

Participation and Communication Disorders in Preschoolers: A Critical Review and Pilot Study

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This study reports a critical review and pilot study examining the relation between preschool speech and/or language impairment and participation outcomes. For the critical review, studies evaluated included one survey research study, one longitudinal mixed study and two between-groups studies. In the pilot study, participation data were gathered from typically developing preschool children ($n = 12$) and those receiving speech and language services ($n = 12$). Overall, findings from both the critical review and pilot study suggest that early communication impairment has a significant and negative effect on some important aspects of life participation.

Introduction

The World Health Organization [WHO] (WHO, 2001) defines participation as involvement in life situations and engagement in daily activities that are critical for development, life experience and well being. The International Classification of Functioning, Disability and Health—Children and Youth Version [ICF-CY; WHO, 2007] is a biopsychosocial model developed by the WHO that provides a framework for evaluating participation in children aged 0-17 years (ICF-CY; WHO, 2007). Various domains are represented within the ICF-CY's framework of participation and include community life, recreation and leisure, interpersonal interactions and daily routines.

Participation is a complex construct that can be affected by individual factors, such as gender and age, as well as environmental factors, such as socioeconomic status and level of family support (Rosenberg, Jarus, & Bart, 2010). Participation is important as it impacts quality of life and offers learning opportunities for the development of essential skills such as communication and forming friendships (Bult et al., 2010).

To date, most participation research has focused on children with developmental and/or physical disability (Rosenberg et al., 2010). However, according to the College of Audiologists and Speech-Language Pathologists of Ontario [CASLPO] (CASLPO, 2008), children who have communication impairment are at risk for decreased participation in society. Communication ability is a prerequisite for executing a variety of interpersonal activities (e.g., having a conversation, interacting according to social rules) and restriction from these activities as a result of communication deficit will limit the life situations in which they can participate (Westby, 2007). With a median prevalence of almost 6% for children with speech or language delays, and a prevalence of 1 to

19% for preschoolers with language delay (CASLPO, 2008), the effects of communication impairment on participation is an important consideration.

There is a need to detail the effect that speech or language impairment may have on participation. The disability literature has provided empirical evidence supporting significant correlations between a child's communication skills and outcome participation measures (e.g., Bult et al., 2010; King et al., 2007; Partyka, 2002; Rosenberg, Ratzon, Jarus, & Bart, 2012), which give reasonable grounds for linking children's communication skill to participation. However, even within the disability literature, there is a paucity of participation studies reporting on the preschool population. Given the prevalence of communication impairment in preschool children and the evidence linking communication and participation in school-age children, evaluating the relation of communication ability and participation in preschoolers may demonstrate the importance of participation-based treatment and outcomes in early intervention.

Objectives

The primary objective of this paper was to critically review the existing literature regarding the possible link between preschoolers' speech and language ability and their participation. The secondary objective of this paper was to investigate participation in a small-scale study involving preschool children who either are or are not receiving speech and language services. The tertiary objective of this paper was to propose clinical implications and evidence-based recommendations for Speech-Language Pathologists (SLPs) practicing in early intervention.

Study 1: Critical Review

Methods

Search Strategy

Computerized databases including PubMed and CINAHL as well as ASHA publications were searched using the following search strategy: [(preschool*) OR (early intervention) OR (toddler*) OR ([communication impairment*] OR [communication disorder*]) OR (speech disorder*) OR (language disorder*)] AND [(participation) OR (APCP) OR (leisure and recreation) OR (ICF*) OR (play)]. Reference lists of previously searched articles were also used to obtain other relevant studies.

Selection Criteria

Studies selected for inclusion in this review were required to measure or describe participation outcomes of preschool children with some kind of communication impairment. All subjects had to be described as speech, language or communication impaired by either parent report or diagnostic evaluation between the ages of 0-5 years. Participation outcomes had to be qualified from either self- or parent-report measures. Certain studies (i.e., McCormack et al., 2011; 2010) included additional teacher- and SLP-report measures, however as parents are the most aware of their children's participation restrictions (McCormack et al., 2010), those results will not be included in the review.

Data Collection

Results of the literature search yielded four articles that met the selection criteria. The articles included three Level 2b research evidence studies: one longitudinal mixed study (McCormack, Harrison, McLeod, & McAllister, 2011), one between-groups study (Carson, Carson, Kleey, & Jackman-Brown, 2007), and one between-groups cohort study (Rosenberg et al., 2010). One survey research study, considered to be Level 4 research evidence, was also included (McCormack, McLeod, Harrison, & McAllister, 2010).

