggins & Wiggins, 1992). This implies that non-academic classroom activities would be beneficial to encourage students to actively interact with each other. It also suggests that character education is important in schools because it gives the teacher the opportunity to target everyday troubles with the students.

The current study suggests that students learn about emotional and social skills to enhance their ways of communication and interaction with others (Snyder et al., 2010). When students learn about being kind and accepting others, the teasing between them should decrease (Hall et al., 1998). This allows room for diverse students to share and be part of the society/school. Practicing character skills and values encourages students to build positive relations and fosters a kids-friendly environment (Parker et al., 2010).

Research Implications and Limitations

Our present study is one of the first conducted in Kuwait to deal with character education and self-esteem in relation to ability grouping. This is why extensive research is needed to be able to generalize similar findings. Several conclusions could be drawn from this study. First, teachers, practitioners and counselors need to direct their efforts to the implementation of a suitable curriculum to meet the students' social and emotional needs. Second, designing and implementing a good character program would help schools develop moral education and values and thereby decrease undesired behaviors. A good character is developed through teaching, learning, and practice (Haynes & Oliver, 2007). Third, many character skills fall under the heading of *developing a good citizen*; among these skills are honesty, fairness, interpersonal relationships, self-acceptance, responsibility, loyalty, compassion, etc. (Kemp, 2000). The values are a non-definitive list, but the present study dealt with values common to developing a good citizen. It included self-acceptance, judgment, fairness, honesty, interpersonal relationships, and compassion. Thus, it is critical to foster character development in schools. This also entails that there will need to be professional development of teachers to train them to teach character education to students of different ability groups. Fourth, it is recommended to look more closely at the gender differences in relation to moral thinking. Some research has indicated that there is no difference between males and females regarding moral judgment abilities (Gupta & Puja, 2010; Daniels et al., 1995). Extensive research should consider moral reasoning in different societal and cultural contexts to study gender differences. Fifth, it is recommended in future research to include qualitative data collection in the research design. A mixed-methods approach that includes participant observation and analysis of classroom discourse would help to capture not only aspects of students' pre- and post-treatment self-esteem, but also interactions during the character education treatment sessions that might have led to the changes in student performance.

There are some limitations that signify that caution must be applied when generalizing the findings. The research was conducted solely in one bilingual school and therefore may not be representative of students in other settings. The sample size is small for the findings to be generalized. The period of implementation is only six weeks which is possibly too short to bring about the desired significant changes in self-esteem levels of both ability groups. Also, the tool used to collect teachers' feedback is not structured and teachers' reflections are not systematic, and thus not included in the article. The findings could also mean that a more specific domain of self-esteem may be more relevant than the general self-esteem considered.

References

- Abdel-Khalek, A. (2011). Religiosity, subjective well-being, self-esteem, and anxiety among Kuwaiti Muslim adolescents. *Mental Health, Religion & Culture*, 14, 129-140
- Al-Ansari, E. (2002). Effects of gender and education on the moral reasoning of Kuwait University students. *Social Behavior and Personality: An International Journal*, 30, 75-82.

- Albo, J.M., Núñez, J.L., Navarro, J.G., & Grijalvo F. (2007). The Rosenberg Self-Esteem Scale: Translation and validation in University students. *The Spanish Journal of Psychology*, 10, 458-467.
- Al-Fayez, G., Ohaeri, J. & Gado, O. (2012). Prevalence of physical, psychological, and sexual abuse among a nationwide sample of Arab high school students: association with family characteristics, anxiety, depression, self-esteem, and quality of life. *Social Psychiatry & Psychiatric Epidemiology*, 47, 53-66.
- Al-Hroub, A. (2010). Programming for mathematically gifted children with learning difficulties. *Roeper Review*, 32, 259-271.
- Allred, C. (2008). Improving academics, behavior and character. *Leadership*, 38, 26-29.
- Al-Rumaidhi, K. (2008). Moral reasoning: Moral reasoning among Kuwaiti Adolescents. *Social Behavior and Personality: An International Journal*, 36, 115-122.
- Ang, R. P., Neubronner, M., Oh, S., & Leong, V. (2006). Dimensionality of Rosenberg's Self-Esteem Scale among normal-technical stream students in Singapore. *Current Psychology*, 25, 120-131.
- Berkowitz, M. & Hoppe, M. (2009). Character education and gifted children. *High Ability Studies*, 20, 131-142.
- Carr, D. (2000). Emotional intelligence, PSE and self-esteem: A Cautionary note. *Pastoral Care in Education*, 18, 27-33.
- Character Education Partnership. (2010). *Eleven principles of character education*. Retrieved July 31, 2012 from: <http://www.character.org/elevenprinciples>
- Crain, W. (1985). *Theories of development: Concepts and applications*. USA: Pearson/Prentice Hall.
- Daniels, J., D'Andrea, M. & Heck, R. (1995). Moral development and Hawaiian youths: Does gender make a difference? *Journal of Counseling & Development*, 74, 90-94.
- Derryberry, P., Wilson, T., Snyder, H., Norman, T., & Barger, B. (2005). Moral judgment developmental differences between gifted youth. *The Journal of Secondary Gifted Education*, XVII, 6-19.
- Donegan, A., & Rust, J. (1998). Rational emotive education for improving self-concept in second-grade students. *Journal of Humanistic Education and Development*, 36, 248-256.
- Douglas, R. (2005). Adoption and implementation of a western character education program: A case study. *ProQuest Dissertations & Theses database*, 66, 192.
- Eidle, W. (1993). Values education and self-esteem. *Education*, 113, 661-671.
- El-Korashy, A. (1987). *Manual for using Raven's Colored Progressive Matrices*. Kuwait: Dar Al Qalam.
- El-Korashy, A. (2007). *Raven's Coloured Progressive Matrices*. Kuwait: Dar Al Qalam.
- Elmore, R. & Zenus, V. (1994). Enhancing social-emotional development of middle school gifted students. *Roeper Review*, 16, 182-85.
- Friedman, W., Robinson, A. & Friedman, B. (1987). Sex differences in moral judgments? A test of Gilligan's theory. *Psychology of Women Quarterly*, 11, 37-46.
- Gage, N. L. & Berliner, D.C. (1998). *Educational psychology*. New York: Houghton Mifflin Company.
- Carol, G. (1993). *In a different voice: Psychological theory and women's development*. Cambridge, MA: Harvard University.
- Goleman, D. (1995). *Emotional intelligence: Why it can matter more than IQ*. USA and Canada: Bantam Books.
- Goodwin, R., Costa, P. & Adonu, J. (2004). Social support and its consequences: 'Positive' and 'deficiency' values and their implications for support and self-esteem. *British Journal of Social Psychology*, 43, 465-474.
- Gupta, P. & Puja (2010). A study on moral Judgement ability of pre-adolescent children (9-11 Year) of public schools. *International Journal of Education and Allied Sciences*, 2, 73-86.
- Hall, A., Holder, B., Matthews, E., McDowell, M., Pyne, L., Walker, S., & White, K. (1998). *Character education: Ideas and activities for the classroom*. North Carolina, U.S.: Carson-Dellosa Publishing Company.
- Hatcher, J. & Hall, L. (2009). Psychometric Properties of the Rosenberg Self-Esteem Scale in African American Single Mothers. *Mental Health Nursing*, 30, 70-77.
- Haynes, C & Oliver T. (2007). Finding common ground: A guide to religious liberty in public schools. Retrieved on July 31, 2012 from: <http://www.freedomforum.org/publications/first/findingcommonground/B13.CharacterEd.pdf>
- Hoge, R. & Renzulli, J. (1991). *Self-concept and the gifted child*. National Research Center on the Gifted and Talented. Retrieved July 30, 2012 from: <http://www.gifted.uconn.edu/nrcgt/reports/rb9104/rb9104.pdf>
- Houlston, C., & Smith, P. K. (2009). The impact of a peer counselling scheme to address bullying in an all-girl London secondary school: A short-term longitudinal study. *British Journal of Educational Psychology*, 79, 69-86.
- Kemp, L. (2000). *Building Good citizens for Texas: Character education resource guide*. USA. Texas Education Agency, US Department of Education.
- Kenny, D., Archambault, F., & Hallmark, B. (1995). *The effects of group composition on gifted and non-gifted elementary students in cooperative learning groups*. National Research Center on the Gifted and Talented. Retrieved on July 15, 2012 from: <http://www.gifted.uconn.edu/nrcgt/reports/rm95116/rm95116.pdf>

- Knepper, W., Obrzut, J., & Copeland, E. (1983). Emotional and social problem-solving thinking in gifted and average elementary school children. *The Journal of Genetic Psychology*, 142, 25-30.
- Kohlberg, L. (1971). *From Is to Ought: How to Commit the Naturalistic Fallacy and Get Away with It in the Study of Moral Development*. New York: Academic Press.
- Kutob, R., Senf, J., & Shisslak, C. (2010). Concurrent and longitudinal predictors of self-esteem in elementary and middle school girls. *American School Health Association*, 80, 240-248.
- Lee, S. & Kubilius, P. (2006). The effects of a service-learning program on the development of civic attitudes and behaviors among academically talented adolescents. *Journal for the Education of the Gifted*, 30, 29-67.
- Manning, M. (2007). Re-framing how we see student self-concept. *Education Digest*, 8, 36-41.
- Martin, A., Marsh, H., McInerney, D., Green, J., & Dowson, M. (2007). Getting along with teachers and parents: The yields of good relationships for students' achievement motivation and self-esteem. *Australian Journal of Guidance and Counseling*, 17, 109-125.
- Mayer, J. & Cobb, C. (2000). Educational policy on emotional intelligence: Does it make sense? *Educational Psychology Review*, 12, 163-184.
- McDaniel, A.K. (1998). Character education: Developing effective programs. *Journal of Extension*, 36 Retrieved July 30, 2010://www.joe.org/joe/1998april/a3.php
- Mosley, J., & Sonnet, H. (2002). *101 Games for self-esteem*. UK: LDA.
- Parker, D.C., Nelson, J.S., & Burns, M.K. (2010). Comparison of correlates of classroom behavior problems in schools with and without a school-wide character education program. *Psychology in the Schools*, 47, 817-827.
- Powell, K. C. (2009). The role of concept of self and societal expectations in academic and career achievement. *MPAEA Journal of Adult Education*, 33, 95-104.
- Radford, M. (2003). Emotional intelligence and education. *International Journal of Children's Spirituality*, 8, 255-268.
- Raven, J., Raven, J.C., & Court, J.H. (1998). *Manual for Raven's Progressive Matrices and Vocabulary Scales*. Oxford: Oxford Psychologists Press.
- Robins, R.W., Hendin, H.M., & Trzesniewski, K.H. (2001). Measuring global self-esteem: Construct validation of a single-item measure and the Rosenberg self-esteem scale. *Personality & Social Psychology Bulletin*, 27, 151-161.
- Rodewalt, F. & Tragakis, M. (2003). Self-esteem and self-regulation: Toward optimal studies of self-esteem. *Psychological Inquiry*, 14, 66-70
- Rosenberg M. (1989). *The Rosenberg Self-Esteem Scale*. Retrieved on July 15, 2012 from: <http://www.bsos.umd.edu/soc/research/rosenberg.htm>
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.
- Rothbart, M., Hanley, D., & Albert, M. (1986). Gender differences in moral reasoning. *Sex Roles*, 15, 645-653.
- Silbert, E., & Tippet, J. (1965). Self-esteem: Clinical assessment and measurement validation. *Psychological Reports*, 16, 1017-1071
- Silverman, L.K. (1993). Social development, leadership and gender. In L.K. Silverman (Ed.), *Counseling the gifted and talented* (pp. 291-327). Denver: Love.
- Snowman, J., & Biehler, R. (2000). *Psychology applied to teaching*. New York, Boston: Houghton Mifflin Company.
- Snyder, F., Flay, B., Vuchinich, S., Acock, A., Washburn, I., Beets, M., & Li, K. (2010). Impact of a social-emotional and character development program on school-level indicators of academic achievement, absenteeism, and disciplinary outcomes: A matched-pair, cluster-randomized, controlled trial. *Journal of Research on Educational Effectiveness*, 3, 26-55.
- Srikala, B., & Kumar, K. (2010). Empowering adolescents with life skills education in schools- school mental health program: Does it work? *Indian Journal of Psychiatry*, 52, 344-350.
- Vernon, A. (1989). *Thinking, feeling, behaving: An emotional education curriculum for Children*. Illinois, USA: Research Press.
- Vialle, W., Heaven, P., & Ciarrochi, J. (2007). On being gifted, but sad and misunderstood: Social, emotional, and academic outcomes of gifted students in the Wollongong youth study. *Educational Research and Evaluation*, 13, 569-586.
- Watson, M. (2006). Long-term effects of moral/character education in elementary school in pursuit of mechanisms. *Journal of Research in Character Education*, 4, 1-18.
- Wiggins, J., & Wiggins, M. (1992). Elementary students' self-esteem and behavioral ratings related to counselor time-task emphases. *School Counselor*, 39, 377-381.

EVIDENCE-BASED PRACTICE GUIDELINES FOR FETAL ALCOHOL SPECTRUM DISORDER AND LITERACY AND LEARNING

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Evidence-based Practice Guidelines for Fetal Alcohol Spectrum Disorder (FASD) and Literacy and Learning are derived from an inductive analysis of qualitative data collected in field research. FASD is the umbrella term for a spectrum of neurocognitive and physical disabilities caused by prenatal exposure to alcohol. Data from a sample of N=150 was collected using sharing circles with Aboriginal elders and community members; conversational interviews with parents and their children with FASD; and interviews and focus groups with professionals who support children with FASD and their families. Special protocols were followed in collaboratively planning and participating in research involving Aboriginal communities. Aboriginal research methodologies utilized are situated among emerging, multi-disciplinary, qualitative research methodologies suitable for understanding the complexity of natural phenomena such as FASD. The goal of dissemination is to further translation of research findings regarding evidence-based guidelines for FASD to the clinical or practice levels, across disciplines and sectors, as well as across the life cycle, in order to prevent adverse life outcomes.

Introduction

The current qualitative research study explored the impact of Fetal Alcohol Spectrum Disorder (FASD) on the lives of individuals with FASD, families, caregivers, elders, professionals and communities. FASD refers to a range of diagnoses for physical, cognitive and neurobehavioral disorders that can result from prenatal alcohol exposure (PAE). FASD is an umbrella term for various diagnoses including fetal alcohol syndrome (FAS), partial fetal alcohol syndrome (pFAS) and alcohol related neurodevelopmental disorder (ARND) (Chudley et al., 2005). The present qualitative research study focussed on what practices and approaches worked well for individuals with FASD, their families and caregivers. The research was undertaken in partnership with elders, Aboriginal communities, and a parent led FASD Support Group, in compliance with the *CIHR Guidelines for Health Research Involving Aboriginal People* (Canadian Institutes of Health Research, 2008). The research is an attempt to address the gap in formulating an FASD and Holistic Literacy and Learning framework, useful as guidelines for effective practice across disciplines and sectors, as well as across the life cycle. Six interrelated themes constituting *FASD and Literacy and Learning Practice Guidelines* emerged from an inductive analysis of participants' transcribed interview data, as well as field notes, informed by the literature review and the researcher's experiences with children diagnosed with a condition within FASD, including her three adopted children who have diagnoses within FASD. The interviews or discussions took place in Aboriginal sharing circles, family groups, professional focus groups or individual interviews.

Method

Participants

The Social Sciences and Humanities Research Council (SSHRC) funded a three year project (with a two year extension) for a qualitative research study of literacy and learning needs of individuals with FASD. Although no national prevalence data is available for Canada, FASD comprises 2-5% of the school-age population of younger children in United States and some western European countries (May et al., 2009). Participants and key informants for the current study were recruited through calls distributed by community partners, such as the FASD Support Network of Saskatchewan at its various conferences, workshops and other events, or on its web-site, as well as through a First Nations tribal council and a Métis federation. In order to protect anonymity, participants were asked to contact the researcher directly and accordingly researcher contact information was provided in the notices. Each community partner provided a letter of support for the research, as well as negotiating and signing a research partnership agreement. The community partners, particularly elders from the tribal council, were active participants in the design of the research methodology and in the conduct of the

research. Elders were insistent in wanting qualitative, not quantitative research data, as they felt the latter might further stigmatize their children. Therefore, a quantitative approach was to be used only for global numbers, but was to be avoided for individual cells for the themes arising from data analysis. Such an approach is in compliance with *CIHR Guidelines (Ibid.)* requiring both community and individual consent, and respect for Aboriginal protocols, including a preference for a qualitative, participatory research.

Of the individuals interviewed in sharing circles, focus groups, or conversational interviews, although there is some overlap among categories which is corrected for in the total number of active participants, the group tallies are as follows: 13 adults with FASD ages 19 to 30 years; nine children with FASD, ages several months to 18 years, present at the interview with parent(s), mentors or in a family group; 16 parents or caregivers of individuals with FASD, five of whom are also individuals with FASD, that is the condition was intergenerational (note that 10 children with FASD were discussed by these parents, but were not present at the interviews); nine mentors of individuals with FASD including two court workers; four teacher-educators; two lawyers; four medical doctors; four occupational therapists (two also being parents of children with FASD); four FASD researchers (two also being parents of children with FASD); one Director of an inner city supported housing complex, onsite, who supervised 67 high-risk residents, many of whom had FASD or other co-occurring behavior problems including mental health and addiction issues; and one Director of a downtown, drop-in youth centre on-site, which also provided home-style, supported housing for 40 young women ages 12-18 years who were at risk of being victimized in the sex trade, both facilities including individuals with FASD.

Focus groups and circles were organized by respective governing bodies or delegated to administrative personnel, including a focus group of seven who worked as an interdisciplinary, professional health team to assess, diagnose, and provide supports to children with FASD in a northern Saskatchewan health district. After discussion and planning meetings with the Director of Justice, as well as the General Manager of Services at an urban tribal council, a two-day circle of 19 First Nations elders was held at the tribal council's board room. This circle of elders further led to a two-day circle comprised of four elders, 10 parents of children with FASD, as well as three individuals with FASD, at the White Buffalo Youth Lodge, an inner city venue which was accessible to families and more conducive to protecting their identity and privacy than the tribal council's board room. Following discussions and meetings with the President of an urban Métis federation and the Director of a Métis health and wellness centre, a two day circle was held at the health and wellness centre. The participants in the circle included seven Métis elders, seven FASD mentors, and an adult, male client with FASD.

Subsequent to a half-day meeting and interview with a Justice Coordinator of a rural First Nations, a one day Circle of 27 community members of a remote, rural reserve, two of whom were elders, was attended, with a representative of the Ministry of Justice participating, as well as the Justice Coordinator who acted as facilitator.

Four Elders played a further leading role in meeting individually or in pairs with the researcher in order to advise, plan and facilitate the various circles. When two day circles were held, one was a follow-up circle held a few months after the initial circle, to review the results of the first circle and to communicate further. The conversational interviews generally lasted up to two hours; however, the sharing circles took place over several days, the focus group one-half day, and the community group, one day. Overall, a considerable degree of gender balance was maintained in the various categories comprising the active participants in the interviews, sharing circles and focus group. A global N = 150 for active participants was arrived at by correcting for any overlap among the categories by not counting participants twice if they fit more than one category. Please refer to Table 1, Participants in Research by Category.

Most of the participants were from Western Canada (130), with a contingent from the Eastern Canada (four), as well as a global component of participants from United States (six), Australia (one), New Zealand (one), and South Africa (eight) as part of a planned research visit to South Africa, the country with the highest measured prevalence of FASD.

The goal of the research was to gather experiential data observing participants and their children in their natural surroundings (as opposed to a laboratory or clinic) and through open-ended conversational interviews, focus groups or sharing circles to elicit participants' first hand experiences, including what practices and approaches worked and did not work for them in relation to FASD and literacy and learning across sectors and the life span.

Table 1: Participants in Research by Category

<u>Category of Participants</u>	<u>Number of Participants</u>	<u>Overlap Among Categories</u>	<u>Net Total Tally</u>
Adults with FASD	13		13
Children with FASD	9		9
Parents of children with FASD	16	5	11
FASD Mentors	9		9
Teacher-Educators	4		4
Lawyers	2		2
Medical Doctors	4		4
Occupational Therapists	4	2	2
FASD Researchers	4	2	2
Directors/Officials	7		7
Professional Diagnostic Team Focus Group	7		7

Circle Participants

Métis elders + 7 FASD mentors + 1 adult with FAS	15
1 Facilitator + 1 Justice official + 27 community members, 2 of whom are elders, at a remote reserve	29
4 First Nations elders + 10 parents + 3 individuals with FASD	17
19 First Nations Elder	19
	150

TOTAL PARTICIPANTS*Data Collection**Conversational interviews, focus groups and sharing circles.*

The present researcher established a relationship of trust with the community partners, elders, individuals with FASD, families, caregivers, professionals and service providers before they consented to participate in the conversational interviews, focus groups, sharing circles or field notes. Conversational interviews were employed with individuals diagnosed with an FASD and their families; a focus group was used with an interdisciplinary diagnostic and treatment team; and two-day long sharing circles were the choice of elders who, in turn, convened and facilitated such circles with parents and individuals with FASD whom they invited. Following First Nations protocols, gifts of tobacco, coloured cloth, prayer, smudging, or a pipe ceremony commenced the sharing circles. Elders gave advice and prior approval about questions to be discussed at the circles and notes of the proceedings were recorded with coloured markers on large, mounted experience charts for all participants to see. Notes could be corrected in real time if they did not represent what the circle participants had intended to share. Interviews and focus group sessions were audiotaped and transcribed for approval by participants, while elders' sharing circle notes were transcribed and printed for their distribution and approval.

A community group met on a remote, rural reserve in Saskatchewan, as a follow-up to a sentencing circle. Twenty-seven participants attended the full day circle, lunch was served, and notes of the proceedings were recorded by hand and then transcribed and approved.

Observations and field notes.

A morning was spent in an urban, inner-city school which operated two dedicated FASD classrooms. The researcher observed two teachers, two educational assistants and 15 students going about their daily routine of teaching and learning, including interactions among and between teachers and students in the environments of specialized primary and intermediate classrooms, as well as a music room. There were nine students present in the intermediate classroom and six in attendance in the primary classroom, as well as a teacher and teacher aides or helpers in both classrooms. All students in the dedicated classrooms had diagnoses within FASD. Aboriginal children comprised 95-98% of the students in the school, along with a complement of immigrant and refugee children. In addition, a meeting was held with the principal to discuss the FASD dedicated program and to clarify any queries. A support team consisting of a psychologist, social worker, occupational therapist and speech and language pathologist was available to support the teachers and students in the FASD dedicated program. Field notes of the visit were recorded by hand and then transcribed.

The 20 subjects observed or consulted in the school, but not interviewed either individually or in a group forum, were not included in the participant tally of $N = 150$ for the conversational interviews, focus groups, or sharing circles, but are in addition to that.

Data Analysis

The data consists of qualitative data collected through observation and direct experience gathered during conversational interviews, focus groups, sharing circles and field notes. Transcribed data from these sources was then coded, collated and grouped into interrelated, recurring themes and patterns as discerned by the current researcher through an inductive process. The method of constant comparison was used to compare new data to be sorted with existing data and categories to approach a best fit when selecting, merging and refining coding categories or themes and in making connections between them. Data triangulation assisted in validating the categories or themes by comparison to related data derived across the data-collection spectrum (e.g. various interviews, focus groups, sharing circles and field notes) (Cohen et al., 2007). Such multiple data collection strategies lend legitimacy to research because when data from multiple sources are triangulated, validity and reliability of results increases (Kanu, 2002). Induction *per se* is the scientific process of deriving general principles, theories, themes, models or frameworks from a large array of data, informed by the researcher's knowledge and understandings of the data and field of study. In order to ensure consistency, only one researcher, the current researcher, analyzed, coded and collated all the data into six inductively derived themes which function as *FASD Literacy and Learning Practice Guidelines*. As noted by Wilkinson (2000) the number of categories or themes which inductively emerge from data depends on a number of variables, such as the amount of data collected and the breadth of views it contains, as well as whether only a broad view or a more detailed picture of the complexity inherent in the phenomenon the data represents is required. The complexity and diversity of the effects of FASD on learning and behaviour, and the implications of that complexity for instructional planning for the individual learner with FASD have been well documented (Kalberg et al., 2006; Ryan, 2006; Ryan et al., 2006; Bredburg, 2010; Koren et al., 2010; Mitten, 2011).

Results and Interpretation

Six inductively derived themes (along with a number of sub-themes) collectively termed *FASD Literacy and Learning Practice Guidelines* emerged from an inductive data analysis which was informed by the researcher's background knowledge, research and experience with individuals with FASD, including being a parent of three children with FASD.

Theme 1: Multi-modal Learning

Multi-modal learning involves as many senses as possible, as well as a variety of modes and media (Jewitt & Kress, 2003; New London Group, 1996). Multimodal, holistic approaches to learning engage and stimulate children, accommodating their learning styles, whether visual (images, page or screen), auditory (music, speech, noise and other sounds), spatial (three dimensional), kinesthetic (movement) or multimodal (involving more than one sense modality), rather than relying mainly on didactic oral or textual modes. For children with FASD, visual, spatial or kinesthetic stimulation may be particularly important to activate certain parts of the brain to find or generate new, alternate neural pathways to replace those damaged by prenatal exposure to alcohol. The latter process is termed neuroplasticity of the brain (Kolb et al., 2003).

In the opinion of a teacher-educator interviewed, flash cards, workbooks and commercial tests do not assist very much with diagnosing and developing engaging literacy programming for children with FASD. What does work is qualitatively observing and listening to children as they read, to determine the metacognitive strategies they use, and particularly the approximations or miscues they make as they read. Miscues are the exciting, teachable moments that occur when a learner is challenged to progress to the next step in learning. Miscues illustrate the learner's zone of proximal development, as coined by Vygotsky (1962) and should not be coded as errors or mistakes. Rather these are approximations learners make as their reading strategies progress. Teachers can model metacognitive skills for students at these critical points, using problem solving self-talk through which students can learn to make their own meaning of the text. For instance, in response to miscues, the teacher educator interviewed recommended responding *Good try, you're using a strategy, or you're a problem-solver. Can you suggest what else the word or meaning could be?*

As the English language does not make phonetic sense consistently (Smith, 2003), children must learn to read using a variety of complementary strategies to include cues related to the context and structure of the story, such as visual cues presented in the story, and the child's own background knowledge, culture and vocabulary. A study in the Western Cape of South Africa provides supporting evidence for Smith's contention that phonics alone is not sufficient in learning to read. After nine months of treatment and training one hour a week on

phonological awareness, a group of children with FASD aged 9- 10 years in their third formal year of schooling improved in tests of phoneme knowledge and pre-literacy skills compared to an age- matched control group with FASD who received no such training. However, their reading scores and other general scholastic tests dependent on reading skills did not improve significantly in comparison to the control group (Adnams et al., 2007) as Smith would have predicted.

According to Gardner (1993) there are multiple intelligences, including but not limited to linguistic, mathematical, musical, kinesthetic, spatial and interpersonal intelligences, all of which need to be recognized in learning. In the opinion of the teacher-educator interviewed, learning must be multi-sensory and include visual arts, practical and applied arts, apprenticeships, physical activity, outdoor activities, adventures and field trips, social interactions and other forms of experiential learning, in addition to the conventional text-centered and oral or language-centered processes.

Engagement, demonstration and immersion are key conditions for learning (Cambourne, c1988). According to the teacher-educator, the first step is to engage learners with demonstrations, field trips, concrete visuals and artifacts. Otherwise, it is unlikely that learning will be set in motion, especially for children with FASD, Attention Deficit Disorder (ADD) and Attention Deficit Hyperactivity Disorder (ADHD). Picture-walks through a storybook before reading the story can engage the child. Drawing before, during and after reading can scaffold memory, sequencing and meaning making. Accompanying text can be added to students' drawings, with the help of the teacher if necessary or by reference to a word wall, to describe what is happening in these series of drawings, creating a storyboard. A word wall is an organized collection of frequently used words prominently displayed in the classroom. It is an interactive tool for teaching reading, writing and spelling to children as they can refer to the word wall when trying to compose their own text, as on a storyboard. Storyboards are graphic organizers which utilize a series of illustrations or images displayed in sequence to tell a story, while text is added to supplement the images.

Experiential Learning.

John Dewey (1938) recognized the intimate relationship between experience and learning, and the need for teachers to actively construct interactive processes involving hands-on, experiential learning for students, as well as through social interaction with teachers and peers. For instance it is best to learn mathematical relationships, $3 + 3 = 2 + 2 + 2$, concepts like number, length, quantity and volume, through making muffins, or playing in the sandbox, than through flash cards, workbooks or computer drills. Moreover, through stories or play, children learn self-restraint, taking turns, collaboration and cooperation. Brain development is varied and stretches out for a long time so children should not be hurried nor discouraged (Wolf, 2007). They learn best through being active, not passive, through integrated learning that is social, creative and innovative. The natural trajectory of experiential learning is trans-disciplinary or interdisciplinary inquiry, the making of connections rather than fragmentations, building meaning, acquiring self-regulation through flexible pacing, which is especially important for those with FASD who have slower auditory processing speeds as well as requiring more time for memory retrieval (Shanker, 2010, and Shanker & al., 2012).

An adoptive mother of a son diagnosed with FAS, (age 4.5 years when adopted, age 18 at time of interview) and a daughter diagnosed with pFAS, (age 27 months at the time of adoption and age 15 years at time of interview) was interviewed. The mother was a key informant, as not only was she the adoptive mother of two children who had diagnoses within FASD, but she was also an occupational therapist working in early childhood special education. In fact, both adopted parents in this case were very active in engaging their children in various family and community literacy and learning experiences, such as visits to a children's museum for hands on learning experiences from an early age (weighing and measuring items, motion and speed activities, mixing colors, obstacle courses involving motor planning, experimenting with textures, cutting, colouring, pasting and creating) as well as re-enacting certain historical events using period costumes and props. In the home they measured food and liquid items and read recipes when helping their parents in the kitchen; helped to build tree forts at the cottage; took trumpet and piano lessons, as well as Tae Kwon Do; engaged in many art activities using a wide variety of media; and worked with their father in his workshop, measuring, sawing, painting and making things, and taking care of the cars. Through these activities they learned functional math, reading, music and motor skills as well as basic mechanics and construction. However, the adoptive mother cautioned about the need for on-going supervision during experiential learning for children with FASD, because they do not understand boundaries as evidenced when her children started experimenting with cell phones. Problems ensued, including incurring large telephone bills as well as getting onto trouble with the law.

Participants in the elders and parents circle noted that individuals with FASD are *hands-on* learners, that is, they learn by watching and doing. Traditionally this was accomplished by working side by side with a parent,

grandparent or other family member. Individuals with FASD like culturally relevant activities such as sewing, beading, and learning how to make moss bags which are traditional baby carriers. Sports are important as individuals with FASD function better when physically active, and, additionally, sports have built in reward systems to motivate them. Playing on a team and team sports are important for them. By watching and doing, they learn how to be team players, how to do things together, how to make friends, and how to follow rules, so that they can gradually come to cope with these important social skills. They don't learn these things if they are excluded. They also learn from puzzles and board games, if done together as a family in an intergenerational group. Again, they watch and do, and learn sharing, rules of the games, social skills, manual skills, spatial perception, organization and communication skills. Family activities also facilitate emotional attachment and bonding, which can be lacking in children with FASD, particularly if they have experienced multiple placements.

Holistic language and literacy approach to integrating drawing and other visuals with storytelling, reading and writing.

Holistic language and literacy approaches view notions of reading and oracy as components of an overall process of language development; they view children as natural, active learners as they develop their own conceptualizations of the world and learn language. Children do not learn alone, but rather in a social context of family, community, peers and teachers, whether in play, on a field trip, or in a didactic setting. Just as they learn language through hearing it and using it, through conversation, storytelling and narrative, similarly they learn to read through being read to and through reading itself, in a kind of transaction among reader, text and language. An instructional approach recommended by the teacher-educator interviewed is one of stimulating meaningful experiences through play, activity, story, or field trip, then drawing a picture of the experience, and telling a story based on the picture, followed by writing (or printing) the story, at first with the teacher's assistance, and finally reading aloud the story they have written, while utilizing cues from the picture they have drawn. In addition to visual cues, they also make use of vocabulary, semantic and syntactic cues, as well as phonics. For a longer story, they could draw a series of pictures, illustrating beginning, middle and end of the story, and inscribe a story underneath each picture, forming a storyboard. For children with FASD, this method can scaffold deficits in memory, attention, sequencing, processing speed (encoding and decoding) and comprehension. The key is to begin with their strongest learning mode, usually visual learning, then progress to reading and writing in an integrated manner.

Alternatively, those who do not like to draw may enjoy finding pictures on the internet, printing them and using them in their stories. A teacher-educator interviewed had a group of boys with FASD she taught who liked to find pictures of vehicles from the internet to use in their storyboards, their favorites being about motor bikes and monster trucks.

Theme 2: Scaffolding Memory, Processing Speed and Sequencing Skills

Memory depends on neural pathways in the brain. The development of these networks or pathways in the brain is dynamic and flexible, constantly changing with experience and simulation, thus allowing the network to grow, strengthen, or to rewire itself if damaged. Neuroscientists term this phenomenon *plasticity of the brain* (Kolb et al., 2003.). A stimulating environment, including multi-modal and experiential learning, is important for building neural networks or pathways in the brain, including those damaged by prenatal alcohol exposure (PAE).

These complex neural networks are needed for the development of memory and abstract thought, but may be delayed in developing due to PAE. Moreover, thoughts need to be held in memory long enough to connect to one another, so that problem-solving and other executive functioning can occur. A sense of time, a temporal sense, is abstract, therefore sequencing or organizing memories in a sequential order of steps, or identifying stages of a plot or a story (such as beginning, middle and end) may be challenging for learners with FASD who are largely concrete thinkers. Moreover, individuals with FASD may not be able to discern what needs to be done first, second and third to complete a task, such as when brushing one's teeth, getting ready for school, or the steps involved in reading a story, telling a story, or solving a mathematical problem. Visual anchor charts and lists of steps, or storyboards, may serve to sequence the steps and prompt memory. Generally, directions and instructions using visual cues and fewer and simpler words will be understood more readily by those with auditory processing delays characteristic of many individuals with FASD.

The key informant mother, special education teacher and occupational therapist related how she used magnetic picture lists for chores on the fridge door, with a *do* and a *done* column. Pictures of what was expected were in the *do* list, so the children could look at the picture list to see what needed to be done, do the task, and then move this picture to the *done* column, thus reducing frustration and power struggles. At school her daughter

keeps a daily schedule book of homework which needs to be done and gets help to maintain this by a teacher aid and a social worker. She brings the book home, shows her mother each piece of work completed, and then her mother signs both the work and the homework book, and the child takes both back to school. The mother also makes a copy of the homework done, as the child has been forgetful about handing things in at school and then gets into trouble for not having it completed.

Theme 3: Sensory Integration and Self-Regulation

Certain pinpointed areas of the brain respond selectively to various types of stimuli, whether visual (sight), auditory (hearing), olfactory (smell), kinesthetic (physical movement), tactile (touch), proprioceptive (sense of one's position in space, vertical or horizontal) or vestibular (sense of balance). The brain has to respond to continuing feedback from all these senses. At birth, the brain is immature and integration of sensory input is not complete, but develops with maturity, although such immaturity persists in disabilities such as Autism Spectrum Disorder (ASD) and FASD. Individuals in which sensory integration is not complete may exhibit sensory defensiveness (an aversive response to stimuli), tactile defensiveness, an over- or under-responsiveness to stimuli, and a resulting inability to regulate arousal states or to control impulses. With proper control of stimuli, affected areas of the brain can mature and adapt and the brain can begin to function as an integrated, self-regulating whole (Ayres, 2005; and Shanker et al., 2012).

A First Nations woman interviewed who practices as an FASD mentor suggested various accommodations to better serve those with sensory integration issues in the classroom. These included using natural light rather than fluorescent lighting which constantly flickers, having fewer distracting displays and posters in the classroom, controlling for noise, having the student sit at the front near the teacher, and minimizing change in the classroom routine and seating arrangements. She stressed that it was important that a student with FASD be prepared ahead of time for any changes in classroom organization or routine so that the student could prepare for the transition and learn new cues required. Because individuals with FASD may have slower information processing speeds, one needs to be patient with them, and should not rush or overload them, otherwise one is setting them up for failure. She recommended only 10 to 15 minutes of homework a day because learners with FASD have to try harder to accomplish the same task as someone without a disability, and their brains tire from the increased effort. She further recommended only a few simple questions on a page, for instance, only three or four math problems that are plain and simple. Students with FASD will stay calmer and better able to perform whereas a page full of questions may be overwhelming. Oral testing is recommended to reduce anxiety and to ensure that they understand the questions, as well as open book testing to calm them and to scaffold their memory problems. If they do their work in the resource room, they should also be tested in the resource room, so that environmental cues and learning associations are the same in both cases, and they feel more relaxed in a familiar setting.

The adopted mother of a female student diagnosed with pFAS reported that her daughter, now age 16, was easily distracted in a busy environment. She learned to cope by using headphones to screen out noise, and special music which is calming to her. At school she takes her tests in a quiet area and does homework/assignments away from the noise of the classroom. She also pays better attention if she has something to fiddle with, so has fidgets to use at home and at school, such as squishy porcupine balls, and stretchy animals and bracelets. Fidgets need to be quiet and small to be permitted in school, but they are important as *calming crutches*. Gum or chewy candy provides oral stimulation which calms her daughter and helps focus her attention, but gum may not be allowed in schools. When engaged in conversation her daughter flips from topic to topic and needs reminders to slow down her thoughts and speech. The adopted son in the family was diagnosed with FAS, and later with ADD. He was put on medication for a brief period of time. Medication did seem to help him focus better and pay more attention to detail, however when he became a runaway, *meds* were terminated as he was doing street drugs.

A First Nations adult male with FAS, living on his own, learned to shop at night when stores are less crowded, as he gets over-stimulated and panicky trying to function in crowds. He described the experience as trying to take in everything all at once and becoming overwhelmed. Because of his sensory integration issues, he avoids crowds, often stays at home or goes to his sister's place. Because his sister has children he stays downstairs out of the commotion, not because he is anti-social but as a defensive reaction against sensory over-stimulation. He had a job he liked working in a restaurant, but when management changed, the new management kept changing the work schedules, staffing and menu. He would confuse whether he worked Saturday from 7 to 12 or Sunday from 4 to 7, and other changes, and as a result lost his job, then his apartment, and was on the street again for a time, until he met his FASD mentor.

A First Nations adult male in his thirties with PAE, married, and father of a 13 year old girl, a three year old boy, and an infant of several months, told how he is very sensitive to certain sounds. For instance, when his baby cries, her cries are so high-pitched and piercing that he cannot stand it. Once he even punched a hole in the wall because it hurt so much. Now he and his family have a two-storey house, so he can go to the other floor to get away from the crying sound. His wife and mother-in-law also live in the home and they help to manage his extreme defensiveness to high-pitched sounds, and he also has an FASD mentor.

Occupational therapists interviewed recommended *How does your Engine Run*, also known as the Alert program, as a useful program for helping learners to recognize, visualize and think aloud about their sensory issues, emotions and attention levels, thereby learning to self-regulate (Williams et al., 1996). Using the engine analogy, children can learn to *rev up* their engines if they are feeling tired or sad, or *gear down* or put on the brakes if they are feeling hyperactive or angry. Alternatively, or in addition, they can put on earphones, close the blinds or dim the lighting, select a wiggle seat, or a fidget toy, select a carrel or individual office to put on top of their desk tops to screen out visual distractions, or move to a comfortable, quiet, enclosed space with low lighting within the classroom, such as a small playhouse or teepee for that purpose, or even pull themselves around on a coaster board if they need physical activity. Some classrooms have introduced stationary bicycles or mini-trampolines for students to use briefly as required, in order to re-set student's internal engines so that they can resume their work more effectively. A smaller, segregated FASD classroom where these approaches are normalized and actively supported and monitored by an occupational therapist, teacher and teacher assistants appears to be the most efficacious circumstance for learning sensory-integration and self-regulation without stigmatization. Although these approaches also have been used in integrated classrooms, it is more difficult to normalize them in integrated settings.

Theme 4: Attention and Related Issues

Deficits in attention have long been associated with prenatal alcohol exposure. In Streissguth's prospective, longitudinal study of 415 individuals having diagnoses within FASD, 61% of the children and adolescents had attention deficits (1996, 2002). Children with FASD display deficits in focusing, selecting, encoding, maintaining and shifting attention, as well as an increase in impulsive responding and sometimes hyperactivity (Burden et al, 2011). Thus, according to teachers interviewed it is important to engage children before beginning to read a story, give instructions, or teach a lesson, in order to make sure their attention is focused, and then use interesting, relevant, visual, tactile or kinesthetic stimuli to sustain attention. Prepare and cue them for transitions from one activity to another, or from one classroom to another, through the use of visual schedules and visual clocks. If impulsive blurting out is an issue, use a talking stick or similar concrete, tactile device that can be passed around to indicate when it is each child's turn to speak. Coloured tape to demarcate personal boundaries may be used so that they do not intrude unduly on another student's space, such as when lining up. Many of these techniques can be modified for use with adults who have a diagnosis within FASD and accompanying attention issues.

Individuals with ADHD have problems focusing and sustaining attention, whereas individuals with FASD have particular problems encoding and decoding information, as well as shifting their attention from one task or activity to another. They require more time for tasks such as auditory processing which requires encoding and decoding, as well as assistance in making transitions (Coles et al., 1997). However, ADHD and FASD may be co-occurring conditions in the same individual, so such individuals may experience many or all of the above challenges.

In an interview with a birth mother of a son, John, who was diagnosed with FAS and appeared younger than his 17 years, it was noted that John had trouble concentrating, understanding boundaries, had a slower auditory processing speed (so one should speak more slowly with fewer words when communicating with him) and had trouble shifting his attention in order to make transitions. Although he has a normal IQ, because of his attention deficit he could not complete assignments at school and thus had homework to bring home every day. A year earlier he was charged with sexual touching on the playground when reaching out to catch a ball his arm accidentally touched an adjacent female student's breast. John was not sexualized and did not understand why what he did was wrong. His mother (a single Mom) called the police wanting a male role model to explain these issues to John. Instead of explaining to John, the police charged John with sexual touching. He was very traumatized by the resulting court processes, including five to eight court appearances, even to the point of regression by standing up and urinating on his bed. A judicial reprimand was the outcome of his guilty plea, the mildest sentencing alternative available to the judge. It is very difficult to prepare individuals with FASD for a court appearance, but a visit to the court room beforehand as well as role playing to rehearse court processes could have been utilized to assist in preparing John. Otherwise, his problems with attention, including the

processes of encoding and decoding, might raise his anxiety levels and interfere with his comprehension and behavior.

Theme 5: Speech, Language, Communication and Social Skills

Children with FASD usually exhibit some degree of language disability, either a language deficit or delayed language development. They may have problems learning to produce certain sounds correctly, or may have fluency problems such as stuttering, making their speech more difficult to understand. They may develop language skills and acquisition at a slower rate, and may have immature vocabulary, grammar or syntax. For instance, they may have trouble putting words together to make a phrase or sentence. Often they know a word but cannot retrieve it from memory or may substitute another word from the same general category, like *sheep* for *goat*. Neurocognitive and hearing deficits, or dental and craniofacial anomalies such as cleft lip or palate may affect speech (Wyper et al., 2011), impacting on social and other life adjustments.

Expressive language skills exceed receptive language skills.

In individuals with FASD, expressive language skills (what they say) tend to exceed their receptive language skills (what they can understand and apply). A retrospective clinical chart review of over 100 children under the age of three years, with prenatal alcohol exposure (PAE), confirmed this gap, as well as confirming the delay in both receptive and expressive language skills for children with PAE compared to children without PAE (Proven, 2011). On the other hand, Wyper et al. (*Ibid.*) studying an older group of 27 children with FASD ages five to 13 years found no difference between receptive and expressive language skills in these children, although they were lower in both skills compared to 23 normally developing controls.

Language deficits may persist into adulthood. Individuals with FASD may be able to repeat or parrot back what a parent, teacher, employer, police officer or judge says to them, but not understand the substance of what was said, and thus not be able to follow instructions nor to comply with a court order. They may neither understand nor remember without the use of concrete, visual, hands-on experience or supervision. They may need to be *walked through* instructions in order to be able to comply, and if instructions involve being on time, catching a bus or getting to a correct address they may need special aids or a mentor to accompany them, according to court workers interviewed.

Communication skills can affect social, academic and employment adjustments. Due to problems with auditory processing, they may require considerably more time to respond to instructions or to questions posed, according to a psychologist interviewed. The danger is that they may be passed over by the teacher, employer, judge or lawyer if they don't respond initially. Using fewer and simpler words for them to sort out usually helps to alleviate the auditory processing difficulties. In addition, one should ask them to repeat what was said to them as a rough gauge of their comprehension, although comprehension does not always imply being able to remember and apply what was said.

