CHAPTER 1
INTRODUCTION
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1.1. Academic performance

Good academic performance is a key indicator to monitor children’s education (Karande & Kulkarni, 2005). A child is expected to have quality performance in academics as it is mandatory to be competent in this competitive world (Rathore & Sangwan, 2014). If a child’s performance in school is found to be below par, he/she is considered to be poor in academic performance. Poor performance at an elementary school level may lead to consequences such as repetition in grades, poor self-esteem, and impaired relationships with peers, parents and teachers. In later life, these consequences may lead to juvenile delinquency and behavioral problems resulting in dropouts (Huffman, Mehlinger, & Kerivan, 2000; Karande & Kulkarni, 2005).

‘Scholastically backward’ is a term used to refer to children who perform insufficiently in academics without having any obvious limitations (Karande & Kulkarni, 2005). This scholastic backwardness is identified as one of the causes for dropouts, exclusively among primary school children (Sukumaran, 2011; Pratinidhi, Kurulkar, Garad, & Dalal, 1992). It was observed that approximately 14% of children perform poorly in their academics especially after a year of elementary school (Ong, Chandran, Lim, Chen, & Poh, 2010). In India, it is estimated that in a classroom, approximately 20% of children perform poorly in their academics (Karande & Kulkarni, 2005). Understanding the reasons for poor academic performance at the earliest in elementary school children would be beneficial to enhance the quality of performance and to achieve their potential.
1.2. Factors influencing academic performance

The various factors influencing academic performance have been appraised in earlier studies. A positive relationship between environmental factors such as clean air, good light, less classroom noise, comfortable school environment and academic achievements is well supported by many studies (Habibullah & Ashraf, 2013; Mathee, Rollin, Levin, & Naik, 2007; Karande & Kulkarni, 2005; Kawada, 2004). Family factors such as parental education, parental occupations, economic status, ethnicity, and frequent migration were found to be contributing to academic performance (Parcel, Dufur, & Cornell Zito, 2010; Tyler et al., 2008; Lopez, Gallimore, Garnier, & Reese, 2007; Engec, 2006). Various child related factors such as general medical aspects, psychological aspects, cognitive aspects, visual perception (VP), visual motor integration (VMI) and handwriting were also found to be contributing to a child’s academic performance (Afzal & Gortmaker, 2015; Titz & Karbach, 2014; Habibullah & Ashraf, 2013; Halfon, Larson, & Slusser, 2013; Li et al., 2013; Espelage, Hong, Rao, & Low, 2013; Grills-Taquechel, Fletcher, Vaughn, & Stuebing, 2012; Krawczuk-Rybak et al., 2012; Brockmann, Urschitz, Schlaud, & Poets, 2012; Matricciani, Olds, & Petkov, 2012; Polderman, Boomsma, Bartels, Verhulst, & Huizink, 2010; Siqueira & Gurge-Giannetti, 2011; Ong et al., 2010; Karande & Kulkarni, 2005; Carlson, Rowe, & Curby, 2013; Dhingra, Manhas, & Kohli, 2010; Pereira, Araujo, & Braccialli, 2011; Son & Meisels, 2006; Oche, 2014; Dinehart & Manfra, 2013).

1.3. Study background

Occupational therapists working with children are concerned about their capacity to facilitate participation in daily activities such as self-care, play, and school related tasks effectively (American Occupational Therapy Association [AOTA], 2002). It is important to offer services for children with difficulties in academics as the latter can
have serious consequences for successful participation in later life (Brody, 1993 and McLaughlin & Wehman, 1992 as cited in Goldstand, Koslowe, & Parush, 2005). Though various factors influence a child’s academic performance, VP, VMI and handwriting are considered to be significant from an occupational therapy (OT) perspective (Case-Smith, 2002; Dankert, Davies, & Gavin, 2003).

VP is “a process of organizing input of what is seen”. It has been found that VP is related to learning readiness and academic achievement, particularly in early school years. Sufficient VP abilities are required to learn and differentiate letters (Kulp, 1999). In a cross sectional study done by Dhingra et al. (2010), it was found that 27.5% of the fourth through sixth standard children had low visual perceptual skills. A deficit in VP may interfere with the tasks related to school such as difficulty in reading, writing, spelling and thereby academic performance (Brown, Unsworth, & Lyons, 2009).

VMI is defined as “the degree to which visual perception and finger-hand movements are well coordinated” (Beery & Beery, 2010). It is self-evident that VMI skills can have a role in pre-academic and academic success, as the primary focus of instruction in early education involves pencil and paper activities (Dankert et al., 2003). According to McHale and Cermak, 5-15% of elementary school children present with some form of VMI dysfunction (as cited in Brown et al., 2009). Children with problems in VMI are found to have difficulties in academic performance (Goldstand et al., 2005) and also difficulties in writing legibly or aligning columns correctly while doing mathematics (Barnhardt, Borsting, Deland, Pham, & Vu, 2005). This may have a negative impact on scholastic progress and also on the sense of success in academic achievement (Piek, Baynam, & Barrett, 2006).
Handwriting is defined as “writing with a pen or pencil” (Oxford dictionary, n.d.). It is often a primary mode that school children use to exhibit their knowledge. Difficulty in handwriting may interfere with academic achievement as children spend 31-60% of their school time in handwriting and other fine motor tasks (McHale & Cermak, 1992). 5-25% of typically developing children usually face problems related to handwriting (Smits-Engel mans, 1995 and Hamstra-Bletz, 1993 as cited in Jongmans, Linthorst-Bakker, Westenberg, & Smits-Engel mans, 2005). Illegible handwriting may interfere with teachers’ perception of a child’s academic performance and may lead to lower grades, thereby impeding academic progress (Briggs, 1970; Markham, 1976; Rubin & Henderson, 1982 and Tseng & Cermak, 1993 as cited in Zwicker, 2005). Thus, legible handwriting continues to be a significant skill to develop for elementary school children and difficulty in this skill can affect a child’s proficiency in school related tasks.

As OT deals with VP, VMI, and handwriting, it is important to know the influence of these factors on academic performance. When literature was reviewed to identify the influence of VP, VMI and handwriting on academic performance, it was found that very few studies addressed the relationship of these factors with academic performance and when they did address them, they showed controversial results (Floyd, Evans, & McGrew, 2003; Kavale & Forness, 2000; Carlson, et al., 2013). In addition, most of the studies were cross-sectional and were done on western populations. Furthermore, available literature reviewed from Indian context (Dhingra et al., 2010) in this regard is very limited. No study in India has examined the yearly changes of these factors and their longitudinal impact on academic performance. It was also found that there is a cultural difference in perceptual abilities between East Asians and Westerners (Nisbett & Masuda, 2003). Hence, a longitudinal study would be better able to capture the impact of these factors on academic performance in Indian context.
1.4. Research questions

- Is there enough research evidence to say that visual perception, visual motor integration, and handwriting influence the academic performance among elementary school children?

- Is the academic performance among elementary school children influenced by visual perception, visual motor integration, and handwriting?

- Is there any change in the performance of visual perception, visual motor integration, and handwriting as years pass on?