Results

McCormack et al. (2011) explored the long-term outcomes of early language impairment in a longitudinal mixed study with 4,329 Australian preschool children (age 4-5 years) recruited as part of the Longitudinal Study of Australian Children (LSAC), a nationally representative sample of Kindergarten children. Identification of communication impairment was determined at the beginning of the study and was based on a parent's affirmative response to the question, "Do you have concerns about how your child talks and makes speech sounds?" ($n = 1,041$). At age 7-

9 years ($M = 8;2$), Activities and Participation (WHO, 2007) outcomes across five ICF-CY domains relevant to this review were measured using questionnaire responses of teachers, parents and children. ICF-CY domains of interest that were measured included *Interpersonal Interactions and Relationships [IIR]* and *General Tasks and Demands [GTD]*. The study employed questionnaires commonly used to measure these. Appropriate statistical analyses (chi-square; ANOVA; ANCOVA) were completed. The group with communication impairment (CI) had significantly lower scores on several participation measures, including self-description of friendships, prosocial characteristics, peer problems, emotional symptoms, and persistence. Although not relevant to the current review, other variables (e.g., socioeconomic status) were also found to be reliably associated with participation outcomes.

Strengths of this study included the large and representative sample size similar in sex, age, and indigenous status, and appropriate statistical treatment with controlling of extraneous variables. However, sole use of parent-report as an indicator of communication impairment may have resulted in children being included in the CI-group who would not qualify under standardized assessment procedures as having communication impairment. As well, effect sizes were very small in this study.

Overall, this study is suggestive that early childhood communication impairment is associated with significantly more impaired Activities and Participation compared to typical children in domains related to completing tasks and handling demands and those related to interactions with friends/peers, but that other factors also influence participation and activities.

McCormack et al. (2010) investigated the impact of early speech impairment on a national sample of 205 Australian SLPs and 86 parents of preschoolers with speech impairment (SI) using the ICF-CY as a framework for analysis. Parents of preschoolers aged 3;11-5;8 years with mild-to-moderate speech impairment were recruited through the Sound Effects Study. Speech impairment was confirmed by researchers using a formal speech assessment.

Parents completed a questionnaire measuring ICF-CY Activities and Participation constructs and identified activities their child had difficulty participating as a result of their communication difficulty. Activities that were most commonly identified as difficult were conversation, learning to write, focusing attention, handling stress and managing one's behaviour. In contrast, carrying out daily routines, recreation and

leisure activities and acquiring skills were identified as least difficult for these children. Items that were frequently reported as being difficult were factor analyzed to determine categories of impairment that drew on the ICF-CY domains (e.g., *Interpersonal Interactions and Relationships*). Results from the factor analysis revealed that parents identified *Communication* and *Learning and Applying Knowledge* as the most difficult areas followed by *General Tasks and Demands*. *Interpersonal Interactions and Relationships* was rated the least difficult area for children.

The data provided by this study suggests that early speech impairment is associated with impaired Activities and Participation in various domains. However, the study's sample size was small and there was no control group of typically developing preschoolers which limits interpretation of results. Furthermore, preschoolers with SI may have different characteristics than children with language impairment so generalization of findings to all communication impaired preschoolers may be inappropriate.

Carson et al. (2007) analyzed parent and child temperament and behaviour characteristics in 47 parents and their toddlers aged 25-31 months ($M = 29.00$, $SD = 1.55$ months). Outcomes were compared between toddlers who were typically developing (TD; $n = 30$) and those who had a speech and/or language delay (SLD; $n = 17$) as determined by standardized tests, a language sample, and SLP clinical judgment gathered at an initial parent interview. All children were part of a larger study and only those with complete data sets were included. The average age between the two groups was comparable and all participants came from White, middle-class families from the Western United States. Parents were recruited on a volunteer basis through public service announcements and information postcards posted in the community.

Temperament and behavioural characteristics of the parent and their child were obtained via parent-report measures. Additional measures were administered to evaluate the child's communication and social development. Appropriate statistical analyses (ANOVA; independent t tests) were completed to compare group means on measures of parental behaviours, child temperament and communication age. The results revealed that parents of preschoolers with SLD reported a significantly lower level of nurturance and a greater use of physical punishment than parents of TD children. The results also revealed that preschoolers in the SLD group demonstrated significantly higher scores on detachment and under-reactive behaviour than their typically developing peers. All findings yielded medium effect sizes.