They often have problems with social cognition and communication, best assessed through formal or informal narrative discourse analysis (Coggins, Timler et al., 2007; Coggins, Friet et al., 1998). Executive functioning, or problem solving deficits, are associated with deficits that children with FASD have with social processing and development of related language skills. Modeling, role-playing, coaching and discussion in real life situations are useful techniques for teaching social skills. In a dedicated FASD classroom observed, the teacher ate lunch with a group of five students all seated comfortably around a small, circular table. Each student would respond, in turn, to a simple, non-intrusive question and would be coached to make eye contact while responding and to listen carefully to other students' responses when their turn came to speak. The students were coached to use appropriate language and tone of voice, to adapt their body language to show respect and interest, and to use polite table manners. Due to deficits in social cognition, communication, memory and self-regulation, these individuals have difficulty using language in more sophisticated social contexts. They may lack the problem-solving skills and critical communication abilities required to enter peer groups, resolve conflicts, negotiate compromises, and maintain friendships and primary relationships. Modeling, role-playing, coaching and discussion in real life situations are useful teaching techniques for learning these social skills (Olswang, Coggins et al., 2007; Olswang, Swensson et al., Dec., 2010; O'Malley, 2007; Kully-Martens et al., 2012; and Stevens et al., 2012.).

Speech and language challenges.

Children with an FASD may have speech and language challenges, such as a language deficit or delayed language development, including problems learning to produce certain sounds correctly and fluently, resulting in speech which may be difficult to understand.

An interview was scheduled with a First Nations mother of two boys diagnosed with FAS, ages seven and nine years. When the researcher arrived at the family residence for the morning interview, a knock on the door resulted in two little boys' heads peeping out the door. The researcher told them that she had arranged to meet with their mother that morning. They indicated that their mother was asleep, pointed to the bedroom, and then eventually went and got their mother. The researcher could not understand the speech of either child very well, although they were very polite and friendly, and really wanted to communicate, they did so mainly through smiles and gestures supplementing their speech. The mother said that one had begun and the other was beginning speech therapy through the school. While they understood what was said to them, and knew what they wanted to say, they could not coordinate the movements of lips, jaws, and tongue to articulate and speak clearly.

Another parent interviewed said that her adopted daughter diagnosed with pFAS had received speech therapy for the previous three years. She described her as talkative, but as having *marble mouth* and said the therapy helped her slow down and improve her enunciation and clarity of speech. Sometimes there is poor articulation when the front teeth need to contact the tongue in a certain way, or the lips are to come together, to make various sounds.

Social skills, life skills and adaptive functioning levels.

Due to emotional, social and language delays, as well as delays in executive functioning (planning, organizing and problem-solving) and memory problems (including slower processing speed) individuals with FASD lag in age-appropriate development, termed adaptive functioning level. There can be a great deal of variability in their adaptive functioning levels, known as dysmaturity. For instance an 18 year old may be physically mature with strong expressive language, but the individual's social maturity may be that of a 12 year old, with math skills of an eight year old and reading decoding skills at age 15, but reading comprehension at age nine (Malbin, 2002). When dealing with inappropriate behavior for FASD individuals it is recommended to *think younger* and to consider that problem behavior may be due to dysmaturity rather than non-compliance. Inconsistent performance is characteristic of individuals with FASD, having *on* and *off* days, or performance variability, which is also characteristic of those with memory problems. The gap between expectations and performance is greatest at adolescence, a time of rapid growth and development, along with increased freedom and responsibility.

A 29 year old First Nations single mother of two boys, ages seven and eight years old (both the mother and the two boys having diagnoses within FASD) explained how an Aboriginal sharing circle with other women her age helped her to adjust to the many demands and frustrations of being a single parent of two young boys having diagnoses within FASD. (She had separated from the father of the boys due to spousal abuse.) She learned how to deal with her emotions, such as anger and frustration, on the one hand, and depression, on the other. Life skills training in another program helped her to learn to deal with budgeting and running a household, thus helping to create more stability in the lives of herself and her children.

Dysmaturity in adaptive level, social skills and life skills were evidenced in Mark, diagnosed with FAS, and Mary with pFAS. Mark was egocentric in development, characteristic of a person younger in age than his 18 years. At adolescence he started to become more dysfunctional in terms of social relations, addictions and problems with law enforcement agencies. Mary, on the other hand, at age 15 years liked to play with younger children, was not interested in boys nor personal appearance and grooming (the lack of grooming concerned her mother), again characteristic of a younger level of development than her chronological age.

Theme 6: Motivation, Engagement and Retention in School

In Streissguth's seminal research (1996, 2002), 60% of a prospective longitudinal study cohort of 415 individuals with FASD experienced problems with school, such as suspensions, expulsions and dropping out, and 60% experienced problems with the law. The reluctance of educational systems to come to terms with the medical model of disabilities such as FASD, may be a contributing factor which could be ameliorated by viewing an FASD diagnosis as something to contribute to eligibility criteria for special services, planning, programming, placement and retention of students with FASD at their respective levels of adaptive functioning (Bredburg, 2011). Moreover, according to an interviewee who was a researcher, occupational therapist and mother of two adopted Aboriginal adolescents with FASD, disciplinary measures need to be informed by and accommodate students' disabilities. Such measures need to include de-escalation and calming techniques, and an awareness that suspension and expulsion may lead to involvement with high risk elements in the community to which vulnerable individuals with FASD are more susceptible than their age peers, as Bredburg (*Ibid.*) has noted.

Another interviewee related that her teenage son diagnosed with FAS dropped out of school, followed by addiction to and warrant for arrest for making and selling crystal methamphetamine. It is often very difficult for parents to maintain children with an FASD diagnosis in school during the volatile years of adolescence. Special learning tools and strategies to ameliorate the problem include those that assist with sensory issues, meet the needs for multi-modal, active, experiential, one-to-one instructional support, full-time supervision, and the realization that learning and maturity may take longer for many of these students. In addition, mentors and advocates acting as *external brains* for those with FASD can help to retain them in school and community (Chudley et al., 2007). Otherwise, absent accommodation for their disabilities, individuals with FASD may fall by default into the justice system, where they are likely to be victimized and deteriorate further (Mitten, 2004).

Considering factors such as attention deficit disorder, sensory and self-regulatory problems, slower auditory processing speeds, and high rates of school leaving, ongoing motivation and engagement are necessary to assist individuals with FASD in focusing and maintaining their interest and attention in order to retain them in school. Motivation is more effective if it is intrinsic to the task, rather than extrinsic such as money, a token, or a piece of pizza, although both types of rewards have their roles. The key is to get to know the individual so as to discover interests, activities and modes of learning to which the individual can readily connect. If the individual cannot learn readily through textual and auditory modes, try visual, experiential, hands-on or interactive digital modalities, with supervision. Key to the success of experiential learning and interactive modes is the flexible pacing they provide which is especially important for successful learning and development of individuals with FASD who may be functioning at a younger age than their chronological age, have slower processing speeds, and require more time for memory retrieval, yet do not want to become stigmatized as less capable in front of their peers.

Conclusion

Through the vehicle of qualitative research the present researcher strove to understand the complexity of FASD and its impact on the lives of individuals, their families, schools and communities. The inductive themes emerging comprise clinical applications in the form of evolving FASD Literacy and Learning Practice Guidelines. According to Denzin and Lincoln (2000, 2005) qualitative research involves the studied and systematic use and collection of a variety of empirical materials, including interviews, observations and artifacts. The six inductive themes derived herein are a synthesis of both FASD and Literacy and are intended to do justice to the complexity of both phenomena, without either leaving significant gaps, on the one hand, or becoming too large and unwieldy in application, on the other. Extensive observations of teaching and learning applying the guidelines proposed, in various sectors (home, school and community) and for various age groups, as well as a comparison of outcomes with conventional methods, are the next steps in moving from practice guidelines to full-fledged FASD pedagogy.

The inductive themes or guidelines derived from the qualitative data are meant to further the translation of research to the clinical or practice level. Moreover, the themes or guidelines are not meant to be applied in a formulaic or mechanistic manner, but rather require discretion of the teacher, parent, caregiver or service provider in selecting and applying the themes on an individual basis, alone or in combination. Often, an ongoing balancing process will be required in their application as the challenge is to balance sometimes disparate requirements of diagnostic brain domains (Lang, 2006) and background factors, with the need to fashion rich, dynamic, holistic literacy curricula and pedagogies for learners with FASD, from a culturally contingent perspective. The application of themes, as noted, may require balancing, for while a learner with FASD may be prone to sensory over-stimulation, he or she may, at the same time, also be attention deficit and so may need an amount of stimulation to become engaged in learning. In addition, the learner may have memory deficits and problems with abstract thinking that require visuals and hands-on activities to reinforce. Having a quiet, pleasant and partially enclosed place with low lighting for the individual to retreat to when over-stimulated may help the learner with FASD to calm down or *slow his or her engine* before incrementally introducing further enriching stimuli. An adjoining room or a partially enclosed, comfortable, softly illuminated playhouse or culturally relevant teepee within the classroom may serve this function.

Significantly, through metacognitive techniques such as modeling and thinking aloud about the strategies used, learners with FASD can progress to manage and monitor their own learning needs and with support gradually move along a gradient to greater independence. The inductively derived FASD and Literacy and Learning Guidelines are intended to be applicable across sectors (home, school, and community) as well as across the life span.

References

- Adnams, C. M., Sorour, P.; Kalberg, W. O.; Kodituwakku, P. W.; Perold, M. D.; Kotze, A.; September, S.; Castle, B.; Gossay, J. P.; May, P. W. (2007). Language and literacy outcomes from a pilot intervention study for children with FASD in South Africa. 41(6) *Alcohol* 403-414. doi:10.1016/j.alcohol.2007.07.005
- Ayres, A. J. (2005). *Sensory integration and the child, understanding hidden sensory challenges* (25th anniversary edition, revised). Los Angeles, CA: Western Psychological Services (original work published 1930): Pediatric Therapy Network.
- Bredberg, E. (2009). FASD and education policy: issues and directions. In E. P. Riley, S. Clarren, J. Weinberg, and E. Jonsson (Eds.), *Fetal alcohol spectrum disorder—management and policy perspectives of FASD* (pp. 317-326). Chichester: John Wiley.
- Burden, M. J., Westerlund A., Muckle, G., Dodge, N., Dewailly, E; Nelson, C.A., Jacobson, S. W.; & Jacobson, J.L. (2011). The effects of maternal binge drinking during pregnancy on neural correlates of response inhibition and memory in childhood. 35(1) *Alcohol Clin. Exp. Res.*, 69-82. doi:10.1111/j.1530-0277.2010.01323.x
- Cambourne, B. (c. 1996). *The whole story: Natural learning and the acquisition of literacy in the classroom*. Auckland: Ashten Scholastic.
- Canadian Institutes of Health Research. (2008). *CIHR guidelines for health research involving Aboriginal people*. Canada.
- Chudley, A.E.; Conry, J.; Cook, J.L.; Looock, C.; Rosales, T.; & LeBlanc, N. (2005). Fetal alcohol spectrum disorder: Canadian guidelines for diagnosis. 175 (5 supp) *Canadian Medical Association Journal*, S1-S21. doi:10.1503/cmaj.1040302
- Chudley, A. E.; Kilgour A. R.; Cranston, M.; & Edwards, M. (2007). Challenges of diagnosis of fetal alcohol spectrum disorder in the adult. 145(3) *American Journal of Medical Genetics, C. Semin. Med. Genetics.*, 261-272. doi:10.1002/ajmg.c.30140
- Coggins, T.E.; Timler, G.R.; & Olswang, L.B. (2007). Identifying and treating social communication deficits in school-age children with fetal alcohol spectrum disorders. In K. D. O'Malley, (Ed.), *ADHD and fetal alcohol spectrum disorders [FASD]* (p. 161) New York: Nova Science Publishers, Inc.
- Coggins, T.E.; Friet, T. & Morgan, T. (1998). Analysing narrative productions in older school-age children and adolescents with FAS: An experimental tool for clinical applications, *Clinical Linguistics and Phonetics*, 12 (3), 221-236.
- Cohen, L.; Manion, L.; Torreson, K.; Morrison, K.R.M. (2007). *Research Methods in Education*. Sixth Edition. Routledge: New York, N. Y.
- Coles, C.D.; Platzman, K.A.; Raskind-Hood, C.L.; Brown, R.T.; Falek, A.; & Smith, I. E. (1997). A comparison of children affected by prenatal alcohol exposure and attention deficit, hyperactivity disorder. Feb. 21, 21(1) *Alcoholism: Clinical and Experimental Research*, 150. DOI: 10.1111/j.1530-0277.1997.tb03743.x
- Denzin, N.K. & Lincoln, Y.S. (2000). Introduction: The discipline and practice of qualitative research. In N. K. Denzin and Y.S. Lincoln (Eds.) *Handbook of qualitative research* (2nd ed., pp. 1-32) London: Sage Publications, (1).
- Denzin, N.K. & Lincon, Y. S. (Eds.). (c2005). *The Sage handbook of qualitative research*. Thousand Oaks: Sage Publications.
- Dewey, J. (1938). *Experience and education*. New York: MacMillan.
- Gardner, H.E. (1983, 1993). *Frames of mind: The theory of multiple intelligences*. New York: Basic Books.
- Jewitt, C. & Kress, G. (2003). *Multimodal literacy*. New York: P. Lang.
- Kalberg, W. O. & Buckley, D. (2006). Educational planning for children with fetal alcohol syndrome. *Ann Ist Super Sanita* 42(1), 58.
- Kanu, Y. (2002). In their own voices. *Alberta Journal of Educational Research*. 48 (2), 98-121.
- Kolb, B., Gibb, R., & Robinson, T.E. (February, 2003). Brain plasticity and behavior. *Current Directions in Psychological Science*, 12 (1), 1-5. doi:10.1111/1467-8721.01210
- Koren, G., Fantus, E., & Nulman, I. (February 10, 2010). Managing fetal alcohol spectrum disorder in the public school system: A needs assessment pilot. 17(1) *Can. J. Clin. Pharmacol.* e79. Retrieved June 17, 2012 at <http://www.motherisk.org/FAR/index.jsp>.
- Kully-Martens, K.; Denys, K.; Treit, S.; Tamana, S.; & Rasmussen C. (2012). A review of social skills deficits in individuals with fetal alcohol spectrum disorders and prenatal alcohol exposure: Profiles, mechanisms, and interventions. 36(4) *Alcoholism: Clinical and Experimental Research*, 568. Doi 10.111/j.1530-0277.2011.01661.x
- Lang, J. (June 26, 2006). Ten brain domains: A proposal for functional central nervous system parameters for fetal alcohol spectrum disorder diagnosis and follow-up. *e-JFAS Int.* Retrieved from http://www.motherisk.org/JFAS_documents/JFAS_5012_Final_e12_6.28.6.pdf
- Malbin, D. (2002). *Trying differently rather than harder*. (2nd ed.). Portland, Oregon: Tectrice.

- May, P.A., Gossage, J. P., Kalburg, W.O., Robinson, L.K., Buckley, D., Manning, M. & Hoyme, H.E. (2009). Prevalence and epidemiological characteristics of FASD from various research methods with an emphasis on recent in-school studies. *Dev. Disabil. Res. Rev.*, 15, 176-192. doi:10.1002/ddrr.68
- Mitten, R. (2004). *Section 9: Fetal alcohol spectrum disorders and the justice system*. First Nations and Metis Justice Reform Commission of Saskatchewan, Final Report, Volume II, Submissions to the Commission. Retrieved May 24, 2012 from <http://www.justice.gov.sk.ca/justicereform/volume2/12section9.pdf>
- Mitten, H. R. (2011). *Fetal alcohol spectrum disorder, Circles of healing, transformation and reconciliation: Ke ge-na-thee-tum-we-in*. (Doctoral dissertation). Retrieved May 24, 2012 from <http://library.usask.ca/theses/available/etd-07182011-151222/unrestricted/RaeMittenPhDThesis.pdf>
- The New London Group. (1996). A pedagogy of multiliteracies: Designing social futures. 66 (1) *Harvard Educational Review*, ISSN 0017-8055. Retrieved June 12, 2012 from http://wwwstatic.kern.org/filer/blogWrite44ManilaWebsite/paul/articles/A_Pedagogy_of_Multiliteracies_Designing_Social_Futures.htm
- Olswang, L. B.; Coggins, T. E.; & Svensson, L. (2007). Assessing social communication in the classroom: Observing manner and duration of performance. *Topics in Language Disorders*, 27(2), 111-127.
- Olswang, L. B.; Swensson, L.; & Astley, S. (Dec., 2010). Observation of classroom social communication: Do children with FASD spend their time differently than their typically developing peers? *Journal of Speech, Language and Hearing Research*, 53, 1687-1703.
- Proven, S. L. (March 2-5, 2011). Receptive and expressive language skills in children 0-3 years of age with prenatal alcohol exposure. *Syllabus of the 4th International Conference on FASD, Abstracts*, PA 23.
- Ryan, S. M. (2006). Instructional tips: Supporting the educational needs of students with fetal alcohol spectrum disorders. 3(2) Article 5, *TEACHING Exceptional Children Plus*, ISSN 0014-4029. Retrieved June 15, 2012 from <http://journals.cec.sped.org/tecplus/vol3/iss2/art5/>
- Ryan, S. & Ferguson, D. (2006). On, yet under, the radar: Students with fetal alcohol spectrum disorders. 72(3) [ISSN 00144029] *Exceptional Children*, 363-379. Retrieved June 16, 2012 <http://cyber.usask.ca/login?url=http://search.proquest.com/docview/201106415?accountid=14739>
- Shanker, S. (2010). Self-Regulation: Calm, alert and learning, 50 *Education Canada* 3. Retrieved June 19, 2012 from <http://www.runforlife.ca/wp-content/uploads/2010/10/Education-Canada.pdf>
- Shanker, S. and Downer, R. (2012). *Enhancing the potential in Children (EPIC)*. In L. Miller and D. Hevey (Eds.), *Policy issues in the early years* (p. 61) Los Angeles: Sage.
- Smith, F. (2003). The just so story—Obvious but false. 80(4) *Language Arts*, 256-257.
- Stevens, S.A.; Major, D.; Rovet, J.; Koren, G.; Fantus, E.; Nulman, I.; and Desrocher, M. (2012). Social problems in children with fetal alcohol spectrum disorders. 19 (1) *Journal of Therapeutic and Clinical Pharmacology* e99-e110. Retrieved from <http://www.jptcp.com/pubmed.php?issueId=577>
- Streissguth, A.P.; Barr, H. M.; Kogan J., & Bookstein, F.L. (1996). *Understanding the occurrence of secondary disabilities in clients with fetal alcohol syndrome (FAS) and fetal alcohol effects (FAE), Report to the Centers for Disease Control and Prevention on Grant No. R04/CCR08515* (Tech. Report No. 96-06). Seattle: University of Washington, Fetal Alcohol and Drug Unit.
- Streissguth, A.; & Kanter J. (Eds.). (2002). *The challenge of fetal alcohol syndrome, overcoming secondary disabilities*. Seattle: University of Washington Press.
- Streissguth, A.P.; Bookstein, F.L.; Barr, HM; Sampson, P.D.; & O'Malley, K. (2004). Risk factors for adverse life outcomes in fetal alcohol syndrome and fetal alcohol effects. 25(4) *Journal of Dev. & Beh. Pediatrics.*, 238. Retrieved June 17, 2012 at <http://www.wisspd.org/htm/ATPracGuides/Training/ProgMaterials/Conf2007/WEth/RFALO.pdf>
- Vygotsky, L. (1962). *Thought and language*. (Ed. and Trans. by E. Hanfmann and G. Vaka). Cambridge: MIT Press, Massachusetts Institute of Technology.
- Wyper, K.R. & Rasmussen, C. R. (2011). Language impairments in children with Fetal Alcohol Spectrum Disorder. 18(2) *Journal of Population Therapeutics and Clinical Pharmacology* e364-376. Retrieved June 28, 2012 at <http://www.motherisk.org/FAR/index.jsp>
- Williams, M. S. & Shellenberger, S. (1996). *An introduction to how does your engine run? The alert program for self-regulation*. Albuquerque, NM: Therapy Works, Inc.
- Wolf, M. (2007). *Proust and the squid: The story and science of the reading brain*. New York: Harper-Collins Publishers. Retrieved June 17, 2012 at http://www.amazon.ca/Proust-id-Maryanne-Wolf/dp/184046867X#reader_184046867X.

EVALUATING THE PHONOLOGY OF NICARAGUAN SIGN LANGUAGE: PREPRIMER AND PRIMER DOLCH WORDS

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Over the past 30-years linguists have been witnessing the birth and evolution of a language, Idioma de Señas de Nicaragua (ISN), in Nicaragua, and have initiated and documented the syntax and grammar of this new language. Research is only beginning to emerge on the implications of ISN on the education of deaf/hard of hearing children in Nicaragua. The purpose of this comparative exploratory field study was to evaluate preprimer and primer Dolch sight words and sign language frequency between English, American Sign Language (ASL), Spanish and Idioma de Señas de Nicaragua (ISN). The research focused on word and sign frequencies between the languages and used Stokoe's parameters of location, hand shape, and movement to study the phonology of the signs. ISN has been closely evaluated over the first few decades of its existence. This study is meant to serve as a foundation for examining the use of ISN as a means toward achieving literacy for deaf/hard of hearing students in Nicaragua.

The rate of deafness in Nicaragua is much higher than in the United States (Polich, 2005). Unsanitary hospitals in Nicaragua are a leading factor in babies contracting sepsis requiring a powerful dose of the antibiotic gentamicin. Additional risk factors in rural Nicaragua include maternal infection during pregnancy, poor perinatal health care, prematurity, and gentamicin exposure. Heightened blood levels of gentamicin are associated with increased incidences of severe/profound deafness, vision problems and/or balance difficulties and with unrestricted access to the drug, there are higher numbers of individuals with hearing loss in Nicaragua (Polich, 2005). Despite the elevated rate of deafness in Nicaragua, Idioma de Señas de Nicaragua (ISN) is only now an evolving sign language that is less than 30-years old. To date, most research has focused on proving that ISN is indeed a language (Senghas & Coppola, 2001).

Phonology of American Sign Language

William Stokoe (1960) described phonology in sign language as a finite set of discrete meaningless, contrastive elements that combine to form words. Since 1960, linguists have been studying signed languages around the world. Studying signed languages has inherent difficulties due to the lack of native signers and the influence of the spoken language on the sign language. Even now, in Nicaragua and Israeli Bedouin communities, linguists are gathering as much data as possible while the sign languages are relatively young and pure (Fox, 2007). Current research shows that signed languages are more similar to spoken languages in how the brain processes the information and in the basic properties of any language (Campbell, MacSweeney, & Waters, 2007). As a result, many schools, universities, and states now recognize American Sign Language as a distinct, world language.

Since Stokoe's pioneering research, additional phonological theories for sign language have been proposed such as, The Hold-Movement Model by Liddell, Visual Phonology by Uyechi, Dependency Phonology by van der Hulst, Prosodic by Brentari, and Hand Tier by Sandler and Lillo-Martin (Brentari, 1998; Sandler, 2012; Valli, Lucas & Mulrooney, 2011). In 1978, Stokoe published a revised edition of his work to include references to the advances in sign language research and psycholinguistics. For this study however, Stokoe's original phonological parameters using the current terminologies of hand shape, location, and movement were utilized to begin the study of the new Nicaraguan Sign Language. While sign language does not have the same long documented history as spoken languages, many similarities exist. Sign languages have been shown to process in the same part of the brain as spoken language and that both the right and left-brain are used (Campbell, et al., 2007). Sign languages have unique phonology, morphology and syntax (Sandler, 2012). Some of the similarities to spoken languages include *tips of the fingers* as compared to *slips of the tongue* meaning that mistakes are

made phonologically (Thompson, Emmorey, & Gollan, 2005). Sign languages are natural and will develop within a community of individuals desiring to communicate. When Leuninger, Hohenberger, & Waleschkowski (2007) studied German Sign Language, it was documented to be the phonological features that accounted for the *slips* and these slips had a tendency to happen mostly with proper names with partial access to phonology. It has been concluded that, *Signs appear to be stored as a set of phonological attributes* (Thompson, Emmorey & Gollan, 2005, p. 859).

While spoken words are linear in nature, signs are organized in bundles. The English words *three* and *there* have the same five letters. However, by rearranging two letters, there are different words with different meanings; it is linear. In ASL, the *phonemes* of hand shape, location, and movement can be expressed at the same time. Because phonological parameters are expressed simultaneously in a sign, one change in one phoneme changes the meaning completely. For example, the hand shape (open 5) and movement (touch) for signs mother and father are the same but the location changes. In ASL, female signs are produced near the chin while male signs are made near the forehead. While these signs are produced with one hand, Fox reports that *...about 60% of the signs of American Sign Language are made with both hands* (Fox, 2007, p. 102)

Sign languages can carry more information in larger chunks than in spoken language and users of ASL can think about the same concepts, beliefs, and doubts as those using spoken languages (Hohenberger, 2008). Yet there are differences in the modalities. The first most notable one is that spoken languages use only the tongue as an articulator whereas sign languages have two articulators: the right hand and the left hand. Such handedness is a phonological feature that is not found in any spoken language. The second most notable difference is the use of facial expressions and body language as a function of grammar (Sandler & Lillo-Martin, 2006). In ASL, different facial features discriminate between a topical sentence and a question for example. These differences carry morphological information simultaneously with the phonological means (Hohenberger, 2008).

Nicaraguan Sign Language

After the Nicaraguan Revolution in 1979, Idioma de Señas de Nicaragua slowly emerged and has been documented since 1986 (Polich, 2005). Linguists have flocked to Nicaragua to study a new language, especially because it was the children who were creating the language (Senghas & Coppola, 2001). As the students gathered, a pidgin language soon developed and was known as Lenguaje de Señas de Nicaragua. When the second generation of students came to school, Idioma de Señas de Nicaragua (ISN) developed as a language that had structure and complexity. The linguistic complexity of a language develops over time as it interacts with and is used within the community (Meir, Sandler, Padden & Aronoff, 2003; Senghas & Coppola, 2001). Beginning with only gestures and home signs, a complete language had evolved before the existence of a Deaf community (Kegl, 2002; Polich, 2005).

The national Nicaraguan Association of the Deaf, Asociación Nacional de Sordos De Nicaragua (ANSNIC), empowers the Deaf to be proactive while at the same time protecting the new language of ISN. Through the association, deaf people are socializing with each other at a much younger age and are able to stay in contact for a longer time. With ISN as a mode of communication, ANSNIC is able to provide educational and employment possibilities, in particular training people to be sign language interpreters.

Language is perhaps the greatest invention of all time but language does not exist in a vacuum. The alphabet of ISN is based on the one-handed alphabet used in the United States, Canada, and Costa Rica. Gloria Campos, a Nicaraguan woman, spent two years (1972 to 1974) working at St. Joseph's School for the Deaf in New York and returned to Costa Rica with the finger spelling alphabet she learned in the United States. At the same time, Gallaudet College established the program Regional de Recursos Para la Sordera (Regional Resource Program on Deafness) at the University of Costa Rica in 1974. Other global influences on ISN are evident as well. There is a strong Swedish influence on ISN as a result of the Swedish Federation of the Deaf providing funds to establish a house for the ANSNIC (Senghas, R.J., 2005). Judy Kegl, a linguist from the University of Southern Maine who has been researching ISN since 1986, wrote the introduction to the ISN dictionary project. The global influences on ISN are evident and ANSNIC is making every effort to preserve the integrity of the original signs and grammar. When visiting with ANSNIC members, there is a collective concern that ASL will usurp ISN and that the government will mandate a sign system that follows spoken Spanish (personal communication, 2008). Even though the alphabet is based on ASL, there are differences unique to the community. Because the ASL sign *--t--* is actually an offensive gesture in Nicaragua, the ISN *--t--* has been modified. The *--s--* is shaken and the *--x--* moves downward at an angle. In addition, signs for *--ll*, *ch*, *ñ--* have been included to correspond with Spanish (ANSNIC, 1997).

Print Literacy

Much of early sign language development is noun based, but in order to make a link to print literacy, the high frequency sight words must be learned. Dolch words are primarily function words that can be learned quickly through repetition and links to visual elements in order to commit the words to memory (Dolch, 1936; Ehri, 1995). Because one sign may represent many ideas or concepts, there is not a one word to one sign relationship in either ASL or ISN. The English Dolch word *make* can mean to build something, to earn money, to clean your bed, to develop or to create something as shown in Figure 1. The Spanish Dolch word *hacer* has just one sign in ISN as seen in Figure 2. The Fairview Learning Program incorporates these features by adapting the well-established Dolch words and adapting them to also include the varying sign possibilities in ASL (Schimmel, Edwards, & Prickett, 1999). By using the components of Fairview in schools, many deaf/hard of hearing children are becoming bilingual in both ASL and English.

Purpose of Study

The purpose of the study was to evaluate preprimer and primer Dolch sight words and sign language frequency and phonology--location, hand shape, and movement--used to support deaf/hard of hearing students' literacy development in Idioma de Señas de Nicaragua compared to American Sign Language.

Methodology

This study examined the first two, preprimer (40 words) and primer (49 words) of the five Dolch word lists using the Fairview model in English and ASL which will lay the foundation for the creation of a similar teaching methodology in Spanish and Idioma de Señas de Nicaragua (ISN). A descriptive, correlational design was used in this study in order to examine the relations among a number of variables. The preprimer and primer Dolch words were used in order to analyze the phonology of the Nicaraguan Signs. Location, hand shape and movement were compared between an established language, American Sign Language with a relatively new sign language, Idioma de Señas de Nicaragua (ISN).

While Stokoe's original model does not identify all phonologic components, especially for compound signs or signs with multiple movements, it is the original framework for the phonology of signs. Also, non-manual elements such as mouth movements or facial expressions were not included in Stokoe's initial model, but more recent research has confirmed these elements as essential to the sign itself as well as distinguishing a noun from a verb. For this study, Stokoe's initial model was used to establish a foundation upon which to build a literacy development curriculum and research based methodology for teaching the deaf/hard of hearing students in Nicaragua.

Sign Language Data Collection

The translation of the Dolch words was completed over a 12-month period including two ten day research trips to Nicaragua. A commercial package, *Picture Me Reading Spanish Sight Words* was purchased to ensure accuracy (Isaacson, 2003). The creators of the program used two translators: one who was a native English speaker and one who was a native Spanish speaker to ensure inter-interpreter reliability. To verify the translations of Spanish-to-English and English-to-Spanish words used throughout this study was also interpreted using Nicaraguan translators. In addition, one translator acted as the Spanish-to-English, English-to-Spanish, and ISN language interpreter. Furthermore, a deaf adult in the Nicaraguan deaf community, who is widely respected by the Asociación Nacional de Sordos de Nicaragua, translated the Spanish Dolch words into ISN.

Limitations

The researcher holds current national certification in interpreting and transliterating from the United States Registry of Interpreters for the Deaf and is a licensed teacher of the deaf/hard of hearing who has been trained in the Fairview Learning System (Ausbrooks-Rusher, Schimmel, & Edwards, 2012). However, the researcher completed this research relying on the Spanish interpreters and language guides. This exploratory field study was based on the availability of formal Nicaraguan signs that are recognized and used by the deaf community. In addition, the signs could change rapidly, with more signs being added and others diminishing in popular deaf community usage. Another limitation is evaluating the original phonemes of location, hand shape, and movement but not the more recently added phonemes of non-manual markers and palm orientation.

Results

As shown in Table 1, the results of the ASL and ISN sign ratios shows an imbalance of signs to words. There are significantly more signs in ASL for the Dolch words than in ISN, $X^2 = 10.17$, $p < .01$ for preprimer and $X^2 = 25.38$, $p < .01$ for primer. This is not surprising because ASL is nearly 200 years old and ISN is in its early stages of development. Yet, this study finds that ISN is a young, vibrant, and organic language with potential for enlarging the vocabulary and expanding the phonemic features of existing signs.

Table 1. Preprimer and Primer American Sign Language Dolch Word and Sign Frequencies Compared to Idioma de Señas de Nicaragua Dolch Word and Sign Frequencies

	American Sign Language (ASL)	Idioma de Señas de Nicaragua (ISN)
Preprimer Dolch		
Words	40	51
Signs	95	51
Primer Dolch		
Words	49	76
Signs	113	51

In this study the linguistic property of phonemes has been analyzed in relation to ASL and ISN using the first two levels of Dolch words. Because ISN is in its infancy, Stokoe's parameters were used because his was the first model to look at sign language phonology. Furthermore, phonological elements do not convey meaning on their own, but when combined with other elements they carry meaning. By studying the smallest parts of the language, it is possible to see how they form words, phrases, and sentences used in signed discourse (Brentari, 1998, Stokoe, 1991).

Location

While there are fewer signs for Dolch words in ISN overall, there was a high correlation between the location phoneme in ASL and the location phoneme in ISN for both preprimer ($r^2 = .97$) and primer ($r^2 = .94$). Following Stokoe's (1960) original work in ASL phonology, there are only 12 locations from which to code the signs. As shown in Table 2, the neutral location holds the most signs, which is that space ahead of the signer's body.

Table 2. Preprimer and Primer American Sign Language Location Compared to Pre-Primer and Primer Idioma de Señas de Nicaragua Location

Preprimer	Primer ASL	ISN	ASL
neutral location	65	43	82
face, or whole head	8	0	2
forehead, brow, or upper face	2	0	1
eyes, nose, or mid face	5	3	2
lips, chin, or lower face	4	3	15
cheek, temple, ear, or side face	0	0	1
Neck	0	0	0
shoulders, chest, trunk	9	10	8
upper arm	0	0	0
elbow, forearm	0	0	1
inside of wrist	0	0	0
back of wrist	0	0	0

Hand shapes

Stokoe did not identify every possible shape a hand could physically form, but instead established different categories that might include more than one hand shape. For the compact, fist hand shape, the sign might actually be an *-a-*, *--s-*, *--t-*, or *--l-*, but all of those hand shapes would be included in the A category. There are 19 categories for hand shapes under Stokoe's system. Individual signs could be further analyzed by individual hand shape or finger placement, but for Stokoe's groundbreaking work the general categories were sufficient. As seen in Table 3, the most frequent hand shapes used in both ASL and ISN are the fist (A), flat hand (B), spread hand (5) and pointing finger (1). There was a moderate correlation between the location phoneme in ASL and the location phoneme in ISN for both preprimer ($r^2 = .56$) and primer ($r^2 = .68$).

Movement

While studying other languages, Stokoe (1960) realized that there were limits to the kinds of letter combinations that could be used to form words. Stokoe applied that same idea to sign language when he identified 24 movements. The five general categories are vertical, sideways, horizontal, rotary, and interaction. Within each category are sub categories giving more specific movements. For this study, the main movements of individual signs were analyzed and the relationship between ASL and ISN was found to be moderately high. Table 4

compares the movement of ASL and ISN. There was a moderate correlation between the location phoneme in ASL and the location phoneme in ISN for both preprimer ($r^2 = .59$) and primer ($r^2 = .60$).

Table 3. Preprimer and Primer American Sign Language Hand Shape Compared to Pre-Primer and Primer Idioma de Señas de Nicaragua Handshape

Preprimer	Primer		
	ASL	ISN	ASL
fist (as ASL 'a', 's', or 't')	15	11	33
flat hand (as ASL 'b' or '4')	31	18	44
spread hand (as ASL '5')	17	5	12
cupped hand (as ASL 'c', or more open)	6	0	3
claw hand (as ASL 'e', or more clawlike)	1	0	9
okay hand (as ASL 'f'; thumb & index touch or cross)	1	1	1
pointing hand (as ASL 'g' 'd' or 'l')	26	22	29
index + middle fingers together (as ASL 'h,' 'n' or 'u')	5	3	10
pinkie (as ASL 'i')	2	0	3
thumb touches middle finger of V (as ASL 'k' or 'p')	0	3	0
angle hand, thumb + index (as ASL 'l')	2	4	8
vehicle classifier hand, thumb + index + middle fingers (as ASL '3')	24	0	1
tapered hand, fingers curved over thumb (as ASL 'o' or 'm')	4	2	20
crossed fingers (as ASL 'r')	0	3	1
spread index + middle fingers (as ASL 'v')	5	3	3
thumb touches pinkie (as ASL 'w')	0	1	3
hook (as ASL 'x')	5	2	6
horns (as ASL 'y', or as index + pinkie)	3	3	9
bent middle finger; may touch thumb (as ASL '8')	4	0	2

Discussion

Language is constantly in a state of flux and continues to evolve within communities, cross culturally and over time. Many tribal languages have become extinct; people no longer use the words *thou*, *whom*, or *shall* in common vernacular and with new technological communication devices, texting abbreviations have infiltrated written work. This may be viewed as either an erosion or destruction of the language, or it may be viewed as part of the necessary journey in a changing world.

The study of ISN is intriguing to linguists as they examine the creation of a language while at the same time document its growth and development. Linguists have been able to study ISN's modest beginnings, and to witness the deep desire for people to communicate and the amazing power of the brain to create order out of very basic raw materials. Much of the research has been spent verifying ISN as a language syntactically such as the use of verbs and classifiers (Kegl, 2002; Senghas, Senghas & Pyers, 2005).

Research has shown a positive correlation between ASL skills and reading skills among deaf/hard of hearing children and adults (Chamberlain & Mayberry, 2008.) Beginning with phonemic awareness in sign language, children are able to understand how a word/sign is produced and formed in a separate manner than its intended meaning. McQuarrie and Abbott (2008) suggested English proficiency was directly correlated to a higher level of ASL and that the better an individual is at ASL Phonemic Awareness, the better that individual was with English skills.

There is limited research on phonemic awareness in American Sign Language specifically. However, Haptonstall-Nykaza & Schick found that d/hh children were more effective at acquiring new vocabulary when a word in print was paired with a sign and lexicalized finger spelling compared to just the printed word and a sign (2008). In one study, teachers of the deaf/hard of hearing described instructional strategies in which they use ASL phonemic awareness because they see it crucial in fostering English development of the students. (Crume, 2012). By emphasizing the sign structure of ASL, students are able to map their knowledge of signs and sign structure onto the structure of print and are then able to be more flexible in their effective communication.

Table 4. Preprimer and Primer American Sign Language Movement Compared to Pre-Primer and Primer Idioma de Señas de Nicaragua Movement

Preprimer	Primer		
	ASL	ISN	ASL
moving upward	5	4	0
moving downward	14	5	7
moving up and down	0	2	1
to the dominant side	3	6	18
to the center or non-dominant side	1	0	1
side to side	3	3	1
toward signer	5	1	9
away from signer	24	11	26
to and fro	5	3	7
supinate (turn palm up)	0	0	3
pronate (turn palm down)	0	0	2
twist wrist back & forth	5	1	1
nod hand, bend wrist	3	2	4
open up	1	0	1
close	2	1	7
wriggle fingers (symbol looks like a cursive <i>e</i>)	0	0	1
circle (symbol is a spiral)	6	2	3
approach, move together	5	4	2
contact, touch	7	11	9
link, grasp	0	0	0
Cross	2	1	0
Enter	1	1	2
Separate	1	1	3
exchange positions	0	0	1

The signs for this study were analyzed using Stokoe's parameters for sign language phonology with location having the highest correlation between ASL and ISN. This corresponds with a study by Siedlecki & Bonvillian (1993) that studied sign language acquisition for signing children and found sign locations being more accurately produced when compared to hand shape and movement. Therefore the earliest acquired sign locations are neutral space, trunk, chin, and forehead, which indicate signs in these locations are easier to produce. These locations are important to this study, as location in a sign is crucial to the formation of the other phonological components of a sign.

Boyes Braem's (1998) study identified the --5--, --1--, --b--, and --a-- hand shapes as being acquired first. This corresponds with the results of this study. Because these hand shapes are acquired first, they are also produced more frequently and with fewer errors. The ISN --ch-- hand shape was included in the *H* hand shape category for this study. In this study, any hand shape made during a sign was included in the analysis. Certain hand shapes are used for descriptions of size and shape, which provide the foundation for developing classifiers. When combined with movement and location, these hand shapes begin to carry meaning and move beyond the phonological category. Just as Stokoe's first dictionary of ASL--organized by the hand shapes not by English words--the ISN dictionary is organized by the hand shapes (ANSNIC, 1997).

In the current study the most frequently documented movement was moving away from the signer. While differences in movement frequency exist, the possible movements themselves are significantly related between ASL and ISN. The types of movements a child can produce are largely influenced by gross and fine motor development and the Dolch words are less complex in both the print and the signed forms. In a study of 52 deaf adults using British Sign Language, the major errors happened in the movement category in the subcategories of size and speed (Orfanidou, Adam, McQueen & Morgan, 2009).

There is agreement that ASL is a recognized language based on cultural norms, completeness, and universality of form and function. In the United States, deaf/hard of hearing individuals enjoy the availability of a free prekindergarten through 12th-grade public education, access to trained teachers of the deaf and general human acceptance. Few of these contextual conditions form the realities of the deaf/hard of hearing individuals and

children who are living and growing ISN. By comparison, ISN must be considered a language developing in a country that has neither solidified its deaf communities nor sought to adequately embrace the potential of its deaf individuals.

With significantly fewer Nicaraguan signs for the first two levels of Dolch sight words, there are significantly fewer ways to express concepts in ISN. When studying newer sign languages, the more iconic signs have been seen to develop in the earlier stages. Spatial verbs develop earlier because they are more iconic but using the grammar of space for more complexities in verb agreement gradually emerges over time (Padden, Meir, Aronoff & Sandler, 2010). Therefore, the development of the sign language must be understood as a social system that requires inter-generational interaction within a community of users.

ISN has been closely evaluated over the first few decades of its existence. This study is meant to serve as a foundation for examining the use of ISN as a means toward achieving literacy for deaf/hard of hearing students in Nicaragua. In Nicaragua, medical approaches to deafness will not suffice. Education in its most basic form will be the path to success. However, in order to impact change in education, the history of political and social upheaval, chronic corruption, and natural disasters of Nicaragua must be considered. The people making educational decisions in Nicaragua have been shaped and formed by decades of such institutional instability. Therefore, these individuals have their beliefs based on a history of conflict and not for reforming schools for the future.

Conclusion

This study examined the phonemic elements of individual signs in ISN. Further research will need to examine the additional influences on the development of the signs as the community of users expands, as contact among the users increases, and as ISN is used more for educational purposes. Future research may also look at the iconicity of Nicaraguan signs compared to ASL. Comparing iconicity for the Dolch words, which do not always carry meaning with nouns and verbs in ISN, is one anticipated study.=

While this study examined the first two levels of Dolch words and not general discourse, future research will need to examine the hand shapes and how they are used to develop classifiers as ISN becomes increasingly robust over time. With this study as the foundation, future research will continue to cultivate the budding of new opportunities for the deaf in Nicaragua.

References

- Asociacion Nacional de Sordos de Nicaragua (ANSNIC). (1997). *Diccionario del Idioma de Sennas de Nicaragua*. Managua, Nicaragua: Copy Fast.
- Ausbrooks-Rusher, M., Schimmel, C., & Edwards, S. (2012). Utilizing Fairview as a bilingual response to intervention: Comprehensive curriculum review with supporting data. *Theory and practice in language studies*, 2(7), 1317-1329.
- Boyes Braem, P. (1998). Acquisition of the handshapes in American Sign Language. In V. Volterra and C.J. Erting (Eds.), *From gesture to language in hearing and deaf children* (pp.107-128). Washington, DC: Gallaudet University Press.
- Brentari, D. (1998). *A prosodic model of sign language phonology*. Cambridge, MA: MIT Press, 1998.
- Campbell, R., MacSweeney, M. & Waters, D. (2007). Sign language and the brain: A review. *Journal of Deaf Studies and Deaf Education* 13(1), 3-20.
- Chamberlain, C., Morford, J., & Mayberry, R. I. (2000). *Language acquisition by eye*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Crume, P. (2012). *Teachers' perceptions of the use of ASL phonological instruction to develop ASL and English literacy in an ASL/English bilingual preschool*. (Doctoral Dissertation, University of Illinois.)
- Dolch, E.W. (1936). A basic sight vocabulary. *Elementary School Journal* 36(6), 456-460.
- Ehri, L.C. (1995). Phases of development in learning to read words by sight. *Journal of Research in Reading* 18(2), 116-125.
- Fox, M. (2007). *Talking hands: What sign language reveals about the mind*. New York, NY: Simon & Schuster.
- Haptonstall-Nykaza, T.S. & Schick, B. (2007). The transition from fingerspelling to English print: Facilitating English decoding. *Journal of Deaf Studies and Deaf Education* 12(2): 172-183.
- Hohenberger, A. (2008). The word in sign language: Empirical evidence and theoretical controversies. *Linguistics* 46(2), 249-308.
- Isaacson, M. (2003). *Picture me reading: Spanish sight words*. Spring Valley, CA.
- Kegl, J. (2002). Language emergence in a language-ready brain: Acquisition issues. In G. Morgan & B. Woll (Eds.), *Directions in sign language acquisition* (pp. 207-254). Philadelphia, PA: John Benjamins North America.

