



Psychological adjustment and levels of self esteem in children with visual-motor integration difficulties influences the results of a randomized intervention trial

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ABSTRACT

This study evaluates how much the effects of intervention programs are influenced by pre-existing psychological adjustment and self-esteem levels in kindergarten and first grade children with poor visual-motor integration skills, from low socioeconomic backgrounds. One hundred and sixteen mainstream kindergarten and first-grade children, from low socioeconomic backgrounds, scoring below the 25th percentile on a measure of visual-motor integration (VMI) were recruited and randomly divided into two parallel intervention groups. One intervention group received directive visual-motor intervention (DVMI), while the second intervention group received a non-directive supportive intervention (NDSI). Tests were administered to evaluate visual-motor integration skills outcome. Children with higher baseline measures of psychological adjustment and self-esteem responded better in NDSI while children with lower baseline performance on psychological adjustment and self-esteem responded better in DVMI. This study suggests that children from low socioeconomic backgrounds with low VMI performance scores will benefit more from intervention programs if clinicians choose the type of intervention according to baseline psychological adjustment and self-esteem measures.

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1. Introduction

This article addresses the predictive value of psychological adjustment and self esteem on the outcome of two interventions aimed at improving visual-motor integration (VMI) skills of kindergarten and first grade children.

Visual-motor integration (VMI) is defined as the integration of visual, perceptual, and motor skills (Exner, 2005). VMI is the component of visual perception skills which includes the motor element and depends on maturation and integration of cognitive, visual, perceptual and motor skills (Tseng & Chow, 2000; Yinon and Weintraub, 2000).

In many studies VMI function has been identified as playing an important role in child development and academic performance (Bart, Hajami, & Bar-Haim, 1997; Chen, Bleything, & Lim, 2011; Taylor Kulp, 1999; Tseng & Chow, 2000). The VMI is crucial for acquiring reading and writing skills (Cornhill & Case-Smith, 1996; Hagborg & Aiello-Coultier, 1994; Tseng & Murray, 1994), as well as for achievement in mathematics (Sortor & Kulp, 2003; Taylor Kulp, 1999) in the first four grades of elementary school.

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The disparity between children with visual-motor difficulties who are not treated and their classmates tends to remain constant as the children grow (Marr & Cermak, 2001). Thus, since healthy adjustment during the first years of school is a precursor to subsequent school success, reducing the VMI gap in first grade is crucial (Ratzon et al., 2009). Given the seriousness of impaired VMI on behavior and adjustment if left untreated, there are important implications for educators and therapists (Malloy-Miller, Polatajko, & Anstett, 1995). Despite the broad consensus that visual-motor skills are important for promoting academic achievement, and that several occupational therapy (OT) interventions have proved effective in improving visual motor skills in preschool and first year school children (Dankert, Davies, & Gavin, 2003; Oliver, 1990; Parush & Hahn-Markowitz, 1997; Ratzon, Efraim, & Bart, 2007), most children with visual-motor difficulties start school without a diagnosis or referral for treatment (Ratzon et al., 2009).

There appears to be a significant correlation between academic success and psychological factors such as social skills, self-esteem and hyperactivity (Al-Yagon & Mikulincer, 2004; Lamminmaki et al., 1997; Margalit & Efrati, 1996). When these factors are deficient, psychological adjustment becomes disordered. Psychological adjustment disorders are characterized by emotional symptoms, behavioral symptoms or both. Inadequate psychological adjustment is manifested by misinterpretation of the behavior of others, hostility, aggression and by blaming others for one's own mistakes (American Psychiatric Association, 1994). Self-esteem has a major influence in all age groups on coping with difficult situations in daily life (Jerome, Fujiki, Brinton, & James, 2002). Self-esteem has an effect upon an individual's self-image, comprising factors such as religion, personal values, uniqueness, abilities, success (El Hassan, 1999; Harter, 1989; Marsh & Holmes, 1990; Strein, 1993) and growth (Manor-Binyamini & Abu-Ajaj, 2012).

Despite the influence of psychological adjustment and self-esteem upon academic measures, to the best of our knowledge, no study has attempted to predict their influence on the outcome of interventions aimed to improve visual-motor integration skills.

This study expands upon a previous work (Lahav, Apter, & Ratzon, 2008) that compared the efficacy of a directive visual-motor intervention (DVMI) versus a nondirective supportive intervention (NDSI) on psychological adjustment, self-esteem, and visuomotor-integration (VMI) skills in mainstream elementary school and kindergarten children. A total of 168 children were recruited and randomly allocated to a DVMI group, a NDSI group and a control group. Psychological adjustment, self-esteem, and VMI skills were evaluated before and after the intervention period. Findings show that in the kindergarten subset, NDSI significantly improved VMI skills compared to DVMI and no treatment. In the first-graders, NDSI and DVMI yielded a similar, significant, improvement in VMI compared to no treatment. Finally there were no significant differences in psychological adjustment and self-esteem improvements among the NDSI, DVMI, and control groups.

Studying children of families from low socioeconomic backgrounds, is important both since they are at high risk of school failure, and due to the evidence that they may begin school at a disadvantage with regard to motor skills (Scheffler, Ketelhut, & Morgenstern, 2004), behavior and academic achievement (Wagner & Gombay, 1996; Yeung, Linver, & Brooks-Gunn, 2002).

The children screened for the current study were scored as having low VMI skills according to the Beery-Buktenica Developmental Test of Visual Motor Integration (Beery & Buktenica, 1997) that measures copying performance of geometric shapes (Dankert et al., 2003). The VMI of the study group was measured by the multiple aspect VMI tool, the DTVP-2.

We looked at two short term types of intervention. The interventions tested were a directive visual motor intervention (DVMI) and a non-directive supportive intervention (NDSI). The subject's self-esteem and psychological adjustment were measured before the interventions. The measures of self-esteem comprised four subscales, while the measures of psychological adjustment comprised two subscales.

The objective of this study is to explore the predictive value of the children's psychological adjustment and self-esteem baseline in both interventions for VMI improvement, enabling the prediction of who could benefit from which intervention. Our hypothesis was that psychological adjustment and self-esteem baseline would significantly predict VMI improvement in both intervention groups.

2. Method

2.1. Participants

Five hundred and eighty-five mainstream kindergarten and first-grade children residing in a low socio-economic neighborhood were screened for Visual Motor Performance (VMP). The 230 children (39%) who achieved a score below the 25th percentile (corrected for age) for VMP were enrolled in the study. Of these, 62 children who met one of the following criteria were excluded from the analysis: those with medical diagnoses indicating a central nervous system dysfunction (three children—mental retardation, cerebral palsy and autism), those with severe sensory loss (two children—visual and auditory impairment), those as reported by the teachers as having emotional, behavioral or mental problems (eight children), those attending special education programs (10 children); those undergoing current occupational therapy or physiotherapy treatment (six children), those whose parents refused to participate (15 children) and those who failed to complete the study due to repeated absence from school (18 children).

Our previous study's (Lahav et al., 2008) experimental design included 168 children randomly allocated to three parallel groups, two intervention groups, (DVMI, $n = 53$; NDSI, $n = 63$) and one control group ($n = 62$). All groups were measured for VMI, psychological adjustment (PA) and self-esteem (SE) before and after intervention period.

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