The data provided by this study suggest that preschoolers with speech or language delay are more detached, aloof and withdrawn than their typically developing peers. The data also suggests that parents of preschoolers with speech or language delay may be less responsive to their child's needs, interact less with their child and provide less stimulating environments than parents of typically developing preschoolers. However, generalizability of findings is limited as this study used a small, homogenous sample.

Rosenberg et al. (2010) conducted a between-groups cohort study to determine whether children with disabilities have different outcomes than typically developing children on the Child Participation Questionnaire [CPQ]. Sample size was determined via power analysis and 528 parents were recruited through a convenience sampling method. Two hundred and thirty-one children ($M = 5.13 \pm .66$ years old) with mild-to-moderate developmental disabilities (e.g., gross motor difficulties, learning disabilities) were recruited from occupational therapy clinics in Israel. The control group was comprised of 249 children without disability ($M = 5.13 \pm .72$ years old). A two-way ANOVA revealed no significant difference on outcome measures between the youngest and oldest participants which qualifies the study to relate findings to preschool-aged children. The sample had no significant differences in age, gender or family income.

All parents completed the CPQ which is a questionnaire that evaluates six areas of occupations in preschool children: *Activities of Daily Living (ADL)*, *Instrumental Activities of Daily Living (IADL)*, *Play, Leisure, Social Participation* and *Education*. Five participation measures are used as outcomes on the CPQ: participation diversity, participation intensity, independence, child enjoyment and parent satisfaction of the performance of their child. Parents also completed the Vineland Adaptive Behaviour Scales [VABS] to assess children's adaptive behaviour in four dimensions: *ADL*, *Communication*, *Motor Skills* and *Socialization*.

Appropriate statistical analyses (ANOVA; Spearman's Correlation) were completed and revealed that children with disabilities participated in significantly fewer activities at lower intensities and demonstrated decreased enjoyment as compared to typically developing children. Results also indicated that communication ability was significantly correlated with participation diversity and independence level, but not on participation intensity.

Results from this study suggest that diversity of participation and independence is related to

communication ability, and that children with physical disabilities participate in fewer activities than their typically developing peers. Limitations of this study include its sampling methodology as it was a convenience sample and it evaluated children with physical disabilities which do not directly reflect outcomes of children with communication impairment. If the study had provided ANCOVA measures, then the unique effects of communication abilities could have been discussed and allow the data to be better related to communication literature. This paper provides compelling evidence that participation is a multidimensional construct and suggests that communication ability is a factor in determining children's outcomes on participation measures.

Discussion

Taken together, the results of the four reviewed studies are suggestive that speech and/or language impairment in preschool children has a significant and negative impact on some aspects of life participation. These studies support findings from the disability literature suggesting that children's communication ability is related to decreased participation in a variety of activities. Therefore, results warrant further study and give purpose to the second half of this paper which will explore results from a pilot study on participation in communication impaired preschoolers.

Study 2: Pilot Study

Participation in daily activities varies both in frequency and intensity. In this study, both of these aspects of participation were examined in preschoolers who either were or were not receiving speech and language services. It was hypothesized that preschoolers in the S/LI group participated in fewer activities and at a lower intensity than preschoolers in the TD group.

Methods

Participants

A total of 24 preschoolers (age 34-49 months) participated, 12 (9 males) who were typically developing (TD) and 12 (9 males) with a speech and/or language delay (S/LI). Children in the speech and language group were receiving treatment for speech and/or language delay at a university speech and language clinic in Southwestern Ontario. Standard scores from the Goldman-Fristoe Test of Articulation [GFTA] and the Peabody Picture Vocabulary Test 4 [PPVT-4] were also available for 11/12 children. All of the children in the S/LI group scored <86 on at least one of these standardized tests (see Table 1). Children in the typically developing group were individually matched to the S/LI group on age (within 1 month

except for one child who was matched within 2 months of age). Group demographics are shown in table 1.