- Leuninger, H., Hohenberger, A., & Waleschkowski, E. (2007). Sign language: Typology vs. modality. *MIT Working Papers in Linguistics* 53, 317-345.
- McQuarrie, L. & Abbott, M. (2008, June). *The relationship between sign language phonological knowledge and word recognition skills in bilingual deaf children*. Presented at the 2nd International Conference on Special Education, Marmaris, Mugla, Turkey.
- Meir, Irit, Sandler, W., Padden, C., & Aronoff, M. (2003). Emerging sign languages. In M. Marschark & P.E. Spencer (Eds.), *The Oxford handbook of deaf studies, language, and education*. New York: Oxford University Press.
- Orfanidou E, Adam R, McQueen JM, Morgan G. (2009). Making sense of nonsense in British Sign Language (BSL): The contribution of different phonological parameters to sign recognition. *Memory and Cognition* 37(3):302-15.
- Padden, C., Meir, I., Aronoff, M., & Sandler, W. (2010). The grammar of space in two new sign languages. *Sign Languages: A Cambridge Language Survey*. Cambridge University Press, Cambridge, UK, 570-592.
- Polich, L. (2005). *The emergence of the deaf community in Nicaragua: With sign language you can learn so much*. Washington, DC: Gallaudet University Press.
- Sandler, W. (2012). The phonological organization of sign languages. *Language and Linguistics Compass*, 6(3), 162-182.
- Sandler, W., & Lillo-Martin, D. (2006). *Sign language and linguistic universals*. Cambridge, England: Cambridge University Press.
- Schimmel, C., Edwards, S.G., & Prickett, H.T. (1999). Reading?...pah! (I got it!). *American Annals of the Deaf* 144(4), 298-308.
- Senghas, A., & Coppola, M. (2001). Children creating language: How Nicaraguan Sign Language acquired a spatial grammar. *Psychological Science* 12(4), 323-328.
- Senghas, R.J., Senghas, A. & Pyers, J.E. (2005). The emergence of Nicaraguan Sign Language: Questions of development, acquisition, and evolution. In S.T. Parker, J. Langer, & C. Milbrath (Eds.), *Biology and knowledge revisited: From neurogenesis to psychogenesis* (pp. 287-306). Mahway, NJ: Lawrence Erlbaum Associates.
- Siedlecki, T., & Bonvillian, J.D. (1993). Location, handshape & movement: Young children's acquisition of the formational aspects of American Sign Language. *Sign Language Studies* 78, 31-52.
- Stokoe, W. (1960). *Sign language structures*. Silver Spring, MD: Linstock Press.
- Stokoe, W.C. (1991). Semantic phonology. *Sign Language Studies* 71, 99-106.
- Thompson, R., Emmorey, K. & Gollan, T.H. (2005). Tips of the fingers' experiences by deaf signers: Insights into the organization of a sign-based lexicon. *Psychological Science* 16(11), 856-860.
- Valli, C., Lucas, D., & Mulrooney, K. (2011). *Linguistics of American Sign Language: An introduction*. Washington, DC: Clerc Books, Gallaudet University Press.

**EXPLORING THE NATURE OF EFFECTIVE WORD STUDY INSTRUCTION
FOR STRUGGLING READERS: PRACTICAL APPLICATIONS FOR
BROADER PERSPECTIVE OF THE SIMPLE VIEW OF READING**

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Effective reading instruction plays an important role in improving students' outcomes in reading achievement. This paper is designed to serve as a tutorial for translating the simple view of reading model into classroom practices for improving early reading instruction. This model is used as a framework for facilitating teachers' word study knowledge for instructing both typically developing readers and struggling readers. Scientific studies on the developmental relationships between component reading skills and reading achievement and classroom strategies to facilitate effective word study instruction are discussed in the context of this model.

Student reading achievement is an issue of national concern (National Reading Panel, 2000; National Education Association, 2002). According to the results of the National Assessment of Educational Progress (NAEP) reading assessment, about two-thirds (67%) of all fourth-graders are currently reading at or below basic level, and only one-third (34%) are reading at the proficient or advanced level (National Center for Educational Statistics, NCES, 2011). Compared to scores in previous assessment years, there have been no significant changes in the percentage of fourth-graders performing at or below the basic level in reading, indicating that an overwhelming number of students continue to have reading difficulties in our nation (NCES, 2011). These statistics have been behind educational reforms that encourage educators and researchers to develop and refine ways to improve reading outcomes for struggling readers.

The No Child Left Behind Act (NCLB, 2002) and the Individuals with Disabilities Education Improvement Act (IDEIA, 2004) are examples of two key reform efforts designed to improve the reading achievement of students in the United States. An important tenet of NCLB is that local education agencies (LEAs) and school districts must provide all of their students with scientifically research-based instructional methods to ensure that all students achieve to a high standard (NCLB, 2002). Likewise, IDEIA (2004) requires that practitioners implement scientifically based instructional practices using the skills and knowledge necessary to improve the academic achievement and functional performance of children with disabilities to the maximum extent possible. Therefore, identifying effective instructional practices and encouraging educators to use those practices in their classrooms are important for improving students' reading achievement (Odom et al., 2005).

After a comprehensive review of experimental and quasi-experimental studies of early reading skills and their relationship to reading success, the National Reading Panel (NRP, 2000) underscored the five essential reading component skills acquired between kindergarten and third grade necessary for skilled reading. These skills include phonemic awareness, phonics, vocabulary skills, reading fluency, and reading comprehension (NRP, 2000). Furthermore, the Panel emphasized the necessity of children acquiring an explicit understanding of the segmental nature of language at the early stages of reading acquisition; how sounds (phonemes) are represented by letters (graphemes) and how graphemes represent phonemes. This concept, often referred to as the alphabetic principle, provides the foundational knowledge for learning phonics, acquiring rapid word recognition, and later reading comprehension and fluency (Ehri, 1992; Ehri et al., 2001).

A promising approach for identifying effective reading instruction in special education is to focus on specific areas of reading lessons, such as word study. Word study focuses on supporting students' abilities to understand patterns in words and decode words based on letter-sound correspondence. In addition to sounding out words,

word study also involves associating the pronunciation of words with the meaning of the word (Hoover & Gough, 2000). Therefore, word study contributes to reading ability by developing decoding skills that support the comprehension component of reading (Hoover & Gough, 2000). More specifically, phonologically-based skills, such as phonemic awareness and phonics, represent the word decoding element of reading. Together, decoding and comprehension are believed to lead to reading achievement. Phonological awareness is a well-documented predictor of reading skills among elementary school students (Torgesen et al., 1999; Ehri et al., 2001). Strong decoding skills are especially important when children are in the *learning to read* stage which precedes the *reading to learn* stage in later years of childhood (Hogan, Catts, & Little, 2005; Scarborough, 1998). Therefore, word study, with a focus on instruction related to decoding, has been selected as the focal area for this paper since decoding is a primary problem that elementary students with reading disabilities face, and that affects their reading achievement later in adolescence and adulthood (Ehri et al., 2001; Miller, 2011). This idea has been theoretically driven. That is, since it has been posited that the simple view of reading provides more practical implications for assessing and teaching reading skills (Hoover & Gough, 1990; Rover & Scott, 2006), the meaning of word study and its specific constructs can be also examined through the simple view of reading. In other words, four components of early reading (i.e., phonemic awareness, phonics, vocabulary, and spelling) can be interpreted as resulting from two distinct functions, decoding and linguistic comprehension skills. In this sense, I discuss the simple view of reading and apply the simple view in order to define decoding skill as a core reading component. Furthermore, relationships between the core components areas in the early grades and later reading achievement will be addressed with regard to the simple view of reading and other studies related to early reading predictors. Scientific studies that support the simple view of reading will be discussed to frame developmental relationships between specific core reading skills and reading achievement, as well as effective instructional practices for word study.

The Simple View of Reading and Its Application to Word Study

Hoover and Gough (1990) used two frameworks to describe the process of reading. The *complex view* of reading presents reading as a product of multiple linguistic and cognitive processes (e.g., lexical, structural and discourse knowledge, naming speed, working memory etc.) needed to translate spoken language into written language. In contrast, the *simple view* of reading characterizes reading as a function of two distinct domains, decoding and comprehension (Gough & Tunmer, 1986), in which comprehension refers to the ability to interpret spoken language (Catts & Kamhi, 2005). In order to illustrate this *simple* perspective on the collaborative relationship between decoding (D) and linguistic comprehension (L) in the attainment of reading achievement (R), Hoover and Gough (1990) developed the formula, $R = D \times L$, in which each ability is represented as the extreme skill on a continuum ranging from 0 (nullity) to 1 (perfection). As noted by Lombardino (2012), this model's elegance lies in its identification of the two core variables, decoding and linguistic comprehension, upon which reading an alphabetic language is based and its allowance for dissociations between abilities represented in these core components of reading. Hence, this model allows for identifying the strengths and/or weaknesses within these two linguistic components of skills, *decoding*, a lower level phonological skill needed to translate letters into speech sounds and in *comprehension*, a higher level semantic skill needed to understand the meanings of words and the interactions between the meanings of words and the syntactic and discourse structures in which they are embedded in both spoken language and in written language.

This simple view of reading explicitly targets two knowledge domains, phonics and vocabulary, that fall under the rubric of *word study* in teacher education. While not stated explicitly in the model, two other linguistic domains of knowledge, morphology and orthography, are inextricably tied to both phonological and semantic skills in spoken and written language and must be viewed as *part and parcel* of the components of the simple view of reading model.

Thus, this simple model, when viewed from a deeper perspective has practical implications for teachers' use of assessment and instructional strategies (Hoover & Gough, 1990; Roberts & Scott, 2006) with struggling readers in the classroom and is supported by a large body of scientific data (Snow, Griffin, & Burns, 1998). In their longitudinal study of 626 children from preschool through 4th grade, Storch and Whitehurst (2002) identified two categories of reading skills consistent with simple view of reading, code-related and oral language component skills. Code-related skills include phonological awareness, letter-sound correspondence, and print knowledge. Because these skills are closely associated with the phonological knowledge needed to segment words into phonemes and map graphemes and phonemes onto each other, they are inherent to the decoding construct in the simple view equation for reading. Conversely, oral language component skills such as vocabulary, morphology, and even pragmatics, are meaning-based higher level language skills that fall under the comprehension construct of the simple view equation. In table 1, an adapted version of the simple view model, is shown as a framework for situating the construct of *word study*.

Table 1. Simple View of Reading Model for Word Study Constructs

Decoding	x	Comprehension	=	Reading Achievement
<ul style="list-style-type: none"> • Knowledge Phonological Awareness • Knowledge of Phonics for Reading • Knowledge of Phonics for Spelling 		<ul style="list-style-type: none"> • Vocabulary • Knowledge of Morphological Structures • World Knowledge and Inferential Thinking 		Skilled Reading

Within the *word study* framework, phonemic awareness and phonics represent the phonologically-based skills that support the word decoding element of the simple view model while lexically-based skills, such as vocabulary, represent the linguistic comprehension element of the model. While the simple view of reading does not address spelling skills specifically, the necessity of using both code-based graphemic units to represent the phonemic units in words (i.e., letters such as *s* or *th*) and morphemic units (i.e., such as base words, prefixes, and suffixes) to represent the meaning-based units within words, spelling is linked inextricably to both the decoding and comprehension components of reading (Roberts & Scott, 2006).

Early Reading Predictors for Reading Achievement

Numerous studies have examined longitudinal data on relationships between component skills of reading (e.g., phonics, vocabulary) and reading achievement (e.g., Anthony & Lonigan, 2004; Hogan, Catts, & Little, 2005; Hoover & Gough, 1990; Storch & Whitehurst, 2002; Wagner et al., 1997). Data of this nature allows for the identification of reading skills that predict reading achievement at different points in time. Phonological awareness is a strong and significant predictor of word reading skills in elementary children until around second grade (Torgesen et al., 1999; Ehri, 1992; Ehri et al., 2001; Storch & Whitehurst, 2002). Its predictive value is diminished after this period when children are transitioning from the stage of *learning to read* into the stage of *reading to learn* (Hogan, Catts, & Little, 2005; Scarborough, 1998). For example, in a five-year longitudinal study of 216 children, Wagner and his colleagues (1997) assessed phonological awareness, word reading, and vocabulary skills from kindergarten through 4th grade. While individual differences in phonological awareness and vocabulary predicted later word reading skill, the amount of unique variance explained by phonological awareness in predicting later word reading skills declined from 23% in kindergarten to second grade, 8% from first to third grade, and 4% from second to fourth grade. Additionally, in a longitudinal study beginning in preschool, Storch and Whitehurst (2002) examined children's knowledge in two domains, code-related skills (e.g., print concepts and phonological awareness) and oral language skills (e.g., receptive vocabulary, expressive vocabulary, and narrative recall) to determine which skills best predicted future reading achievement. Consistent with previous studies, the authors found a stronger relationship between the two domains during the preschool period than in the first and second grades, showing that the predictive strength of skills within these domains varies along a developmental continuum.

In summary, while phonological awareness plays an unequivocally critical role in reading development, the extent of its contribution to reading has been found to vary at different points during the acquisition of reading (Scarborough, 1998; Torgesen, et al., 1999). The following conclusions are well supported from numerous studies on predictive relationships between reading constructs (e.g., phonological awareness skill, word knowledge) and component reading skills (decoding, comprehension): (1) decoding and linguistic comprehension, as early reading predictors, are distinguishable from one another; (2) phonological awareness is a foundational skill for word recognition and word recognition is a foundational skill for reading comprehension; and (3) both decoding and comprehension skills are essential in the development of skilled reading.

Hence, the simple view of reading serves well as a heuristic for demonstrating the interactive relationships between decoding alphabetic symbols in print and comprehending language; the importance of making these connections in the early elementary grades is well supported in scientific literature.

Effective Word Study Instructions for Students with Reading Difficulties

Phonological Awareness Instruction

In response to the wealth of evidence on the critical role of phonological awareness during the early stages of literacy acquisition, O'Connor (2007) describes activities that teachers can use in the classroom to instruct students on how words can be segmented into smaller units – a necessary skill for learning to decode. These strategies include: (1) stretching words to segment and blend them (*Let's tap out the parts of this word o..pen*);

(2) isolating the first, middle, and ending phonemes (*What is the first sound you here in the word goat*; and (3) segmenting words into all of their phonemes (*Let's count the sounds in goat – g..o..t*).

Phonics/Decoding Instruction

Because decoding is the most essential skill for reading in an alphabetic language (Moats, 1995; 2000), teachers must understand the various ways in which phonemes are represented in print in order to teach students to decode well. As noted by Henry (2003) *print cannot be understood (comprehended) if it cannot be translated into language (decoded)* (p. 3). Numerous books (e.g., Bear, Invernizzi, Templeton, & Johnston, 2004; Ganske, 2000) and explicit phonics instructional programs (e.g., Carroll, Snowling, Hulme, & Stevenson, 2003; Share, 2008) are available to help guide teachers in choosing a developmental framework for teaching word decoding. Henry (2003) and Moats (2000) recommend the following scope and sequence for teaching phonics: (1) begin with single letters and check if the child knows the letter names and corresponding sounds of both consonants and vowels; (2) once students know the sounds of most of the consonants and vowels, begin teaching to letter combinations such as initial blends, consonant digraphs, consonant blends (e.g., st-, sm-, sl-, sp-, ch, -ink, -ank, -unk, etc.), and common morphemic patterns (e.g., plurals, -s, -es; regular past tense, -ed; present progressive, -ing, etc.); (3) continue with the three-letter blends (e.g., spr, str, spl, etc.); (4) introduce common syllable patterns (e.g., VC, CVC, CCVC, etc.), common suffixes and prefixes (e.g., re-, -or, -tion, etc.), corresponding rules, compound words, and possessives; (5) introduce Latin roots (e.g., form, port, rupt, tract, script, spec, stru, fac, tend, etc) and Greek combination forms (e.g., phon, photo, gram, auto, tele, logy, etc).

Spelling Instruction

Phonemic awareness and vocabulary knowledge contribute to skilled spelling ability (Biemiller, 2006). In a meta-analysis of the impact of systematic phonics instruction on reading, Ehri and colleagues (2001) showed that phonemic awareness skills also predict spelling ability. As part of teaching students the full range of skills associated with written language, teachers need to know how to use systematic approaches for teaching spelling. Student's spellings are an excellent index of their awareness of individual phonemes and knowledge of the alphabetic principle. For example, a student who spells *cat* as *kt* shows partial knowledge of how to use letters (phonemes) to represent the two consonants in this spoken word (i.e., /k/, /a/, /t/). An understanding of the basic principles of English orthography including the alphabetic principle (i.e., representing by letters and corresponding sounds), syllable patterns (i.e., CVC as in *stop*), and morphemic units (i.e., *photo graph er*) are needed to spell proficiently (Bear et al., 2004). Hence, students' spellings play an important role in establishing connections between the phonological (sound), orthographic (spelling), and semantic (meaning) dimensions of word-level reading.

Moats (1995) underscores the importance of teachers helping students make the *spelling-meaning connection* by making explicit that words that share orthographic patterns often have similar meanings (e.g., define-definition; transfer-transportation) or fill similar grammatical roles (e.g., present progressive tense as in eating, walking, talking). Due to the multiple ways in which spelling intersects with the phonological, orthographic, and semantic dimensions of written language (Treiman & Bourassa, 2000), teaching spelling should be viewed by teachers as an essential academic skill for facilitating written language knowledge across several core components of reading (i.e., decoding, word recognition, vocabulary, reading comprehension). Similar to phonics instruction, numerous sources are available to assist teachers in choosing a scope and sequence for teaching spelling (Bear et al., 2004). Henry (2003) lists six categories of spelling rules that all teachers should use in spelling instruction: (1) silent-e rule or magic-e-rule: the silent e makes the vowel long in one-syllable words (e.g., *kite, poke, and snake*); (2) doubling rule: the final letters f, l, s, and z are doubled following a single vowel in a one-syllable words (e.g., *glass, yell, staff, and buzz*); (3) soft c and g rule: the letter c makes the /s/ sound before e, i, and y (e.g., *cell* and *city*); the letter g makes the /j/ sound before e, i, and y (e.g., *gym* and *giant*); (4) -ck, -tch, and -dge rule: when a word ends in a /k/ sound after a short vowel, the digraph -ck is used to represent the /k/ sound after a short vowel at the end of one-syllable words (e.g., *clock, rock, back, and sack*); when a word ends in a /ch/ sound after a short vowel, the digraph -ch is used to represent the /ch/ sound after a short vowel at the end of one-syllable words (e.g., *catch, batch, and a suffix starting with a vowel as in bake-baking*; when a base word ends in a final e, the final -e is dropped before adding a suffix starting with a vowel (e.g., *use-usable, and sale-salable*); when a base word ends in one consonant after a short vowel, the final letter is doubled before adding a suffix starting with a vowel (e.g., *shop-shopped-shopping, overlap-overlapped-overlapping, sad, -saddened*. ; and (5) plurals: Most nouns become plural by adding -s at the end of a word (e.g., *play-plays*); for nouns ending in -s, -x, -z, -ch, and -sh the -es is used for the plural forms (e.g., *glass-glasses*); for nouns ending in y, the final y is changed to i and -es is added (e.g., *fly-flies* and *try-tries*); exceptions exist for some nouns ending in f or fe (e.g., *leaf-leaves* and *knife- knives*)

Vocabulary Instruction

Vocabulary knowledge is essential to fluent reading and comprehension (National Reading Panel, 2000; Snow, Griffin, & Burns, 1998). Word knowledge in the primary grades is predictive of reading comprehension in the middle grades and beyond (Cunningham & Stanovich, 1997; Scarborough, 1998). This link between knowledge of word meanings and later text-reading fluency and comprehension is of critical importance in the context of reading instruction. Studies of vocabulary knowledge show that spoken vocabulary size, as measured by standardized vocabulary tests, is more directly related to word decoding and word recognition, whereas depth of word knowledge, as measured by tasks that tap words multiple meanings is more directly related to reading comprehension (Tannenbaum, Torgesen, & Wagner, 2006; Ouellette, 2006).

Explicit and supplemental vocabulary instruction for students in the upper elementary grades, deepens struggling readers knowledge of words and improves their comprehension (Biemiller, 2006; NRP, 2000). Students' exposure to words in context does not insure that they will acquire functional knowledge of a word's meaning. Multiple exposures to a word are necessary for the majority of students to *learn* a new word well enough to use it correctly and to comprehend it accurately (Jenkins, Stein, & Wysocki, 1984; Swanborn & de Glopper, 1999). In reference to vocabulary instruction, McKeown and Beck (2004) underscored that any successful vocabulary program must provide both formal and informal opportunities to learn and use novel words in context. Their program, *Text Talk* (Beck & McKeown, 2001), is a method for read-alouds, provides teachers with a framework for helping students construct meanings for words used in their classroom texts.

Morphological Instruction

Morphological awareness is defined as *children's conscious awareness of the morphemic structure of words and their ability to reflect on and manipulate that structure* (Carlisle, 1995, p.194). Children who attain knowledge of morphemes and morphemic structures within words can distinguish and manipulate morphological structures within words (e.g., change a present tense verb, such as *runs* to its present progressive form, *running*) and well recognize grammatical changes in words (e.g., *hope* as a noun vs. *hopefully* as an adjective). In addition, increasing children's knowledge of how words can be divided into roots (e.g., *graph*) and stems (*graph ics*) can help them capture the meanings or syntactic roles of unknown words as well as attempt to spell unfamiliar words (Nagy & Scott, 2000). Ways in which morphological awareness facilitates the learning of component reading skills such as spelling, vocabulary and reading comprehension are well documented (e.g., Bowers, Kirby, & Deacon, 2010; Carlisle, 1995; 2000; Templeton, 2004) and suggest that morphological knowledge can be a predictor and facilitator of literacy skills. Thus, morphological instruction should be used to facilitate students' literacy proficiency, especially in the development of vocabulary knowledge for complex word multisyllabic words (Bowers et al., 2010; Carlisle, 1995). Furthermore, researchers suggest that morphological awareness instruction is beneficial to struggling readers because morphological knowledge (i.e., use of orthographic structures to support meaning such as adding *ed* to indicated past tense) and orthographic knowledge (i.e., use of printed forms to convey meanings (i.e., using *ly* on beautifully in the context of a *beautifully written story*) are complimentary processes (e. g., Casalis, Cole, & Sopo, 2004).

The National Institute for Literacy (2008) suggests four instructional strategies for teaching morphology; (1) teach different morpheme patterns and grammatical affixes (e.g., base words, prefixes, and suffixes, compound words, function words, Latin morphemes, Greek morphemes, inflections, and derivations); (2) use quick speed drills to develop automatic recognition of syllables and morphemes; (3) teach the six syllable types (i.e., closed, open, vowel-consonant, vowel pair, vowel-r, and consonant-le) to strengthen vocabulary; and (4) teach the meaning of morphemes across content-area classes as well as within the context of a sentence. Henry (2003) suggests that morpheme webs or matrices can be used as effective tools to help students analyze and organize compound words and affixes once they have knowledge about several roots. The center of the web or matrix can serve as a root word and the branches from the center can include various patterns of word changes for spellings and meanings such as inflectional and derivational morphemes.

Studies on Effective Word Study Instruction

The majority of research on effective word study instruction for students who struggle in reading has focused on identifying specific factors that account for effective intervention (e.g., Chard, Ketterlin-Geller, Baker, Doabler, & Apichatabutra, 2009; Torgesen, 2000). The primary tenet of this research is that if teachers use evidence-based practices during teaching, their instruction will lead to greater gains in their students' written language achievement (e.g., National Reading Panel: NRP, 2000; Ehri et al., 2000).

Ehri and colleagues (2001) conducted a comprehensive meta-analysis on the effects of phonemic awareness (PA) instruction on students' reading outcomes, using a variety of dependent and moderator variables to evaluate the effects of PA instruction on learning to read and spell. They reported that PA instruction positively

impacts reading outcomes in word reading, reading fluency, spelling, and reading comprehension for children with various reading difficulties under various conditions (e.g., classroom, small groups, or individuals, etc.). Most importantly, these authors stated that PA instruction was most effective *when it was taught with letters than without letters, when one or two PA skills were taught than multiple PA skills, when children were taught in small groups than individually or in classrooms, when instruction lasted between 5 and 18 hours rather than longer, and when children were taught by classroom teachers* (p. 251).

While PA instruction helped all children learn to read, its impact was greatest with preschool and kindergarten, indicating that PA instruction is more important for younger students prior to formal reading instruction. However, Ehri et al. noted that students whose struggles with reading are associated with depressed phonemic knowledge should benefit from PA instruction regardless of their grade levels. Data from their meta-analysis suggests that regardless of whether or not children have difficulties learning to read or are at risk for such difficulties, the critical components of effective reading must be acquired in relatively invariant sequence for normal reading to occur. Instruction in morphological knowledge is particularly when children are expected to (a) read more derived words to gain meaning from novel words encountered in written text and (b) comprehend the meaning of the words through analysis of the word parts (Carlisle, 2004; White, Power, & White, 1989).

Struggling readers are likely to need instruction that is more intensive, supportive, and comprehensive across these areas than students without reading difficulties (Foorman & Torgesen, 2001). English language learners (ELLs) who struggle with reading also need such instruction to improve their reading abilities. Gersten and his colleagues (Gersten, Baker, Haager, & Graves, 2005; Baker, Gersten, Haager, & Dingle, 2006) investigated relationships between observed teachers' practices and English language learners (ELLs)' growth on reading achievement. In this study, the researchers found that the quality of instruction in vocabulary, phonemic awareness, and phonics was higher in high-performing classrooms. Most importantly, ELLs who received highly rated instruction showed performance levels similar to native English-speaking children, showing that teacher practices in word study positively impact ELLs' growth and performance on reading. In light of these findings, teachers should recognize that high quality phonemic awareness and phonics instruction contribute to increased skill in decoding, word recognition, reading fluency, and reading comprehension skills for Native English speakers as well as ELLs with reading difficulties.

Instructional Processes for Students' Successful Reading Outcomes

For nearly two decades, researchers have been attempting to describe exactly what it is that effective reading teachers do to promote the achievement of their students (e.g., Foorman & Torgesen, 2001; McCutchen, et al. 2002; NEA, 2002; Pianta et al., 2008; Pressley et al., 2001; Taylor et al., 2001, 2002). Though these studies have not examined the role that effective instructional practices play in the achievement of students with disabilities, they provide a good starting point for examining what *high quality and effective* instruction might look like. Thus, it is expected that reviewing research on best practices in general education should provide relevant information for the use of effective reading instruction practices for special education teachers.

The National Education Association (NEA, 2002) reported nine characteristics of effective instructional practices based on common findings across recent studies. These include: (1) maintaining instructional balance; (2) stressing higher-level thinking; (3) applying skills and strategies for word recognition and comprehension skills; (4) providing a substantial amount of coaching in the form of support and feedback; (5) encouraging students to work independently and take responsibility for their own learning; (6) motivating instruction and fostering active involvement; (7) having high expectations for reading growth; (8) developing classroom management; and (9) building strong relationships with students (Block & Pressley, 2002; NRP, 2002; Pressley, Wharton-McDonald, Allington, Block, & Morrow, 1998; Pressley, Wharton-McDonald et al., 2001; Taylor et al., 2001).

These findings are in line with research on effective teaching practices described by Taylor et al. (2001) and Pressley and his colleagues (1998, 2001). Using the findings from large scale studies on effective teachers of reading, Taylor and his colleagues (2002) found that effective teachers provide more small-group instruction, emphasize high pupil engagement, prefer active coaching to telling, and engage students in more higher-level thinking than less effective teachers. Similarly, Pressley and colleagues (1998) examined literacy instruction of the first grade teachers who were nominated as exemplary in reading instruction by their peers and supervisors. They found that the most effective teachers displayed high academic engagement, excellent classroom management, positive reinforcement and cooperation, explicit teaching of skills, emphasis on literature, much reading and writing, matching of task demands to student competence, encouragement of student self-regulation, and strong cross-curricular connections.

Although the majority of studies on effective instructional practices have examined general education students and their teachers, a few have investigated effective instructional practices for teaching word-level reading with struggling readers or students identified with reading disabilities (e.g., Brownell et al., 2007; Rankin-Erickson & Pressley, 2000). For example, Rankin-Erickson and Pressley (2000) selected a sample of special education teachers who were nominated as effective and outstanding in teaching elementary students with reading disabilities. The authors asked these teachers to answer the following questions in a questionnaire: (1) what instructional techniques do they use in their classrooms?; (2) what practices and activities do they use to engage students?; (3) what instructional materials do they use?; and (4) how do they respond to students' errors? The authors concluded that while there was no definitive set of strategies, these successful teachers commonly responded that they (1) created a positive classroom environment, (2) modeled target responses, (3) provided frequent positive feedback, (4) attempted to convey the goal of every lesson, (5) discussed the importance of reading, (6) encouraged personal interpretations of text, and (6) created an exciting mood for reading.

These same strategies were used for both word recognition and reading comprehension instruction by Rankin-Erickson & Pressley (2000) and were similar to effective practices observed in previous studies of general education teachers.

Furthermore, Brownell and her colleagues (2007) investigated the relationship between special education teachers' domain knowledge, their classroom practices for teaching reading, and the reading achievement of their students with learning disabilities. They observed 92 special education teachers in addressing the issue of, *what special education teachers should know and be able to do* (p.38), a critical question for improving teacher instruction and student achievement. Results showed that special education teachers had fairly strong knowledge of teaching reading and their practices in teaching decoding were affected by the level of knowledge. Most importantly, findings revealed that when special education teachers provided more explicit and engaging instruction and skillful classroom management their student gains were greater.

In short, based on the results of the findings from previous studies, there is some evidence to conclude that effective teachers commonly put more emphasis on characteristics such as balanced instruction, modeling strategies, active coaching, active engagement, classroom management, and students' self-regulation. All of these being practices are closely related to improvement in students' reading outcomes. Taken together, the research on effective elementary reading teachers have yielded a compilation of factors that characterize good teachers and their teaching practices. Unfortunately, however, this research exists only for the specifically targeted practices of successful teachers in the context of specific instructional lessons (Brownell et al., 2009; 2010; Taylor et al., 2002).

Towards Best Scientifically-Based Strategies for Intervention

There have been efforts to define the most effective strategies for teaching reading (e.g., National Reading Panel, 2000). The No Child Left Behind Act (2001) recommended that teachers' use scientifically based strategies, or evidence based strategies to provide appropriate reading instruction for students with reading difficulties. The National Reading Panel (NRP) suggested evidence based strategies for each of five essential components. For word study, the panel emphasized the importance of explicit and intensive reading intervention when teaching struggling readers and the importance of children acquiring phonemic awareness and phonics as foundational skills for learning to read an alphabetic language.

A review of effective word study instructions for students with reading difficulties showed that the following components were critical in word study instruction: phonological awareness instruction (i.e., instruction on how words can be segmented into smaller units), phonics/decoding instruction (i.e., representation of phonemes in print), spelling instruction (i.e., how to use phonemes to represent spoken word), vocabulary instruction (i.e., knowledge of words), and morphological instruction (i.e., understanding of morphemic structures). Several studies examining the effectiveness of reading instruction that focused on various components of word study showed evidence for the effectiveness of word study, particularly when it was coupled with explicit and engaging word study instruction within a positive classroom environment with frequent feedback and effective classroom management (e.g., Brownell et al., 2007; Rankin-Erickson & Pressley, 2000).

From the perspective of the *simple view reading*, the best scientific strategies for improving decoding skills evolve from teachers' understandings of code-related skills, such as phonemic awareness and letter-sound correspondence. Teachers must know how to teach these core components of word recognition based on individual students' levels of phonemic knowledge. Most importantly, teachers need to start to teach word study by understanding the constructs and content of word study and type of difficulties related to processing print that their students are experiencing.

References

- Anthony, J. L., & Lonigan, C.J. (2004). Nature of phonological sensitivity: Converging evidence from four studies of preschool and early grade-school children. *Journal of Educational Psychology*, 96, 43-55.
- Baker, S., Gersten, R., Haager, D., Dingle, M. (2006). Teaching practice and the reading beginning special education teacher quality. *Exceptional Children*, 75, 391-411
- Bear, D., Invernizzi, M., Templeton, S., & Johnston, F. (2004). *Words their way: Word study for vocabulary, phonics, and spelling instruction* (3rd ed.). Upper Saddle River, NJ: Pearson.
- Beck, I. L., & McKeown, M. G. (2001). Text Talk: Capturing the benefits of read-aloud experiences for young children. *Reading Teacher*, 55, 10-20.
- Biemiller, A., & Boote, C. (2006). An effective method for building meaning vocabulary in primary grades. *Journal of Educational Psychology*, 98, 44-62.
- Bowers, P. N., Kirby, J. R., & Deacon, S. H. (2010). The effects of morphological instruction on literacy skills: A systematic review of the literature. *Review of Educational Research*, 80, 144-179
- Block, C. C. & Pressley, M. (2002). *Comprehension Instruction: Research-based best practices*. New York: Guilford.
- Brownell, M. T., Dimino, J., Bishop, A. G., Haager, D., Gersten, R., Menon, S., Klingner, J. K., Sindelar, P. T., & Penfield, R. D. (2009). The role of domain expertise in beginning special education teacher quality. *Exceptional Children*, 75, 391-411
- Brownell, M. T., Haager, D., Bishop, A. G., Klingner, J. K., Menon, S., Penfield, R., et al. (2007, April). *Teacher quality in special education: The role of knowledge, classroom practice, and school environment*. Paper presented at the annual meeting of the American Education Research Association, Chicago
- Carlisle, J.F. (1995). Morphological awareness and early reading achievement. In L.B. Feldman (Ed.), *Morphological aspects of language processing* (pp. 189-209). Hillsdale, New Jersey: Erlbaum.
- Carlisle, J. F. (2000). Awareness of the structure and meaning of morphologically complex words: Impact on reading. *Reading and Writing*, 12, 169-190
- Carlisle, J. F. (2004). Morphological processes that influence learning to read. In C. A. Stone, E. Silliman, B. Ehren, & K. Apel (Eds.), *Handbook of language and literacy* (pp. 318-339). New York: Guilford Press.
- Carroll, J. M., Snowling, M. J., Hulme, C., & Stevenson, J. (2003). The development of phonological awareness in preschool children. *Developmental Psychology*, 39, 913-923.
- Casalis, S., Cole, P., & Sopo, D. (2004). Morphological awareness in developmental dyslexia. *Annals of Dyslexia*, 54(1), 114-138.
- Catts, H. W., & Kamhi, A. G. (2005). *Language and reading disabilities* (2nd ed.). Boston: Allyn & Bacon.
- Chard, D. J., Ketterlin-Geller, L. R., Baker, S. K., Doabler, C., & Apichatabutra, C. (2009). Repeated reading interventions for students with learning disabilities: Status of the Evidence, *Exceptional Children*, 75, 263-281
- Cunningham, A. E., & Stanovich, K. E. (1997). Early reading acquisition and its relation to reading experience and ability ten years later. *Developmental Psychology*, 33, 934-945.
- Ehri, L. (1992). Reconceptualizing the development of sight word reading and its relationship to recoding. In P. Gough, L. Ehri, & R. Treiman (Eds.), *Reading acquisition* (pp. 107-143). Hillsdale, NJ: Erlbaum.
- Ehri, L., Nunes, S., Willows, D., Schuster, B., Yaghoub-Zadeh, Z., & Shanahan, T. (2001). Phonemic awareness instruction helps children learn to read: Evidence from the National Reading Panel's meta-analysis. *Reading Research Quarterly*, 36, 250-287.
- Foorman, B. R., & Torgesen, J. K. (2001). Critical elements of classroom and small group instruction promote reading success in all children. *Learning Disabilities Research & Practice*, 16, 202-211.
- Ganske, K. (2000). *Word journeys: Assessment-guided phonics, spelling, and vocabulary instruction*. NY: Guilford Press.
- Gersten, R., Baker, S. K., Haager, D., & Graves, A. (2005). Exploring the role of teacher quality in predicting reading outcomes for first-grade English learners: An observational study. *Remedial & Special Education*, 38, 212-222.
- Gough, P. B., & Tunmer, W. E. (1986). *Decoding, reading, and reading disability*. *Remedial and Special Education*, 7, 6-10.
- Henry, M. K. (2003). *Unlocking literacy: Effective decoding and spelling instruction*. Baltimore: Paul H. Brookes Publishing Company
- Hogan, T. P., Catts, H. W., & Little, T. D. (2005). The relationship between phonological awareness and reading: Implications for the assessment of phonological awareness. *Language, Speech, and Hearing Services in Schools*, 36, 285-293
- Hoover, W. A., & Gough, P. B. (1990). The simple view of reading. *Reading and Writing: An Interdisciplinary Journal*, 2, 127-160.
- Jenkins, J.R., Stein, M.L., & Wysocki, K. (1984). Learning vocabulary through reading. *American Educational Research Journal*, 21, 767-788.
- Lombardino, L.J. (2012). *Assessing and Differentiating Reading and Writing Disorders*. Clifton Park, NY:

- Delmar, Cengage Learning.
- McCutchen, D., Abbott, R. D., Green, L. B., Beretvas, S. N., Cox, S., Potter, N. S., et al. (2002). Beginning literacy: Links among teacher knowledge, teacher practice, and student learning. *Journal of Learning Disabilities, 35*, 69–86.
- McKeown, M. G., & Beck, I. L. (2004). Direct and rich vocabulary instruction. In J. F. Baumann & E. J. Kame'enui (Eds.), *Vocabulary instruction: Research to practice* (pp. 13-27). New York: Guilford Publishing Company.
- Moats, L. C. (2000). *Speech to print: Language essentials for teachers*. Baltimore: Paul H. Brookes Publishing Co.
- Moats, L. C. (1995). *Spelling: Development Disability and Instruction*. Baltimore: York Press.
- Nagy, W., & Scott, J. A. (2000). Vocabulary processing. In M. Kamil, P. Mosenthal, P. D. Pearson, & R. Barr (Eds.), *Handbook of reading research* (Vol. 3, pp. 269-284). Mahwah, NJ: Erlbaum.
- National Center for Educational Statistics National Center for Education Statistics (2011). *The nation's report card: Reading 2011*. Retrieved from <http://nces.ed.gov/nationsreportcard/pdf/main2011/2012457.pdf>
- National Institute for Literacy (2008). Key Literacy Component: Text Comprehension. Retrieved from <http://www.adlit.org/article/27882> on February 17th, 2011.
- National Reading Panel. (2000). *Report of the National Reading Panel*. Washington, D.C.: National Institute for Child Health and Human Development.
- National Education Association. (2002). *Characteristics of teachers who are effective in teaching all children to read*. Minneapolis, MN: University of Minnesota
- O'Connor, R. E. (2007). Teaching word recognition: Effective strategies for students with learning difficulties. The Guilford Press: New York
- Odom, S., Brantlinger, E., Gersten, R., Homer, R., Thompson, B., & Harris, K. (2005). Research in special education: Scientific methods and evidence based practices. *Exceptional Children, 71*, 137-148
- Ouellette, G. P. (2006). What's meaning got to do with it: The role of vocabulary in word reading and reading comprehension. *Journal of Educational Psychology, 98*, 554–566
- Pianta, R.C., Belsky, J., Vandergrift, N., Hourts, R., & Morrison, F.J. (2008). Classroom effects on children's achievement trajectories in elementary schools. *American Educational Research Journal, 45*, 365-397
- Pressley, M., Wharton-McDonald, R., Allington, R., Block, C.C., Morrow, L. (1998). *The nature of effective first-grade literacy instruction*. New York: The National Research Center on English Learning and Achievement.
- Pressley, M., Wharton-McDonald, R., Allington, R., Block, C.C., Morrow, L. Tracey, D., Baker, K. (et al.) (2001). A study of effective first-grade literacy instruction. *Scientific Studies of Reading, 5*, 35,38
- Rankin-Erickson, J. L., & Pressley, M. (2000). A survey of instructional practices of special education teachers nominated as effective teachers of literacy. *Learning Disabilities Research & Practice, 15*, 206-225
- Roberts, J. A., & Scott, K. A. (2006). The simple view of reading: Assessment and intervention. *Topics in Language Disorders, 26*, 127-143
- Scarborough, H. S. (1998). Early identification of children at risk for reading disabilities: Phonological awareness and some other promising predictors. In B. K. Shapiro, P. J. Accardo, & A. J. Capute (Eds.), *Specific reading disability: A view of the spectrum* (pp. 75–119). Timonium, MD: York Press
- Share, D. L. (2008). *Orthographic learning, phonological recoding, and self-teaching*. In R. Kail (Ed.). *Advances in child development and behavior* (vol. 36, pp. 31-82). San Diego: Academic Press.
- Snow, C. E., Griffin, P., & Burns, M. S. (1998). Preventing reading difficulties in young children. Washington, DC: National Academy Press
- Storch, S. A., & Whitehurst, G. J. (2002). Oral language and code-related precursors to reading: Evidence from a longitudinal structural model. *Developmental Psychology, 38*, 934-947.
- Swanborn, M. S., L., & De Clopper, K. (1999). Incidental word learning while reading: A meta-analysis. *Review of Educational Research, 69*, 261-286
- Tannenbaum, K. R., Torgesen, J. K., & Wagner, R. K. (2006). Relationships between word knowledge and reading comprehension in third-grade children. *Scientific Studies of Reading, 10*, 381–398
- Taylor, B. M., Pearson, P. D., Peaterson, D. S., & Rodriguez, M. C. (2001). *Year one of the CIERA school change project: Supporting schools as they implement home-grown reading reform*. Minneapolis, MN: University of Minnesota
- Taylor, B. M., Peterson, D. S., Pearson, P. D., & Rodriguez, M. C. (2002). Looking inside classrooms: Reflecting on the *how* as well as the *what* in effective reading instruction. *The Reading Teacher, 56*, 270-279
- Templeton, S. (2004). The vocabulary-spelling connection: Orthographic development and morphological knowledge at the intermediate grades and beyond. In J. F. Baumann & E. J. Kame'enui (Eds.), *Vocabulary instruction: Research to practice* (pp. 118–138). New York: Guilford
- Torgesen, J. K., Wagner, R. K. Rashotte, C. A., Rose, E., Lindamood, P., Conway, T., & Garvin, C. (1999).

Preventing reading failure in young children with phonological processing disabilities: Group and individual responses to instruction. *Journal of Educational Psychology*, 91, 579-93

Torgesen, J. K. (2000). Individual differences in response to early interventions in reading: The lingering problem of treatment resisters. *Learning Disabilities Research & Practice*, 15, 55-64.

Treiman, R., & Bourass, D. (2000). The development of spelling skill. *Topics in Language Disorders*, 20, 1-18.

Wagner, R. K., Torgesen, J. K., Rashotte, C. A., Hecht, S. A., Barker, T. A., Burgess, S. R., Donahue, J., & Garon, T. (1997). Changing relations between phonological processing abilities and word-level reading as children develop from beginning to skilled readers: A 5-year longitudinal study. *Developmental Psychology*, 33, 468-479.

White, T. G., Power, M. A., & White, S. (1989). Morphological analysis: implications for teaching and understanding vocabulary growth. *Reading Research Quarterly*, 24, 283-304.

**FAMILY QUALITY OF LIFE FROM THE PERSPECTIVES
OF INDIVIDUAL FAMILY MEMBERS:
A KOREAN-AMERICAN FAMILY AND DEAFNESS**

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Beginning in the mid-to-late 1980s, the focus on individual quality of life expanded to family quality of life (FQOL) in the field of intellectual disabilities. However, few studies examined FQOL for families who have children with hearing loss. Furthermore, most studies focused on mothers' perceptions of FQOL. The purpose of this study is to understand how different members of a family experience FQOL when there is a member with hearing loss and how those experiences contribute to aggregated FQOL perception as a family unit. Three Korean-American family members, including the father, mother, and individual with hearing loss, participated and presented diverse perceptions of their FQOL. Results indicated each family member described diverse perceptions in seven (58%) of the 12 indicators categorized in four of the five FQOL domains. Implications for future research were described.

In the developmental disabilities field, conceptualizing and measuring individual quality of life have made significant progress internationally (Cummins, 2001; Schalock, 2000). Because of the purposeful research effort to examine individual quality of life, Schalock and colleagues (2002) reported eight domains of quality of life for individuals with disabilities: Emotional Well-being, Interpersonal Relationships, Material Well-being, Personal Development, Physical Well-being, Self-determination, Social Inclusion, and Disability-related Rights. Beginning in the mid-to-late 1980s, the focus on individual quality of life expanded to family quality of life (FQOL), given the growing importance of a "family-centered service delivery model" in the disability field (Poston et al., 2003, p.313).

Conceptually, the basis of FQOL consists of three themes: the extent to which families' needs are met, family members' enjoying their lives together, and whether family members have opportunities to engage in activities they consider important (Park et al., 2003). The Beach Center Family Quality of Life Scale (Hoffman, Marquis, Poston, Summers, & Turnbull 2006) was validated through several national surveys or interviews of more than 1,500 family members of individuals with disabilities and professionals, resulting in a five-domain structure with 25 indicators. The domains include Family Interaction, Parenting, Emotional Well-being, Physical/Material Well-being, and Disability-Related Support. In addition, Brown and colleagues (2006) from three different countries (i.e., Canada, Australia, and Israel) structured the Family Quality of Life Survey, which included nine domains of FQOL: Health, Financial, Family Relations, Support from Other People, Support from Disability-related Services, Spiritual and Cultural Beliefs, Careers, Leisure, and Community/Civic Involvement.

Turnbull and colleagues (2007) synthesized research on investigating the extent to which FQOL research focused on internal family characteristics (e.g., family relationships) and external family support (e.g., support from organizations). In general, internal factors that influenced FQOL outcomes were "child behavior and family resources (e.g., income)"; external factors included "families' ratings of service adequacy" (Turnbull et al., 2007, p.351) and satisfaction levels of family-professional partnerships. In many studies, families report least satisfaction with external Support from Other People and/or Support from Disability-related Services, as contrasted to internal family characteristics such as family relationships (Brown, 2008; Brown, Ananda, Fung, Isaacs, & Baum 2003; Brown et al., 2006; Turnbull, Summers, Lee, & Kyzar, 2007; Werner, Edwards, & Baum, 2009). For instance, Brown and colleagues collected FQOL data from 470 people in eight countries (i.e., Australia, Belgium, Canada, Israel, Japan, Nigeria, Slovenia, and United States) by using the Family Quality of Life Survey (Brown, 2008). Results indicated that family respondents had the lowest scores for attainment and satisfaction in the domain of Support from Other People and Disability-related Services scored while they

scored highest in Family Relationships.

