

**The Contribution of Therapeutic Riding and the
Maternal Attachment Pattern to the Improvement of
Executive Function, Sensory Processing, the
Experience of Self Esteem, the Child's Attachment
Pattern and the Maternal Distress Level among
Children with ADHD**

Tali Aviv

School of Education

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Abstract

Attention Deficit / Hyperactive Disorder (ADHD) is a common neuro - developmental disorder which influences many areas which project on a child's development during the various stages of development, on the child's family, and on society around the child. ADHD negatively influences the cognitive, behavioral, emotional and social aspects of the child. The three theories brought forward in this paper relate to self regulation as one of the central causes of the disorder, which makes it hard for the child to manage his relationship with those around him.

The first theory deals with the disturbance in Executive function which was found to be strongly correlated to ADHD. Barkley (1997a) attributes a central role to self regulation, where the focus is the delay of a reaction (Graziano, McNamara, & Reid, 2011; Zilberman-Hayun, Orbach, Berger, & Atzava-Poria, 2013). A disability in delayed reaction will lead to a damage in the interaction among other executive functions. There are six clusters of executive functions (initiative, focus, effort, emotion, memory and activity) which when damaged can influence many domains of the child's life (Brown, 2006).

The second theory deals with difficulties in sensory processing. Sensory processing is a person's ability to accept, create integration with and respond to information received by the senses from the environment, in an adaptive motor and behavioral manner (Ayres, 1972). Misinterpretation of bodily and environmental cues will lead to non-adaptive responses (Bundy & Murray, 2002) and to difficulty in dealing with external demands. The sensory regulation is part of the sensory processing (Pfeiffer, Henry, Miller, & Witherell, 2008). It is a basic human ability, which is expressed by the ability to control the quality and level of responses to external and internal stimuli, in order to achieve an optimal range of performance and compatibility to challenges in a socially accepted manner based the capacity for internal and interpersonal discourse (Bronson, 2000).

The third theory is the theory of attachment, which ascribes the ability for self regulation in a developmental process to the relationship with the caregiver. If the caregiver is available and responds to the child's distress, then the child will experience calm and the caregiver will become a secure attachment figure. As time passes, the

baby, after experiencing similar events, will internally construct an inner representation of the process, which will subsequently enable the building of internal work models which in time of stress will be expressed in interpersonal relationships. When the caregiver is not available on a regular basis, or is distant, the baby will construct an uncertain? pattern of attachment and will find it hard to self regulate in times of distress (Bowlby, 1973, 1980, 1982, 1988). A large percentage of children with ADHD were found with disabilities in executive function and sensory processing, and with an uncertain pattern of attachment.

The baby's congenital difficulties make it harder for the mother to be the one with the precise response to her baby's needs at times of distress. She experiences herself as inadequate and her motherhood as faulty (DeGangi, Sickel, Wiener, & Kaplan, 1996). Many times, the negative experience of her ability to be a calming influence for her child dilutes her strength, is experienced as distress, and leads her to close herself up in her own world and keep her distance from the child (Modesto-Lowe, Danforth, & Brooks, 2008), which can explain the development of an insecure pattern of attachment among the ADHD children. As the child grows, he/she enters into educational frameworks and must cope with peers. Day to day function as a "regular student" is hard, compounded by criticism from teachers and sometimes by ridicule from peers. The child's self esteem is negative and he / she experiences low self worth (Mohammadi et al., 2012).

The wide ranging deep implications of the disorder lead to a search for effective intervention methods, and one of them is the therapeutic riding – a subject upon which there is scarcely any body of research, This research will try to address the lack in order to make it possible to build the basis for a structured and clear intervention program for children with ADHD and difficulties in sensory processing. The current research model deals with analyzing the connection between ADHD (an independent variable) to executive function, sensory processing, self worth, patterns of attachment and maternal distress (also independent variables), the effect of therapeutic riding (a moderating variable) and maternal attachment (moderating variable) on the attachment.

The research group included 62 children between the ages of 6-12, all of whom had been diagnosed by neurologists as having ADHD and all were medicated, who participated in therapeutic riding lessons. The control group included 61 children also

diagnosed by neurologists as having ADHD and medicated, and without additional treatments during the intervention. The study included variables from 3 points in time, which were filled by the mother and the child. A small part which derives from the qualitative research was also included. The mothers filled in a semi structured questionnaire at the end of the process, which helped to deepen the understanding of the process in their perception. In order to check whether there were changes in the various indices during the study, a series of latent growth models (LGMs) were conducted, where the variables were the research indices and the predictor variable was the time variable, where the period of measurement was the encoded in units of one week.

The main research findings showed an improvement in executive functions, sensory processing, patterns of attachment and the child's self esteem. In addition, the level of maternal distress had lowered and the mothers underwent a transformation in their attachment patterns. To the best of my knowledge this is a pioneering research, which checks the multiple variables from a multi-disciplinary holistic approach, in the hope that in the future more research will be conducted using intervention plans for the ADHD population. I am very hopeful that continuing research will be conducted for therapeutic riding in order to establish structured programs for a range of populations and ages.