Table 1. Descriptive statistics for all participants

	n	Age Range (in months)	Median Age (in months)	Sex	M (SD) SS	
					GFTA	PPVT
TD Group	12	34-48	41.50	3F 9M	--	--
S/LI Group	12	36-49	41.50	3F 9M	71 (13.4)	95 (12.4)

Note: SS – standard score

Procedures

Parents of all participants completed the Assessment of Preschool Children's Participation [APCP] (King, Law, Petrenchik, & Kertoy, 2006). The APCP is a standardized, reliable and valid parent-completed measure that identifies activities in which a preschooler is and is not participating (Law, King, Petrenchik, Kertoy, & Anaby, 2012). The APCP includes 45 activities that measure participation in play (e.g., playing with toys), skill development (e.g., taking swimming lessons), active physical recreation [AP] (e.g., playing on playground equipment) and social activities (e.g., having someone over to play) in non-academic environments (e.g., at home). For every activity, parents indicate whether the child has done the item in the past 4 months (frequency) and how often the item has been done (intensity) on a 7 point ordinal scale (1= once in the past 4 months, 2= 2 times in the past 4 months, 3= 1 time a month, 4= 2-3 times a month, 5= 2-3 times a week, 6= 2-3 times a week, and 7= 1 time a day or more). Frequency scores are calculated by counting the number of activities completed and intensity scores are calculated by dividing the sum of the item frequency by number of possible activities for each type (e.g., play).

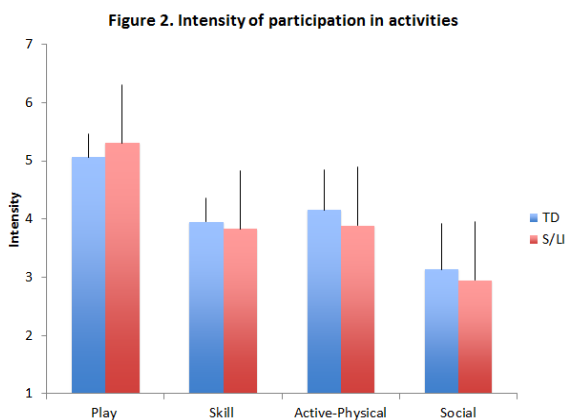
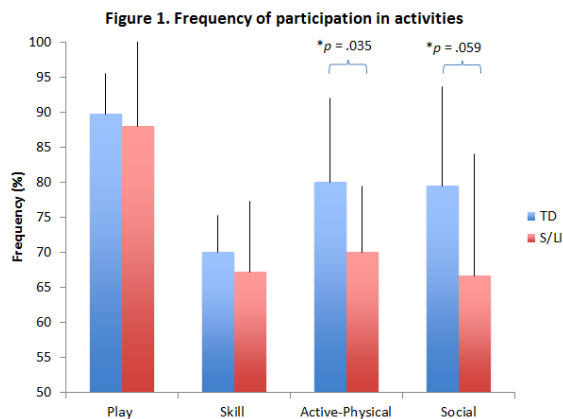
Results

The frequency and intensity of participation in play, AP, skill, and social activities for both the TD and S/LI groups are summarized in Figures 1 and 2. Overall, frequency and intensity scores were lower for the S/LI than TD groups. For children in both groups, frequency of participation was greatest in play activities followed by active-physical recreation activities. Children in the S/LI group participated the least frequently in both skill and social activities while children in the TD group participated the least frequently in skill activities. Intensity of participation was highest in play activities and lowest in social activities for both groups.

Groups were compared using a multivariate ANOVA on the frequency of play, skill development, active-

physical recreation and social activity subscores. No significant effect was found for the multivariates together (Hotelling's T). However, results of the univariate comparisons revealed a significant main effect for active physical recreation, $F(1,22) = 5.077$, $p = .035$, $\eta^2 = .19$, and social activities, $F(1,22) = 3.959$, $p = .059$, $\eta^2 = .15$, but not for play activities, $F(1,22) = .132$, $p > .05$, or skill development, $F(1,22) = .718$, $p > .05$. These findings indicate more frequent involvement in active physical recreation and social activities for the children not involved in speech and language services than those involved in those services.

A corresponding ANOVA was completed on the four intensity subscores and no significant effect was found for the multivariates together (Hotelling's T) or any of the univariate ANOVAs ($F(1,22) < .99$, $p > .05$, all cases).



Qualitative data related to the types of activities in which the children participated were visually inspected. Considerable overlap was evident for all participation activities. Interestingly, 25% of the TD and 0% of the S/LI groups reported being involved in team sports.

Discussion

Results of the pilot study indicate that preschool children with communication impairment participate less than their age-matched, typically developing peers. While participation in skill development and play activities was similar, children with communication impairment participated significantly less in social and active-physical recreation activities, yielding large effect sizes. Both groups were similar in the intensity of participation in their activities.