One shortcoming of FQOL research is that it focuses largely on families who have members with intellectual disabilities. The majority of studies has focused on families of individuals with intellectual disabilities and has excluded other vulnerable populations (Turnbull et al., 2007; Zuna, Turnbull, & Summers, 2009). For example, there has been limited attention to FQOL for families of individuals with hearing impairment concerning their FQOL, although these families may experience various unique challenges due to the hearing loss. Such challenges may include being aware of the impact of hearing loss, choosing communication options for the child, learning how to communicate effectively with the child, and dealing with emotional and practical difficulties in raising a child with hearing loss (Luckner & Velaski, 2004). Families also need to find appropriate services and supports for the child, which may result in professionals (e.g., audiologists, speech therapists, early intervention coordinators, and educators of the deaf) entering the family's life. Jackson and Turnbull (2004) synthesized published studies on perspectives of families of children with hearing loss. The authors used a four-domain structure (i.e., Family Interaction, Parenting, Resources, and Support for the Members with a Disability) of an earlier version of the Beach Center Family of Life Scale (Park et al., 2003) as a framework for reviewing literature on the impact of deafness on FQOL. Results indicated that deafness had an impact on all four domains and that the degree/type of FQOL impact varied depending on "severity of hearing loss, a family's ethnicity, the hearing status of parents, the education of parents, the mode of communication used, the proficiency of partners in child's communication mode, and family's access to social supports and parenting models" (Jackson & Turnbull, 2004, p.27). There were also certain types of support that benefited families, including "social support, parenting models, and access to information and training" (Jackson & Turnbull, 2004, p.27).

Another shortcoming within research on FQOL to date has been the tendency to use only mothers and, in very few cases, fathers as sole respondents (Poston et al., 2003) with a major void being the exclusion of the perspective of the individual with a disability. Turnbull et al. (2007) noted that more than half the family research studies in the intellectual disability field for the past 10 years focus on mothers only. About research focusing on families of members who are deaf and hard of hearing, Turnbull and Jackson (2004) indicated that the respondents in all of their reviewed studies were mothers only. When considering the goal of family research, "...it is important to move beyond the study of the perceptions of individual members, especially mothers, to address the family as a unit of focus and to study the aggregation of family members' responses, in addition to the extent to which family members are similar or different in their perceptions of family variables" (Turnbull et al., 2007, p.352).

Given the dearth of studies focusing on the impact of deafness on FQOL and reporting family members' diverse perceptions of their FQOL, the purpose of this study was to understand how different members of a family experience FQOL when there is a member with hearing loss and how those experiences contribute to the aggregated FQOL perception as a family unit. Specifically, the two research questions related to family members' perceptions were: (a) When an individual with hearing loss is a member of the family, how do different family members perceive their FQOL?; and (b) How do family member's diverse viewpoints and experiences contribute to an aggregated family perception of their FQOL?

Method

We used qualitative methods to investigate family members' perceptions individually and collectively in relation to the impact of a family member with hearing loss on their FQOL. Qualitative methodology focuses on participants' perspectives concerning current phenomenon and describes them in descriptive and inductive ways (Mertens & McLaughlin, 2004; Rubin & Rubin, 2005).

Participants

A Korean master's student who conducted an earlier survey with several Korean-American families introduced us to a family who was interested in the interview. Of the four family members, the father (Kim), the mother (Park), and the second son with hearing loss (Kun) agreed to participate in the study. However, the first son, who is also a hard of hearing individual, expressed unwillingness to participate. Therefore, only three family members participated in the interview. Table 1 summarized the demographic information of each participant.

All of the family members are over 18-years old; the parents are first-generation hearing Korean-American parents. A first-generation Korean-American refers to "being born in Korea, speaking Korean as a first language, and self-identification as Korean" (Cho & Cannotti, 2005, p. 3). Kim and Park are in their early 60s or middle 50s and their English proficiency is intermediate. They reside in the state of California. Park manages a family-owned restaurant and Kim works as a real estate agent. They state that their economic status is moderately high and that they are well acculturated in the United States, largely because of interactions with

their American customers. Kun, age 26, has profound hearing loss and uses hearing aids. He uses total communication (American Sign Language [ASL] and oral English), with ASL his dominant communication mode. Kun resides in a college dormitory in the state of New York. Kun has received special education and related services in U.S. public education settings since moving to America at the age of 11. Shortly after he entered public school in U.S., he commuted to a school for the deaf based on the recommendation of his IEP team members.

Table 1. Demographic Information of Participants

Interviewee	Age	Marital status	Highest degree earned	Occupation
Kim (Father)	61	Married	Master's degree	Self-owned business
Park (Mother)	55	Married	Bachelor's degree	Self-owned business
Kun (Son)	26	Single	Associate degree	Freelance technician

Interview Protocol

We used three sources for developing an interview protocol. The first was the five-domain structure (i.e., Family Interaction, Parenting, Emotional Well-being, Physical/Material Well-being, and Disability-related Support) of the Beach Center Family Quality of Life Scale (Hoffman et al., 2006) as the primary framework for developing an interview protocol and at a later point for data analysis. We also used a review of literature of the FQOL of families who raise children with hearing loss (Jackson & Turnbull, 2004). The third source was discussions with professionals in the area of disabilities and qualitative research methodology to develop a 10-question interview protocol (see Table 2). In some cases, we modified questions depending on the participant's role. For instance, we asked Kim and Park, "How familiar are you with Kun's life, such as schoolwork, activities, friends, and teachers?" and we asked Kun, "How familiar are your parents with your life, such as schoolwork, activities, friends, and teachers?" In addition to the 10 questions, we included additional probes to obtain more specific and in-depth perspectives.

Data Collection

The first author, a native Korean who speaks English as well, served as the interviewer for this study. She interviewed the parents by telephone because of the geographical distance from the Midwest to the West coast of the United States. Internet messenger was the tool the first author used for interviewing Kun because of his inability to communicate over the phone. She scheduled the interviews at the participants' convenience; each interview took approximately 1-1½ hours. She conducted the interviews in the Korean language with each of the parents and in English with Kun, according to each participant's preference of language use and audio-taped and transcribed for later analysis. When interviewing Kun, the first author used written communication through internet messenger, then copied and saved the transcript as a Microsoft Word document.

Data Analysis

Given the conceptual soundness of the five domains of the Beach Center Family Quality of Life Scale (Hoffman et al., 2006), we used this established framework for data analysis. Within the framework of the five domains, we conducted coding and analysis inductively by using an interpretive approach (Maxwell, 2005) and by constructing the meaning of participants' stories (Merriam, 2002). As a result, several indicators emerged within each of the five domains.

After interviewing each of the three participants, the first author transcribed the audio-taped interviews with each of the parents in Korean because, as noted earlier, the interviews with the parents were conducted in Korean. Then, she translated the interviews in Korean into English for data analysis. The record of written communication with Kun served as transcribed interview in English. Consequently, three transcribed interview data in English were obtained from each of the three participants. In order to confirm the accuracy of translation from Korean to English of the transcribed interview data, a Korean doctoral student in the field of special education read both the Korean and English transcription. The first author and the Korean doctoral student agreed that every translation was accurate.

Table 2. Interview Protocol

Domain	Questions
Family Interaction	What does it mean to have a child with hearing loss? (What does it mean to be an individual with hearing loss?) How does having a child with hearing loss affect your family communication? How have your family time and relationship changed because of Kun's (your) hearing loss?
Parenting	How is raising Kun different from or similar to raising a child without hearing loss? (How have your parents raised you similarly or differently due to your hearing loss?) How familiar are you with Kun's life, such as schoolwork, activities, friends, teachers, etc.? (How familiar are your parents with your life, such as schoolwork, activities, friends, teachers, etc?)
Emotional Well-being	Tell me about your family's experience of stress or frustration because of Kun's (your) hearing loss. What kinds of help can you count on for relieving your stress?
Physical/Material Well-being	How have the financial needs of your family affected the ability to provide special equipment?
Disability-Related Support	What supports and services have you received and to what extent have you been satisfied with the supports and services as well as the service providers? What supports and services have you needed?

The first and second author independently summarized all the English transcriptions, including the written communication with Kun, using matrices for the purpose of comparison across the interviews. According to Maxwell (2005), a matrix is a useful tool for data analysis as well as for ongoing monitoring of selecting and collecting data. As authors, we repeatedly checked and modified our summaries to ensure that the summaries aligned with the actual English description of the interviews. After we reached the consensus of summaries, we worked on sorting the summarized data into several indicators under the five-domain framework. Although the interview protocol was a product of systematic development from the five domains, which led to the clear classification of participant stories into the same domains, several indicators emerged within each domain. To validate indicators related to each of the five domains, each of the authors independently sorted the summarized data into several indicators within each domain and then discussed each others' indicators until we achieved an agreement of 12 indicators across the five domains.

The triangulation occurred between the first author and the Korean doctoral student in terms of translating the Korean transcription into English. Likewise, the triangulation occurred between the first author and the second author related to the alignment of the summaries with the interview descriptions and the identification of the indicators. In addition, the triangulation occurred with the member check because the first author did a member check with each of the participants sharing the results of this study to increase the validity and credibility of the collected data.

Results

The findings focus on the five domains of the Beach Center Family Quality of Life Scale (Hoffman et al., 2006) and the indicators that emerged from content analysis of participant responses to the interview. Together, the five domains included 12 indicators (see Figure 1)

Family Interaction

Family interaction refers to a family's ability to have open conversations with each other, to solve problems cooperatively, to enjoy their time together, and to have meaningful relationships with extended family members (Summers et al., 2005). Extended family refers to "members of the nuclear family, relatives, and others who are regarded as relatives" (Turnbull, Turnbull, Erwin, & Soodak, 2006, p. 40). Supports and accommodations for all family members, including a member with a disability, are necessary to enhance quality of family members' relationships with one another and to strengthen their affection and commitment (Turnbull, Turnbull, Summers, & Poston, 2008). The three indicators that emerged from the interviews in the Family Interaction domain were (a) communication, (b) family time together, and (c) relationships with extended family.

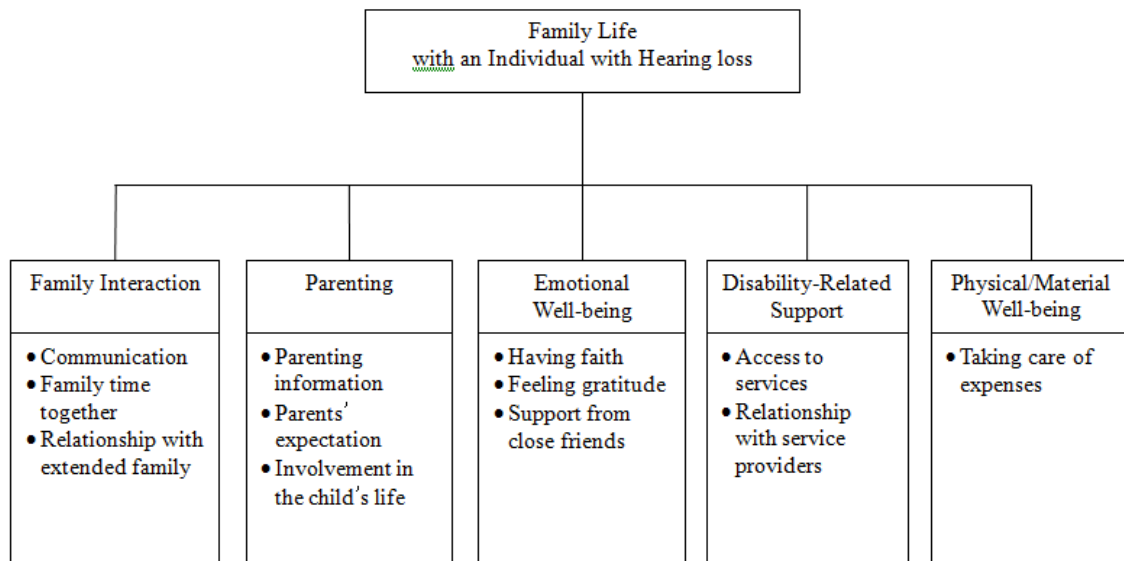


Figure 1. Five Domains and 12 Indicators.

Communication.

Choosing and developing strategies to communicate with the individuals with hearing loss was the biggest challenge for this family. Kim and Park expressed their shock, disbelief, and devastation when they were informed of their sons' hearing loss because they understood little about what it was like to have a child with hearing loss. Park stated that hearing loss and communication presented ongoing learning challenges for the family:

I believe that hearing loss rarely means incapability, but inconvenience. In reality, however, I am still learning what hearing loss is like and how to better communicate with my sons.

Kim expressed his concern about his sons' future life in the dominantly hearing society even though he continuously encouraged his sons to keep learning and be confident. In particular, Kim focused on being patient in communicating with his children. He reflected on a day in the past:

One day, I wanted to talk with Kun and found he did not have his hearing aids on him. He seemed not to understand me fully, and I felt a sense of frustration in him. I repeated what I said patiently and we both were happy with our communication.

For Kun, hearing loss meant exclusion from hearing society because of the communication barrier. He decided to accept it and to find helpful accommodations:

At first, it bothered me because I'd be "left out" from the hearing society. But... eventually I learned to accept it and found a way to accommodate my hearing loss such as using interpreters... using paper and pen... I'll be always left out when watching TV shows without captions, and having to wait till there's an open captioned movie available, but hey, life isn't always fair. So, I've decided to deal with it.

Kun believed that it is more important for parents to understand and love their family members with a hearing loss, as contrasted to parents always being able to communicate.

I strongly advice to interact with them as much as possible. Yes, the communication barrier is there, but the biological bond is still there. Make memories with the family and let the children know they have loving parents and they are loved very much. I was fortunate to have my parents do that for me, and I hope the same for other children as well.

Each family member considered both the hearing and hard of hearing needs of other family members when deciding on a communication mode. As a result, Kim and Park learned sign language to the best of their ability, and Kun and his brother worked hard on the spoken language. However, it turned out Kim and Park mostly used the spoken Korean language with Kun and written Korean language with their older son rather than using sign language. While both parents believed that they usually communicated openly with their sons, Kun expressed his difficulty in openly communicating with his parents because of different communication tools:

I understand my parents' use of spoken Korean language because my family is a strong hearing-based family. However, I had to work hard on communicating with my parents and often did not understand them. My brother often gave up talking with my parents because his understanding and speaking of the Korean language is even less clear than it is for me. I think all these restricted our open communication.

On the other hand, Park believed that the family members' characteristics affected open communication:

I am concerned about my first son who is very shy, unlike Kun. When he wants to speak with me, most often times, he used Kun as his interpreter. When Kun did not want to do it, he changed his mind and did not say it. It's harder to openly communicate with him.

Kim, who was hardly able to spend time with the rest of the family members due to his business, stated that lack of time affected their family communication.

I am very busy with my business. I work hard to make a living for my family. I am sorry that I cannot have more time with my family members. If we had more time to be together, our communication would be more open.

Regardless of diverse perceptions of hearing loss and communication, all the participants agreed that they desired to engage in more communication with each other and to do so as often as possible.

Family time together.

The nature of spending family time together within the participant family was similar to that of hearing families. They tried to have family time together as much as possible. They went on trips, took part in church activities, went shopping, ate at restaurants, worked at the family-owned restaurant, and talked about their dreams and school lives. Kim and Kun reported that the challenge in having time together was not because of their Kun's hearing loss, but because of the Kim's insufficient time to be with his family. Kim stated the following:

Since we moved to America, I have had to work hard all day long for a living. In addition, I like to be involved in various activities, including the Korean immigrants' organization, Korean church, and other social groups, even though my family is also important. I try to have more time with my family.

Kun agreed that his father was too busy to be with his family:

While I do not mind dad being so busy, it would be nice to be home more often and have more family time. Sooner or later, I'll be living my own life, so time for all family to stay together is running out... not that I am complaining though.

Park also pointed out the lack family time. She has been more involved in the family-owned restaurant since Kun has become an adult, which has resulted in less family time together. Although all of the family members had a desire to have enough family time together, the parents' long work hours kept their lives busy.

Relationship with extended family.

The family moved to America in 1994 and their extended family resides in Korea. Despite the geographical distance, the family shared their life with their extended family. Park addressed that she often talked with her parents and sister in Korea to share their lives together:

My parents and sister are very important to me. They encourage me and support me all the time. I doubt if I could endure all the difficult times without their help.

Kim emphasized the importance of their extended family and stated that he used a video phone when the family talked with his parents and other extended family members:

I want my sons to think of their extended family in Korea. A video phone is very helpful because my sons can see the faces. We use all the possible tools to communicate with the extended family. They include emails, text messages, TTY (teletypewriter), and letters. I think my sons enjoy talking with the extended family in Korea.

Kun, however, stated that he had only a little interaction with their extended family in Korea:

It is hard to talk with them because they don't know sign language. I just smile at the video camera. It's awkward, you know. Furthermore, I don't remember much about my grandparents, uncles, aunts, or cousins because I left Korea when I was little.

The relationship with their extended family was very important for both parents, while Kun put little emphasis on it.

Parenting

The three indicators identified within the Parenting domain were (a) parenting information, (b) parents' expectation, and (c) involvement in the child's life.

Parenting information.

Kim and Park reported that they experienced an increased demand on their time in looking for parenting information for their sons with hearing loss. They had to find an appropriate communication option for each of their sons. In addition, they spent a lot of time on finding a good education program for their sons. Other families who have raised children with hearing loss and an organization for Asian deaf people in southern California served as the most valuable agents in providing parenting information on topics such as education, social activities, and careers. Kim and Park also experienced comfort in getting information from others who had firsthand experience related to hearing loss. Furthermore, they learned how to raise their sons through their own experiences. Park stated her difficulty in parenting:

It would be different if I had hearing children. However, I had to learn how to raise my children with hearing loss. I reached some Korean-American parents who also raised children with hearing loss. I first felt comfort from them. They listened to me and understood me. They suggested deaf schools and sign books. However, I hardly got precise information about communication options because they chose different communication methods according to each of their children's hearing status and their own perceptions about hearing loss. There were so many things that we had to find out for ourselves.

Kim added his difficulty in being knowledgeable about the ways his sons learned best:

It is important not to cover your mouth when talking with people with hearing loss. Also, what matters is clearness in addition to an appropriate volume. There are a lot of small things that hearing people take for granted, but actually are difficult for people with hearing loss.

Kun, in contrast, believed the way that Kim and Park parented was rarely different from parents of hearing children except for the communication matter. Furthermore, he stated that his hearing loss created a physical proximity between his parents and himself:

I don't think parenting has changed. Well, the way of communicating would have been different. I mean, my parents wouldn't need to blink the light, or come in my room just to talk. They would just shout my name, and I would be able to respond. I think the physical contact would have been reduced... maybe it was a good thing that my older brother and I were deaf because that required them to make physical contacts with us like coming into our room, having to look at us when they talk (that way we can lip read) and be able to see them while in communicating... it's like subtle way of say, 'we are still here for you,' I guess.

Parents' expectation.

In spite of their difficulty in raising their sons with hearing loss, Kim and Park always encouraged the sons and expressed their high expectation for Kun and his brother. Kun reflected on his parents' teaching throughout his life:

My parents taught me that my hearing loss is just a handicap... and that a handicap shouldn't stop me from anything. They were religious, of course. Most of their teachings were religion-related, and at the same time, taught me to rely more on God... because of my inability to hear.... They repeatedly said to me, "Whose son are you? You're my son! I believe in you!" It's a typical Korean saying, which is like saying you can do it.

Kim emphasized having high expectations for the child:

I allow my children to be exposed to both hearing and deaf worlds and meet diverse people. I believe that they can find their strengths and become positive. I am proud of my sons. They are just precious to me. I trust them.

Park focused on teaching her sons polite versus impolite social behaviors. She also tried to be positive and to not to give up, saying, "The child already has the power to overcome his difficulties." Based on his learning from parents, Kun added his opinions on parenting with high expectations:

Having a deaf child is like... a child with a gifted mind... Show your child that you're there for him, love the child, get to know the child, have high expectations, show interest in his hobbies, and be a typical, loving parent to your child.

Involvement in the child's life.

The participants differed in their understanding about Kun's life including schoolwork, activities, friends, and teachers. They agreed that they all understood the particulars of Kun's schoolwork and the activities in which he participated. Interestingly enough, both parents indicated that Kun had difficulty making friends with ease, whereas Kun stated that he could make friends without difficulty. Kun had both hearing and hard-of-hearing friends, although he felt more comfortable with his deaf and hard-of-hearing friends since they could understand each other better given their similar situation. When interacting with his hearing friends, Kun used text messaging, chat rooms, and some spoken language. Concerning Kun's teachers, Park interacted with them only a few times because of difficulty in communication and difference of culture:

In Korean culture, we rely on teachers about our child's educational decision rather than asserting parents' thinking or ideas. In addition, English was another barrier to interact with the teachers. So, I let Kun interact with teachers most of the time.

Likewise, Kim had little information about or interaction with Kun's teachers because of his busy work schedule. Mostly, Kun interacted with teachers and informed his parents about their conversations, mainly his mother.

Emotional Well-being

Emotional well-being involves having support to relieve stress, to take care of special needs, to spend time with friends, and time to receive care-giving (Jackson, Wegner, & Turnbull, 2010). Park expressed extreme stress from increased efforts and time demands due to her sons' hearing loss. Likewise, Kim stated that he often experienced stress because of his sons' hearing loss. Kim and Park both described a sense of isolation as a source of stress. In contrast, Kun believed the biggest stressors for the family are cultural barriers and the generation gap. The participants shared their ways of achieving emotional well-being within the Emotional Well-being domains: (a) having faith, (b) feeling gratitude, and (c) support from close friends.

Having faith.

Kim and Park stated that they relieved their stress and frustration with raising their sons with hearing loss through faith in God and their prayers. Park stated that she experienced shock when she recognized her sons' hearing loss:

It was a shock when I recognized both my sons had hearing loss. I never saw any deaf people through my entire life, you know. I cried and prayed to God. He listened to me and gave me peace. Whenever life is tough and whenever I feel alone because of my sons' hearing loss, I pray and pray. God is always there to help me.

Kim stated that the family experienced social stigmatization and isolation from others. He shared his experiences of feeling isolated from society:

I think that society lacks understanding about deaf culture and people with hearing loss. As a family unit, we were not able to attend many social activities and events because of my sons' difficulty of communication with others. Also, we had few shared interests with hearing families or society. In heaven, however, we will be all alike. There will not be any isolation in God's world. That encourages me a lot. God has provided me with comfort and I believe that He takes care of my sons no matter when they need help. I encourage a family to have a faith and stick to it.

Both Kim and Park described their deep faith in God as a way of overcoming their stressors. Kun, however, rarely addressed his faith in God as a way of overcoming his stressors. Instead, he emphasized the importance of being grateful for his parents whenever he experienced stress as described in the following section.

Feeling gratitude.

While Kim and Park considered their sons' hearing loss as a major source of stress and frustration, Kun believed that the biggest stresses for their family were cultural barriers and the generation gap. For instance, Kun is more individualistic while Kim and Park maintained the collective perception of emphasizing "we" rather than "I". Kun also addressed that Kim and Park often sacrificed some enjoyable moments of life and kept working to earn and save more money for the future. For Kun, however, enjoying current life is as important as earning money. Kun stated that whenever he experienced stress, he kept reminding himself of the value of his family as his biggest supporter:

When I was little, I thought my father did not care for my family and only focused on his work. I now know how hard my parents have worked for my family, especially for my brother and me. They moved to America looking for a better environment for my brother and me. In addition, I am able to have all the things that I want to have including my own car thanks to my parents' sacrifice.

For Kun, thinking of and being thankful for his parents' sacrifice empowered his emotional well-being when he experienced stress because of the generation gap or cultural differences.

Support from close friends.

Another way that the family overcame their stressors and achieved emotional well-being was through having support from close friends. Kim and Park interacted as much as possible with other families who also had children with hearing loss for the purpose of sharing information as well as encouraging each other. In addition, Kim and Park each had his or her group of friends with whom they spent time and experienced stress reduction. Kim emphasized the importance of having close friends:

For me, having families who have similar situations as friends was a good way to overcome the stress from my children's hearing loss. I think that having other families as friends would contribute not only to the child's emotional well-being, but to that of the family as a unit. Also, I have a group of close friends who I can meet occasionally. We encourage each others' lives and keep our friendship.

Park also shared her positive experience with mothers who have children with hearing loss:

We understand each other even without a word. We cry together, and we laugh together. We encourage each other all the time. We are just like a family.

Kun shared his experience of achieving emotional well-being through a group of hard-of-hearing friends, including his brother.

We are all hard-of-hearing. We don't even think about our hearing loss. We chat and laugh just like hearing people do with their close friends. In particular, Korean-American hard-of-hearing friends understand how I feel differently from my parents in terms of cultural differences or generation gap. We similarly get through such challenges by encouraging each other to appreciate our parents' sacrifice and love.

Disability-Related Support

Disability-related support refers to support families receive from the formal service system and to their relationship with service providers (Jackson et al. 2010). Two indicators including (a) access to services and (b) relationship with service providers emerged from the Disability-Related Support domain.

Access to services.

As an adult with a disability, Kun has received vocational rehabilitation support from the federal government. U. S. federal government agencies implemented the Rehabilitation Act of 1973 to prohibit discrimination based on disability. The law's programs include financial assistance, federal employment, and employment practices of federal contractors. Kun received financial support to achieve his career goal:

I want to be an English teacher for the deaf. In order to become a teacher, I need a college education. That's where vocational rehabilitation comes in the picture... they support me financially by paying 50% of my college bills. RIT's (Kun's school, *Rochester Institute of Technology*) bill is about... almost \$6500 per quarter, but my dad pays only \$3200 in addition to dormitory and food expenses.

In addition, Kim stated that vocational rehabilitation support would assist Kun in finding jobs and paying for hearing aids if the request was reasonable. Kun and Park emphasized that people with disabilities must meet specific criteria to receive vocational rehabilitation. For example, Kun was required to maintain good grades in school and choose a more realistic and practical career goal such as becoming an English teacher for the deaf. He received Social Security Disability Income as a financial support. Social Security Disability Income provides a federal allowance of \$500 a month each for Kun and his brother.

Relationship with service providers.

Park reflected upon early experiences with Kun and his brother regarding experiences with service providers. She and their teachers identified needed support for her sons through the Individualized Educational Program (IEP) meetings:

I rarely met teachers because of my difficulty in understanding English. In the IEP meetings, however, teachers were supportive to provide appropriate services for my sons. Both of my sons had difficulty in acquiring ASL (American Sign Language) and they received additional training. In addition, Kun received intensive speech therapy, which resulted in his fairly good pronunciation. Teachers provided specific information about diverse communication methods for children with hearing loss. They emphasized the importance of communication methods because those methods would be critically related to later educational methods (schools for the deaf or public schools). They also informed me

about the most recent policies and laws in relation to supporting children with disabilities.

Park became knowledgeable about disability-related support because she received information from service providers, although Kun mostly delivered the service providers' messages. Kun agreed that he had good relationships with service providers, and was satisfied with their services. Kun explained his relationship with his teachers and other service providers:

For me, it is easier to have a better relationship with people who are able to sign. However, it does not mean that I have a bad relationship with people who cannot sign. For instance, my vocational rehabilitation supporter, who cannot sign, and my family, have a mix of a personal and professional relationship from working together for several years. I appreciate all of the service providers' support and am satisfied with them.

Kim, however, was uncertain about his relationship with service providers for Kun. In fact, he rarely interacted with teachers and service providers because of his busy work schedule.

I don't know much about Kun's teachers. Because I am very busy, it is hard to have a good relationship with school teachers and service providers. I wished I could have attended my sons' IEP meetings and built positive partnerships with the teachers and service providers.

Physical/Material Well-being

Physical/material well-being is met when a family is able to pay for basic necessities, health care, and other needs, as well as feel safe at home, work, school, and in their neighborhood (Summers et al., 2005; Poston et al., 2003). In particular, based on the fact that health care is critical for the family's welfare and satisfaction, the capability to access and benefit from appropriate medical services could be a significant factor in the family's physical/material well-being (Jackson & Turnbull, 2004). Based on the data collected, Kun's family rarely had difficulty in relation to physical/material well-being although they all agree that the disability-related expenses have been very high.

Taking care of expenses.

Similar to most disabilities, hearing loss is expensive. Costs include gaining access to medical services as well as the purchasing of technology equipment such as hearing aids. Kun did not recall his family being financially troubled:

My brother and I have received sufficient medical care and speech therapy. My parents paid for replacing four sets of my hearing aids and a similar number of hearing aids for my brother. I know it cost tremendously. However, my parents have not complained about the expensive hearing devices so far. Sometimes I wonder if my parents would have been rich if my brother and I were not deaf.

Kim and Park stated that they worked very hard to meet all of the expenses for their sons because the disability-related expenses have been so high. They increased their working hours to earn more money and often sacrificed their family time together. Because of their hard work, they did not experience strain due to family finances. Nonetheless, as described earlier, all participants agreed that the financial support from the vocational rehabilitation program, as well as Social Security income for Kun as an individual with a disability, was helpful when he became 18 years old.

Discussion

The purpose of this study was to understand how different members of a family experience family quality of life when there is a member with hearing loss and how those experiences contribute to the aggregated family quality of life perception as a family unit. These were the two research questions: How do different family members perceive their FQOL when an individual with hearing loss is a family member? How do family members' diverse viewpoints and experiences contribute to aggregated family perception of their FQOL?

Diverse Perceptions of FQOL Among Family Members

Kun's family described diverse perceptions of their FQOL indicating disagreement or agreement in all five domains and 12 indicators. In the domain of Family Interaction, the family members addressed their various perceptions about communication and their relationship with extended family. Kun's family agreed with the existence of communication barriers and challenges in their family supporting previous research studies (Jackson & Turnbull, 2004; Luckner & Velaski, 2004). In addition, Kim believed that lack of time affected their family communication, while Park identified her sons' shyness as a factor limiting family communication. Nonetheless, both parents believed they communicated openly with their sons. Kun, however, expressed his difficulty in communicating openly with his parents because of different communication modes. Concerning the extended family, both Kim and Park emphasized the importance of interaction with their extended family. In

contrast, Kun put little emphasis on his extended family. The family, however, described similar perceptions on their family time together. The parents' long work hours limited their family time.

The family also indicated diverse perceptions in the Parenting domain. Both Kim and Park spent much time searching for information on communication options and educational programs for their sons. As research has indicated (Luckner & Velaski, 2004), these parents were uncertain about how to interact with their sons with hearing loss. Other parents of children with hearing loss, an organization for the deaf, and the parents' own experiences, were sources of important parenting information. Kun, however, believed Kim's and Park's parenting was rarely different from what other parents of hearing children did, with the exception of their communication mode. While Kim and Park addressed their difficulty in finding and applying parenting information, Kun, from his personal experience growing up, thought a positive aspect of parenting children with hearing loss was having physical proximity for parents and children to better see each others' signs or gestures. In respect to involvement in their son's life, both Kim and Park lacked involvement and understanding for different reasons. Kim rarely interacted with Kun's school teachers because of insufficient time due to work demands, while Park reported she could not interact effectively with Kun's teachers because of language and cultural issues. For instance, Park rarely interacted with Kun's teachers in Korean culture settings because she followed teachers' decisions in terms of Kun's education rather than asserting her own opinions. Kim and Park agreed that Kun had difficulty making friends because of his hearing difficulty. Kun, however, stated that he easily made both hearing and hard-of-hearing friends. All three participants agreed that Kim and Park had high expectations.

With regard to Emotional Well-being, the participants indicated different stressors that affected their emotional well-being. While the hearing loss of their sons and isolation from the hearing society were major reasons for the parents' stress, Kun's biggest stressors were cultural differences and the generation gap. For instance, Kun had individualistic perceptions while Kim and Park had collective perceptions focusing more on "we" than on "I". Kun also identified the value of enjoying current life while Kim and Park sacrificed enjoyable moments of their current life to earn more money for a better future. Both Kim and Park relied on their faith in God to relieve their frustration. By contrast, Kun rarely mentioned religious faith as a way of overcoming his stressors. Rather, he had appreciation of his parents for their love and sacrifice when he experienced stress. All three participants agreed that each of their close friends helped them to release their stress. In particular, Kun included his brother as one of his close friends who provided emotional support.

In the domain of Disability-Related Support, the family shared similar perceptions on access to services while indicating diverse perceptions on relationships with service providers. They agreed that they could easily access services including vocational rehabilitation support and Social Security Disability Income. Kim's perceptions of the relationship with service providers were different from those of Park and Kun. While both Park and Kun experienced a positive relationship with service providers, Kim had no relationship with them because he had few chances to interact with them.

All three participants indicated agreement in the domain of Physical/Material Well-being. Although disability-related expenses were high, Kun's family did not experience financial difficulty; rather, they increased their work hours in order to earn more money. They also agreed that Kun's governmental financial support was very helpful.

In summary, each family member described diverse perceptions in seven (58%) of 12 indicators categorized in four of the five domains (i.e., Family Interaction, Parenting, Emotional Well-being, Disability-Related Support). Specifically, each participant described disagreement on communication, relationships with extended family, parenting information, involvement in the child's life, ways of overcoming different stressors (e.g., having faith, feeling gratitude), and relationships with service providers. By contrast, family members expressed agreement on family time together, parents' expectation, support from close friends, access to services, and taking care of expenses. In general, discrepancy between parents and child was more likely than between mother and father. In other words, Kim and Park indicated diverse perceptions on their FQOL mainly in the three (25%) indicators (i.e., communication, involvement in the child's life, and relationship with service providers), while Kun described perceptions different from those of his parents on the above seven (58%) indicators.

Aggregated Family Perceptions on FQOL

This study indicates that different family members perceive their FQOL differently in many areas of their lives. Therefore, examining an aggregated understanding of family perceptions on FQOL becomes important. For instance, disability-related communication barriers did not constitute this family's sole challenge. Instead, communication barriers, lack of time to communicate, and family members' characteristics combined to affect

their FQOL in relation to the communication issue. In the Parenting domain, difficulty gaining parenting information on disability-related communication and education programs for the sons, which was a challenge, interacted with a positive aspect of parenting children with hearing loss (e.g., physical proximity) to influence this family's FQOL. Thus, aggregation of family perspectives must take into account disagreements and agreements that exist within individual family members, and within the family in a collective sense, as identified in Table 3.

Table 3. Indicators of Disagreements and Agreements Among Participants

Domain	Disagreements	Agreements
Family Interaction	<ul style="list-style-type: none"> • Communication • Relationship with extended family 	<ul style="list-style-type: none"> • Family time together
Parenting	<ul style="list-style-type: none"> • Parenting information • Involvement in the child's life 	<ul style="list-style-type: none"> • Parents' expectation
Emotional Well-being	<ul style="list-style-type: none"> • Having faith • Feeling gratitude 	<ul style="list-style-type: none"> • Support from close friends
Disability-Related Support	<ul style="list-style-type: none"> • Relationship with service providers 	<ul style="list-style-type: none"> • Access to services
Physical/Material Well-being		<ul style="list-style-type: none"> • Taking care of expenses

Limitations

One limitation of this study is the absence of Kun's brother as a participant. Including Kun's brother could provide a comprehensive view of this family. Another limitation is conducting interviews with telephone and internet messenger means. Both methods limited observation of interviewees' nonverbal behaviors such as facial expressions and gestures, which could have provided richer information.

Implications for Research

Several implications for future research emerged from this study. First, more research that investigates each family member's perceptions on FQOL when they have a member with hearing loss is needed to better understand a full family perspective. As previous research indicated, mothers have tended to be the sole responders of their FQOL. This exclusively maternal perspective has limited full understanding of FQOL from the perspective of all members, including siblings and extended family members (Poston et al., 2003). Second, research needs to compare and contrast different methods of aggregating FQOL ratings from multiple family members. This is an important next step to effectively measure, interpret, and support FQOL of each family as a unit.

References

- Brown, I. (2008). Comparison of trends in eight countries. *Inspires!*, 2(2), 9-13
- Brown, I., Ananda S., Fung W., Isaacs, B., & Baum, N. (2003). Family quality of life: Canadian results from an international study. *Journal of Developmental and Physical Disabilities*, 15, 207-230.
- Brown, R. I. (2006). Editorial. *Journal of Policy and Practice in Intellectual Disabilities*, 3(4), 209-210.
- Brown, R. I., MacAdam-Crisp J., Wang, M., et al. (2006). Family quality of life when there is a child with a developmental disability. *Journal of Policy and Practice in Intellectual Disabilities*, 3(4), 238-246.
- Brown, R. I., Schalock, R. & Brown, I. (2009). Quality of life and its application to persons with intellectual disabilities and their families- Introduction and overview. *Journal of Policy and Practice in Intellectual Disabilities*. 6(1), 2-5.
- Cho, S., & Gannotti, M. E. (2005). Korean-American mothers' perception of professional support in early intervention and special education programs. *Journal of Policy and Practice in Intellectual Disabilities* 2(1), 1-9.
- Cummins, R. A. (2001). Living with support in the community: Predictors of satisfaction with life. *Mental Retardation and Developmental Disabilities Research Reviews*, 7, 99-104.
- Hoffman, L., Marquis, J. G., Poston, D. J., Summers, J. A., & Turnbull, A. P. (2006). Assessing family outcomes: Psychometric evaluation of the family quality of life scale. *Journal of Marriage and Family*, 68, 1069-1083.
- Jackson, C. W., & Turnbull, A. P. (2004). Impact of deafness on family life: A review of the literature. *Topics in Early Childhood Special Education*, 24(1), 15-29.
- Jackson, C. W., Wegner, J. R., & Turnbull, A. P. (2010). Family quality of life following early identification of

- deafness. *Language, Speech, and Hearing Services in Schools*, 41, 194-205.
- Jokinen, N., & Brown, R. I. (2005). Family quality of life from the perspective of older parents. *Journal of Intellectual Disability Research*, 49 (10) 789-793.
- Luckner, J. L., & Velaski A. (2004). Healthy families of children who are deaf. *American Annals of the Deaf*, 149 (4), 324-335.
- Maxwell, J. A. (2005). *Qualitative research design: An interactive approach*. Thousand Oaks, CA: Sage Publications.
- Merriam, S. B. (2002). *Qualitative research in practice*. San Francisco, CA: Jossey-Bass.
- Mertens, S. M. & McLaughlin, J. A. (2004). *Research and evaluation methods in special education*. Thousand Oaks, CA: Corwin Press.
- Park, J., Hoffman, L., Marquis, J., Turnbull, A.P., Poston, D., & Mannan, H. (2003). Toward assessing family outcomes of service delivery: Validation of a family quality of life survey. *Journal of Intellectual Disability Research*, 47(4/5), 367-384.
- Poston, D., Turnbull, A., Park, J., Mannan, H., Marquis, J., & Wang, M. (2003). Family quality of Life : A qualitative inquiry. *Mental Retardation*, 41(5), 313-328.
- Rubin, H. J. & Rubin, I. S. (2005). *Qualitative interviewing: The art of hearing data*. Thousand Oaks, CA: Sage Publications.
- Shalock, R. L. (2000). Three decades of quality of life: Mental retardation in the 21st century. In M. L. Wehmeyer & J. R. Patton (Eds.), *Mental retardation in the year 2000* (pp.335-356). Austin, TX: Pro-Ed.
- Summers, J. A., Hoffman, L., Marquis, J., & Turnbull, A. P., Poston, D., & Nelson, L. L. (2005). Measuring the quality of family-professional partnerships in special education services. *Exceptional Children*, 72(1), 65-82.
- Summers, J. A., Poston, D. J., Turnbull, A. P., Marquis, J., Hoffman, L., Mannan, H., & Wang, M. (2005). Conceptualizing and measuring family quality of life. *Journal of Intellectual Disability Research*, 49(10), 777-783.
- Turnbull, A. P., Summers, J. A., Lee, S., Kyzar, K. (2007). Conceptualization and measurement of family outcomes associated with families of individuals with intellectual disabilities. *Mental Retardation and Developmental Disabilities*, 13, 346-356.
- Turnbull, A. P., Turnbull, H. R., Erwin, E., & Soodak, L. (2006). *Families, professionals, and exceptionality: Positive outcomes through partnerships and trust* (5th ed.). Upper Saddle River, NJ: Pearson Education.
- Turnbull, A. P., Turnbull, H. R., Summers, J. A., & Poston, D. (2008). Partnering with families of children with developmental disabilities to enhance family quality of life. In G. Peterson-Karlan, R. Ringlaben, & P. Parette, (Eds.), *Research-based and emerging practices in developmental disabilities* (pp. 481-500). Austin, TX: Pro-Ed.
- Wang, M., & Brown, R. I. (2009). Family quality of life: A framework for policy and social service provisions to support families of children with disabilities. *Journal of Family Social Work*, 12(2), 144-167.
- Werner, S., Edwards, M., & Baum, N. T. (2009). Family quality of life before and after out-of-home placement of a family member with an intellectual disability. *Journal of Policy and Practice in Intellectual Disabilities*, 6, 32-39.
- Werner, S., Edwards, J. M., Baum, N., Brown, I., Brown, R. I., & Isaacs, B. J. (2009). Family quality of life among families with a member who has an intellectual disability: An exploratory examination of key domains and dimensions of the revised FQOL Survey. *Journal of Intellectual Disability Research*, 53(6), 501-511.
- Zuna, N. I., Turnbull, A., & Summers, J. A. (2009). Family quality of life: Moving from measurement to application. *Journal of Policy and Practice in Intellectual Disabilities*, 6(1), 25-31.

**NEARLY TWO DECADES AFTER THE IMPLEMENTATION
OF PERSONS WITH DISABILITIES ACT:
CONCERNS OF INDIAN TEACHERS TO IMPLEMENT INCLUSIVE EDUCATION**

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This study examined the concerns of regular secondary school teachers in Delhi, India in order to work with students with disabilities in inclusive education settings. A total of 470 teachers responded to a two-part questionnaire. Part-one of the questionnaire collected information related to personal and professional characteristics of the teachers. Part-two was a Likert scale which required the teachers to indicate their concerns on a list of statements related to inclusion. Data was analyzed using descriptive statistics and t-tests. The data indicated that the teachers in Delhi, overall, had a moderate level of concerns to implement inclusive education in their schools. These teachers were however not concerned about their increased workload due to inclusion. In addition, an overwhelming majority (95%) of the teachers indicated that they had not received training in special education. The implications for teacher training in India are discussed in terms of the different models that can improve teacher quality for inclusive education.

The demand to educate students with disabilities in inclusive education setting continues to grow worldwide. It has become a major policy focus in the last three decades in India as well. The passage of the Persons with Disabilities (PWD) Act in 1995 was a significant step by the Indian government in this regard. The law emphasized that schools should ensure that whenever possible the education of students with disabilities should take place with their peers without disabilities. A natural corollary of this Act was the expectation that regular classroom teachers would be required to possess the appropriate attitudes, knowledge and skills in order to fulfill their new roles and responsibilities.

Research conducted in western countries regarding teacher perceptions towards inclusive education indicate that many teachers hesitate about including students with disabilities in their classrooms (Forlin & Chambers, 2011; Hemmings & Woodcock, 2011). One of their most primary concerns is that they believe that they lack specialized skills needed in instructing these students. A number of researchers assert that a teacher's willingness to include specific students is strongly influenced by factors such as their attributes (Sachs, 2004), the nature and severity of the disabling conditions of the learners (Elkins & Porter, 2005), availability of physical and human resources (Bradshaw and Mundia, 2006), and their pre-service and in-service training (Chong, Forlin & Au, 2007).

The available research on teacher attitudes indicates that while many general education teachers philosophically support inclusion, most have strong concerns about their ability to implement these programs successfully (Das, Gichuru & Singh, 2013). For instance, studies have shown that most general education teachers do not agree that they have or will be provided with sufficient planning and instructional time necessary to support inclusion (Barton, 1996). Other studies have shown that even after receiving professional development training, many teachers still question their ability to teach students with disabilities, and some doubt they will be provided with the necessary support and resources (Vaughn, Schumm, Jallad, Slusher & Saumell, 1996). In addition, a few studies found that secondary school teachers are often less positive than their elementary counterparts, and in some cases, more resistant to additional responsibilities that inclusion brings with it (Bender, Vail & Scott, 1995).

Inclusive Education in India

The origin of government's effort to promote inclusive education in India can be traced back to 1974 when for the first time the scheme of Integrated Education of Disabled Children (IEDC) was implemented by the central government in select blocks of the country. This scheme broke new ground by stressing the need for educating children with mild to moderate disabilities in regular school settings. Since then a number of policies, programs and legislations have been implemented that strengthened the government's commitment to this imperative. In 1986, The National Policy on Education (NPE) brought the fundamental issue of equality for students with special needs to the forefront. It stated that the *objective should be to integrate physically and mentally disabled people with the general community as equal partners, to prepare them for normal growth and to enable them to face life with courage and confidence*. While the NPE (1986) helped set the stage for further inclusive education, it was the adoption of the Plan of Action (POA) in 1992 paved a solid ground for this initiative. The POA strengthened the initiatives of the National Policy by demanding that children with special needs be educated only in regular schools and not in special schools as had been allowed earlier. All of these efforts got a boost by a shot in the arm when the Government of India passed The Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act in 1995. This law required that all states and Union Territories must ensure that persons with disabilities have access to the same educational opportunities and basic human rights as their peers without disabilities. The Act further emphasized that, whenever possible, students with disabilities should be educated in regular school settings.

Since the passage of this landmark legislation in 1995, a number of other significant initiatives have taken place as well. Those include *Sarva Siksha Abhiyan* [Education for All movement] launched in 2001 that included a policy of 'zero reject'. It suggested that no child that has special needs could be neglected or denied enrolment on the basis of a disability. In 2005, the Ministry of Human Resource Development implemented a National Action Plan for inclusion in education of children and youth with disabilities. The main objectives of this plan were to ensure that: (a) no child is denied admission in mainstream education, (b) no child would be turned back on the grounds of disability, and (c) mainstream and specialist training institutions serving persons with disabilities, in the government or in the non-government sector, facilitate the growth of a cadre of teachers trained to work within the principles of inclusion

Policies, programs and legislation initiatives discussed thus far shows unequivocal commitment of the government for the inclusive education of children with disabilities in India. The policy shift that took place in 1974, away from segregated setting to a more inclusive setting, has been strengthened by a number of initiatives of the government of India and support structure and financial assistance provided by outside agencies such as the World Bank, UNESCO, UNICEF to name a few.

A natural corollary of these developments was the expectation that regular school teachers in India would be required to possess the appropriate attitudes, knowledge and skills to fulfill their new roles and responsibilities. A number of researchers have conducted empirical research that does not however paint an optimistic picture. For example, Das (2001) conducted a needs assessment of primary and secondary regular school teachers in Delhi and reported that the teachers did not consider themselves to be competent in majority of the skills needed in teaching students with disabilities. These teachers indicated that they did not have adequate knowledge of: various disabling conditions, procedures required in developing and implementing Individual Education Programs (IEPs) and government policies and programs for children with disabilities. Sharma (2001) found that both principals and teachers in Delhi were concerned about lack of resources (e.g. special education teachers and paraprofessional staff), the non-availability of instructional materials, the lack of funding, and the lack of training to implement inclusive education.

Teacher Concerns for Inclusive Education

The inclusion of students with disabilities into regular classrooms is viewed by some educators as extra workload and increased responsibilities (Danne, Beirne-Smith, & Latham, 2000; Menlove, Hudson & Suter, 2001). Teachers face another major issue which is non- acceptance of special needs students by their peers without disabilities (Danne et al., 2000). The teachers also expressed apprehensions that the dynamics within the inclusive setting may impact the academic progress of students without disabilities (Forlin, 1998). Some regular education teachers view the inclusive setting as difficult and stressful especially when they need to collaborate with related service professionals such as psychologists or speech, physical or occupational therapists (Friend & Cook, 2012).

In a study conducted by Vaughn et al. (1996), teachers expressed that they were deeply concerned about the implications of inclusion programs to their profession. They feared dilution of academic success of students in

general, their inability to handle extra workload involved in implementing inclusion, innate fear of failure to teach students with disabilities and subsequent law suits, as well as apprehension regarding the redefinition of their roles as an educator.

The findings of an investigation conducted by McLeskey, Waldron, So, Swanson and Loveland (2001) regarding the perspectives of teachers toward inclusive education, concur with the contention that while most teachers support the concept of inclusion, and believe it as the basic right of children with disabilities, they have justifiable concerns about including such students in regular classrooms. They maintain that if successful inclusive education programs are to be developed, these concerns must be addressed and ameliorated to ensure that inclusion programs are successfully implemented, teachers have professional roles that are satisfying and reasonably demanding, and students benefit from these programs.

Welch (1989) expressed the need for addressing teacher concerns in inclusive education in very strong words by stating that: *teachers' concerns about implementation of innovative change seem to be the threshold that must be crossed before change can occur; otherwise agents and advocates of change are likely to shoot themselves in the foot* (p.539).

The common concerns that are recurrently expressed by school teachers regarding the inclusion of students with disabilities into their regular classrooms include: negative attitudes, safety issues, physical accessibility, behaviour problems, large class size, meeting the educational needs of students with and without disabilities, social needs, designing and implementing curriculum and instructional adaptations, evaluation, grades and diplomas, additional work and responsibility, teacher stress, collaborative problem-solving relationships, lack of financial support, inadequate teaching materials and equipment, lack of specialized personnel, lack of support from school administrator, time and scheduling issues and lack of training in special education (Avramidis et al., 2000; Das, 2001; Das et al., 2013; Forlin & Chambers, 2011; Hemmings & Woodcock, 2011; Rose, 2001; Sharma, Moore & Sonawane, 2009)

While statistics show that the issue of disability is huge in India, approximately 30 million children with disabilities (Chief Commissioner of Persons with Disabilities, 2007), there has been a dearth of research on teacher concerns regarding inclusive education. A review of literature yielded only three studies (Shah, 2006; Sharma, 2001, Sharma et al., 2009) that were done on this topic in India. This study, therefore, was an attempt to gain further understanding of teacher concerns especially in the light of implementation of policies and programs relating to inclusion since the passage of the Persons with Disabilities Act in 1995. Specifically, the aims of the study were to investigate the concerns of secondary school teachers in Delhi, India about implementing inclusive education and the effects of the selected background variables on their concerns.

Method

Instrumentation

A two-part survey instrument was used in this study. Part-one gathered information about personal and professional characteristics of the respondents. Part-two employed the Concerns about Inclusive Education Scale (Sharma & Desai, 2002).

Personal and Professional Characteristics. Part-one of the survey instrument collected information relating to personal and professional characteristics of the teachers. The respondents were requested to provide information regarding the following aspects: gender, age, highest level of education, years of teaching experience, contact with a person with a disability, training in special education/inclusion, perceived knowledge of the PWD Act, 1995 and perceived level of confidence in teaching students with disabilities.

Concerns about Inclusive Education Scale. Part-two of the questionnaire was the Concerns about Inclusive Education Scale (CIES). This scale was developed by Sharma and Desai in 2002. This is a 21 item Likert scale. The CIES is designed to measure the concerns of school principals and teachers regarding the inclusion of students with disabilities. The scale consists of a four point Likert-type classification with responses labelled extremely concerned (4), very concerned (3), a little concerned (2) not concerned at all (1) to measure the level of educators' concerns. The validity of the CIES was addressed by Sharma and Desai (2002) through a panel of experts. The reliability coefficient for the scale was found to be 0.91.

The concern score for an individual is calculated by adding all of the responses on each item. The CIES yields a total-scale score that is obtained by adding the value of responses on each item. An educator's concern score on CIES may range from 21 to 84; with a high score on CIES indicating that the respondent is highly concerned about including the students with disabilities in the classrooms compared with those respondents with lower

scores. The respondent who marks 'not concerned at all' in all the 21 questions gets a score of 21; while a respondent who marks 'very concerned' in all the 21 items obtains a score of 84. Sharma and Desai (2002) indicated that the CIES has four factors that include:

1. Teachers' concerns for resources (Factor I),
2. Teachers' concerns for acceptance of special students (Factor II),
3. Teachers' concerns for academic standard of the classrooms (Factor III), and
4. Teachers' concerns for the workload in inclusive settings (Factor IV).

Participants

Participants in this study were regular classroom teachers working in secondary schools under Vidya Bharti Management in Delhi. Although it is a privately run organization, it adheres to government rules and regulations for many key aspects including grade level promotion or retention and high school graduation. It operates 35 secondary schools in four zones of Delhi. The east zone, the west zone and the south zones each have 9 secondary schools while the north zone has 8 secondary schools. Out of these 35 schools, there are some where children with special needs are educated alongside their non-disabled peers. Three schools in each zone were selected based on where inclusive education program for special needs children was currently being implemented.

It is important to mention here that India has two parallel systems of schooling (government and private) that provide educational opportunities to its pupils. According to India Human Development Survey (2005), about 68% children in 6-14 years of age group are enrolled in government schools with 42% and 76% of the urban and rural students in government schools respectively. Private school enrollment stands at 58% in urban areas to 24% in rural areas. This shows a strong establishment of private school system in India. It is therefore important that the concerns of the teachers working in private schools be identified as previous studies focused on the measurement of concerns of the teachers working in government run schools.

Sampling and Data Collection

A simple cluster sampling method was employed to select the sample for this study. A total of 500 teachers from 12 schools were invited to participate in the study. Of these, 470 responded yielding a response rate of 94%.

Results

Personal and Professional Characteristics

Information about the teachers' personal and professional characteristics is presented in Table 1. It is clear from the demographic descriptions of responding teachers (n= 470) that the majority of the participants were females, younger teachers (<40 years) with a postgraduate degree and had less than ten years of teaching experience. The vast majority of teachers (90%) had not received training in special education, did not have adequate knowledge of the PWD Act, 1995 and possessed an average level of confidence for teaching special needs students. In addition, the majority of teachers did not have any contact with a person with a disability.

Teachers' Concerns for Inclusive Education

In order to determine the teachers' concerns regarding inclusive education, their responses on CIES were examined. The means for each of the items of the CIES were computed. A mean score of 2.0 or above would indicate teachers' concern for an item; while a mean below 2.0 would indicate that the teachers are not concerned about that item. The concerns mean score of the teachers in this study was 2.37. As stated earlier that the concerns of the teachers on the CIES can range from 4 (extremely concerned), 3 (very concerned), 2 (little concerned) to 1 (not at all concerned). As the concern mean score of 2.37 falls between 2 and 3, it can be concluded that the teachers in Delhi had a moderate level of concerns about implementing inclusive education practices in their classrooms.

In addition to determining the overall concerns of the teachers in this study, further analysis was conducted to determine their relative concerns on each of the four factors of the CIES. The data analysis indicated that the teachers in Delhi were most concerned about the lack of resources (2.76) followed by decline in academic standard of the classrooms (2.33), lack of acceptance of students with special needs (2.32). Factor 4 (concerns about increased workload in inclusive settings, mean = 1.99) failed to meet the minimum requirement for it to be considered as a concern. As mentioned earlier, a minimum score of 2.0 was required in this study for an item or a factor to qualify as a concern. Teachers in Delhi therefore are not concerned about their increased workload in inclusive setting.

Table 1. Teachers' Demographic Information

Characteristics	n	%
1. Gender		
Male	154	33
Female	316	67
2. Age		
20-30 years	100	21
31-40 years	173	38
41-50 years	129	27
Above 50 years	68	14
3. Highest level of education		
Intermediate	2	<1
Graduate	172	37
Post Graduate	296	63
4. Teaching experience		
1-5 years	116	25
6-10 years	98	21
Above 10 years	256	54
5. Training in special education		
Yes	23	5
No	447	95
6. Perceived knowledge of <i>The Persons with Disabilities Act, 1995</i>		
Very Good	7	1
Good	14	3
Average	93	20
Poor	93	20
Nil	263	56
7. Confidence in teaching students with disabilities		
Very High	49	10
High	58	12
Average	237	51
Low	75	16
Very Low	51	11
8. Contact with a person with a disability		
Yes	50	10
No	420	90

Research Question 1. What is the rank order of importance attached to each concern by the teachers regarding the inclusion of students with disabilities?

Table 2 indicates that the teachers were not concerned about lack of incentives (Mean = 1.72), increasing workload (Mean = 1.84) or decline of their performance (Mean = 1.95). These three items also received the lowest mean scores of all the items included in the questionnaire. The data indicated that the teachers in Delhi were most concerned about inadequate availability of paraprofessional staff (Mean = 2.93) followed by inadequate availability of instructional materials (Mean = 2.85) and then difficulties with including students lacking self-help skills (Mean = 2.78).

Research Question 2. Is there a significant relationship between the teachers' concerns about inclusive education and the following personal and professional characteristics: gender, age, highest level of education, years of teaching, training in special education, contact with a person with a disability, knowledge of the PWD Act, 1995 and level of confidence in teaching students with disabilities?

Table 2. Rank Order of Teachers' Concerns for Inclusive Education

Item of concern (Abbreviated)*	Mean of	concernFactor
Inadequate Para-professional staff	2.93	I
Inadequate instructional materials	2.85	I
integrating students lacking self-help skills	2.78	III
Inadequate resources/Special Education Staff	2.76	I
Inadequate administrative support	2.75	I
Inappropriate infrastructure	2.71	I
Lack of knowledge and skills	2.70	II
Difficult to divide attention	2.56	III
Not enough funds	2.56	I
Non- acceptance by non-disabled students	2.26	II
Not enough time	2.22	II
Decline of academic achievement of non-disabled students	2.22	IV
Difficult to maintain discipline	2.21	II
Non-acceptance by parents	2.20	II
Decline of school academic standard	2.19	III
High anxiety and stress in teachers	2.16	III
Additional paper work	2.15	IV
Increased stress level in other staff	2.03	IV
Decline of educators' performance	1.95	III
Increased workloads	1.84	IV
Lack of incentives	1.72	IV

Table 3 indicates the concerns of secondary school teachers in Delhi according to their background variables. While female teachers were more concerned (2.40 ± 0.12) about the inclusion of students with disabilities in their classrooms than male teachers (2.30 ± 0.18), the difference between their response was statistically non-significant ($p > .05$). Those teachers who were over 40 years of age were more concerned (2.39 ± 0.17) than the teachers who were under 40 years of age (2.35 ± 0.12) and the difference between their concerns was non-significant ($p > .05$). There was not a significant difference between the teachers' concerns based on their educational qualifications ($p > .05$). Those teachers who had a graduate degree however indicated a greater level of concerns (2.41 ± 0.16) than those who had a postgraduate degree (2.35 ± 0.12). Those teachers who had more experience (over 10 years) were more concerned (2.38 ± 0.13) than the teachers who had less experience (less than 10 years) (2.34 ± 0.14) and the difference between their concerns was non-significant ($p > .05$). Concerns of the teachers whether they had a contact with a person with a disability (2.36 ± 0.30) or not (2.37 ± 0.10) were almost identical. The difference between their concerns was also statistically non-significant ($p > .05$). Those teachers who had not received training in special education expressed a greater level of concerns (2.39 ± 0.10) for inclusive education than those who had received such training (2.03 ± 0.52). The difference between their concerns was statistically significant ($p < .05$). The teachers that had the knowledge of the PWD Act expressed a little higher level of concern (2.39 ± 0.11) than those who did not have the knowledge of the Act (2.31 ± 0.54) and the difference between their concerns was not significant ($p > .05$). Those teachers who were not confident in teaching special needs children had a greater degree of concern (2.46 ± 0.55) than those who were confident in teaching such children (2.24 ± 0.53). The difference between their concerns was statistically significant ($p < .01$).

Discussion

Including students with disabilities into regular classrooms is a complex issue and its implementation is a topic of great controversy globally. A major purpose of the present study was to identify the concerns of the secondary school teachers in New Delhi regarding the inclusion of special needs students. Using the Concerns about Integrated Education Scale (CIES), it was found that the participants in this study were moderately concerned (Mean=2.37) about implementing inclusive education in their classrooms. The results of this study are similar to the findings of research conducted on this topic in other countries using the CIES. For example, Sharma et al. (2006) identified the concerns of the pre-service teachers in four countries. They reported concern mean scores of 2.21, 2.25, 2.62 and 2.68 for the teachers from Canada, Australia, Singapore and Hong Kong respectively. In another study, Bradshaw and Mundia (2006) found the concern mean score of 2.70 among 166 pre-service teachers in Brunei.

Table 3. Teachers' Concerns according to their Background Variables

Background Variables	\bar{x} (SD)	\bar{x} (SD)	t	Sig. (2-tailed)	CI
Gender	Male	Female			
	2.30 (0.55)	2.40 (0.51)	-1.76	p< .079	0.18, 0.12
Age	<40 years	>40 years			
	2.35 (0.51)	2.39(0.55)	-0.749	p<0.454	0.12, 0.17
Educational Qualifications	Graduate	Post-graduate			
	2.41 (0.52)	2.35 (0.53)	1.345	p< 0.179	0.16, 0.12
Length of Teaching Experience	<10 years	>10 years			
	2.34 (0.52)	2.38 (0.53)	-0.793	p< 0.428	0.14, 0.13
Contact with a Person with a Disability	Yes	No			
	2.36 (0.53)	2.37 (0.53)	-0.141	p< 0.888	0.30, 0.10
Training in Special Education	Yes	No			
	2.03 (0.63)	2.39 (0.51)	-2.664 *	P< 0.014	0.52, 0.10
Knowledge of PWD Act, 1995	Yes	No			
	2.39 (0.54)	2.31 (0.48)	1.395	p< 0.165	0.11, 0.54
Level of Confidence in Teaching Special Needs Children	High	Low			
	2.24 (0.53)	2.46 (0.55)	3.088 **	p< 0.002	0.21, 0.19

*p<.05, **p<.01 CI = confidence interval

A number of researchers have conducted concern studies in other states in India using CIES and have found similar results as well. For example, Shah (2006) conducted a study in the state of Gujarat and reported that the teachers expressed moderate level of concerns for inclusion. Sharma et al. (2009) conducted a survey of 478 pre-service teachers in the state of Maharashtra and reported a moderate degree of concerns (mean=2.25) as well among these teachers. The present study, however, shows that the educators of Vidya Bharti Management Schools in New Delhi appear to be slightly more concerned than the teachers reported in the previous two studies. This is discouraging as it indicates that the concerns of the Indian educators are increasing. Causes for these increased levels of concerns need to be explored even though the increase is very little. It may be possible that the teachers are getting increasingly concerned about inclusion and its implications as disability and human rights issues are gaining acceptance among people in India recently. Such issues are gaining momentum due to government's focus on disability issues and increased emphasis on the education of students with special needs by implementing policies and programs. Teachers on the other hand, however, are struggling with the lack of resources, lack of training in special education or perhaps even their own lack of skills to meet the needs of children with disabilities as indicated in Table 1 earlier.

This study indicates that the lowest levels of concerns of the teachers was in Factor 4 (Mean=1.99) of the CIES. In fact, this factor did not even meet the criteria to indicate a concern (a minimum mean score of 2.0 was required for a factor or an item to register as a concern). The items in this factor related to concerns for decline of academic achievement of non-disabled students, concerns about additional paper work, concern for the stress levels of teachers, increased workload of teachers and concern for the lack of incentives. This shows that the teachers in Delhi are not concerned about the issues mentioned above. Such findings are encouraging as it shows teachers' willingness to implement inclusive education in spite of personal hardships that they face in this process.

Looking at the variable of gender, it was observed that both male and female teachers were highly concerned about lack of resources in classrooms, but both the genders were least concerned about workload due to inclusion in their classrooms. As an Indian female, the first author can understand the reason for female teachers being more concerned than their male counterparts because in Indian society females mostly bear responsibility for rearing the children. The males in Indian society do not usually spend as much time with child rearing and household activities. They are mostly bread winners for the family and focus their time and energy on activities outside the day-to-day management of the household. These aspects can have impact on male teachers being less concerned about including students with special needs in their classrooms.

According to the age variable, results in this study indicated that the older teachers (who were more than 40 years old) were slightly more concerned than the younger teachers (who are less than 40 years old). Several studies (Loreman, 2002; Riley, 1997) have suggested that younger teachers hold more positive attitudes towards the inclusion of special needs students in their classrooms compared with their older colleagues. Younger teachers with positive attitudes towards integrated education are less concerned about inclusive education. The results of this study are also similar to the results of previous studies (Loreman & Deppler, 2001) which reported that younger teachers were less concerned about inclusion than their older colleagues.

The teachers who had some experience working with students with disabilities claimed to possess more knowledge about inclusive education. It shows that when younger teachers face some difficulty in understanding or teaching special needs children, they may try to overcome the challenge by seeking more information from their senior colleagues. Similarly, the teachers who have already taught special needs children in their classrooms, claimed to possess more behavior management knowledge to overcome challenges and to deal effectively with next class of special needs children.

In this study, those teachers, who were already skilled in inclusive education and had some experience working with special needs children, did not have many concerns about inclusive education. Those teachers who did not have training in special education are anxious and apprehensive as they have never undergone any training or have not seen a functioning model of inclusion. Other studies (Chong et al., 2007; Shah, 2006) reported that those teachers who had some focus on special education during their tertiary education were less concerned as compared with those teachers who never had any focus on special education for integrating special needs students in their classrooms.

The demographic information of the study shows that only 5% of the teachers had undergone training in special education. It is a matter of grave concern that schools are implementing inclusion programs without having trained personnel. These teachers should, therefore, be provided with adequate opportunities for professional development. Ongoing professional development opportunities should be made available to these teachers in very near future. Literature has indicated that teachers have benefited from in-service programs which form part of a long-term systemic staff development plan rather than from single-shot short-term programs (David & Kuyini, 2012). In addition, due to the large teacher population and the limited availability of fiscal resources in India, it is further proposed that the training programs for these teachers should be carried out using *train-the-trainer* model. In the first stage, one teacher from each school should be provided with intensive training. Subsequently, this teacher should be required to carry out training programs for all teachers in his/her school. This is an option for policy makers in India especially given that Article 23L(2) of the draft amended PWD Act (Center for Disability Studies, 2011), which relates to teacher training, outlines that *All educators should be trained to teach students with disabilities in an inclusive classroom* (p. 71). This would improve teacher competencies for inclusive education across India in a more sustainable way.

There is also an urgent need to re-examine the regular education teacher training curriculum in India. As increased number of students with disabilities enter mainstream classrooms, it is therefore imperative that the pre-service regular education teachers are equipped with knowledge and skills to meet the needs of these children. The teachers should be provided with increased opportunities to learn characteristics, instructional strategies, classroom management and policies and procedures for the instruction of students with disabilities. In addition, they should be provided with opportunities for increased contact with these students during pre-service teacher preparation programs.

For reasons of time, cost and practicality, the results of this study were based on a limited number of settings and providers which were focused in one educational institution, the Vidya Bharti Management schools in New Delhi. The model of inclusive education adopted by the Vidya Bharti Management school system may be different from the models of inclusive education adopted by other schools. The investigated schools followed what they called the 'full inclusion' model, in which all students with learning disabilities were placed in general education classrooms for the entire day. It would have been beneficial to determine what types of social support were available to students with disabilities to facilitate their social functioning and peer relationships in the inclusive education setting. Also, the data were collected from teachers who were from a relatively small geographic region; therefore, their responses may not be representative of teachers from other regions in India. Furthermore, only respondents from secondary schools were included in the present study. Perceptions about inclusive practices at the elementary level might be quite different and require additional investigation. The results of this study revealed that there are a lot of potential areas for further studies and activities which would provide a better understanding of inclusive education in India. While this study covered only one state (Delhi) in India, there may be different results that may emerge from other parts of India. An important need for more

extensive investigation is based on the heterogeneity of Indian education. Literacy rates in various states in India are vastly different. This is evident in the data presented by the National Sample Survey Organization (2011). For example, while Kerala has a literacy rate as high as 92%, some states such as Bihar and Rajasthan have the literacy rates as low as 53.3% and 52.7% respectively.

This study covered only school teachers' concerns towards inclusive education. In more inclusive research, other key informants such as school principals and administrators, teacher educators and policy makers should also be included. More investigation is warranted to explore whether those teachers who have undergone comprehensive pre-service training about implementing inclusive education are more successful teachers in an inclusive setting. This research may further highlight the significance and need of professional development and in-service training of teachers for successful inclusion. Only knowledge variables, contact variables and demographic variables were used in this study but there are many more variables such as class size, ongoing professional development and geographical situation that could influence teachers' concerns for inclusive education.

Conclusion

A moderate level of teacher concerns for inclusive education, as found in this study, should be a matter of 'real concern' for policy makers in India. Previous research conducted in India in this area has consistently conveyed this message (Bhatnagar & Das, 2013; Das, Sharma & Singh, 2012; Das et al., 2013; David & Kuyini, 2012). Policy initiatives coupled with fiscal support from the government of India and outside agencies such as UNESCO and the World Bank have been directed towards inclusive education to a greater degree since the passage of the PWD Act, 1995. While these initiatives have brought the notion of inclusive education to the forefront of society, much work however is needed to be done to appropriately meet the needs of about 30 million children with disabilities in India. Successful participation of regular school teachers is instrumental for this reform in India. There is an urgent need to address their concerns in order to realize inclusion imperative for such a large number of children with disabilities in India.

References

- Avramidis, E., Bayliss, P., & Burden, R. (2000). A survey into mainstream teachers' attitudes towards the inclusion of children with special educational needs in the ordinary school in one local education authority. *Educational Psychology*, 20(2), 191-211.
- Barton, L. (1996). *Disability and Society: Emerging Issues and Insights*. Longman Publishers.
- Bender, W.N., Vail, C.O., & Scott, K. (1995). Teachers' attitudes toward increased mainstreaming: Implementing effective instruction for students with learning disabilities. *Journal of Learning Disabilities*, 28(2), 87-94.
- Bhatnagar, N., & Das, A. K. (in press). Attitudes of Secondary School Teachers towards Inclusive Education in New Delhi, India. *Journal of Research in Special Educational Needs*.
- Bradshaw, L., & Mundia, L. (2006). Attitudes to and concerns about inclusive education: Bruneian in-service and pre-service teachers. *International Journal of Special Education*, 21(1), 35-41.
- Center for Disability Studies (2011). Persons with Disabilities Act, 2011 working draft. Unpublished manuscript, NALSAR University of Law, Hyderabad, 1-118.
- Chief Commissioner of Persons with Disabilities (2007). Disability in India. New Delhi: Ministry of Social Justice and Empowerment.
- Chong, S., Forlin, C. and Au, M. L. (2007). The influence of an inclusive education course on attitude change of preservice secondary teachers in Hong Kong. *Asia Pacific Journal of Teacher Education*, 35(2), 161-179.
- Danne, C.J., Beirne-Smith, M., & Latham, D. (2000). Administrators' and teachers' perceptions of the collaborative efforts of inclusion in the elementary grades. *Education*, 121(2), 331-338.
- Das, A. K. (2001). Perceived Training Needs of Regular and Secondary School Teachers to Implement Inclusive Education Programs in Delhi, India. Unpublished doctoral dissertation, The University of Melbourne.
- Das, A. K., Sharma, S. & Singh, V. K. (2012). Inclusive education in India: A paradigm shift in roles, responsibilities and competencies of regular school teachers. *Journal of Indian Education*.
- Das, A. K., Gichuru, M., & Singh, A. (2013). Implementing inclusive education in Delhi, India: Regular school teachers' preferences for professional development delivery modes. *Professional Development in Education*, doi:10.1080/19415257.2012.747979
- David, R. & Kuyini, A.B. (2012). Social inclusion: Teachers as facilitators in peer acceptance of students with disabilities in regular classrooms in Tamil Nadu, India. *International Journal of Special Education*, 27(2), 1-12.
- Elkins, J. & Porter, J. (2005). Departmental differences in attitudes to special educational needs in the secondary school. *British Journal of Special Education*, 32(4), 188-95.

- Forlin, C. (1998). Teachers' personal concerns about including children with a disability in regular classrooms, *Journal of Developmental and Physical Disabilities*, 10(1), 87-100.
- Forlin, C., & Chambers, D. (2011). Teacher preparation for inclusive education: Increasing knowledge but raising concerns. *Asia-Pacific Journal of Teacher Education*, 39(1), 17-32.
- Friend, M. & Cook, L. (2012). *Interactions: Collaboration Skills for School Professionals*. Boston, MA: Pearson.
- Hemmings, B., & Woodcock, S. (2011). Preservice teachers' views of inclusive education: A content analysis. *Australasian Journal of Special Education*, 35(2), 103-116.
- India Human Development Survey (2011). India Human Development Survey – II (February 2011). National Council of Applied Economic Research and University of Maryland.
- Loreman, T. (2002). Teacher Education and Inclusion. Paper presented at the XIIIth World Congress of Inclusion International, Melbourne, Australia.
- Loreman, T. & Deppeler, J. (2001). Inclusive Education in Victoria: the UNESCO Education for All 2000 Assessment. In *Education for All: UNESCO Report Card on Inclusive Education in Australia* (Fyshwick: National Council on Intellectual Disability), pp.69-72.
- McLeskey, J., Waldron, N.L., So. T., Swanson, K., & Loveland, T. (2001). Perspectives of teachers towards inclusive school programs. *Teacher Education and Special Education*, 24(2), 108- 115.
- Menlove, R. R., Hudson, P. J., & Suter, D. (2001). A field of IEP dreams: Increasing general education teacher participation in the IEP development process. *Teaching Exceptional Children*, 33(5), 28-33.
- National Sample Survey Organisation (2011). Disabled Persons in India, NSS 67th Round (July 2010-June 2011), National Sample Survey Organisation.
- Riley, E. A. (1997). The Attitudes and Concerns of Catholic Parish Primary School Principals and Teachers Toward the Integration of Students with Disabilities into Regular Schools. Unpublished Masters Dissertation. The University of Melbourne, Parkville.
- Rose, R. (2001). Primary school teacher perceptions of the conditions required for including pupils with special educational needs. *Educational Review*, 53, 2, 147-156.
- Sachs, S. K. (2004). Evaluation of teacher attributes as predictors of success in urban schools. *Journal of Teacher Education*, 55(2), 177-87.
- Shah, R. (2006). *Concerns of Indian educators in Integrated Education*. Unpublished doctoral dissertation, University of Pune.
- Sharma (2001). *The Attitudes and Concerns of School Principals and Teachers Regarding the Integration of Students with Disabilities into Regular Schools in Delhi, India*. Unpublished doctoral dissertation, The University of Melbourne.
- Sharma, U., & Desai, I. (2002). Measuring concerns about integrated education in India. *The Asia-Pacific Journal on Disabilities*, 5(1), 2-14.
- Sharma, U., Loreman, T., Forlin, C., & Earle, C. (2006). Attitudes, concerns and sentiments about inclusive education: An international comparison of novice pre-service teachers. *International Journal of Special Education*, 21(2), 80-93.
- Sharma, U., Moore, D., & Sonawane, S. (2009). Attitudes and concerns of pre-service teachers regarding inclusion of students with disabilities into regular schools in Pune, India. *Asia Pacific Journal of Teacher Education*, 37(3), 319-331.
- Vaughn, S., Schumm, J. S., Jallad, B., Slusher, J. Saumell, L. (1996). Teachers' views of inclusion. *Learning Disabilities Research and Practice*, 11(2), 96-106.
- Welch, M. (1989). A cultural perspective and the second wave of educational reform. *Journal of Learning Disabilities*, 22(9), 537-540.

SEXUAL BEHAVIOR IN MALE ADOLESCENTS WITH AUTISM AND ITS RELATION TO SOCIAL-SEXUAL SKILLS IN THE KINGDOM OF SAUDI ARABIA

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The present study aimed to identify common sexual behavior among adolescents with autism, where parents and teachers of sixty-one male adolescents from twelve to twenty-one years of age were recruited from three cities in the Kingdom of Saudi Arabia. They were asked to respond to a sexual behavior questionnaire, and a social-sexual skills questionnaire. Only teachers were asked to respond to a screening questionnaire for Asperger syndrome and other high functioning autism spectrum disorders to determine the functional level of the adolescents with autism in the sample. This resulted in thirty-two adolescents selected from the main sample; fifteen of them with high functioning autism, and seventeen with low functioning autism. Overall, both parents and teachers reported inappropriate sexual behavior expressed by the adolescents with autism. The results also showed significant correlations between both the social-sexual skills and reported sexual behaviors in all sub-tests and total scores. The high functioning adolescents with autism displayed significantly less inappropriate sexual behavior and significantly more social-sexual skills when compared to adolescents with low functioning autism.

Adolescence is the developmental stage where humans learn about and generally first experience sexuality. This is no different in individuals with autism. One of the major concerns in the field of autism is the sexuality of adolescents since they tend to display sexual interests and a wide range of sexual behaviors (Hellmans, Roeyers, Leplae, Dewaele & Deboutt, 2010; Kalyva, 2010; Ruble & Dalrymple, 1993). Autism can occur in association with any level of cognitive ability and functionality. Individuals with autism are divided into two groups: individuals who have an intellectual disability are considered as having low functioning autism (LFA) while those without intellectual disability are referred to as having high functioning autism (HFA) (Mesibov & Ousley, 1991; Stokes & Kaur, 2005; Wing & Gillberg, 1999). Both HFA and LFA often display inappropriate sexual behaviors due to their social deficit, which is the most remarkable feature of the autism disorder (Bourgondien, Reichle, & Palmer, 1997; Haracopoco & Pederson, 1992). Nevertheless, only a few studies have addressed the problems and the questions of sexual behavior and the social skills associated with autism (Kaur, 2005; Realmut & Ruble, 1999; Schofield, 2004; Sullivan & Caterino, 2008). Even though they are rare, such studies could be useful for both parents and those who work in the field of autism, particularly for those dealing with adolescents.

Sexual desires normally arise when one reaches puberty, and this does not differ in the case of individuals with autism (Gabriels & Hill, 2007; Haracopoco & Pederson, 1992; Sullivan & Caterino, 2000). The way in which the sexual desires are being dealt with and expressed is one of many challenges that parents and caregivers face (Kaur, 2005). Reaching the adolescent stage increases the problems individuals with autism have to face in terms of physical changes, environmental changes and societal expectations. They frequently fail to appropriately handle these issues and thus it affects their feelings and emotions negatively. Moreover, it is well-known that social interaction with others is a necessary factor to learn proper sexual behavior, but since individuals with autism lack such experiences, they miss valuable learning opportunities (Hellmans, Colson, Verbraken, Vermeiren & Deboutte, 2007; Sullivan & Caterino, 2008). Furthermore, autism affects the way individuals make sense of the environment and how they interact with others and failing to understand society's rules, traditions and regulations which lead to unsuitable behavior which might cause social rejection from others. This may cause distress not only to adolescents with autism, but also to their parents and caregivers (Sullivan & Caterino, 2008).

Consequently, and also due to their poorly developed social skills and their lack of social understanding, many adolescents with autism are reported to show inappropriate sexual behavior in public. These inappropriate public behaviors include masturbation, rubbing their genitals, and undressing (Realmut & Ruble, 1999; Volkmar, Paul, Klin & Cohen, 2005). Haracopco and Pederson (1992), studied a group that included eighty-one adolescents with autism aged between sixteen and forty, of which 22 were HFA. In this study, Haracopco and Pederson found that 68% were masturbating, and of these, 25% would masturbate daily, and 53% would masturbate in public. They also found that the vast majority (90%) of their sample displayed inappropriate sexual behavior towards others. In another study, Stokes and Kaur (2005) compared adolescents with autism and adolescents from the general population. The results indicated that adolescents with autism showed more inappropriate sexual behavior than their peers and caused more concerns among their parents. Ruble and Dalrymple (1993) distributed a questionnaire to a sample of a hundred caregivers of individuals with autism. This questionnaire covered social-sexual awareness, sex education, and sexual behavior. These caregivers oversaw individuals with autism of which 32% females, while 68% were males. Results of the questionnaire revealed that 28% of individuals with autism undress in public, 23% masturbate in front of others, while 14% masturbate using objects and 18% touch people of the opposite sex in inappropriate ways.

It is also vital to explore the understanding and application the social skills linked to sexual behavior. Skills include washing the genitals, general hygiene and self-care, knowing whom one is allowed to kiss or hug, knowing with whom and when one is allowed to talk about sexual matters, and knowing that it is not proper to touch the genitals in public. These skills are vitally important due to their impact on both sexual behavior and their own relationships with others. Hellemans et al., (2007) have studied a group of four-twenty HFA male adolescents and found that the correct social-sexual skills were fairly well-known in theory, but the practice of them was moderate. Thus, 46% of the sample would hug and touch others, while 17% of them would pay no attention as to whether their actions caused discomfort or not. Bourgondien, Riechle and Palmer's (1997) studied 89 individuals with autism aged between 16 and 59. In this study Bourgondien, Riechle and Palmer found that 58% of their sample would masturbate, while 24% of those studied would use objects during masturbation, and 34% those studied displayed sexual behavior towards others. Lunsy and Konstantareas (1997) indicated in their study that the adolescents with autism who did not receive any training would have limited ability in determining and naming social-sexual skills. Usually such skills are acquired normally from social interactions. However, in the case of autism, organized training should be provided in order to improve those skills. Such training must take several aspects into consideration, including the adolescents' social skills, their level of functioning, their ability to understand the given information, and their cognitive skills (Lunsy & Konstantareas, 1997).

The purpose of this current study was to identify the common sexual behaviors of the adolescents with autism from the perspective of both parents and teachers, taking into consideration the adolescent's functional level which impacts on sexual behavior. This study additionally aims to differentiate between parents and teachers perspectives regarding the social-sexual skills of the adolescents, the correlations of the latter to the sexual behaviors and also how the adolescent's functional level impacts on their social-sexual skills.

Although sex may be considered a sensitive subject due to different religious, cultural and moral beliefs, the right to express the sexual needs according to society's rules and regulations should not be deprived from adolescents with autism (Sicile- Kira, 2006). Likewise, the proper training of social-sexual skills should be provided to help them interact properly within their community. In a country like Saudi Arabia, traditions and customs make it quite complicated to discuss sexual issues. Therefore, the dilemma starts when parents and caregivers find themselves in a difficult position where they need to seek help for their adolescents with autism in regards of sexual behavior. Since it is well known that if the individuals come from a traditional society where discussing sexual matters is a taboo, it makes it more difficult to acknowledge the problem and this might stand in the way of finding suitable solutions. Consequently, accepting sexuality as a natural course of life and establishing sexual education is rather a difficult task to accomplish in Saudi Arabia.

Method

Participants

In this study, 61 male adolescents aged 12 to 21 were recruited for this research from private centers specializing in autism in three cities: Makkah, Jeddah and Riyadh, in the Kingdom of Saudi Arabia. Administrators from each center were contacted to determine the availability of the targeted age group and the possible cooperation from both teachers and parents. This process resulted in the selection of ten centers: one in Makkah, seven in Jeddah, where one was then excluded due to credibility issues, and two in Riyadh. Each center was visited to collect the consent letters, meet with the adolescents' teachers, explain the purpose of the study, and to submit

and discuss the questionnaires. The sixty-one adolescents were from the different cities as follows: 6.4% of the sample was taken from Makkah, 52.3% from Jeddah and 41.3% from Riyadh. The information about the adolescents was obtained from 34 teachers. Some teachers filled-in more than one questionnaire and only forty-eight parents responded, where the rest of the parents did not.

Exclusion criterion was a history of sexual abuse; such information was obtained by adding an open end question to the distributed questionnaire. One individual was excluded because of a history of sexual abuse, 14 were excluded because they were not within the required age group, and six female adolescents were also excluded due to the limited number of females in comparison to the number of the male adolescents.

To determine the level of functioning among the sample, the analysis of the teacher's performance in a Screening Questionnaire for Asperger Syndrome and Other High Functioning Autism Spectrum Disorders (ASSQ) mean total score and quarters were collected as a cutoff score to identify both groups. The low quarter referred to the group who has low functioning autism while the upper quarter referred to the high functioning autism. According to this criterion thirty-two adolescents were taken from the main sample whereas fifteen of them would have HFA, and 17 would have LFA.

Instruments

Three instruments were used in this study. Two of them were constructed and developed by the researchers. The third one was *A Screening Questionnaire for Asperger Syndrome and Other High Functioning Autism Spectrum Disorders* by Ehlers, Gillberg & Wing (1999) translated by the researchers.

Sexual Behavior Scale: This scale was developed based upon previous studies and the issues these studies identified such as masturbation, using harmful objects, touching the genitals and homosexuality (Haracopco & Pederson, 1992; Hellemans, Colson, Verbraken, Vermeiren & Deboutte, 2007; Mortlock, 1993; Realmuto & Ruble, 1999; Volkmar, Paul, Klin & Cohen, 2005). The scale was designed to recognize whether the adolescent displayed any sexual behavior. Subjects responded on six points scale from 0 to 5 (0= I do not know, 1= does not happen, 2= rarely, 3= sometimes, 4= often, 5= always).

The scale consisted of 32 items concentrating on three areas:

1. Masturbation: For example, time and place of masturbation, and the use of objects. These consisted of six items.
2. Inappropriate sexual behavior towards self and others: For example, touching other's private areas, kissing and hugging others, and trying to touch family members in an inappropriate way. These consisted of fourteen items.
3. Sexual stimulation: For example, unusual sources of sexual stimulation like animals and children, and the use of harmful objects to stimulate the genitals. These consisted of 12 items.

This scale also collected basic demographic variables, including age, gender and date of birth.

The researchers used constructive validity to determine the validity of the scale. This included subset interrelationships since the sexual behavior scale is suppose to measure various aspects, though not necessary same aspects as its sub-tests. Therefore, the coefficients reported a range between 0.40-0.62 which is statistically significant and moderately lends support to their validity. As for the reliability, the scale had acceptable evidence of internal consistency inter-rater (teacher and parents) where reliability is 0.81 and Cronbach alpha is 0.93.

Social-Sexual Skills Scale: This scale was also developed based upon previous studies and the issues these studies acknowledged i.e. Hygiene, washing after using the toilet, and proper change of underwear (Hellemans et al., 2007; Konstantareas & Lunsy, 1997; Ruble & Dalrymple, 1993). It was designed to recognize whether the adolescent knows and practices the proper social-sexual skills. Subjects responded on six points rated from 0 to 5 (0= I do not know, 1= does not happen, 2= rarely, 3= sometimes, 4= often, 5= always).

The scale consisted of twenty-one items concentrating on two areas:

1. Self-care skills: For example, proper use of toilets, the wearing of proper clothes and the washing the genitals. These consisted of 11 items.
2. Social-sexual skills: For example e, knowing whom one is allowed to kiss or hug, and knowing with whom and when one is allowed to talk to about sexual matters. These consisted of ten items.

This scale also collected basic demographic variables, including age, gender and date of birth.

The same technique of constructive validity was used with the social-sexual skills scale. The coefficient reported was 0.49 which is statistically significant and moderately lends support to their validity. As for reliability, the same technique was applied where the inter-rater (teachers and parents), where reliability 0.81; Cronbach alpha 0.87.

ASSQ Scale: A Screening Questionnaire for Asperger Syndrome and Other High Functioning Autism Spectrum Disorders by Ehlers, Gillberg & Wing (1999), was translated by the researchers and used in the current study. This questionnaire shows the level of functioning of adolescents with autism. It consisted of twenty-seven items and the sub-test required ratings from 0 to 2 (0= no, 1= somehow, 2= yes).

This questionnaire had acceptable evidence of good construct validity for group differentiation. One could hypothesize that the result of the test should distinguish between the two groups: adolescents with high functioning autism and adolescents with low functioning autism. Also t-test analysis was used to compare both groups in terms of sexual behavior and social-sexual skills. The results showed statistically significant differences existed between them in the sexual behavior sub-tests as well as social-sexual skills sub-tests, $p < 0.01$. Internal consistency was used as well with this instrument: Cronbach alpha 0.72.

Results

Common Sexual Behavior

The frequency technique was used to collect the data about the sexual behavior, which is a measurement of the presence or absence of the behavior. Frequency here reflects common sexual behavior from both parent's and teacher's perspectives in the adolescents with autism.

Table 1. Common Sexual Behaviors

Statements	Parents	Teachers
Using unusual objects (unharmful) to reach sexual arousal such as leather, rubber and toys	87.6%	82%
Reaching sexual arousal by looking at people's body parts	79.1%	80.4%
Undressing in public	75%	77%
Looking under people's clothes	72.9%	74%
Rubbing the body against others for sexual arousal	70.9%	75.4%
Kissing strangers	64.6%	67.3%

Table 1 lists the total percentages as reported by both parents and teachers where one can see that some sexual behaviors are more frequent than others. Some behaviors reported more frequent by teachers when compared to parents which are as followed 'Reaching sexual arousal by looking at people's body parts'; 'Undressing in public'; 'Looking under people's clothes' and 'Rubbing the body against others for sexual arousal'. Where the most frequent ones are 'Using unusual objects (unharmful) to reach sexual arousal such as leather, rubber and toys,' and 'Reaching sexual arousal by looking at people's body parts,' while 'Kissing strangers' was the least frequent among the behaviors.

The Relationship between Social-Sexual Skills and Sexual Behavior

Person correlation was used to examine the relationship between the independent variables, the two sub-tests of the social-sexual skills, and the three sub-tests of the sexual behavior among the adolescents with autism. Moreover, Person correlation was used to examine the correlations between both scales in total scores.

In Table 2, significant correlations were found. The sub-tests of both social-sexual skills and sexual behavior have negative correlations in which most of the correlations vary between moderate and strong. The strongest relation was between both sexual stimulation and social-sexual skills sub-tests. The weakest one was between both 'Inappropriate sexual behavior towards self and others' and 'Self-care skills' sub-tests. Overall, the correlations between both scales in total scores are strong and negative which support the hypothesis that the better the social- sexual skills are, the less the inappropriate sexual behavior will accrue.

Table 2. The Correlation Between Social-Sexual Sub-Tests and Sexual Behavior Sub-Tests

<u>Social-Sexual Skills</u>	Self-Care skills	Social- Sexual Skills	Total Score for Social-Sexual Skills
Sexual Behaviors			
Masturbation	438.-**	807.-**	618.-**
Inappropriate sexual behavior towards self and others	**393.-	**708.-	**550.-
Sexual stimulation	**645.-	**833.-	**793.-
Total score for sexual behavior	**592.-	**915.-	**778.-

**P < 0.01

The Differences between HFA and LFA in Sexual Behavior

A two-sample independent t-test was computed on SPSS to determine if statistically significant differences existed between the adolescents with HFA and LFA existed in sexual behavior. The t-test, mean and SD of each group were calculated and compared.