General Discussion

A critical analysis of the existing literature revealed that communication impairment has a significant and negative effect on participation in preschoolers. Further evidence of a relationship was provided by the results of a small-scale pilot study indicating that preschoolers, who were receiving speech and language services, participate less than their age-matched, typically developing peers.

This paper reviewed four articles which examined the association between communication impairment in preschool children, younger than 5 years of age, and participation outcome measures. The first study by McCormack et al. (2010) demonstrated that preschool communication impairment is associated with significantly more impaired outcomes on measures of Activities and Participation compared to typical children. This finding was supported by Rosenberg et al. (2010) who reported a significant correlation between communication ability and diversity of participation. Interestingly, intensity of participation in activities did not seem to be related to communication ability. Both Rosenberg et al. and the pilot study found no significant correlation with intensity and this is supported by findings in the participation literature on older children with language impairment (e.g., Rosenberg et al., 2012).

Results from the critical review detailed the effects of communication impairment on specific participation outcomes. It was a common finding that participation in social activities was impaired in these children, and McCormack et al. (2010) found that they had significantly more impaired peer problems and lower self-description of friendships than typically developing peers. These findings reflect those in the childhood participation literature (e.g., Bult et al., 2010) and were further supported by the pilot study, where communication impaired children participated in significantly fewer social activities. However, these findings may not be true for preschoolers with speech impairment as parents in the second study by McCormack et al. (2010) reported that interpersonal

interactions and relationships were not impaired for these children.

The relationship between communication ability and social competence is described by Brinton and Fujiki (2005) as an “omelet model” where ingredients such as language may function within a larger batch of ingredients, including temperament and socioeconomic status. This model is supported by results from the third study by Carson et al. (2007) who demonstrated that preschoolers with communication impairment have a higher incidence of detached, aloof and withdrawn temperaments. These unfavourable temperaments may hinder their success in communicating with others during social activities in addition to their deficits in communication. Interestingly, previous research on older children with language impairment has shown that they also interact less with peers and are more withdrawn than their typically developing classmates (Fujiki, Brinton, Isaacson, & Summers, 2001). These results suggest a stability of participation levels across the lifespan and support the suggestion that the foundation for meaningful participation is formed in the first few years of life (Bult et al., in press).

The roles of parents and parental temperament were also detailed as factors to decreased participation levels; Carson and her colleagues found that parents of toddlers with speech/language delay provided less opportunity for their children to participate in a variety of activities than did parents of typical toddlers. As participation in activities often occurs within a family context during the preschool years (Law et al., 2012), these children are at further disadvantage for participation in life activities. Participation in active-physical activities seems to be specifically vulnerable to these family characteristics (Rosenberg et al., 2010) and this was evidenced in the pilot study by the finding that communication impaired preschoolers had significantly lower levels of participation in active-physical activities than their typically developing peers.

This paper has confirmed findings that participation is a multidimensional construct (e.g., Findlay, Garner, & Kohen, 2009) and interacts with personal factors such as communication ability and temperament as well as environmental factors such as family activity preferences. Available literature on participation in school-aged children has indicated that communication ability has been found to have a significant impact on participation in life activities, and this paper suggests that this relationship also exists in the preschool population.

Limitations of the critical review include comparing results of preschoolers with varying degrees of

communication impairment. For example, children with speech impairment will likely have different outcomes on participation measures than children with language impairment. In addition, all studies used different frameworks for interpretation of participation (e.g., temperament, ICF-CY). Limitations of the pilot study include small sample size and poor controlling of extraneous variables that may have additional effects on participation such as socioeconomic status, physical abilities and temperament. While results from this paper are interpreted with caution due to these limitations, these findings are worth investigating in a larger sample as compelling and significant results were found.

Clinical Implications

Communication impairment limits access to activities that provide opportunities to learn and build communication skills. Therefore, it is essential that SLPs working within the preschool population include measures of participation in their assessment protocol so that they can collaborate with caregivers and develop meaningful, participation-based goals (see discussion in Wilcox & Woods, 2011). These goals are important as they can increase participation and build language skills within current activities as well as decrease barriers to the access of additional language-facilitating activities. Furthermore, this approach to intervention satisfies CASLPO’s (2008) mandate for practice in Speech-Language Pathology regarding improved quality of life through participation in children with speech and/or language impairment.

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