Table 3. The Comparison Between Adolescents with HFA and LFA in the Sexual Behavior Sub-Test

Subtests	HFA		LFA		T test	DF	Sig
	N= 15		N=17				
	mean	SD	mean	SD			
Masturbation	15.08	4.8	17.21	2.85	1.98	30	0.05*
Inappropriate sexual behavior towards self and others	44.24	4.9	47.82	3.79	3.03	30	0.004**
Sexual stimulation	36.48	7.75	41.68	3.05	3.05	30	0.000***

Note. HFA= High Functioning Autism. LFA= Low Functioning Autism.

*P < 0.05. **P < 0.01. ***P < 0.001

In Table 3, the results show statistically significant differences existed between adolescents with HFA and adolescents with LFA in all three sub-tests of the sexual behaviour. The mean scores of all sub-tests were higher in the adolescents with LFA in comparison to adolescents with HFA which indicated that the adolescents with LFA displayed more inappropriate sexual behaviour than did the adolescents with HFA.

In Table 4, the results show statistically significant differences existed between adolescents with HFA and adolescents with LFA in both sub-tests of the socio-sexual skills. The mean scores of both sub-tests were higher in the adolescents with HFA in comparison with adolescents with LFA which indicated that the adolescents with HFA displayed better socio-sexual skills than the adolescents with LFA.

Discussion

The present study expands current knowledge about sexual issues in adolescents with autism in the Kingdom of Saudi Arabia. Adolescents with autism were reported to show inappropriate sexual behavior according to several

previous studies (Kaur, 2005; Realmut & Ruble, 1999; Schofield, 2004; Sullivan & Caterino, 2008) and the current study also confirms such findings.

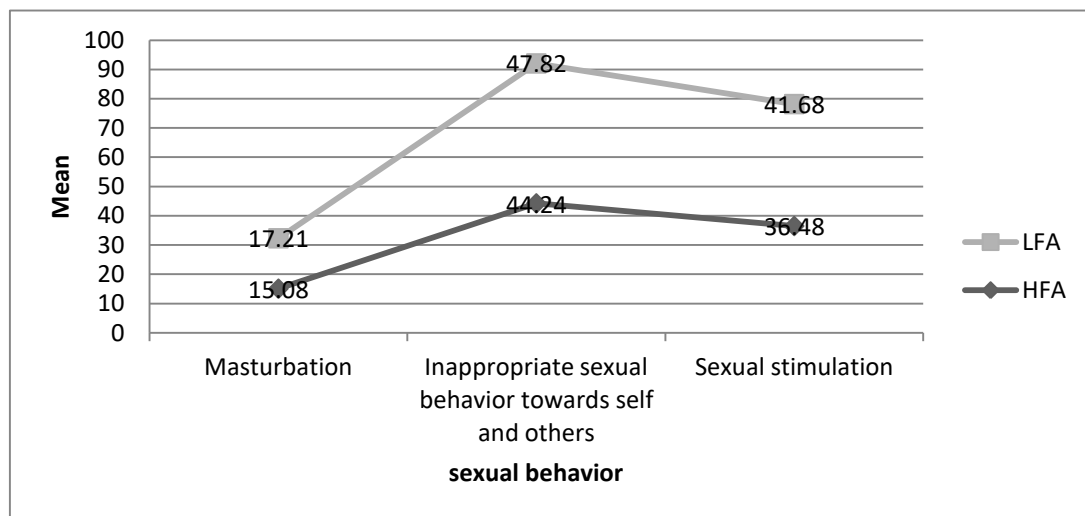


Figure 1. Significant differences were found between adolescents with HFA and adolescents with LFA in all three sub-tests of the sexual behavior scale.

The Differences between HFA and LEA in Social-Sexual Skills

Table 4. The Comparison Between Adolescents with HFA and LFA in the Socio-sexual Skills Subtests

Subtests	HFA N= 15		LFA N=17		T test	DF	Sig
	Mean	SD	Mean	SD			
Self-care skills	34.36	7.48	18.37	6.83	8.19	30	0.001***
Socio- sexual skills	25.64	0.82	15.34	1.64	7.89	30	0.001***

Note HFA= High Functioning Autism LFA= Low Functioning Autism***

***P=0.001

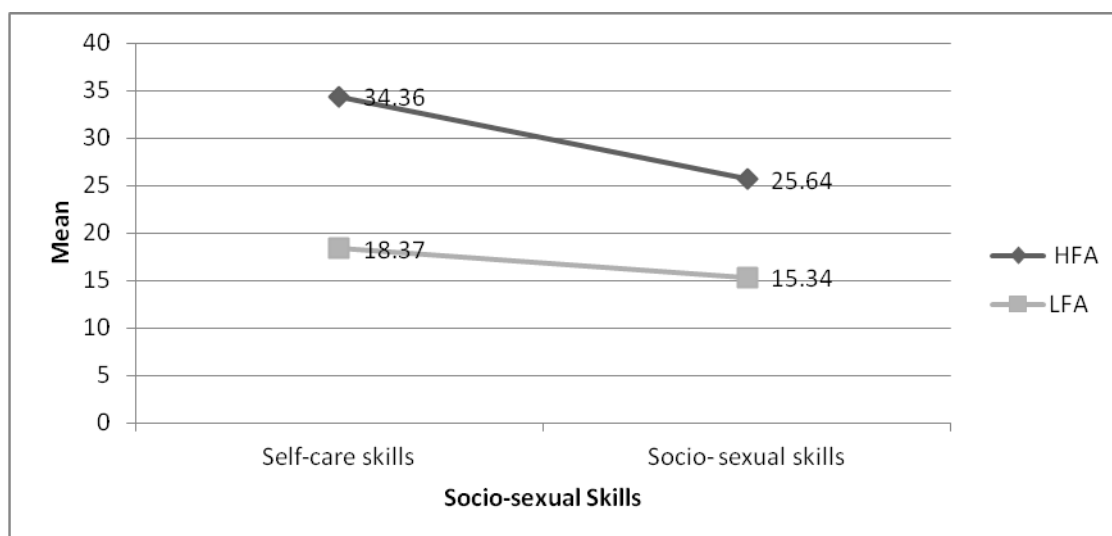


Figure 2. Significant differences were found between adolescents with HFA and adolescents with LFA in both sub-tests of the social-sexual skills scale.

Since sexual desires are a normal issue that appears in the adolescence stage of life, adolescents with autism would often express those desires in an inappropriate way due to the characteristics of autism itself. Lack of social interaction and confusion regarding social rules and regulations leads to unsuitable behavior unlike those in the general population who has the social skills to learn those rules and regulations and blend into the society.

Many inappropriate behaviors would arise in such stage in autistic adolescents. One of many such behaviors is undressing in public which was reported by 75% of the parents and 77% of the teachers in this study. This finding matches that the study by Ruble & Dalrymple (1993). Other inappropriate behaviors were also reported in the current study, the most common one was using unusual objects (unharmful) to reach sexual arousal such as leather, rubber and toys. This was reported by 87% of the parents and 82% of the teachers. Another behavior was reaching sexual arousal by looking at people's body parts which was reported by 79% of the parents and 80% of the teachers. These findings concur with other literature that also described inappropriate sexual behavior towards others (Bourgondien et al., 1997; Haracopco & Pederson, 1992; Hellemans et al., 2007; Ruble & Dalrymple 1993; Stokes & Kaur 2005). Therefore, the problems that face the adolescents with autism regarding their sexual matters are many; some of these stem from the lack of understanding of social rules as well as misconceptions of their personal feelings which leads to immature expression of sexual desires. Overall, the reasons behind such issues are related to the autistic disorder itself and not to culture, even though major differences do occur between cultures regarding the social regulations as stated in Bourgondien et al., (1997) where adolescents with autism were allowed to kiss, hug and hold hands which is not acceptable behavior in other cultures such as in Saudi Arabian society which is highly conservative and where public displays of affection or physical contact deemed against social mores.

Adolescents with autism do not have the ability to acquire socio-sexual skills on their own, and due to the lack of appropriate educational influences they could display inappropriate sexual behaviour which could be repressed, misunderstood, and incorrectly interpreted (Henault & Attwood, 2006; Lunsy & Konstantareas, 1997). The current study again confirms such issues which are obvious in the negative correlations between socio-sexual skills and inappropriate sexual behaviour. Therefore, the proper socio-sexual training should be provided to adolescents with autism according to their level and cognitive skills. It is the specialist's duty to explain the social rules and regulations in simple, precise detail and to establish a positive perspective on sexuality. This should be done to reach the aim of helping the adolescents with autism express their feelings in a suitable way so they could establish a positive coexistence with the society which they live in. Moreover, neglecting such matters could lead to a worse expression of sexual behaviour which increases distress on both the parents and the adolescents themselves.

Sexual desires are normal issues as mentioned before, so it is only natural that they appear regardless of the level of cognitive functioning. Consequently, in the current study, the sexual behavior occurred in both groups: adolescents with HFA and adolescents with LFA. Such findings suggest that an adolescent with autism, regardless the level of functioning, is likely to display inappropriate sexual behavior as showed in Hellemans et al., (2007) where inappropriate sexual behavior appeared in both groups.

Nevertheless, the level of functioning does influence how frequent the behavior occurs. A significant difference in the current study was found between both groups, where adolescents with HFA display less inappropriate sexual behavior than the adolescents with LFA. The same results were indicated in the studies of both Haracopco & Pederson (1992) and Stokes & Kaur (2005).

As for the social-sexual skills the same findings were anticipated where adolescents with HFA were supposed to display better social-sexual skills when compared to the adolescents with LFA. The findings of the current study confirm the hypothesis. As in previous studies (Stokes & Kaur, 2005; Mesibov & Ousley, 1991; Ruble & Dalrymple, 1993) the same findings were attained meaning that, although both groups showed weaknesses in applying social-sexual skills, the adolescents with HFA were more aware of them.

As a conclusion, different cultures have different teaching about what constitute sexual morality. The values, norms and beliefs we practice are learned from the surrounding society. Therefore, in a country like Saudi Arabia that is ruled by a traditional, conservative mores; conducting such a study was a bet of a challenge. Such paper though was necessary taking into consideration the need to highlight sexual behavior among adolescents with autism that occur in the society and the social-sexual skills related to it. The findings should assist in helping mothers and caregivers defining the inappropriate behavior; dealing with it and working to obtain solutions.

This study had some limitations though. Unfortunately, the sample of adolescents with autism was limited due to several factors. There are not enough centers specialized in autism that provide services to the targeted age group. In addition, lack of cooperation from some centers occurred. This is believed to be because of the sexual nature of this research topic which was culturally incongruous with the traditional highly conservative parameters of the society and thus not a topic to openly discuss or scrutinize. While working on this study, the researchers could not find another study that covers such a topic in Saudi Arabia. This is probably also due to the tendency in the culture of ignoring sexuality as a natural part of growth, and how humans explore their sexuality in many ways throughout different stages of their development. Moreover, the members of the Saudi society are inclined towards secrecy when addressing such a topic which applies to both individuals with special needs and the general population. As a consequence, the problems and concerns of sexuality in adolescents with autism are relatively neglected. Another limitation was the inadequate number of female autistic adolescents when compared to males.

Recommendations for future research would be to address the issues mentioned in the above limitations by perhaps trying to study a larger sample which could include female adolescents. Furthermore, some topics definitely need more research, such as the making of a comparison which could be done between male adolescents with autism and female adolescents with autism in terms of sexual behavior and social-sexual skills. Furthermore, research could be conducted regarding parental perspectives on the sexual behavior of their autistic child and the different amount of distress the parents may experience according to the gender of the autistic adolescent.

References

- Aikawa, K., Ozawa, H., Miyahara, H., Inadomi, H., & Ohta, Y. (2008). Mother's perceptions of the sexual development and behavior of their children and persons with autism in general. *Acta Medica Nagasakiensia*, 53(1), 1-7.
- Bourgondien, M., Reichle, N., & Palmer, A. (1997). Sexual behavior in adults with autism. *Journal of Autism and Developmental Disorders*, 27 (2), 113- 125.
- Caruso, M., Thompson, T., & Ellerbeck, K. (2003). Sex matters in autism and other developmental disabilities. *Journal of Intellectual Disabilities*, 7, 345- 362.
- Cheausuwantavee, T.(2002).Sexual problems and attitudes toward sexuality of persons with and without disability. *Journal of Sexuality and Disability*, 20 (2), 125- 134.
- Gabriels, R. L. & Hill, D. E. (2007). *Growing up with autism: Working with school- age children and adolescents*. NY: The Guilford Press.
- Haracopos, D., & Pedersen, L. (1992). Sexuality and autism: Danish Report. *Society for the Autistically Handicapped*. Available at www.autismuk.com/index9sub.htm.
- Hellemans, H., Colson, K., Verbraken, C., Vermeiren, R., & Deboutte, D.(2007). Sexual behavior in high-functioning male adolescents and young adults with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 37,260-269.
- Hellemans, H., Roeyers, H., Leplae, W., Dewaele, T., & Deboutte, D. (2010). Sexual behavior in male adolescents and young adults with autism spectrum disorder and borderline/mild mental retardation. *Journal of Sexuality and Disability*, 28, 93-104.
- Hendricks, D., & Wehman, P. (2009). Transition from school to adulthood for youth with autism spectrum disorders. *Focus on Autism and Other Developmental Disabilities*, 24 (2), 77- 88.
- Koller, R. (2000). Sexuality and adolescents with autism. *Sexuality and Disability*, 18 (2), 125- 135.
- Konstantareas, M., & Lunsy, Y. (1997). Social-sexual knowledge, experience, attitudes, and interests of individuals with autistic disorder and developmental delay. *Journal of Autism and Developmental Disorders*, 27 (4), 397- 413.
- Konstantareas, M., & Lunsy, Y. (1998). The attitude of individuals with autism and mental retardation towards sexuality. *Education and Training in Mental Retardation and Developmental Disabilities*, 33 (1), 24-33.
- Mesibov, G. & Ousley, O. (1991). Sexual attitude and knowledge of high- functioning adolescents and adults with autism. *Journal of Autism and Developmental Disorders*, 21 (4), 471- 481.
- Realmuto, G., & Ruble, L. (1999). Sexual behavior in autism: problems of definition and management. *Journal of Autism and Developmental Disorders*, 29 (2), 121- 127.
- Ruble, L.A., & Dalrymple, N.J. (1993). Social/ sexual awareness of persons with autism: A parental perspective. *Archives of Sexual Behavior*, 22 (3), 229- 240.
- Stokes, M., & Kaur, A. (2005). High-functioning autism and sexuality: a parental perspective. *Autism*, 9 (3), 266- 289.
- Sullivan, A., & Caterino, L. (2008). Addressing the sexuality and sex education of individuals with autism spectrum disorders. *Education and Treatment of Children*, 31 (3), 381-391.

- Tissot, C. (2009). Establishing a sexual identity: Case studies of learners with autism and learning difficulties. *Autism, 13*(6), 551- 566.
- Wing, L., Gillberg, C., & Ehlers, S. (1999). A screening questionnaire for Asperger syndrome and other high-functioning autism spectrum disorders in school age children. *Journal of Autism and Developmental Disorders, 29* (2), 129- 141.
- Wolf, P., Condo, B., & Hardaway, E. (2009). Social-sexuality education for persons with autism spectrum disorders using principle of applied behavior analysis. *Teaching Exceptional Children, 42*(1), 50- 61.
- Wolf, P., & Tarnia, B. (2008). Social stories for sexuality education for persons with autism/ pervasive developmental disorder. *Journal of Sexuality and Disability, 26*(1), 29- 36.

THE DIFFICULTIES ENCOUNTERED BY THE MOTHERS HAVING CHILDREN WITH MENTAL DISABILITIES OR AUTISM IN PARTICIPATING TO COMMUNITY LIFE

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The purpose of the study was to compare the difficulties encountered by the mothers having children with mental disabilities or autism in participating to community life. The participants were 21 mothers who have mentally handicapped child and 21 mothers who have child with autism from Istanbul, Turkey. Data was collected through semi-structured interview technique. Nine community skill areas were determined. The results indicated that the mothers having children with autism had more difficulties in participating to the community life than the mothers having children with mental disabilities. While the mothers having children with mental disabilities declared that they experience most difficulties at visiting their neighbors or close relatives, the mothers having children with autism declared that they experience most difficulties in going to somewhere from another place as a pedestrian. When the declared opinions are analyzed, it is observed that caused to feel unwell by people's overlook is repeated challenge of the both two groups.

Community living skills are life skills that allow students to deal with current and future adult day-to-day demands and responsibilities. Usually, general education peers learn these skills as they participate in home and community activities. In contrast, students with disabilities many times require direct and intensive instruction in order to acquire and generalize these skills to school, family and community context (Bigge, Stump, Spagna, & Silberman, 1999).

Limited mental process skills, poor language development and unusual or inappropriate behaviors of children with mental disabilities and autism prevent them from interacting with others to a considerable extent (Heward, 2003). The inclusion of handicapped children into community programs enables them to see that they can succeed in community activities and makes them feel themselves to be valuable (Newman, 2002).

As with the education provided for all children, education for handicapped children aims to allow them to continue their lives without depending on others and to become self-sufficient in the future (Cavkaytar, 1998). Community life skills play a crucial role in enabling handicapped children to become self-sufficient, to participate in community activities, and to experience community interaction with others.

Community life skills were collected under 16 headings based on the classification devised by Luscre, Harden, Quale, Anglin, Ellis, Garrett, and Quin (1984), Dever's taxonomy (1987) and other classifications made in this field (Martin, Heal & Rusch, 1982; Dever, 1989; Browder & Bambara, 1993; Bigge et al., 1999; Westling & Floyd, 1990; Turnbull, Turnbull, Shank, Smith & Leal, 2002; Beakley, Yoder & West, 2003; Heward, 2003; Cavkaytar, 2004; Eripek, 2005). Accordingly, community life skills cover personal maintenance, personal development and community life, homemaking, shopping, pedestrian skills, use of public transportations, using restaurants, use of money and managing personal finances, using the phone, use of leisure time, involvement cultural activities, attending sports activities, use of community facilities, making use of public opportunities, banking skills, vocational life.

There are many studies examining the community life skills of children with mental handicapped and children with autism. Some of these studies are about determining the efficiency of training programs aimed at the development of various community life skills. The following skills can be given as examples from studies in which community life skills were taught: skills at using the phone and shopping (Drysdale, Casey, & Porter-Armstrong, 2008; Özen, 2008; Harin, Kennedy, Adams & Pitts-Conway, 1987; Matson & Long, 1986; Akgün, 2004), skill at using a bank (Bourbeau, Sowers & Close, 1986), skills at using restaurants, public toilets and stores (Blew, Schwartz & Luce 1985; Pol, Iwata, Ivancic, Page, Neef & Whitley, 1981) and pedestrian skills (Batu, Ergenekon, Erbaş, & Akmanoglu, 2004; Matson, 1980; Page, Iwata & Neaf, 1976). Some studies concern the difficulties encountered by mentally handicapped individuals or individuals with autism in participating in community life. Some of these studies attempt to determine the difficulties encountered in participating in such activities as shopping, making use of leisure time, engaging in sports (Pretty, Rapley, & Bramston, 2002), and the sufficiency of traffic training provided for mentally handicapped individuals (Karabulut, 2007). Other studies generally examine the difficulties experienced by families with mentally handicapped children or children with autism. Some of these studies try to determine the difficulties experienced by families, the community support these families receive, and the support given by relatives to these families (Kahriman & Bayat, 2008; Kavak, 2007; Sencar, 2007; Eisenhower & Blacher, 2006; Kaner, 2004). Some aim at determining how families cope with the situation created by having a handicapped child (Naseef, 1989), some examine the family needs (Evcimen, 1996), and others attempt to determine the experiences and needs of families after having a handicapped child (Cavkaytar, Batu, & Çetin, 2004; Şen, 2004; Vural, 2003; Özen, Çolak, & Acar, 2002). Although there are studies concerning the families of the handicapped children, the problems encountered by the families when they participate in community activities with their mentally handicapped or autistic children are not known.

The present study examines the difficulties encountered by mothers with mentally handicapped children or children with autism to community life. These community life skills are; pedestrian skills, use of public transportations, personal development and community life, using public opportunities and entertainment venues, involvement in cultural activities, attending sports activities, shopping, using restaurants and use of community facilities.

So as to take precautions towards the difficulties experienced by the families with mentally handicapped or autistic children in the process of becoming members of the community, the difficulties experienced when they participate in community activities need to be examined in the first place. The fact that mentally handicapped or autistic children have different limitations raises the possibility that these children and their families encounter similar or different difficulties in participating in community life. Therefore, there is a need for studies that reveal the difficulties experienced by families with mentally handicapped children or autistic children, in participating in community life in a natural environment in a realistic and holistic manner. Thus, it is hoped that the present study will make a contribution to the implementation of the necessary measures for decreasing the difficulties experienced by families with mentally handicapped children or autistic children, the planning of municipal services for the same purpose, the introduction of the necessary legal regulations concerning the topic, and the spread of activities raising public awareness of the issue.

The purpose of the present study was to compare the difficulties encountered by the mothers having children with mental disabilities or autism in participating to community life. Under this general purpose the following questions were tried to be answered: What kind of problems do mothers with mentally handicapped children or autistic children experience in the following community spaces when they are with their children? These are; (a) pedestrian skills, (b) use of public transportations, (c) personal development and community life, (d) using public opportunities and entertainment venues, (e) involvement in cultural activities, (f) attending sports activities, (g) shopping, (h) using restaurants (i) use of community facilities.

Method

Design

A descriptive study was conducted via collecting data using semi-structured interviews. According to Patton (2002);

The purpose of qualitative interviewing is to capture how those being interviewed view their world, to learn their terminology and judgments, and to capture the complexities of their individual perceptions and experiences. The fundamental principle of qualitative interviewing is to provide a framework within which respondents can express their own understandings in their own terms (p.348).

Interviews were employed to mothers with disabled children who live in Istanbul, Turkey.

Participants

Two main purposeful sampling determining strategies, criterion sampling and snowball sampling were employed for determining the participants. The purpose of the criterion sampling is to pick all cases that meet a particular criterion (Patton, 2002). Three criteria were determined within the framework of the present study: The first one was the existence of a single disability in the children of the participants (either a mental handicap or autism). The second criterion was the ages of the children (children should be older than 11 and younger than 22). The third criterion required that the children should be living in the same houses with their families. Purpose of the snowball sampling is identifying cases of interest from sampling people who know what cases are (Patton, 2002). The researcher proceeds by using initially selected participants to recommend other participants (Mertens & McLaughlin, 2004). In the present study, participants meeting the criteria were reached through recommendations and from following the leads of other mothers with whom interviews had been conducted. Interviews were conducted on a voluntary basis.

The participants of the study were 21 mothers who have mentally handicapped child (mild-moderate) and 21 mothers who have child with autism, totally 42 mothers. The average age of mothers who have mentally handicapped child was 43 (range= 35-55). The average age of mothers who have child with autism was 45 (range= 33-58). Over half of the mothers who have mentally handicapped child finished primary school (76%) and few of them finished secondary school (24%). On the other hand, nearly half of the mothers who have child with autism finished primary school (47%), some of them finished secondary school (43%) and a few of them finished a college or university (10%). The average age of mentally handicapped children 15 (range= 12-20). The average age of children with autism 16 (range= 12-21). The gender of mentally handicapped children was 43% female, 57% male. The gender of children with autism was 14% female, 86% male. The participants were mostly from a middle income level community.

Procedure

Data were collected through an interview form containing the questions indicated in purpose of the study, which was formed by the researcher. The literature concerning community life skills was reviewed before forming the interview questions, and nine community skill areas were determined in accordance with purpose of the study. These are; (a) pedestrian skills, (b) use of public transportations, (c) personal development and community life, (d) using public opportunities and entertainment venues, (e) involvement in cultural activities, (f) attending sports activities, (g) shopping, (h) using restaurants, (i) use of community facilities.

The interview questions were prepared in order to determine the problems encountered by participants in these areas. The prepared interview questions were presented to three special education experts and their opinions were obtained. The interview form was finalized after conducting 2 pilot applications. At the end of this process, 17 open-ended questions were included in the interviews (Appendix).

Phone calls were made to participants to set the date of the interviews. During these phone calls the place of interview was determined by asking the participants where they wished the interviews to be held. The interviews were conducted on the dates and in the places (school, home, training center) where the participants wanted to meet

At the beginning of each interview the data researcher explained the purpose of the study to the participants. The participants of the study were also told that the procedure was voluntary, they were free to withdraw from the study whenever they wished, and also that they had chance to refuse to answer any of the questions during the interview. Furthermore, the data would be used only for the purposes of the research results, and pseudonyms would be used instead of their real names.

The interview lasted from 30 to 60 minutes (average 40 mins.). Each interview was transcribed verbatim by the individual researcher and checked for accuracy by the researchers by listening to the audio tapes and reading the transcripts.

Data Analysis

Being transcribed interview records were examined under two groups. These are; *the answers given by mothers with mentally handicapped children* and *the answers given by mothers with children with autism*. The answers given by mothers with mentally handicapped children were first read. Then the researcher identified categories that related to the answers to each question. The same process was applied to answers given by mothers who had children with autism. This was followed by the combination of categories set for each group. For example, two different categories, taking a vehicle which was comfortable for the mother and taking a vehicle which was comfortable for the child were turned into a single category: comfort of the child/mother.

Printouts and encoded keys of interviews conducted with 12 mothers, 6 of whom had mentally handicapped children and 6 of whom had autistic children, were randomly selected from among the interview printouts, for each one of which one copy had been taken previously, these were filled up both by a researcher and a field expert in order to obtain reliability among the evaluators. Firstly, the researcher independently marked the related title for each question of each participant. This process was also performed by the expert. Then the researcher compared the answers they marked and calculated the reliability of his/her analysis with the formula of the number of agreements divided by the number of agreements plus the number of disagreements multiplied by 100 (Cooper, Heron & Heward, 1987). The mean reliability between the two experts was 90.3% (range= 75-100%).

Results

The purpose of the present study was to compare the difficulties encountered by the mothers having children with mental disabilities or autism in participating to community life. The results of the study were grouped according to the research questions as mentioned under the general purpose. According to the research questions, nine headings emerged from the data gathered. While giving the results under the headings, the themes with a less than five frequency (in both groups) were not reported in this manuscript. The difficulties experienced by mothers while participating in the activities of community life with their children were written in the form of (difficulties experienced by mothers with mentally handicapped children / sum of the opinions expressed by mothers with mentally handicapped children; difficulties experienced by mothers children with autism/ sum of the opinions expressed by mothers children with autism) in order for them to be compared by the readers. Moreover, the interesting expressions used by mothers were recorded in the frequency data below. During data analysis, each mother was given a pseudonym. These pseudonyms were used when presenting the interesting expressions used by mothers, and these quotations were shown by referencing the page numbers. The answers given by the participants to questions were examined. It was determined that an average of 80% of mothers (range= 19-100%) participated in community life.

Going One Place to Another As a Pedestrian

One hundred percent of mothers with mentally handicapped children and 95.2% of mothers who had children with autism stated that they went from one place to another as a pedestrian with their children. *Having to hold her child's hand* (13/38; 16/59) ranks first among the difficulties encountered by mothers while going from one place to another as a pedestrian. For instance, while Sevil, with a mentally handicapped daughter stated, 'I try, by any means, not to leave hold of Özge's hand' (Interview #3; p.3), Eda who had a child with autism said, 'I generally hold his hand as he has a tendency to jump suddenly' (Interview #30; p.2). Another difficulty derives from people's stares or reactions (10/38; 9/59). For example, Sevda, who had a mentally handicapped daughter, said, 'I am affected even by the looks of citizens' (Interview #18; p.2), and Sabahat, who had a child with autism, stated her problem, 'They sometimes tell me to take care of my child or they just look daggers at me' (Interview #38; p.3). Another problem expressed by mothers is the inability of their children to walk independently (5/38; 14/59). Melahat, who had a mentally handicapped daughter, explained the situation by saying, 'She unconsciously wanders off if I leave her, that's to say, you must hold her arm firmly like a bag' (Interview #41; 6/1). The problem experienced with crashing into people while walking, or the child's not giving way (5/38; 14/59) was expressed by Aydan, who had a mentally handicapped child, as follows, 'He does not give way, he is not careful, he does not look ahead, he crashes into people though he should stand aside, he is not careful when he has to give way' (Interview #22; p.3).

Using Public Transportations

When mothers were asked whether they used public transport, all of the mothers of mentally handicapped children and most of the mothers of children with autism 17/21 (81%) stated that they used public transport. Mothers were asked what they took into consideration when choosing the form of public transport. Mothers said that they paid attention to how full or empty the vehicles would be when choosing public transport vehicles (7/17; 7/18). For example, Ayla, with a mentally handicapped child, said, 'I do not catch vehicles when they are overcrowded' (Interview #2; p.3). Another issue taken into consideration by mothers while making a choice among public transport vehicles is taking the vehicle that is favored by the child (5/17; 4/18). On this subject, Aylin, who had a mentally handicapped child, said, 'I take a cruise tour once every blue moon, and it is only because Kadir likes ships very much. I go to and return from Eminönü two or three times' (Interview #7; p.4). Hüsnüye, who had a child with autism, stated the difficulty she experienced, 'He would not get on the other bus, he just cried blue murder when he got on it; he was fond of red buses' (Interview #10; p.3-4).

Fifty-seven-81% of mothers stated that when they used public transport they experienced problems stemming from other people (12/21; 17/21). Mothers were asked what kind of problems stemming from other people they encountered on public transport. In this matter, most of the mothers (8/21; 12/25) mentioned the reactions of

people to the behaviors or words of their children. For instance, Aydan who had a mentally handicapped child stated, 'For example, I just try to drop the subject with him, but there are always people intervening between us. They say, *What kind of a child are you?, How can you speak to your mother in this manner?*' (Interview #22; p.10). Gül, who had a child with autism, related an event she experienced,

He was little. He was 8-9 years old. He was hitting himself on the sea bus. While he was hitting himself, people thought I was hitting him. Everybody stood up and walked towards me, *How shameful is it that you are hitting your child?* (Interview #27; 13/10, p.4).

Another problem on public transport stemming from other people as expressed by the mothers was discomfort about people's stares (7/21; 7/25). Aylin, who had a mentally handicapped child, stated, 'When Kadir is talking everyone looks at us' (Interview #7; p.5), and Seda, who had a child with autism said, 'For example, people turn and look at us, which makes me depressed' (Interview #1; p.6). Another problem stemming from other people is that people on the vehicles do not give up their seats (4/21; 7/25). Eda, who had a child with autism, expressed this problem by saying, 'Young people do not give up their seats, even people over fifty understand the situation for me holding the hand of Berke, and will give us a seat' (Interview #30; p.7).

Fifty-seven to seventy-seven percent of mothers stated that they had a problem when they encountered an unexpected situation and when the vehicle got delayed (9/21; 13/21). Mothers were asked what kind of problems they encountered when the vehicle got delayed. Mothers firstly stated that their children got bored (3/10; 13/13). Serap, who had a child with autism, explained her experiences, 'He gets bored, he jumps and leaps on the seat if he gets bored' (Interview #29; p.4). Another problem concerns the reactions of children (7/10; 0/13). For example, Aydan, who had a mentally handicapped child said,

When I should warn someone or react to them (on the bus), I cannot do that as I am afraid for my child. That is because when I react, he also takes courage from me and has an outburst. So, I try not to react when he is with me (Interview #22; 1/10, p.12-13).

When mothers were asked whether they went on long journeys by public transport with their children, (9/21; 13/21) 57-77% of both groups of mothers stated they went on long journeys by public transport with their children. Mothers were asked what kind of difficulties they encountered on long journeys by using public transport. Mothers stated that their children got bored (1/4; 2/17) and they had to travel at night (1/4; 2/17). For example, Nurten, who had a child with autism, said 'I prefer night coaches so that Burak sleeps and we do not experience so many problems' (Interview #25; p.4), while Berna, who had a mentally handicapped child, said, 'He gets very bored, he cries, wanting to get off the coach, so we cannot go in the daytime' (Interview #6; p.6)

Participating Community Life

When mothers were asked whether they made visits to neighbors or relatives with their children, the same ratio of mothers 19/21 (91%) from both groups of mothers said that they made such visits with their children. When the mothers were asked what kind of problems they experienced during these visits, mothers firstly stated that their children made the house untidy or damaged objects (6/41; 9/23). For example, Şeyda, who had a mentally handicapped child, expressed the problems she experienced, 'They tell Kemal to stop, but he does not stop; they tell Kemal not to open the door of refrigerator without permission, but he opens the door of refrigerator without permission' (Interview #24; p.6), and Ülkü, who had a child with autism said, 'It is not as at your own home, you are sitting down, standing up, telling the child not to do, not to touch, because he is messing everything about and he is looking at everything.' Another problem experienced during such visits stems from the behavioral problems of the child (4/41; 5/23). Seda, who had a 15 year old child with autism, related her experience of this, 'Now, Faruk is swearing. He learns this at school; of course, I am anxious about this matter' (Interview #1; p.10).

Another issue is that children do not behave in accordance with their ages (7/41; 0/23). For example, Atiye, who had a 15 years old mentally handicapped daughter, expressed her experience by saying,

I ask her about it when something happens, she says she did not do it, but she fails to explain what happened. People say that it was Begüm who did it, but she says that she did not do it, others gang up on her, and she cannot defend herself (Interview #23; 7/10, p.10).

Another problem in home visits is that children get bored very rapidly (5/41; 1/23). Kadife, who had a 20 year old child with autism, expressed her difficulty in this matter by saying,

We do not make visits to neighbors and relatives very often. I make such visits, but I keep them very short. Yiğit harms himself when he gets bored, he cries for a long period. I get unhappy when he is unhappy (Interview #11; 17/6, p.4-5).

Another problem is the reactions of neighbors to the behaviors of children (5/41; 0/23). Aylin, who had a mentally handicapped child, related an event she experienced as follows,

My upstairs neighbor, she was a psychopath, that woman! Kadir was shouting from the garden, *Muumum!, I am thirsty, Mum, come* and so on. Last year, the woman filled a washtub with hot water and poured it onto Kadir from the fifth floor! He was covered from head to toe (Interview #7; 26/5, p.11-12).

Attending Public Facilities And Entertainment Venues

When mothers were asked whether they went to ceremonies like wedding receptions, engagement ceremonies or hen nights with their children, (20/21;12/21) 95-57% of mothers stated that they went to such ceremonies with their children. Mothers said that difficulties were created in such situations since their children wanted to carry on playing throughout the events or ceremonies (6/20; 1/13). For example, Filiz, who had a mentally handicapped daughter, expressed the difficulties she experienced by saying, 'When she wants to dance, she tells me to stand up and dance with her. She does not have any friends. I ask her. How will you dance? You cannot keep pace with people, you will look foolish' (Interview #21; p.6), Hatice said of her mentally handicapped son, 'Yes he annoys me very much. He stands up and wants to dance unselfconsciously. While he is trying to dance, he is losing his self-consciousness' (Interview #9; p.6).

When mothers were asked whether they went to places such as amusement parks, children's parks or zoos with their children, (19/21; 15/21) 91-71% of mothers stated that they went to such places with their children. Among the problems encountered by mothers in these kinds of places, the inappropriateness of the playground equipment in the park for their children comes first according to the statements of the mothers (2/18; 7/18). For example, Lale, who had a 19 years old son with autism expressed her problem by saying, 'We go to playgrounds. We have a great problem as the swings in the playgrounds are not appropriate for us' (Interview #31; p.7). Yeliz, who had a 19 years old son with autism, expressed the same problem by saying, 'He likes swinging on a swing he can fit onto. It is difficult to find a swing on which a 115-kg citizen could fit' (Interview #32; p.4). Another problem encountered by mothers in these kinds of places is that their children can display obsessive or inappropriate behaviors (1/18; 7/18). Seda expressed her experience with her son by saying, 'Faruk's behavior was aimless, he did not know any of the rules, and he was taking what belonged to other children. Then, of course, we had certain problems.

We also failed to explain ourselves to people' (Interview #1; p.13). Another problem is that children cannot behave independently in these places (5/18; 0/18). Berna, who had a 14 year old mentally handicapped daughter, expressed the problems she experienced as follows,

She likes parks and amusement parks very much, but one of us should always follow her. That is to say, we cannot be as other parents are, who say 'Let's go and sit on a bench, let our child have fun by herself' (Interview #6; 25/5, p.9).

When mothers were asked whether they stayed in accommodation like hotels or lodging houses with their children, (7/21; 19/21) 33-91% of mothers stated that they stayed in these kinds of place with their children. The most frequent difficulty encountered by mothers staying in these kinds of accommodation was about the failure of their children to adapt to the rules (2/5; 6/16). For example, concerning rules, Seda, who had a child with autism stated,

For example, he was going to the pool, the latest hour for the pool was 6 or let's day 7. He had great difficulty in obeying the rules. For example, you say no, but he insists, *I will go in the pool*. Finally, the attendant turns up (Interview #1; 16/5, p.15).

Another problem expressed by the mothers was the difficulties their children had in adapting to the environment (0/5; 5/16). Esin stated the problem she experienced when she went on holiday with her child with autism,

It is a problem if the holiday is a long one, for example if it lasts up to 10 days, like our last one. We were in the village. Emre loaded all the bags into the car on the fourth day. He put all the bags into the trunk of the car as if he was saying, *Let's go* (Interview #33; 2/12, p.16).

When mothers were asked whether they went to beaches/sandy beaches or swimming pools with their children, (18/21; 21/21) 86-100% of mothers stated that they went to such places with their children. Mothers mostly complained about the behaviors of their children in these kinds of places (1/10; 13/32). Hülya, who had a 19 year old child with autism, related her experience of this situation by saying,

The first two days were good, then he started to play with certain parts of his swimwear on the third day, as if he was fed up, he started to put his hands inside; we experienced these movements, such problems (Interview #26; 13/10, p.10).

Ülkü, who had a daughter with autism said, 'She wants to take off her clothes, but she is a young girl. She wants to take her swimwear off when it gets wet'(Interview #13; 19/6). The second problem is that some children did not want to go into the sea/swimming pool (5/10; 3/32). Among the mothers, Ayla, who had a mentally handicapped child, expressed her problem on this subject,

He does not go into sea; he is scared of water. I used to take him on my lap when he was little, I used to put him into and pull him out of water, but I did not put him into the water this year. I simply wet his feet (Interview #2; 16/5, p.16).

Another problem concerns preferences for the children's/adult pools (0/10; 5/32). For example, Sibel, who had a 13 years old child with autism, related her experience by saying, 'He goes into the children's pool. Other children get scared and escape'(Interview #15; p.6).

Involving in Cultural Activities

When mothers were asked whether they went to places like the cinema, the theater or concerts with their children, (11/21, 9/21) 52-43% of mothers said that they went to such places with their children. Mothers were asked what kind of problems they encountered in such places. Mothers stated that the inappropriate behaviors of their children created trouble for them (3/8; 5/12). For instance, Sibel, who had a child with autism, 'related her experiences by saying,

I used to take him when he was little, I took him many times, what did he do? 'beaaaaa!!!' He stopped people from being able to watch all the time. We just fought with people and then left the place. Once, he wanted to go onto the stage and swing on the swing (Interview #15; 26/6, p.5).

Attending Sports Activities

When mothers were asked whether they went to events like basketball games or football matches with their children, (4/21) 19% of mothers in both groups stated that they went to watch sports events like basketball games or football matches. When mothers were asked whether they engaged in sports activities with their children, (13/21; 14/21) 62-67% of mothers stated that they engaged in sports activities with their children. When mothers were asked what kind of problems they encountered while engaged in sports activities with their children, mothers stated that their children failed in games/did not obey the rules (5/8; 1/4) .

Doing Shopping

When mothers were asked whether they shopped at supermarkets with their children, all of the mothers from both groups stated that they shopped with their children. When mothers were asked what kind of problems they encountered when they were at supermarkets with their children, mothers mostly stated that children made them buy what they liked (9/28; 10/35). Hüsniye, who had a 19 year old daughter, related her experiences of this as follows, 'She selects everything she likes. She picked out macaroni for a while' (Interview #10; p.15). On the same subject, Sabahat said, 'She sometimes wants to buy inappropriate things; she just says that she will buy them'(Interview #38; p.12). Another problem experienced during shopping is that children do not wait at the cash point (3/28; 6/35). For example, Lale, who had a 19 year old child with autism, expressed her difficulties over this by saying, 'When we go into a supermarket, he does not wait at the cash point and he tries to damage everything in other people's baskets to make us leave ...' (Interview #31; p.12). Another problem experienced during shopping concerns the stares or reactions of other people (1/28; 5/35). Ülkü, who had a child with autism, related her experiences by saying, 'During that time, she murmurs while browsing around, and people look at her'(Interview #13; p.10), while Sibel, another mother who had a son with autism, related her experiences as follows, 'I put him into a -trolley. Our children are fat. A woman said, 'aaagh!' as if she was scared by a dog... I told her, 'Is this child an animal? I'll kill you!'(Interview #15; p.6). Another problem is that children want to eat what is sold in the supermarket (0/28; 6/35). For example, Gül, who had a 21 year old son with autism said, 'For example, my son likes coke very much. When my son finds a coke, he takes and opens it. He likes to drink (Interview #27; p.11). Another problem expressed by the mothers is that they are anxious that their children may damage the environment (5/28; 0/35). Ayten, who had a mentally handicapped child, expressed her anxiety over this by saying, 'We experience unease, restlessness. We are always alert to the fact that he may hit, break or drop something fragile'(Interview #5; p.14).

When mothers were asked whether they shopped at stores such as a grocery store, a greengrocer's, a bakery or in the bazaar/market with their children, (21/21; 18/21) 100-86% of mothers stated that they shopped in these kinds of places with their children. When mothers were asked what kind of problems they encountered while shopping in these kinds of places, mothers mostly stated the problem was that their children took some things from the shelves (4/18; 10/23). Serap, who had a child with autism, stated, 'He likes fruit. He takes a mandarin from there whenever I take my eye off him'(Interview #39; p.10). Another problem expressed by mothers is that

children do not want to go into crowded environments (4/18; 3/23). For example, Ayten, who had a mentally handicapped child, said 'Sezer is scared of the crowd'(Interview #5; p.15); Filiz, who had a mentally handicapped daughter, said 'She gets bored of the crowd'(Interview #21; p.10).

When mothers were asked whether they shopped at stores where clothes or shoes were sold with their children, (21/21; 19/21) 100-91% of mothers said that they shopped at these stores with their children. When mothers were asked what kind of problems they encountered while shopping in these places, mothers mostly stated that they had to buy clothes or shoes without having their children try them on (5/17; 11/33). Mothers stated their preference for shopping in these kinds of stores without their children as follows: While Nazan, who had a child with autism stated, 'We never take our children to a store to buy clothes for them. We buy and bring them home and our children wear them'(Interview #14; p.20), Nurten said, 'We know the sizes our children wear, so we buy for them' (Interview #30; p.9). Another problem experienced in these kinds of places is that children get bored (2/17; 8/33). Ayfer, who had a son with autism, explained this as follows, 'If we stay somewhere for a long period, he gets bored'(Interview #8; p.18). Another problem expressed by mothers is the difficulty they had with their children trying on clothes or shoes (5/17; 2/33). Hatice, who had a 17 year old mentally handicapped son, related this incident,

He does not know himself whether the shoes are the right size. Once, his father pressed his fingertips with his hand and said, *Son, these shoes are small for you, they may pinch your feet.* Then the boy took off the shoes, he also took off his own shoes and went down the stairs in bare feet (Interview #9; 13/6, p.16).

Using Restaurants

When mothers were asked whether they ate out with their children, (19/21) 91% of mothers from both groups stated that they ate out with their children. When mothers were asked what kind of problems they encountered while eating out, most of mothers stated that their children got bored while waiting for meals (3/8; 5/13). For example, Saliha, who had a mentally handicapped child said, 'He is somewhat impatient in this matter. He asks why the meals have not arrived yet. He always asks the same question, 'Why are we waiting, why have they not arrived?'(Interview #42; p.9). Kadife, who had a child with autism, stated, 'Impatience with waiting, or whatever happens when the meals arrive, the food gets eaten and finished. We have experienced such events many times over, but we must be patient in this matter '(Interview #11; p.13).

When mothers were asked whether they used public toilets with their children, (20/21) 95% of the mothers in both groups stated they used public toilets with their children. When mothers were asked what kind of problems they encountered while using public toilets, they mostly stated the problems concerning the selection of men's/women's toilets (8/19; 18/26). For example, Berrak, who had a 16 years old son with autism, said, 'It is surely somewhat difficult, but we do not have any problems when his father is with us ...it is not considered appropriate for a woman to go into a man's toilet'(Interview #19; p.12). Esin, who had a 14 year old son with autism, took a different approach to the subject and said,

Women may bring their children with them thinking, 'he does not understand anyway'; but let's think about the case of a father with his daughter. What will such a man do? Will he take his daughter to the women's toilet or to the men's? (Interview #33; 2/12, p.24).

Arzu, who had a 16 year old daughter with autism, gave an example of this situation, 'She sometimes goes with her father, he has to go into the women's toilet, he must surely experience great difficulties in doing that'(Interview #37; p.18).

Using of Community Facilities

When mothers were asked whether they went to health centers such as hospitals or health care centers with their children, all of the mothers from both groups stated that they went to these kinds of health centers with their children. When mothers were asked what kind of problems they encountered while getting service from health centers, mothers mostly stated that they had problems while awaiting their turn (9/26; 15/48). Mothers expressed their problems in this matter as follows, Nilay who had a 13 year old mentally handicapped son said, 'Baran gets very bored, and he wants to go without being examined'(Interview #40; p.13), and Aydan who had a 19 year old son said, 'our problem is the queue'(Interview #22; p.30).

Another problem experienced while getting service from health centers are the difficulties experienced during examinations (5/26; 13/48). Ayfer, who had a 13 year old son with autism said, 'During the examination, he either refuses to open his mouth or he gives the doctor a kick'(Interview #8; p.21) while Nurten, who had a 17 year old son with autism, reported that, 'he never wants a person with white coat to approach him'(Interview #25; p.10). Another problem is the near impossibility of giving medical attention to the child (4/26; 10/48). For

example, Kadife, who had a 20 years old son with autism said, 'It is very difficult to get a blood sample taken. Once, we had to get his blood sample taken by making him sleep, this situation is so serious' (Interview #11; p.14). Esin, who had a son with autism said,

He cut his foot, so his foot was sutured. They did not anaesthetize him; they sutured his foot when he was conscious. All hell broke loose. Four medical attendants flew at him. I was the fifth person, and there was also the doctor who was suturing him in addition to a nurse. The child just suffered (Interview #33; 2/12, p.26)

Dental treatment is another problem area (3/26; 4/48). For example, Filiz, who had a 20 year old mentally handicapped daughter, expressed her problem in this area, 'Once, while the doctor was injecting her gum, she hit his hand. The dentist said, 'This needle could have hit her brain' (Interview #21; p.13).

When mothers were asked whether they went to hairdressers or beauticians with their children, (20/21; 17/21) 95-81% of mothers stated they went to hairdressers or beauticians with their children. When mothers were asked what kind of problems they experienced in these kinds of places, they mostly mentioned that their children did not want to remain at hairdressers or beauticians (4/6; 12/22). Hatun, who had a 20 years old son with autism, said, 'I cannot make him go to the hairdresser (Interview #16; p.12), and Lale, who had a son with autism, said, 'He will not have his hair cut, he pulls away or lifts his head up, he stands up, he overwhelms his father, the hairdresser and me, from top to bottom' (Interview #31; p.16). Another problem is that they always have to take the children to the same hairdresser (1/6; 6/22). Zülfiye, who had a 21 year old son with autism, described this situation as follows, 'He will not go to any hairdresser other than his own hairdresser' (Interview #28; p.14).

Discussion

The purpose of the present study is to compare the difficulties experienced by mothers with mentally handicapped children and those who have children with autism, in participating in community life activities in relation to getting from one place to another as a pedestrian, using public transportation, personal development and community life, using public facilities and entertainment venues, participating in cultural activities, attending sports events and activities, shopping, eating out and use of community facilities.

When the difficulties experienced by mothers with mentally handicapped children or children with autism while going from one place to another by foot with their children were compared, it was realized that most of the mothers in both groups stated that they always had to keep hold of their children's hands. The results obtained from the study carried out by Karabulut (2007) indicate that traffic education given to mentally handicapped children at schools is theoretical and it cannot be transferred into real environments. Mentally handicapped children cannot generalize what they learn in the classroom environment to the real world due to their intelligence levels; it was recommended in the same study that this problem, which stems from current traffic and first aid training, could be eliminated through putting an emphasis on applied training; and it was revealed in the same study that the only reason for the failure of mentally handicapped individuals to safely negotiate urban traffic was not training, environmental planning; and that urban services and lack of education also played a key role in the emergence of this problem. The results and recommendations in the study conducted by Karabulut (2007) may help explain some of reasons for the findings of the present study.

On examining the opinions concerning moving from one place to another as a pedestrian, it is seen that mothers with autistic children were more concerned about this problem than mothers with mentally handicapped children. The average age of the mentally handicapped children of mothers with whom the interviews were carried out was 15. Considering the high average age of the children, the fact that mothers had to keep holding the hands of their children can be regarded as a sign that shows that the handicap of the child is apparent. The fact that almost half of mothers stated that they were annoyed by the stares and reactions of people while out on foot supports the results obtained. This was also the case in the study carried out by Vural (2003), where some of the families said that they were annoyed by the stares of other people.

Mothers with mentally handicapped children, when they visited neighbors or relatives, mostly expressed problems deriving from the fact that their children did not behave in accordance with their ages. By comparison, mothers with children with autism mostly spoke of the problems with their children messing up houses or damaging objects in the houses. They made no mention of problems resulting from behaviors inappropriate for the ages of their children. That only mothers of mentally handicapped children said that this situation was a problem may result from the fact that the main problem for mentally handicapped children is understanding how to be with others over a long period, and understanding how to behave in community environments (Coulter, 2006). These findings parallel those concerning the community developmental characteristics of mentally handicapped children as reported in the literature (Bigge et al, 1999; Özgür, 2004; Eripek, 2005; Heward, 2003;

Turnbull, Turnbull, Shank, Smith, & Leal, 2002). In fact, the problems expressed by the mothers in the present study reflect the general developmental characteristics of their children.

It was seen that a great majority of mothers with mentally handicapped children made visits to neighbors and relatives, but some families, though few in number, made no such visits. In the study carried out by Cavkaytar, Batu & Beklan Çetin (2004), it was concluded that after participants had learnt that their children were mentally handicapped, their relatives and neighbors were unconcerned, and the families were supported only to a limited degree. These results are thought to indicate that the community lives of families are to a great degree limited and the burden on the mother in particular increases. In this matter, the above-mentioned findings correspond with those of the present study. Therefore, these findings can be regarded as the reasons for the limitations placed on mothers in their community lives.

Comparing the problems experienced by mothers saying that they participated in sports activities their children, it is seen that mothers with mentally handicapped children had more to say. Most of the mothers with mentally handicapped children stated that their children failed to play games with rules, such as basketball or football, or they did not obey the rules. It is seen in the study by Pretty, Rapley & Bramston (2002), that although young people without any mental handicap mostly spend their time playing games with rules such as basketball and football, mentally handicapped young people spend their time participating in activities such as coming together for barbeques, playing on the grassplot and bicycling. This finding is consistent with the results obtained in the present study. Unlike mothers with mentally handicapped children, some of mothers with children with autism stated that their children were isolated when taking part in sports activities.

All mothers from both groups stated that they took their children to public toilets when they were outside. Upon examining the problems experienced by these mothers, it is seen that the most frequently encountered problem was about the use of women's or men's toilets. Mothers who have children with autism experience this problem more in comparison with those who have mentally handicapped children. This problem is less frequent if the parent and child are of the same gender. It can be said that serious problems are encountered if the parent and child are of different genders. The reason why mothers who have children with autism express this problem more frequently may be associated with the features of the mothers with whom the interviews were conducted. Only three of the mothers, each with a child with autism, had daughters, while the others had sons. In that case, the parent and child were of different genders. However, mothers also stated that when their daughters had to go into toilets together with their fathers, they experienced great difficulties.

Conclusion and Recommendations

As a conclusion, it can be said that mothers who have mentally handicapped children and mothers who have children with autism have difficulties of varying degrees in attending or participating in different fields of community life. To facilitate the participation of families in community life along with their handicapped children, it is necessary to create activities specifically aimed to enable handicapped children to acquire skills, for their families to cope with any problems, and for a greater awareness to be created in society.

As a result of this study, it can be recommended for future researchers that they conduct studies with families who have children with mental handicaps of children with autism, across different age ranges (younger ages, or during the period of adulthood). Similar studies could be conducted by focusing on different skill areas such as personal maintenance, homemaking, using money, using the phone, making use of leisure time, using the bank, work and professional life skills. That is, studies on skill areas which are among the community skills, but which are not examined in the present study.

References

- Akgün, T. (2004). *Özel alt sınıfla toplumsal uyum becerilerinin kazandırılması sürecinde grafik resimler ile piktogramların eğitime katkısı ve bir uygulama önerisi*. Yayınlanmamış yüksek lisans tezi, Gazi Üniversitesi Eğitim Bilimleri Enstitüsü.
- Batu, S.; Ergenekon, Y.; Erbaş, D. & Akmanoğlu, N. (2004). Teaching pedestrian skills to individuals with developmental disabilities. *Journal of Behavioral Education*, 13 (3), 147-164.
- Beakley, B. A.; Yoder, S. L. & West, L. (2003) *Community-Based Instruction: A Guidebook for Teachers*. Council for Exceptional Children (ERIC Document Reproduction Service No.ED 481 853)
- Bigge, J.; Stump, C. S.; M. Edward Spagna & R. K. Silberman (1999). *Curriculum, Assessment, And Instruction For Students With Disabilities*. Belmont, CA: Wadsworth Pub.
- Blew P. A.; Schwartz S.I & Luce, S.C. (1985). Teaching functional community skills to autistic children using nonhandicapped peer tutors. *Journal of Applied Behavior Analysis*, 18(4), 337-342.

- Bourbeau, P.E; Sowers, J & Close, D. (1986). An experimental analysis of generalization of banking skills from classroom to bank settings in the community. *Education and Training of the Mentally Retarded*, 21, 98-106.
- Browder, D. M. & Bambara, L. M. (1993) Home and Community. M. E. Snell ve F. Brown (Der.), *Instruction of Students with Severe Disabilities* (5th Edition). (s.543-585)
- Cavkaytar, A.; Batu, S. & Çetin, O.B. (2004).Annelerin Gelişimsel Geriliği Olan Çocuğa Sahip Olduklarında Yaşadıklarına İlişkin Görüşleri 14. Ulusal Özel Eğitim Kongresinde sunulan bildiri. Bolu
- Cavkaytar, A. (2004). Kişisel-Toplumsal Becerilerin Öğretimi. G. Kırcaali-İftar (Ed.) *Davranış ve Öğrenme Sorunu Olan Çocukların Eğitimi*.(s.109-124) Eskişehir, Türkiye: Anadolu Üni. Yay.
- Cavkaytar, A. (1998). *Zihin engellilere özbakım ve ev içi becerilerinin öğretiminde bir aile eğitimi programının etkililiği*. Yayınlanmamış doktora tezi, Anadolu Üniversitesi Sosyal Bilimler Enstitüsü.
- Cooper, O.J.; Heron, E.T.; & Heward, L.W. (1987). *Applied behaviour analysis*. Ohio, ABD: Merill Publishing Company
- Coulter, D.L.(2006). Neighbours and Frieds: Community Implication of Intellectual Disability. In S. Greenspan & H.N. Switzky. *What is mental retardation?: ideas for an evolving disability in the 21st.century (Revised and update edition)* (s. 127-133) Washington, ABD: AAMR
- Dever, R. B. (1987). *A national survey on the taxonomy of community living skills* (ERIC Document Reproduction Service No.ED 308 669)
- Dever, R. B. (1989). A taxonomy of community living skills. *Exceptional Children*, 55 (5), 395-404
- Drysdale, J.; Casey, J. & Porter-Armstrong, A. (2008). Effectiveness of training on the community skills of children with intellectual disabilities. *Scandinavian Journal of Occupational Therapy*, 9 (15), 247-255
- Eisenhower, A. & Blacher, J. (2006). Mothers of young adults with intellectual disability: multiple roles, ethnicity and well-being. *Journal of Intellectual Disability Research*, 50(12), 905-916
- Eripek, S. (2005). *Zeka geriliği*. Ankara, Türkiye: Kök yay.
- Evcimen, E. (1996). *Zihin engelli çocuğa sahip ailelerin (Anne-Babaların) gereksinimlerinin belirlenmesi*. Yayınlanmamış yüksek lisans tezi, Anadolu Üniversitesi Sosyal Bilimler Enstitüsü.
- Harin, T.H.; Kennedy, C.H.; Adams, M.J. & Pitts-Conway V. (1987). Teaching generalization of purchasing skills across community settings to autistic youth using videotape modeling. *Journal of Applied Behavior Analysis*, 1(20), 89-96
- Heward, W.L. (2003). *Exceptional children: an introduction to special education(7th Edition)*. New Jersey, ABD : Merrill Prentice Hall
- Kahraman, İ. ve Bayat, M. (2008). Özürü çocuğa sahip ebeveynlerin yaşadıkları Güçlükler ve algıladıkları sosyal destek düzeyleri. *Öz-Veri Dergisi*, 5(1), <http://www.ozida.gov.tr/ozveri/ov9/ov9mak3.htm> web 03.07.2009
- Kaner, S. (2004). *Engelli çocukları olan anababaların algıladıkları stres, sosyal destek ve yaşam doyumlarının incelenmesi*. Ankara Üniversitesi Bilimsel Araştırma Projesi.
- Karabulut, S. (2007). *Zihinsel özürü bireyin yol güvenliği*. Yüksek lisans tezi, Gazi Üniversitesi Fen Bilimleri Enstitüsü.
- Kavak, S. (2007). *Algılanan aile yakınları destek ölçeğinin geliştirilmesi ve 0-8 yaş arası engelli çocuğu olan annelerin yakınlarından aldığı desteği algılamaları*. Yayınlanmamış yüksek Lisans Tezi, Marmara Üniversitesi Eğitim Bilimleri Enstitüsü.
- Luscre, D. & diğerleri (1984). *Community skills training for moderately and severely mentally handicapped students*. (ERIC Document Reproduction Service No.ED 296 500).
- Martin, J.E.; Rusch, F.R; & Heal, L.W (1982), Teaching community survival skills to mentally retarded adults: a review and analysis. *The Journal of Special Education*, 16(3), 243-267
- Matson, J.L. & Long, S. (1986). Teaching computation/shopping skills to mentally retarded adults. *American Journal of Mental Deficiency*, 91(1), 98-101
- Matson, J. L. (1980). A controlled group study of pedestrian-skill training for the mentally retarded. *Behavior Research and Therapy*, 18, 99-106.
- Naseef, R. (1989). *How families cope successfully with a handicapped child: a qualitative study*. ERIC Document Reproduction Service No.ED 310 601)
- Newman, C. (2002). *Special needs, successful inclusion: a guide to planning comunity activities for children with special needs*. (ERIC Document Reproduction Service No.ED 469 054)
- Özen, A. (2008). Teaching emergency phone numbers to youth with developmental disabilities. *International Journal of Special Education*, 23 (2), 85-95
- Özen, A.; Çolak, A. & Acar, Ç. (2002). Zihin özürü çocuğa sahip annelerin günlük yaşamda karşılaştıkları problem davranışlarla ilgili görüşleri. *Ankara Üniversitesi Eğitim Bilimleri Fakültesi Özel Eğitim Dergisi*, 3 (2), 1-13
- Özgür, İ. (2004). *Engelli çocuklar ve eğitimi: özel eğitim*. Adana, Türkiye:Karahana kitabevi.
- Page, T.J; Iwata, B.A & Neef, N. (1976). Teaching pedestrian skills to retarded persons: generalization from the classroom to the natural environment. *Journal of Applied Behavior Analysis*, 9(4), 433-444

- Patton, M.Q. (2002) *Qualitative Research & Evaluation Methods*. 3rd Edition. Sage Publications. California.
- Pretty, G.; Rapley, M. & Bramston, P. (2002). Neighbourhood and community experience, and the quality of life of rural adolescents with and without an intellectual disability. *Journal of Intellectual & Developmental Disability*, 27(2), 106-116
- Pol, R.A.V.D; Iwata, B.A.; Ivancic, M.T.; Page, T.J.; Neef, N.A. & Whitley, F.P. (1981). Teaching the handicapped to eat in public places: acquisition, generalization and maintenance of restaurant skills. *Journal of Applied Behavior Analysis*, 14 (1), 61-69
- Sencar, B. (2007). *Otizimli çocuğa sahip ailelerin (anne-babaların) algıladıkları sosyal destek ve stres düzeyleri arasındaki ilişkinin incelenmesi*. Yayınlanmamış yüksek Lisans Tezi. Dokuz Eylül Üniversitesi Eğitim Bilimleri Enstitüsü
- Şen, E. (2004). *Engelli çocuğu olan ailelerin yaşadığı güçlükler*. Yayınlanmamış yüksek lisans tezi, Mersin Üniversitesi Sağlık Bilimleri Enstitüsü.
- Turnbull, R.; Turnbull, A.; Shank, M.; Smith, S. & Leal, D. (2002). *Exeptional lives: special education in today's schools (3rd edition)*. New Jersey: Merrill Prentice-Hall
- Vural, F. (2003). *Bir sosyal problem olarak Türkiye’de zihin engelliler-İzmir örneği*. Yayınlanmamış yüksek lisans tezi, Ege Üniversitesi Sosyal Bilimler Enstitüsü.
- Westling, D.L & Floyd, J. (1990). Generalization of community skills: how much training is necessary? *The Journal of Special Education*, 23(4), 386-406

Appendix

Interview Questions

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1. What kind of difficulties do you encounter while going from one place to another as a pedestrian accompanied by your child (i.e. while walking on pavements, while crossing the road, while walking through parked cars, while using pedestrian crossings or overpasses, while using traffic lights)?

 2. (a) What do you take into consideration while choosing which form of public transport to use to go from one place to another with your child? (b) What kind of problems that stem from other people do you experience while using public transport to go from one place to another with your child? (c) What kind of problems do you experience when you encounter unexpected situations and delays on public transport when you go from one place to another with your child?

 3. What kind of problems do you experience when you set out on long journeys with your child by coach, by train etc.?

 4. What kind of problems do you experience when you visit neighbors or relatives with your child?

 5. What kind of problems do you experience on outings with your child to: (a) Celebrations like wedding receptions, engagement ceremonies, hen night (b) Entertainment venues such as amusement parks, playgrounds, play pools, zoos

 6. What kind of problems do you experience when you go to the cinema, theaters or concerts with your child (a) What kind of problems do you experience when you are buying your tickets? (b) What kind of problems do you experience when you are waiting in the lobby? (c) What kind of problems do you experience when you enter the cinema/concert hall or theatre?

 7. What kind of problems do you experience when you go to places like hotels/lodging houses with your child?

 8. What kind of problems do you experience when you go to places like the beach or pool with your child?

 9. What kind of problems do you experience when you go to football/volleyball matches or basketball games with your child?

 10. What kind of problems do you experience when you engage in sports activities like football on AstroTurf grounds, jogging or walking with your child?

 11. What kind of problems do you experience when you are shopping at big supermarkets with your child?

 12. What kind of problems do you experience when you are shopping at a greengrocer's, a butcher's shop or in a neighborhood bazaar/market with your child?

 13. What kind of problems do you experience when you are shopping with your child in stores where clothes or shoes are sold?

 14. What kind of problems stemming from the people surrounding you do you experience when you eat out with your child?

 15. What kind of problems do you experience when you take your child to the toilet when you are outside/away from home?

 16. What kind of problems do you experience when you go to hospitals, health care centers or polyclinics with your child?

 17. What kind of problems do you experience when you take your child to the hairdresser or a beautician?
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THE EFFECTS OF VIDEO SELF-MODELING ON CHILDREN WITH AUTISM SPECTRUM DISORDER

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Video self-modeling (VSM) is a type of intervention that has been developed to assist students in viewing themselves successfully in a wide variety of domains. The present study was designed to analyze the effects of VSM on children with autism spectrum disorder in an academic setting, with specific focus on improving on-task behavior and appropriate transitions. Participants were two children who were enrolled within the functional interrelated classroom and diagnosed with autism spectrum disorder. Using an alternating treatment design over a 20 day time period, participants received 10 days of VSM and 10 control days in a random order. Results indicated that for the first child on-task behavior significantly increased on VSM days compared to control days and maintenance was established by the increasing of on-task behavior during the weeks of implementation. For the second child, appropriate transitions significantly increased on VSM days compared to control days but maintenance was not established. Additionally, teachers' ratings of participants' behavior improved from a pre-test given before the intervention to the post-test conducted at the conclusion. Practical suggestions for implementing VSM are provided, in addition to suggestions for future research.

Autism is a type of disorder included in the autism spectrum disorder (ASD) category. Other disorders in the category include Asperger's syndrome and pervasive developmental disorder-not otherwise specified. Individuals with autism have a triad of impairments. These impairments include verbal and non-verbal communication, social interactions, resistance to environmental change (Delano, 2007) and restricted behaviors and interests (Braithwaite & Richdale, 2000; Delano, 2007). Examples of restricted behaviors and interests include unusual behaviors and habits or obsessions, such as repetitive ticks or motor routines. In addition, children with autism have deficits in attention behavior, eye contact, and processing of social stimuli. One of the most prominent deficits in children with autism is communication, as 30% of children with autism never develop a language to native-like proficiency.

Volkmar, Cohen, and Paul (1985) found that parents of 50 children diagnosed with autism reported a variety of stereotyped movement including rocking (65%); toe walking (57%); arm, hand, or finger flapping (52%); and whirling (50%). The pervasive influence of autism spectrum disorder on diverse domains can have an adverse impact on a child's educational performance (Delano, 2007) and can cause these children to lag behind peers. Consequently, educational programs for children with ASD must be multi-faceted and address communication and language development, social and affective development, life skills, and academics.

For many years parents, teachers, and therapists have actively and aggressively pursued a wide range of approaches to treating students with ASD (Buggey, 2005). There have been many attempts to intervene with children who have ASD, some with reasonable success. This literature review will examine such attempts, focusing on a new technique known as video self-modeling and the practical significance its benefits has for children with autism.

The concept of modeling, or observational learning, as an intervention technique was first introduced 40 years ago by Albert Bandura, as part of his seminal work on social learning theory (Bellini & Akullian, 2007). Modeling or observational learning is defined as a result of observing the behavior of a model (Shipley-Benamou, Lutzker, & Taubman, 2002). This concept is known as *others as model*. Among the countless responses acquired observationally, those behaviors that seem to be effective for others are favored over

behaviors that are seen to have negative consequences and the evaluative reactions that people generate toward their own behavior also regulate which observationally learned responses will be performed (Bandura, 1977). Over the course of his career, Bandura (1977, 1997) demonstrated that modeling has a profound impact on the development of children. Bandura (1977) showed that children will imitate behaviors with or without the presence of reinforcement, and will perform the behavior in surroundings other than the settings where it was originally observed. Bandura also stated that children are most likely to attend to a model that they perceive as competent, and who is similar to themselves in some way.

Technological advances in the past two decades have allowed researchers to extend the concept of modeling to include the use of video to teach a wide variety of skills (Sherer, Pierce, Parades, Kisacky, Ingersoll, & Schreibman, 2001). Models presented in televised form are so effective in capturing attention that viewers learn much of what they see without requiring any special incentives to do so (Bandura, 1977). Only a few studies have investigated the effectiveness of video interventions for children with autism, the majority of which have focused on teaching social behaviors and increasing language skills (Shipley-Benamou et al., 2002). In a typical study, children with autism view a video of a target behavior prior to entering the setting in which the target behavior was measured (Delano, 2007). D'Ateno, Mangiapanello, and Taylor (2003) created videotapes for children with autism using adults as models for appropriate play. Children with autism viewed the videotapes, waited one hour, and were observed afterwards in a similar play scenario as the one depicted by the adult in the video. It was noted that the modeling intervention was related to positive gains in appropriate play in children with autism.

As illustrated from the research studies above, the use of video modeling to improve behaviors in a child with autism has been fairly successful. The success could, in part, be explained by four primary features. First, video modeling includes many of the features that Bandura found to be important, such as the use of a competent and similar model. Second, video modeling minimizes attention and language requirements. This is because the child only needs to view a small spatial area (i.e., television monitor) and to listen to a minimum amount of language. Video modeling avoids reliance on social interactions or the presence of a therapist to promote learning. This reduction in the importance of social interactions may be particularly significant for children who struggle in social settings. Finally, motivation for watching television in general might increase interest in watching the video (Sherer et al., 2001).

Among all the advantages of other as model, there are some disadvantages. One disadvantage is the child acting as the model may not remain anonymous during the video recording process. This might reduce the number of parents who give permission for their child to serve as a model (Shipley-Benamou et al., 2002). Filming the desired behavior requires time and follow-up sessions may be needed. Locating a child that is age and gender appropriate as well may serve as additional constraints.

These disadvantages might be solved through another idea from Bandura. Specifically Bandura (1997) noted that the advantage of seeing oneself perform successfully provides clear information on how best to perform skills and strengthens beliefs in one's capability. The phrase *self-as-model* refers to a method of having the child with autism spectrum disorder serve as their own model, typically using videotapes. Video Self-Modeling (VSM) has been evaluated as a second type of video modeling in which the children with autism serve as their own models (Delano, 2007). The process involves recording the target child maximizing a specific skill. The videos are edited, removing unwanted behaviors or errors and other distracting footage, and should be around three to five minutes in length all together. The result should be footage of the target child performing desired behaviors. Repeated viewing of the video occurs, showing only desirable behaviors. Moderate to strong outcomes of the reviewed studies suggest that VSM can be used successfully to support students' communication, behavior, and academic performance in educational settings (Hitchcock, Dowrick, & Prater, 2003). Buggey (2005) applied VSM to autism spectrum disorders to help with such behaviors as social interactions, tantrums, and language productions. In his study, Buggey collected baseline data, and then implemented VSM intervention. After noticeable improvement of behaviors, VSM was withdrawn and conclusions were made. It appeared that all participants made substantial gains as a result of VSM. Shipley-Benamou et al. (2002) found that using VSM was effective in teaching daily living skills to children with autism. An increase in play-related statements in children with autism toward their siblings was found using VSM according to Taylor, Levin, and Jaspers (1999). VSM has proved efficient with help in academic areas such as math (Schunk & Hanson, 1989) and life skills (Miklich, Chida, & Danker-Brown, 1997). Shunk and Hanson (1989) concluded that children who struggled with arithmetic made noticeable improvements after viewing themselves perform correct fraction problems on videotape. Thus, VSM has been incorporated into the classroom as an effective tool to assist students academically.

The success of the tool could be due to a variety of factors. First, VSM offers a way for individuals to confront their own behaviors (Buggey, 2005). VSM usually has immediate results, making it time and cost efficient (Hitchcock et al., 2003). Videos are also portable and can be used to maintain target behaviors during school breaks, such as winter or summer break. By minimizing attentional requirements, requiring the child only to look at a small spatial area (a television monitor), and to hear only the minimum necessary language, children are more able to direct their focus to relevant stimuli (Shipely-Benamou et al., 2002). Children might enjoy watching themselves more than watching an age-matched model and, thus, may be more motivated to attend to the videotape, as well as the familiarity of the self-model might make visual processing, and thus learning, easier (Sherer et al., 2001). It also allows individuals to see themselves as they could be rather than as they currently are. In addition, television offers a relatively nonthreatening medium of teaching when compared to direct human interaction (Zihini & Zihini, 1998).

Further, watching predominately positive and/or successful behaviors of self, as opposed to negative and/or unsuccessful behaviors, is essential to effective modeling as it increases both attention and motivation to attend to the modeled behaviors (Bellini & Akullian, 2007). Research has supported the notion that skills learned via video modeling and VSM generalize across different settings and conditions and that the positive gains made during the video modeling intervention are maintained for months following the conclusion of the intervention (Bellini & Akullian, 2007). Schreibman, Whalen, and Stahmer (2000) used a video priming technique to reduce or eliminate disruptive behaviors associated with transition situations for children with autism, and in all instances the video priming intervention resulted in decreases in the disruptive behavior and generalized across new transition situations.

There has been limited research in general on VSM, the number only in the single digits. A meta-analysis conducted by Bellini and Akullian (2007), included 23 studies that were published between 1998 and 2005. Of those 23, 15 examined video modeling interventions and only 7 examined VSM, with one study examining both video modeling and VSM. In addition, to date, most of the research on the use of video modeling with children with autism spectrum disorder has focused on improving social-communicative skills (Delano, 2007). There has been limited attention and research conducted regarding children with autism spectrum disorders who exhibit severe attention (Courchesne et al., 1994), social (Pierce & Schreibman, 1995), and motivational deficits (Shipley-Benamou et al., 2002). A majority of research has been conducted to increase social skills in the community, conversational skills, and functional skills such as brushing teeth or washing face, and play behavior. Research on VSM within the last three years has continued to explore its benefits in the areas of social engaged time (Victor, Little, & Akin-Little, 2011), social initiatives during playground time (Buggey, Homes, Sherberger, & Williams, 2011), social skills, functional skills (Gelbar, Anderson, McCarthy, & Buggey, 2012) and extension to pre-school aged children (Buggey & Hoomes, 2011). Consequently, more research needs to be conducted on VSM procedures to improve academic functioning, increase on-task behavior in certain academic fields, or allow parents or teachers to pick the task to increase the social relevance. Hitchcock et al. (2003) noted that more research is needed on VSM and they encouraged teachers and researchers to implement VSM and investigate this type of intervention, since there is little research available to date.

The purpose of the present study was to implement VSM in the classroom to improve academic performance, such as on task behavior and appropriate transitions with two students with ASD. Specifically, this study utilized the image of future success (Dowrick, 1999) or video feedforward. Video feedforward is a category of VSM interventions. In feedforward interventions, individuals observe themselves successfully demonstrating skills that are slightly above their current capability (Bellini & Akullian, 2007) or that have not been previously attained (Hitchcock et al., 2003). In a study conducted by Dowrick, Kim-Rupnow, and Power (2006), it was found that video feedforward had significantly increased students' rate of improvement in reading fluency.

Research indicates the utility of self-modeling is evident in that it has been used to address successfully a myriad of conditions, including daily living skills (Shipley-Benamou et al., 2002); language production (Buggy, 2005); preteaching reading skills (Beck, Burns, & Lau, 2009); responding behaviors (Buggy, Toombs, Gardener, & Cervettie, 1999); attention-deficit/hyperactivity disorder (Walker & Clement, 1992); transitions (McCoy, Mathur, & Czoka, 2010); and learning/behavior disabilities (Clare, Jenson, Kehle, & Bray, 2000). With regards to increasing children's on-task behavior, previous investigations employing self-modeling have revealed mixed results (Clare et al., 2000). Clare et al. (2000) reported a substantial increase in their participants' on-task behaviors. In contrast, however, Possell, Kehle, McLoughlin, and Bray (1999) found idiosyncratic and limited effects of self-modeling with similar students used in previous studies. Thus, the present research explored the implementation of VSM within a functional interrelated classroom to explore the effects it had on children with autism spectrum disorder and on-task behavior. Therefore, it was hypothesized

that *the implementation of VSM would significantly increase the percentage of on-task behavior compared to control conditions*. With regards to Clare et al. (2000), students' on-task behaviors were maintained at six and eight weeks after termination of treatment. Lonnecker, Brady, McPherson, and Hawkins (1994) also observed maintenance during the fading phase of research conducted. Consequently, it was also hypothesized that *the implementation of video self-modeling (VSM) within the functional interrelated classroom would demonstrate maintenance, or the general increase in on-task behaviors over the seven weeks of implementation*.

Making successful transitions from one activity to another is difficult for many children, especially children with autism spectrum disorder; increasing the length of the transition is directly relevant to the amount of time available for student engagement in an expected task (McGrath & Rust, 2002). Visual supports may improve learning for children who have limitations in processing or attending to transient information or who are challenged to recall information presented verbally (McCoy et al., 2010). It was hypothesized that *the implementation of VSM would increase the percentage of appropriate transitions as compared to control conditions*. With regards to this hypothesis, it was also predicted that *the implementation of VSM would demonstrate maintenance, or the general increase in appropriate transitions over the weeks of implementation*.

Finally, the present study investigated the functional interrelated classroom teachers' responses before the implementation of VSM and after the completion of VSM. It was hypothesized that *teacher's ratings of on-task behaviors and appropriate transitions would significantly increase after the introductions of VSM as compared to baseline ratings*. This hypothesis was intended to provide a clearer understanding of how the functional interrelated classroom teachers perceived the implementation of VSM and whether they found it effective with their chosen students and areas of improvement.

Method

Participants

Two middle school students were chosen to participate in this study. Both students attended one middle school in Western Kansas and participated in a special education functional interrelated classroom on a daily basis. They were selected for participation in this study because they were previously diagnosed with ASD as documented on the individual education plan (IEP), showed struggles or difficulties in specific academic areas, and were thought to benefit from VSM when teacher input was taken into consideration.

The first student was a 13-year-old Caucasian girl in the 8th grade. VSM was implemented to assist her in increasing her time on-task during reading class (30 minutes), suggested by the two functional interrelated classroom teachers. Beck et al. (2009) described time on-task as attending to the assigned reading material (e.g., appearing to silently read material, writing, raising hand to ask for assistance, and listening to a teacher explain directions). Clare et al. (2000) defined on-task behavior as having eye contact with the teacher, or the assigned task, and performing the requested assignment. In the current study, these definitions were used in addition to time on-task including the student being engaged in academic learning time. Academic learning time consisted of listening to a story, cut and paste activities, coloring or drawing, handwriting practice, or flashcards. Time on-task also included increasing her positive interaction with peers and classroom staff, which encompassed keeping her hands to herself (no pinching, hitting, pulling hair), and replacing automatic refusal to do academic activities with willingness to attempt activities. Off-task behaviors were as defined by previous research and included not having eyes orientated toward the assigned material. Examples of off-task behavior included talking to a peer about something other than the assigned task, staring out the classroom window, being out of seat, and showing any physical aggression (Beck et al., 2009). These definitions of off-task behavior were utilized in the current study.

The second student was a 14-year-old Caucasian girl in the 8th grade. VSM was also implemented to assist her with transition difficulties. In particular, she struggled with transitions during specific class periods when she was asked to switch activities or when she was asked to leave for related services. According to the functional interrelated classroom teachers, her struggles included: very vocal responses and exaggerated questions as to what is going on, tears or crying, hand or finger flapping, and/or exaggerated sobbing. For the purpose of this study, the research focused on transitions during academic periods, which included switching activities in the same academic period. This study focused specifically on math class, because both teachers reported math as being the academic class period where a majority of her difficulties were observed.

Appropriate transitions for this student encompassed attending to the assigned task, which included eyes focusing on the assignment, remaining in her seat, and little to no loud vocalizations or interruptions. Appropriate transitions also included putting away specific materials as directed and retrieving materials for the next activity in math class. Inappropriate transitions consisted of loud vocalizations by the student when asked

to begin a new activity in the math class, such as exaggerated sobbing, crying, and dramatic questions. Inappropriate transitions also encompassed refusal to put away class materials or refusal to get out new class materials for the new activity

Experimental Design

This study utilized a single subject repeated measures design. Single subject designs are designs that can be applied when the sample size is one or when a number of individuals are considered one group; these designs are typically used to study the behavioral change an individual exhibits as a result of some treatment (Bonds-Raacke & Raacke, 2012; Wasson, 2010) and are frequently used in VSM research (Bellini & Akullian, 2007; Beck et al., 2009; Hines & Simonsen, 2008). For the current study, a pre-assessment evaluation completed by the teachers before implementation of VSM of each student's academic behavior occurred. Next, the independent variable was introduced and impacts measured. Finally, a posttest assessment, again completed by the teachers, evaluated the effectiveness of VSM on targeted skills.

An alternating-treatment design with comparison and withdrawal conditions was used to compare the effects of VSM on the performance of on-task behaviors and transitions by the two respective students. An alternating-treatment design is one in which two or more treatment options are alternated in quick succession to evaluate differential effects. Each time a condition is introduced it is maintained only for a brief period before being alternated with a different condition. This design was selected for the current study because of its numerous benefits such as the elimination of baseline data. In addition, previous research utilizing the alternating-treatment design has found that conditions are quickly discriminated by the participants and the influence of conditions can be easily observed (White, 2010). However, there are also some limitations to this design when the population of interest is children with ASD. For example, many children with autism spectrum disorders are preoccupied with *sameness* in their home environments and with school routines. It is not uncommon for changes in the routine to lead to a tantrum or other emotional disturbances (Filipek et al., 1999). However, the advantages outweighed the possible limitation and consequently, the alternating-treatment design consisted of 20 days of implementation, occurring three days a week for seven weeks. Of the 20 days, 10 days utilized VSM treatment and 10 days served as a control. The order of the implementation was determined using a random procedure.

Materials and Procedure

After obtaining consent from the school district to conduct the study, permission was granted by both the functional interrelated classroom teachers. Consent was then obtained from each of the student's parents and, child assent was also obtained from each of the participants in the present study. Once consent was granted, the teachers completed the pre-assessment baseline surveys. For Student 1, the survey measured on-task behaviors (such as making eye contact, performing required assignments, engaging in academic learning time) and off-task behaviors (such as talking to peers at inappropriate times, staring out the classroom window, getting out of the seat). For student 2, the survey measured teachers' perceptions of appropriate transitions like putting away materials when directed and inappropriate transitions like refusal to begin a new activity.

Next, video recording began on each individual child to record the specific target behaviors for VSM footage used in implementation of the research. Video recording took approximately one week to obtain enough footage to create a master video for the two students to view on their randomly assigned VSM days. Editing the videos occurred as well to ensure that only positive behaviors were viewed. Once the videos were edited, a voice over was provided with encouraging prompts for the first student to increase self-efficacy. Such auditory prompts included *Great work, nice job working quietly, or look how good you are working!* The master video for the second student made use of visual prompts she could read. These visual prompts included *Nice job working quietly, good job, and great work!* Videos were played to the child before the specified academic class on the randomly assigned VSM day. To document any change in behaviors, each student was recorded using the Flip video camera each day of the research, which included VSM days and control days for comparison to measure change.

Dependent Variables

Classroom data was collected by employing momentary-time sampling, with behavior of each student rated every 10 seconds during 30 minute observation sessions with Student 1 and 10 minute observation sessions with Student 2. Momentary time sampling has been shown to effectively measure on-task behavior for typically developing students as well as students with BDs (Beck et al., 2009; Gunter, Venn, Patrick, Miller, & Kelly, 2003). The two dependent variables included on-task/off-task behaviors for the Student 1 and appropriate/inappropriate transitions for the Student 2. To gather the dependent variables the present study made use of three research assistants to assist with coding the data obtained.

There were a total of three observers who viewed the video tapes, two current school psychology graduate students and one undergraduate student with a minimum of one year of experience in a research setting. The observers received a one hour training session. During the training session, the operational definitions for on-task and off-task behaviors and appropriate and inappropriate transitions were provided. In addition, example video clips were provided to illustrate on-task and off-task behaviors for the first student, as well as appropriate and inappropriate transitions for the second student. The examples provided did not contain actual footage to be analyzed during the experimental procedure. The observers watched the sample videos, and practiced classifying on-task and off-task behavior and appropriate and inappropriate transitions, and discussed the results. When a 90% consensus was reached, the experimental procedure was ready to begin. The observers were blind to the conditions of the study as recommended by Clare et al. (2000).

Results

A Pearson correlation coefficient was calculated to assess the relationship between each of the three observers' scores to find the highest correlations between each when looking at Student 1 data. There were strong positive correlations found with Researcher one when compared to Researchers two ($r(20) = .873, p < .05$) and Researcher three ($r(20) = .854, p < .05$). Researcher one was determined the primary observer regarding Student 1; due to having the highest correlations (J. M. Naylor, personal communication, April 11, 2012)). A Pearson correlation coefficient was also calculated to assess for the relationship between each of the three observer's scores to find the highest correlations between each when looking at Student 2 data. There were strong positive correlations found with Researcher one when compared to Researcher two ($r(20) = .957, p < .05$) and Researcher three ($r(20) = .955, p < .05$). Again, Researcher one was determined the primary observer regarding Student 2, due to having the highest correlations.

Hypothesis (a)

A paired-samples t test was calculated with Student 1 data to determine if on-task behavior varied between control days and video self-modeling (VSM) days. Results indicated that the average percent of on-task behavior on the VSM days ($M = 97.42; SD = 5.16$) was significantly higher than the average percent of on-task behavior on the control days ($M = 93.6; SD = 4.56$), $t(9) = 2.18, p < .05$. A paired-sample t test was also calculated using Student 1 data to determine if off-task behavior varied between control days and VSM days. The average percent of off-task behavior on the control days was 6.12 ($SD = 4.83$), and the average percent of off-task behavior on the VSM days was 2.58 ($SD = 5.16$). Thus, significantly higher mean scores were found for off-task behavior on the control days than on the VSM days, $t(9) = 1.98, p < .05$.

Hypothesis (b)

A Pearson correlation coefficient was calculated to assess the maintenance effects of VSM on Student 1 over the course of implementation. A moderate positive correlation was found ($r(20) = .402, p < .05$), indicating a significant linear relationship between the day of treatment and on-task behavior. Maintenance was achieved over the course of implementation of the research for Student 1 (See Figure 1).

Hypothesis (c)

A paired-samples t test was calculated with Student 2 data to determine if appropriate transitions varied between control days and video self-modeling (VSM) days. The average percent of appropriate transitions on the control days was 76.84 ($SD = 18.34$), and the average percent of appropriate transitions on the VSM days was 84.67 ($SD = 22.09$), $t(9) = -1.41, p > .05$. A review of the days in which the video was applied to Student 2 revealed an anomaly. This anomaly may be due to the fact Student 2 had a different para-educator than she usually has on this specific day, resulting in a change in the student's schedule. Student 2 had a consistent para-educator to work with during math class each day, but on this day the para was absent. Many students with ASD display resistance to environmental change, which may have led to the anomaly. Thus, the paired-samples t test was re-run with the exclusion of the anomaly. The average percent of appropriate transitions on the control days was 80.93 ($SD = 13.78$), and the average percent of appropriate transitions on the VSM days was 91.45 ($SD = 5.09$). With the removal of the anomaly, there was a significant difference between the control days and the VSM days ($t(8) = -1.94, p < .05$). A paired-samples t test was calculated with Student 2 data to determine if inappropriate transitions varied between controls days and VSM days. The average percent of inappropriate transitions on the control days was 23.16 ($SD = 18.34$), and the average percent of inappropriate transitions on the VSM days was 15.33 ($SD = 22.09$), $t(9) = 1.41, p > .05$. Again the analysis was re-run excluding the anomaly. The average percent of inappropriate transitions on the control days was 19.07 ($SD = 13.78$), and the average percent of inappropriate transitions on the VSM days was 8.51 ($SD = 5.09$). With the removal of the anomaly, there was a significant difference between the control days and the VSM days ($t(8) = 1.94, p < .05$).

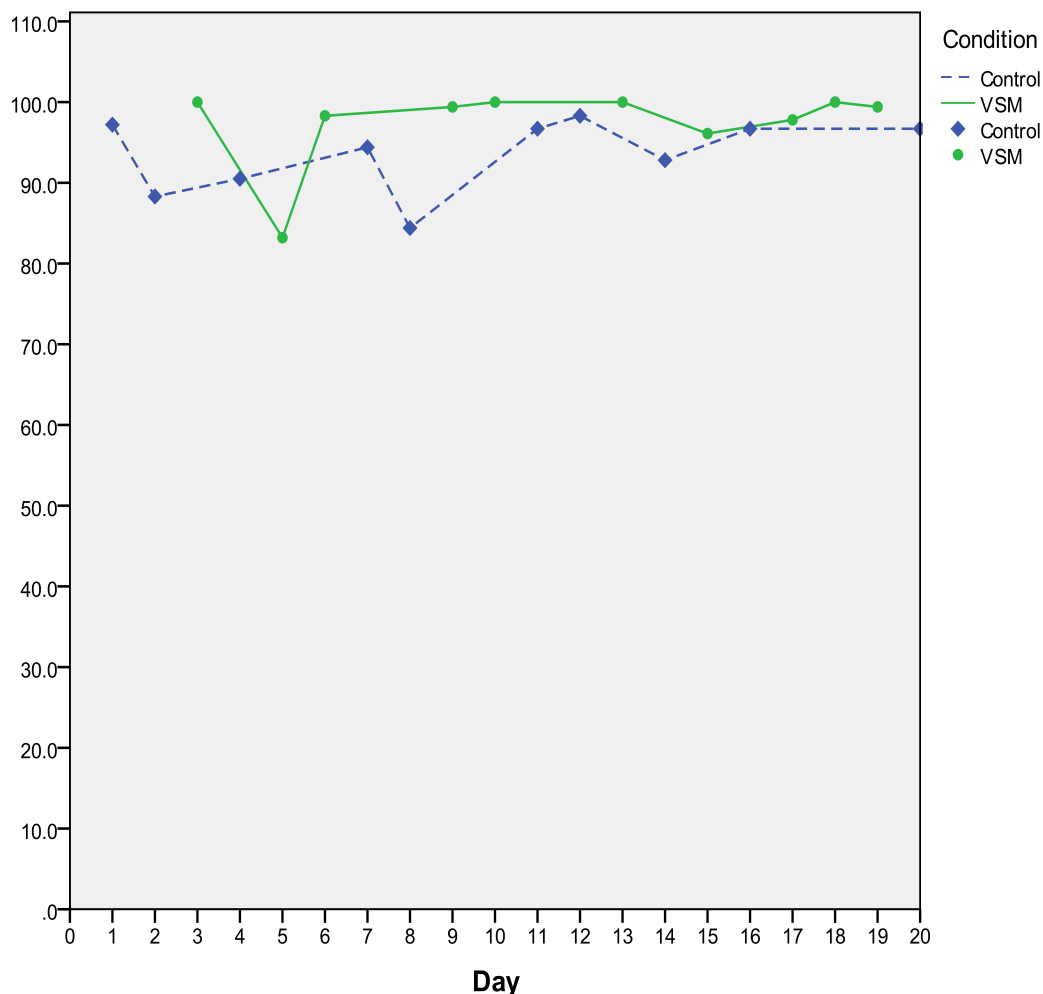


Figure 1. Student I Maintenance

Hypothesis (d)

A Pearson correlation coefficient was calculated to assess the maintenance effects of VSM on Student 2 over the course of implementation. A weak positive correlation was found ($r(20) = .103, p > .05$), indicating a lack of a significant linear relationship between the day of implementation and appropriate transitions. Maintenance was not easily achieved over the course of implementation of the research for Student 2 (See Figure 2).

Hypothesis (e)

A 5-point likert-scale was administered to the two classroom teachers before implementation of VSM and upon completion of the VSM research. The likert-scale had each of the teachers rate on-task behavior as well as off-task behavior for Student 1 and appropriate and inappropriate transitions for Student 2. A paired-samples t test was calculated to compare the teachers' perceptions of on-task behavior for Student 1 before implementation of VSM, to the teachers' perceptions of behaviors after implementation of VSM, with higher scores indicating greater frequency of behavior. The average mean rating of the teachers' perceptions before VSM implementation was 2.79 ($SD = .49$), and the average mean rating of the teachers' perceptions after implementation of VSM was 4.12 ($SD = .24$). According to the two teachers' responses, there was a significant increase of on-task behavior in Student 1 upon completion of the VSM research ($t(6) = -5.20, p < .05$). A paired-samples t test was also calculated to determine the teachers' perceptions before and after VSM implementation of off-task behavior, with higher scores on the post-test indicating improvement or a decrease in behaviors. The average mean rating of the teachers' perceptions before implementation was 2.90 ($SD = 1.93$), and the average mean rating of the teachers' perceptions after implementation was 4.40 ($SD = .42$). Again, according to the two teachers' responses, there was a significant decrease of off-task behavior in Student 1 upon completion of the VSM research ($t(4) = -3.00, p < .05$).

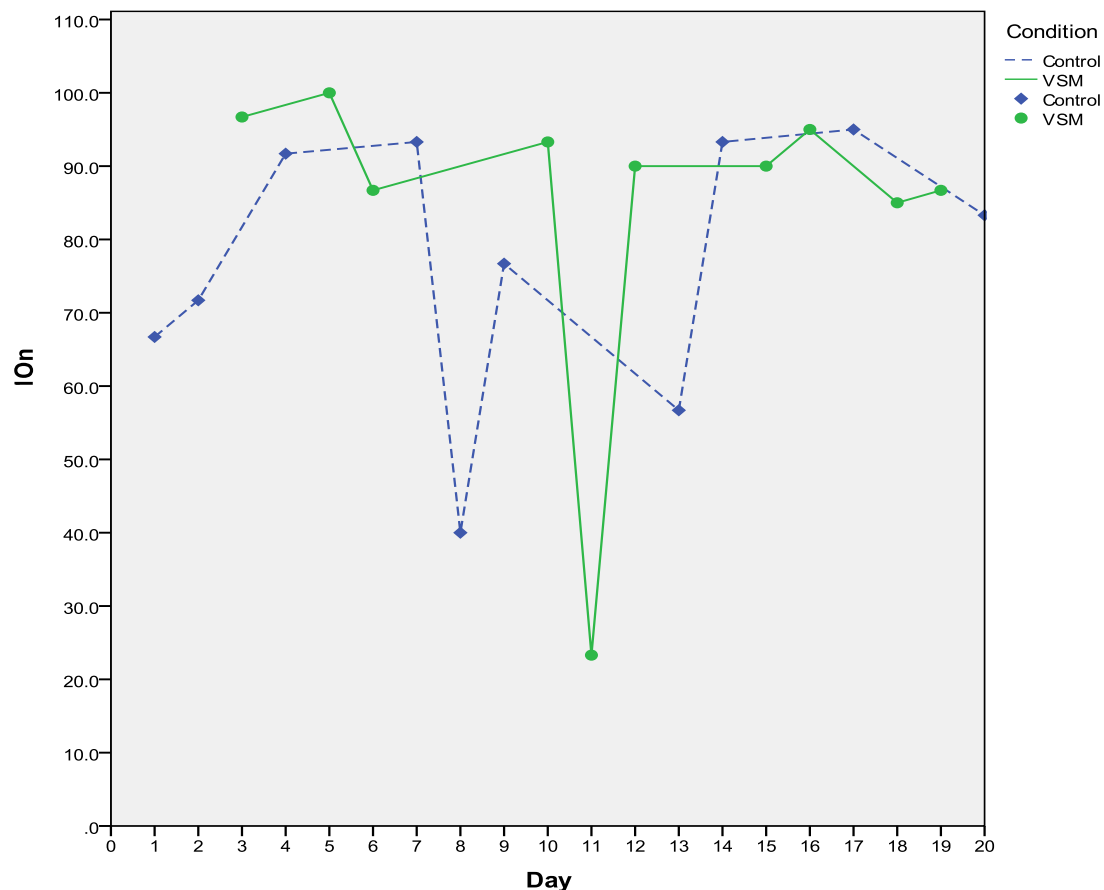


Figure 2. Student 2 Maintenance

A paired-samples t test was calculated to compare the teachers' perceptions before implementation of VSM, to the teachers' perceptions after implementation of VSM of appropriate transitions for Student 2, with higher scores indicating greater frequency of behavior. The average mean rating of the teachers' perceptions before VSM implementation was 2.80 ($SD = .67$), and the average mean rating of the teachers' perceptions after implementation of VSM was 4.20 ($SD = .57$). According to the two teachers' responses, there was a significant increase in appropriate transitions in Student 2 upon completion of the VSM research ($t(4) = -14.00, p < .05$). A paired-samples t test was calculated to compare the teachers' perceptions before implementation of VSM, to the teachers' perceptions after implementation of VSM of inappropriate transitions for Student 2, with higher scores on the post-test indicating improvement or a decrease in behaviors. The average mean rating of the teachers' perceptions before VSM implementation was 3.20 ($SD = 1.35$), and the average mean rating of the teachers' perceptions after implementation of VSM was 4.40 ($SD = .55$). Thus, there was no significant difference found between before and after implementation of the VSM research with regards to inappropriate transitions ($t(4) = -1.47, p > .05$).

Discussion

The purpose of the present study was to examine the effects of video self-modeling on children with autism spectrum disorder when implemented in an academic setting and the maintenance of desired behaviors over time. This study was developed in response to previous research (Buggey, 2005; Clare et al., 2000; Sherer et al., 2001; Shipley-Benamou, 2002; Schunk & Hanson, 1989) suggesting the positive gains made by video self-modeling on children in various settings. However, this study was implemented in the classroom to improve academic performance, including on-task behavior and appropriate transitions with students with ASD. The present study added to the literature by allowing teachers to choose the specific students with concerns, the academic behavior to target, and the class period to implement VSM, thus increasing social relevance.

In an effort to examine the effects of video self-modeling on children with autism spectrum disorder; five hypotheses were developed. The first hypothesis developed stated the implementation of VSM would significantly increase the percentage of on-task behavior compared to control conditions. Consistent with prior research, the data suggests that video is a useful medium for accomplishing positive behavior change in this population (Charlop & Milstein, 1989; Lonnecker et al., 1994; Pierce, Clad, & Schreibman, 1997; Schreibman

et al., 2000; Shipley-Benamou et al., 2002) and the first hypothesis was supported. There was a clear demonstration that for Student 1 on-task behavior greatly improved as a result of the VSM implementation in her reading class. Consistent with the second hypothesis developed, the implementation of VSM demonstrated maintenance over the seven weeks of implementation. In other words, at the completion of the study, on-task behavior for Student 1 had increased overtime regardless of the condition.

The third hypothesis developed stated that the implementation of VSM would increase the percentage of appropriate transitions as compared to control conditions. Student 2 was approaching significance overall, but showed evidence of an anomaly within the 20 days of implementation. With the removal of this anomaly, Student 2 showed a significant difference in overall appropriate transition behavior. The anomaly occurred on day 11 when the student's para-educator was absent unexpectedly. As mentioned earlier, children with ASD show resistance to environmental change (Delano, 2007). It was apparent that the removal of her consistent para-educator led her to struggle during her math class and removing this day provides a clearer picture of the actual impact of VSM. The fourth hypothesis developed stated that the implementation of VSM would demonstrate maintenance. Maintenance for Student 2 was difficult to establish, and it is thought with more time dedicated to the implementation of VSM, maintenance may be found.

The fifth, and final, hypothesis developed stated the teachers' ratings of on-task behaviors and appropriate transitions would significantly increase after the introductions of VSM as compared to baseline ratings. Consistent with this hypothesis, teachers rated on-task behavior and appropriate transitions low on the administered likert-scale before implementation. Upon completion of the present study, another likert-scale was administered for the teachers to rate the strength of improvement in on-task behavior and appropriate transitions. Each teacher gave high ratings for improvement and an increase in on-task behavior and appropriate transitions.

Skills are not perfected through observation alone, nor are they developed solely by trial-and-error fumbling (Bandura, 1977). It is important to stress that some progress is significant when working with children with ASD. Their triad of impairments, consisting of verbal and non-verbal communication, restricted behaviors (Delano, 2007; Braithewaite & Richdale, 2000) and resistance to environmental change (Delano, 2007) can drastically affect their performance academically in the classroom. With VSM implementation, an increase in desired behaviors in the specific VSM days when compared to the control days was achieved. Children with ASD do present a resistance to small changes in their schedule, and the progress that was observed and noted can be considered a success in their academic classes.

It is important to note the clear benefits of VSM. First, the implementation of VSM was relatively nonintrusive, only taking a few minutes at the beginning of their chosen class period to view the edited video clip of positive and appropriate behaviors. Another benefit of VSM is that it tends to produce almost immediate results upon viewing the video clip. No researchers have found instances of delayed effect or even slow, gradual effects; thus if immediate results are not exhibited, it is unlikely that continued viewing will be effective unless it is adapted (Buggey, 2005). These reasons make VSM a viable option for teachers to select.

Limitations and Future Research

A possible limitation due to the single-subject design is the small sample size (Buggey, 2005). In this specific study, that threat was confounded by only having two participants with ASD. In addition, the implementation of VSM was conducted in a natural environment, where there were many extraneous variables that could not be controlled for such as fire drills and school wide activities. Another possible threat to validity was the presence of the video-camera throughout the implementation of the research. Known as the Hawthorne Effect, students may have tended to increase their on-task and appropriate behavior having known there was a camera recording their behavior. A final limitation of the present study is the lack of a follow-up phase. Maintenance as well as replication of skills across settings and contexts within the student's natural environment remains uncertain (Shipley-Benamou et al., 2002). This study was performed within 20 days of control and VSM implementation; the two participants may have benefited and maintained appropriate behaviors given more time.

Future research is needed to verify the current studies results and to continue exploring the effects of video self-modeling on children with autism spectrum disorder. The future research should also extend the amount of time between the intervention and the follow-up phase to determine maintenance of video self-modeling. Generalization across different settings and skills should also be explored. The application of video self-modeling should also be extended to being used in other academic and behavior areas and throughout each day, as opposed to once a day a few times a week. Future research can also include training sessions to assist the teachers and staff in developing and implementing specific video clips for chosen students. Finally, future research is needed to determine if the intervention is equally effective in culturally diverse populations, which

would be predicted given promising preliminary findings using VSM with English language learners (Ortiz, Burlingame, Onuegbulem, Yoshikawa, & Rojas, 2012).

References

- Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W.H. Freeman.
- Beck, M., Burns, B. K., & Lau, M. (2009). The effect of preteaching reading skills on the on-task behavior of children identified with behavioral disorders. *Behavioral Disorders*, 34 (2), 91-99.
- Bellini, S., & Akullian, J. (2007). A meta-analysis of video modeling and video self-modeling interventions for children and adolescents with autism spectrum disorders. *Exceptional Children*, 73 (3), 264-287.
- Bonds-Raacke, J., & Raacke, J. (2010). *Research methods: Are you equipped?* Upper Saddle River, NJ: Pearson.
- Braithwaite, K. L. & Richdale, A. L. (2000). Functional communication training to replace challenging behaviors across two behavioral outcomes. *Behavioral Interventions*, 15, 21-36.
- Buggey, T. (2005). Video self-modeling applications with students with autism spectrum disorder in a small private school setting. *Focus on Autism and Other Developmental Disabilities*, 20 (1), 52-63.
- Buggey, T., & Hoomes, G. (2011). Using video self-modeling with preschoolers with autism spectrum disorder: Seeing can be believing. *Young Exceptional Children*, 14, 2-12.
- Buggey, T., Hoomes, Sherberger, M. E., & Williams, S. (2011). Facilitating social initiations of preschoolers with autism spectrum disorders using video self-modeling. *Focus on Autism and Other Developmental Disabilities*, 26, 25-36.
- Buggey, T., Toombs, K., Gardener, P., & Cervetti, M. (1999). Training responding behaviors in students with autism: Using videotaped self-modeling. *Journal of Positive Behavior Interventions*, 1, 205-214.
- Charlop, M. H., & Milstein, J. P. (1989) Increasing autistic children's spontaneous verbalizations of affections: An assessment of time delay and peer modeling procedures. *Journal of Applied Behavior Analysis*, 19, 307-314.
- Clare, S. K., Jenson, W. R., Kehle, T. J., & Bray, M. A. (2000) Self-modeling as a treatment for increasing on-task behavior. *Psychology in the Schools*, 37(6), 517-522.
- Courchesne, E., Townsend, J., Akshoomoff, N., Saitoh, O., Yeung-Courchesne, R., Lincoln, A., et al. (1994). Impairment in shifting attention in autistic and cerebellar patients. *Behavioral Neuroscience*, 108, 1-17.
- D'Ateno, P., Mangiapanello, K., & Taylor, B. A. (2003) Using video modeling to teach complex play sequences to a preschooler with autism. *Journal of Positive Behavior*, 5 (1), 5-11.
- Delano, M. E. (2007). Video modeling interventions for individuals with autism. *Remedial and Special Education*, 28 (1), 33-42.
- Dowrick, P. (1999). A review of self modeling and related interventions. *Applied and Preventive Psychology*, 8, 23-29.
- Dowrick, P. W., Kim-Rupnow, W. S., & Power, T. J. (2006). Video feedforward for reading. *The Journal of Special Education*, 39, 194-207.
- Filipek, P. A., Accardo, P. J., Baranek, G. T., Cook, E. H. Jr., Dawson, G., Gordon, B., et al. (1999). The screening and diagnosis of autistic spectrum disorders. *Journal of Autism and Developmental Disorders*, 29 (6), 439-484.
- Gelbar, N. W., Anderson, C., McCarthy, S., & Buggey, T. (2012). Video self-modeling as an intervention strategy for individuals with autism spectrum disorders. *Psychology in the Schools*, 49, 15-22.
- Gunter, P. L., Venn, M. L., Patrick, J., Miller, K. A., & Kelly, L. (2003). Efficacy of using momentary time samples to determine on-task behavior of students with emotional/behavioral disorders. *Education and Treatment of Children*, 26, 400-412.
- Hines, E. & Simonsen, B. (2008). The effects of picture icons on behavior for a young student with autism. *Beyond Behavior*, 18, 9-17.
- Hitchcock, C. H., Dowrick, P. W., & Prater, M. (2003). Video self-modeling intervention in school-based settings: A review. *Remedial and Special Education*, 24 (36), 36-56.
- Lonnecker, C., Brady, M. P., McPherson, R., & Hawkins, J. (1994). Video self-modeling and cooperative classroom behavior in children with learning and behavior problems: Training and replication effects. *Behavioral Disorders*, 20, 24-34.
- McCoy, K. M., Mathur, S. R., & Czoka, A. (2010) Guidelines for creating a transition routine: Changing from one room to another. *Beyond Behavior*, 19, 22-29.
- McGrath, C., & Rust, J. (2002). Academic achievement and between-class transition time for self-contained and departmental upper-elementary classes. *Journal of Instructional Psychology*, 29, 40-43.
- Miklich, D. R., Chida, T. L., & Danker-Brown, P. (1997). Behavior modification by self-modeling without subject awareness. *Journal of Applied Behavior and Experimental Psychiatry*, 8, 125-130.
- Ortiz, J., Burlingame, C., Onuegbulem, C., Yoshikawa, K., & Rojas, E. D. (2012). The use of VSM with English language learners: Implications for success. *Psychology in Schools*, 49, 23-29.

- Pierce, K., Clad, K., & Schreibman, L. (1997). Social perception in children with autism: An attentional deficit? *Journal of Autism and Developmental Disorders*, 27, 265-282.
- Pierce, K., & Schreibman, L. (1995). Increasing complex social behaviors in children with autism: Effects of peer-implemented pivotal response training. *Journal of Applied Behavior Analysis*, 28, 285-295.
- Possell, L. E., Kehle, T. J., McLoughlin, C. S., & Bray, M. A. (1999). Self-modeling as an intervention to reduce disruptive classroom behavior. *Cognitive and Behavioral Practice*, 6, (2) 99-105.
- Schreibman, L., Whalen, C., & Stahmer, A. C. (2000). The use of video priming to reduce disruptive transition behavior in children with autism. *Journal of Positive Behavior Interventions*, 2, 3-11.
- Schunk, D. H., & Hanson, A. R. (1989). Self-modeling and children's cognitive skill learning. *Journal of Educational Psychology*, 81, 155-163.
- Sherer, M., Pierce, K. L., Parades, S., Kisacky, K. L., Ingersoll, B., & Schreibman, L. (2001). Enhancing conversation skills in children with autism via video-technology: Which is better, *self* or *other* as a model? *Behavior Modification*, 25 (140), 140-158.
- Shipley-Benamou, R., Lutzker, J. R., & Taubman, M. (2002). Teaching daily living skills to children with autism through instructional video modeling. *Journal of Positive Behavior Interventions*, 4 (166), 166-177.
- Taylor, B., Levin, L., & Jaspers, S. (1999). Increasing play-related statements in children with autism toward their siblings: Effects of video modeling. *Journal of Developmental and Physical Disabilities*, 11, 253-264.
- Victor, H., Little, S. G., & Akin-Little, A. (2011). Increasing social engaged time in children with autism spectrum disorders using video self-modeling. *Journal of Evidence-Bases Practices for Schools*, 12, 105-124.
- Volkmar, F. R., Cohen, D. J., & Paul, R. (1986). An evaluation of DSM-III criteria for infantile autism. *Journal of Psychiatry*, 148, 1705-1707.
- Walker, C. J., & Clement, P. W. (1992). Treating inattentive, impulsive, hyperactive children with self-modeling and stress inoculation training. *Child and Family Behavior Therapy*, 14 (2), 75-85.
- Wasson, J.B. (2010). Single subject design. [Online]. Available at <http://www.practicalpress.net/updatenov05/SingleSubject.html>
- White, O. R. (2010) Alternating treatment design. [Online]. Available at http://courses.washington.edu/edspe511/Downloads/Design_Overviews/Design_Overview_Alternating_Treatment.pdf
- Zihini, F., & Zihini, F. (1998). AZ method: The use of video techniques to develop language skills in autistic children [Online]. Available at <http://ourworld.com/homepages/FZihini/azmethod.htm>

**WHAT IS BEHIND THE DIAGNOSIS OF LEARNING DISABILITY
IN AUSTRIAN SCHOOLS?
AN EMPIRICAL EVALUATION OF THE RESULTS OF THE DIAGNOSTIC PROCESS**

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Every school system has to deal with children with Learning Disabilities (LD). However, the concepts of LD, the assessment procedures, the diagnostic criteria as well as their interpretation vary widely from country to country. What they usually have in common is that general cognitive abilities, as measured by standardized IQ tests, are seen as an important aspect. In Austrian schools the diagnosis of LD is largely based on expert opinions provided by special education teachers. The diagnostic procedure is quite unregulated and open to individual interpretation. As a rule, standardized tests are not used in this connection. In the present study the characteristics of children with a diagnosis of LD are evaluated in terms of standardized testing. 37 pupils diagnosed as having LD and 136 regular school children were assessed at the end of the 5th grade in Austrian schools using standardized tests of intelligence, reading, writing and arithmetic skills and questionnaires regarding social integration in their class, emotional integration in their school and the cultural capital of their families. Compared with a group of pupils without LD, matched for IQ and age, the LD children showed significantly worse basic arithmetic and reading skills, inferior social integration in class and lower familial cultural capital. A stepwise logistic regression analysis indicated that poor basic arithmetic and reading skills were the strongest predictors of having a diagnosis of LD. Other variables, including IQ, had significantly less weight. The results are seen as indication of the fact that precise guidelines for diagnosing LD in the school system and a transition to a system of evidence-based allocation of resources are urgently needed.

The construct of Learning Disabilities (LD) refers to children who have significant academic difficulties in school, for which neither other disabilities (e.g. sensory impairment, mental retardation or emotional and behavioral disorders) nor lack of schooling can be found as a cause (Lloyd, Keller & Hung, 2007). In almost all school systems, these children are labeled with Special Educational Needs (SEN) to give them a legal right for additional assistance and support in school. Within the population of pupils with SEN children with LD form the largest group. However, due to the fact that the diagnosis of LD is at first glance not caused by somatic-medical reasons, but rather by the specific criteria of a given school system, the diagnosis of LD is under a constant legitimacy pressure.

The specific concepts of LD vary widely from country to country. Thus the size of the population of children with LD differs in any given country (Sideridis, 2007). In the US, for example, 5% of the entire student population belong to the group of students with LD, whereas in Germany only 2.6 % of the entire population of school children are diagnosed as having LD (Hallahan, Lloyd, Kauffman, Weiss & Martinez, 2005; KMK, 2010). In addition, the OECD categorizes pupils for its country comparisons in three groups. Pupils with disabilities are categorized in group (A), pupils with learning difficulties are assigned to group (B) and pupils with disadvantages to group (C). This differentiation implies that children with disabilities can be found in group A, children with specific learning difficulties or severe to moderate learning problems belong to group B and finally group C consists of children who are disadvantaged due to social or economical circumstances. 5.7%

of all schoolchildren in the US and 2.2% of all pupils in Germany were recognized under the heading of specific learning difficulties. Furthermore, pupils with severe to moderate learning problems count for 1.4% of the entire population of schoolchildren in the US and for only 0.6 % in Germany (OECD, 2007).

But not only the definitions of LD are different from country to country, there is also considerable variability concerning the assessment procedures and the diagnostic criteria which lead to the diagnosis of SEN in general and of LD in particular. In some countries the diagnostic decisions are based on relatively explicit and well defined guidelines (e.g. discrepancy model in US), in others the assessment procedures in the school system are only very vaguely defined (e.g. Germany and Austria). Traditionally in German speaking countries a below average IQ was considered as most effective diagnostic criterion of LD, since this allowed a general *objective* assessment of the cognitive performance of a child without a school reference (Grünke, 2004). However, since the 1970's IQ testing is seen increasingly critically (Bundschuh, 2010) especially by teachers and educational practitioners. As a result, IQ is no longer used as sole indicator of LD in present governmental recommendations in Germany and Austria either. Nevertheless, many researchers still regard low intellectual abilities as the most important aspect of a diagnosis of LD (Kretschmann, 2006) and recommend the administration of a language-free IQ test in addition to standardized academic achievement tests as part of the diagnostic process (Kany & Schöler, 2009; Kottmann, 2006). The discrepancy model is only applied to the diagnosis of Dyslexia or Dyscalculia in German speaking countries. Children with LD were excluded from the discrepancy model because their abilities are generally below average. An allocation of *SEN-Lernen* (i.e. the official recognition of LD by the school system and thereof the allocation of special educational resources to the school) is only given to children with severe learning difficulties (Schröder, 2008; Klauer & Lauth, 1997). Other disabilities (e.g. sensory impairment, mental retardation or neurological problems) or a lack of schooling have to be ruled out as causes of the problems (Lloyd et al., 2007).

Information about the school career of children diagnosed with LD in German speaking countries is rather sparse. A handful of empirical studies were carried out in order to explore further the school performance of children who were diagnosed with *SEN-Lernen*. In secondary school the children usually show a delay in school achievements of at least two years compared to children of the same age without SEN (Haerberlin, Bless, Moser & Klaghofer, 1991). This is confirmed by present cross-sectional studies (Tent, Witt, Bürger & Zschoche-Lieberum, 1991; Wocken, 2000, 2005). In Germany, seventh grade pupils in special schools for children with *SEN-Lernen* did not even accomplish the requirements of fifth grade in a general-education secondary school (Hauptschule) (Wocken, 2000).

A further characteristic of pupils with LD is their problematic social position. In fact, specific characteristics like social marginalization or migration background, respectively, are important confounding factors (Schröder, 2005, Huber, 2006). It is therefore not astonishing that in Germany in addition to IQ and school performance of the children, a lower social and educational status of the parents was found to be a strong predictor of LD as well (Wocken, 2000).

The situation in Austria

Historically the Austrian special education school system developed quite similar to the German one. However, during the last two centuries the school system in Austria was explicitly shaped into the direction of inclusive education of pupils with SEN. Today, about 51,2 % of all children with SEN are educated in integrated settings in regular schools. Austria has thus an integration rate which is comparable to the rates of England (50,3%), Finland (53%) and Poland (53,2%) (European Agency, 2010). However, it is important to note that the integration rate differs considerably between the nine federal states of Austria. In Styria, for example, the integration rate is about 80%, whereas in lower Austria it lies only around 20% (Statistik Austria, 2010).

The Austrian system differentiates primarily between pupils with and without SEN. In contrast to Germany, the distinction between different types of SEN is only made on the basis of different curricula, which the SEN children are assigned to. So, children with LD have to be assigned to a *general special education curriculum* (Allgemeine Sonderschule) (Feyerer, 2009). Therefore, statistical data concerning the prevalence of LD in Austrian schools are hardly available and the prevalence can only be estimated at 1.5 – 2% (Buchner & Gebhardt, 2011). Conventionally, SEN are diagnosed by a special education teacher usually in the first or second year of elementary school (Volksschule). Only in some special cases and only with consent of the parents this is complemented by an expert opinion of a school psychologist. As a result IQ tests are hardly ever done in the process of diagnosing LD in Austria. Usually the diagnosis is based on performance deficits in math and German language which are observed and described by the special education teacher. If the parents of the child are in agreement with the diagnosis, the school gets extra funding and resources for the child with LD.

In the 5th grade a further assessment is done and, moreover, a reclassification of the curriculum, which the child is assigned to, is possible. Over the next years in secondary school the classification of the child usually remains stable until the end of schooling. Due to the diagnosis of SEN resources for additional support are again allocated to the school. These resources determine the class placement, curriculum mapping and instructional methods as well. One of the key aspects, however, is the fact that the number of pupils with SEN has a significant impact on the available resources for a given class and school.

In regular classes with three to five pupils with SEN an additional special education teacher is employed full time. If there are less than three pupils with SEN in a regular class an additional support teacher is employed only on an hourly basis. The average time this support teacher is paid per pupil with SEN depends on the type of disability. In case of LD and behavioural difficulties the support teacher can spend in class four hours weekly per pupil with SEN. In case of physical disabilities six hours (but only as long as the physical disability goes along with an impairment of educability), for children with sensory disabilities 8 hours and for children with cognitive disabilities 10 hours per week are paid.

Finally, the size of *integrated classes* (i.e. the regular classes which are also attended by pupils with SEN), differs in the federal states of Austria. In Carinthia, for example, the maximum class size is 19 in primary and 21 in secondary school. In contrast, in Styria the recommended number of pupils per class is 24 in primary and 25 in secondary school. So, in average, an integrated class in a secondary school in Styria (where our empirical study was carried out) consists of five pupils with SEN and 20 pupils without SEN.

Research objective

At the moment little is known about the achievements and school performance of Austrian pupils with LD. In order to obtain a more accurate empirical impression of the performance profile of pupils with LD the present study examined pupils in the fifth grade. As mentioned above, this is the relevant age after which the diagnosis of SEN usually remains stable until the end of schooling. The present study tries to examine in what respect pupils with LD differ from pupils without LD. The first research objective of the present study was to answer the question how pupils with a diagnosis of LD differ from pupils without LD apart from IQ. In the second step it was planned to develop a model of retrospectively explaining the diagnosis of LD on the basis of the results of psychometric tests or questionnaires. It was assumed that primarily IQ together with school achievement in math, reading and spelling should play an important role in this context. Furthermore, the children's social integration in class and the cultural capital of their families of origin were expected to make further important contributions.

Method

In 2010, 96 pupils with SEN visited the fifth grade of public schools in Graz/Austria (Landesschulrat für Steiermark, 2011). Of these, 43 pupils (45%) were examined in the present study. 37 out of these 43 pupils had been diagnosed with LD and were now taught according to the *general special education curriculum* (Allgemeine Sonderschule). Eight pupils with LD attended the only remaining special school in Graz, the other 29 pupils attended eight integrative classes in regular secondary schools together with 144 pupils without SEN. The average number of pupils per class was 23, in which four to six pupils with SEN were included. The pupils with LD in integrative classes spent an average of $M = 22.55$ hours per week in inclusive settings and $M = 4.41$ hours per week in segregated settings.

The school testing took place over two days and only those pupils were included in the data analysis who had completed all components of the examination. Consequently, only 125 pupils without disabilities and 32 pupils with LD could be included in the analysis. 60% of the pupils' disabilities had already been diagnosed in the first grade. Migration background of the pupils (at least one parent born abroad) was very prevalent in the whole sample, regardless of SEN, with approximately 41%.

Instruments

The psychometric tests CFT20-R, ELFE 1-6, SLRT II, HSP, ERT 4+ & FDI 4-6 were used in the study. The Culture Fair Intelligence Test CFT20-R (Weiß, 2008) is a language-free intelligence test that measures the basic intelligence of children from the age of 8.5 to 19 years. Individuals with low proficiency in German are not disadvantaged by the testing tasks. It is applicable as a group test ($r_{tt} = .80$).

The Reading Comprehension Test for First to Sixth Graders ELFE 1-6 (Lenhard & Schneider, 2006) measures reading comprehension. In doing so, basic reading strategies as well as the ability to understand sentences ($\alpha = .92$) and texts ($\alpha = .97$) can be determined. From the Salzburg Reading- und Writing-Test SLRT II (Moll

&Landerl, 2010) only the one minute reading subtest was used. This test constitutes an individual reading test that specifically examines decoding speed of words ($\alpha = .90$) and pseudo-words ($\alpha = .98$).

The Hamburg-Writing-Test HSP 1-9 (May & Malitzky, 1999) examines strategies of writing of pupils from the first to ninth grade. The number of correct graphemes is used as raw score ($\alpha = .92$).

The Eggenberg Calculation Test ERT 4+ (Schaupp, Holzer & Lenart, 2010) measures the arithmetic skills of children from fourth to fifth grade. From this test the Basic Arithmetic Scale ($\alpha = .82$) was used. The Basic Arithmetic Scale assesses the calculation abilities regarding addition, subtraction, multiplication and division.

The questionnaire FDI 4-6 (Häberlin et al., 1991) measures the degree of social integration in class (e.g. *I'm very happy with my classmates*) and emotional integration in school (e.g. *I like going to school*). The questionnaire was evaluated in a Swiss survey of pupils from fifth to sixth grade ($\alpha = .89$; $\alpha = .93$).

Additionally, in order to get an estimation of the cultural capital of their families of origin, the children were asked to rate the number of books in the households of their families and teachers were asked to estimate the hours of inclusive schooling and to name the type of SEN of a specific pupil.

Results

In order to control for IQ and age, the first analysis was performed on the basis of matched pairs. 26 pupils with a diagnosis of LD and 26 pupils without LD but with comparable IQ and age were assigned pairwise. Six pupils with LD had to be excluded from the analysis due to the lack of control pupils with comparably low IQ.

The age correlation of the *twins* in the two resulting groups was $r = .85$ and the IQ correlation was $r = .98$. Although they had quite comparable IQs, pupils with LD performed significantly worse in math, reading fluency, reading comprehension and spelling than their twins without LD. Moreover, the number of books was lower in the homes of pupils with LD than in homes of the control children. In terms of social integration, pupils with LD reported feeling less socially integrated in class. With regard to emotional integration in school the two groups did not differ significantly. In order to provide a general overview, the mean scores of the twin pairs as well as the means of all pupils without LD are presented in table 1. In all measures of academic performance the means of the children with LD were significantly lower than the means of their test twins without LD.

In order to estimate the relative weight of these variables as (retrospective) predictors of a diagnosis of LD, a stepwise logistic regression analysis was performed according to the procedure proposed by DeMaris (1995). Initially this method was mainly used in epidemiological research, but it is now increasingly often applied in research on children with special needs (e.g. Shifrer, Muller und Callahan, 2010; Ihle & Esser, 2008). A logistic regression analysis was chosen due to the fact that the dependent variable was dichotomous (pupils with diagnosed LD versus pupils without a diagnosis of LD). The potential predictors were: Gender (females: 1, males: 2), age, number of books in household, cognitive abilities (IQ), reading comprehension, decoding speed of words, correctly written graphemes, basic arithmetic skills and degree of reported social integration in class and emotional integration in school.

In the stepwise procedure four significant models emerged. The first model already yielded an overall percentage of 90.5% correct assignments, which increased in the fourth model up to 92.4 %. Overall, the models explained a large proportion of variance (model 1: *Nagelkerkes* $R^2 = .537$ and model 4: *Nagelkerkes* $R^2 = .692$). The Hosmer-Lemeshow test was not significant at any stage, hence, the regression model appears to be well calibrated (Backhaus, Erichson, Plinke & Weiber, 2008). The predictors basic arithmetic, reading comprehension, cognitive abilities and social integration in class were included in the regression model, whereas the rest of the predictors showed no (further) detectable effect. As can be seen in table 2 poor basic arithmetic and reading skills were the strongest predictors of having a diagnosis of LD. Other variables, including low IQ, had significantly less weight.

Discussion

In previous publications, especially from German speaking countries, low general cognitive abilities, as measured by IQ-tests, are usually seen as the most important criterion for assigning pupils to *SEN-Lernen* (Kany & Schöler, 2009; Kottmann, 2006; Kretschmann, 2006). Therefore, it was quite surprising, that (for the pairwise comparisons) in our sample for nearly all LD children (with only a few exceptions) control children with comparable IQs but without a diagnosis of SEN could be found. In other words, almost the same number of children with relatively low IQs could be found in both groups, a first indication of the fact that general cognitive abilities obviously did not constitute the utterly important difference between children diagnosed with LD and regular schoolchildren. Moreover, the observed differences in school performance between the test twins were not at all expected and strikingly large. In this pairwise comparison the LD children showed not only

significantly worse school performances, especially in math and reading, they also felt less well socially integrated in their classes and came from families with lower cultural capital, although their intelligence and age were quite similar to the control children without SEN.

Table 1. Comparison of Pupils With and Without LD by Means of One-Sample T-tests

	Paired sample		<i>t</i>	<i>df</i>	All pupils without SEN
	Pupils with LD	Regular pupils			
Age	11.93 (0.76)	11.79 (0.85)	-1.650	25	11.48 (0.74)
IQ	78.15 (9.46)	79.54 (8.81)	3.363***	25	93.96 (11.93)
Basic Arithmetic	3.65 (2.76)	7.73 (3.03)	5.025***	25	8.47 (2.79)
Reading Comprehension set	10.38 (4.82)	14.50 (4.84)	3.512***	25	15.62 (4.38)
Reading Comprehension text	7.31 (3.03)	10.85 (3.86)	3.628***	25	12.72 (3.91)
Word-decoding	53.92 (19.27)	77.73 (24.95)	4.243***	25	75.87 (21.23)
Pseudoword-decoding	38.38 (13.03)	50.88 (13.78)	4.170***	25	48.37 (13.50)
Graphem (Spelling)	223.35 (35.70)	258.50 (39.61)	3.275***	25	261.74 (22.65)
Number of books	2.20 (1.04)	2.96 (1.31)	2.618**	24	3.16 (1.13)
Emotional integration	26.22 (16.01)	29.50 (17.15)	.633	25	27.40 (15.71)
Social integration	33.50 (9.98)	40.92 (10.12)	2.581**	25	41.44 (10.21)

Note. **= $p < .01$, ***= $p < .001$. Standard deviations appear in parentheses below means.

Table 2. Stepwise Logistic Regression Models for the Prediction of Having a Diagnosis of LD

Variable	Model				<i>SE(b)</i>	<i>Exp(b)</i>
	1 <i>b</i>	2 <i>b</i>	3 <i>b</i>	4 <i>b</i>		
Basic Arithmetic	-.667**	-.547**	-.434**	-.430**	.138	.651
Reading Comprehension text		-.265**	-.218**	-.206**	.088	.814
IQ			-.071*	-.072*	.031	.930
Social integration				-.071*	.030	.931
Model χ^2	66.67**	80.50**	86.70**	92.73**		
<i>df</i>	1	2	3	4		

All model chi-squares are significant

* $p < .05$, ** $p < .01$

These impressions were finally confirmed by the results of the regression analysis. Again, the most important predictors of having a diagnosis of LD were poor school performance in basic arithmetic and reading comprehension. In contrast, the predictors *IQ* and *social integration* were far less important and *number of books* did not even appear in the significant regression models.

In sum, the results of the present study seem to indicate that the usual diagnostic procedure in the Austrian school system leads to a diagnosis of LD primarily on the basis of poor school performance in math and reading, regardless of the actual cognitive abilities of a child. With regard to educational assessment in Austrian schools it thus seems, that not very much progress has been achieved during the last 100 years, because already at the turn of the 19th to the 20th century children who failed to learn were assigned on the basis of their poor school performance to *special classes for backward children* (Hilfsklassen). However, today a wide variety of standardized educational diagnostic tools is available, by which not only the school performance of a child but also his or her cognitive abilities and other relevant aspects could reliably be evaluated. The achievements, advantages and benefits of modern educational testing still are largely ignored by the Austrian educational system.

Moreover, the introduction of reliable and valid school performance tests would provide the opportunity to evaluate and document the school progress of pupils with and without SEN. Additionally, the results of these tests would provide teachers with more detailed information in order to provide optimal support for the children. Furthermore, it would be useful to introduce and implement a *response to intervention* (RTI) model in the school systems of German speaking countries as well (Gresham & Vellutino, 2010). This would be in particular important due to the fact that the support of children with SEN currently does not take place in the context of evidence-based programs.

However, it is important to emphasize that the results of the present study cannot be generalized without caution. This is mainly due to the fact that our sample contains a relatively high proportion of children with migration background and from socially disadvantaged families, compared to the rest of Austria. As always, further empirical studies are urgently needed.

Conclusion

To sum up, as long as the SEN of specific pupils are assigned primarily on the basis of poor school performance and subsequently determine the allocation of resources to the schools, the diagnosis of SEN will remain an instrument for schools that often seems to be more concerned with resource allocation than with optimal support for the children. Thus usually the child with SEN is identified during the first or second year in school. If a child once is associated with this diagnosis he or she usually will not lose this label (and the resource gaining status for the school) until the end of the school time. According to the results of the present study, a transition to a system of evidence-based allocation of resources appears to be urgently needed.

References

- Backhaus, K., Erichson, B., & Plinke, W. W. R. (2003). *Multivariate Analysemethoden: Eine anwendungsorientierte Einführung* (10th ed.). Berlin: Springer.
- Buchner, T. & Gebhardt, M. (2011). Zur schulischen Integration in Österreich: historische Entwicklung, Forschung und Status Quo. *Zeitschrift für Heilpädagogik*, 62 (8), 298-304.
- Bundschuh, K. (2010). *Einführung in die sonderpädagogische Diagnostik* (7th ed.). München: E. Reinhardt.
- DeMaris. (1995). A Tutorial in Logistic Regression. *Journal of Marriage and Family*, 57(4), 956–968.
- Feyerer, E. (2009). Qualität in der Sonderpädagogik. Rahmenbedingungen für eine verbesserte Erziehung, Bildung und Unterrichtung von Schüler/innen mit sonderpädagogischem Förderbedarf. In *Nationaler Bildungsbericht Österreich 2009. Band 2 Fokussierte Analysen bildungspolitischer Schwerpunktthemen* (pp. 73–97): Bundesministerium für Unterricht, Kunst und Kultur.
- Gresham, F. M., & Vellutino, F. R. (2010). What is the Role of Intelligence in the Identification of What is the Role of Intelligence in the Identification of Specific Learning Disabilities?: Issues and Clarifications. *Learning Disabilities Research & Practice*, 25(4), 194–206.
- Grünke, M. (2004). Lernbehinderung. In G. W. Lauth & M. Grünke (Eds.), *Interventionen bei Lernstörungen. Förderung, Training und Therapie in der Praxis* (pp. 65–77). Göttingen: Hogrefe, Verl. für Psychologie.
- Haeberlin, U., Bless, G., Moser, U., & Klaghofer, R. (1991). *Die Integration von Lernbehinderten: Versuche, Theorien, Forschungen, Enttäuschungen, Hoffnungen*. Bern: Haupt.
- Hallahan, D. P., Lloyd, J. W., Kauffman, J. M., Weiss, M. P., & Martinez. (2005). *Learning disabilities: Foundations, characteristics, and effective teaching*. Needham Heights: Allyn & Bacon.
- Huber, C. (2006). *Soziale Integration in der Schule?!: Eine empirische Untersuchung zur sozialen Integration von Schülern mit sonderpädagogischem Förderbedarf im gemeinsamen Unterricht*. Marburg: Tectum.
- Kany, W. & Schöler, H. (2009). *Diagnostik schulischer Lern- und Leistungsschwierigkeiten: Ein Leitfaden mit einer Anleitung zur Gutachtenerstellung*. Stuttgart: Kohlhammer.
- Klauer, K. J., & Lauth, G. W. (1997). Lernbehinderungen und Leistungsschwierigkeiten bei Schülern. In F. E. Weinert (Ed.), *Psychologie des Unterrichts und der Schule* (pp. 701–738). Göttingen: Hogrefe.
- Kottmann, B. (2006). *Selektion in die Sonderschule: Das Verfahren zur Feststellung von sonderpädagogischem Förderbedarf als Gegenstand empirischer Forschung*. Bad Heilbrunn: Klinkhardt.
- Kretschmann, R. (2006). Diagnostik bei Lernbehinderungen. In U. Petermann & F. Petermann (Eds.), *Diagnostik sonderpädagogischen Förderbedarfs* (pp. 139–162). Göttingen: Hogrefe.
- Kultusministerkonferenz (KMK). (2010). *Sonderpädagogische Förderung in Schulen 1999 bis 2008: Dokumentation Nr. 189 – März 2010*. Retrieved from http://www.kmk.org/fileadmin/pdf/Statistik/Dok_189_SoPaeFoe_2008.pdf
- Landesschulrat Steiermark (2011). Statistik der Schülerzahlen. Graz
- Lauth, G. W., & Grünke, M. (Eds.). (2004). *Interventionen bei Lernstörungen: Förderung, Training und Therapie in der Praxis*. Göttingen: Hogrefe, Verl. für Psychologie.
- Lenhard W., & Schneider, W. (2006). ELFE 1-6: Ein Leseverständnistest für Erst- und Sechstklässler. Göttingen: Hogrefe

- Lloyd, J. W., Keller, C., & Hung, L. (2007). International Understanding of Learning Disabilities. *Learning Disabilities Research & Practice*, 22(3), 159–160.
- May, P., & Malitzki, V. (1999). Hamburger Schreib-Probe 1-9 (HSP 1-9). Stuttgart: vpm
- Moll, K., & Landerl, K. (2010). Lese- und Rechtschreibtest: Weiterentwicklung des Salzburger Lese- und Rechtschreibtest (SLRT). Bern: Hans Huber
- OECD. (2007). *Students with Disabilities, Learning Difficulties and Disadvantages: Policies, Statistics and Indicators*. Paris: OECD Publishing.
- Schaupp H., Holzer, N. & Lenart, F. (2010). Eggenberger Rechentest 4+: Diagnostikum für Dyskalkulie für das Ende der 4. Schulstufe bis Mitte der 5. Schulstufe. Bern: Hans Huber
- Schröder, U. (2005). *Lernbehindertenpädagogik: Grundlagen und Perspektiven sonderpädagogischer Lernhilfe* (2nd ed.). Stuttgart: Kohlhammer.
- Shifrer, D., Muller, C., & Callahan, R. (2011). Disproportionality and Learning Disabilities: Parsing Apart Race, Socioeconomic Status, and Language. *Journal of Learning Disabilities*, 44(3), 246–257.
- Sideridis, G. D. (2007). International Approaches to Learning Disabilities: More Alike or More Different? *Learning Disabilities Research & Practice*, 22(3), 210–215.
- Specht, W. (2009). *Nationaler Bildungsbericht Österreich 2009: Band 2 Fokussierte Analysen bildungspolitischer Schwerpunktthemen*.
- Tent, L., Witt, M., Bürger, W., & Zschoche-Lieberum, C. (1991). Ist die Schule für Lernbehinderte überholt? *Heilpädagogische Forschung*, pp. 289–320.
- Weiß, R. H. (2008). CFT 20-R mit WS/ZF-R. Göttingen: Hogrefe
- Wocken, H. (2000). Leistung, Intelligenz und Soziallage von Schülern mit Lernbehinderungen. Vergleichende Untersuchung an Förderschulen in Hamburg. *Zeitschrift für Heilpädagogik*, (12), 492–503.
- Wocken, H. (2005). *Andere Länder, andere Schüler?: Vergleichende Untersuchungen von Förderschülern in den Bundesländern Brandenburg, Hamburg und Niedersachsen*. Potsdam. Retrieved from <http://bidok.uibk.ac.at/library/wocken-forschungsbericht.html>