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Comparison of behavioral intervention and sensory-integration therapy in the treatment of self-injurious behavior[☆]

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ABSTRACT

The current study investigates the comparative effects of sensory-integration therapy and behavioral interventions on rates of self-injurious behavior (SIB) in a 9-year-old boy with diagnosis of autism. A functional analysis was conducted to identify the variables maintaining the self-injurious behavior. This analysis demonstrated that SIB was maintained by negative reinforcement as a result of escaping or avoiding demand situations. A sensory-integration therapy and a behavioral intervention were compared within an alternating treatments design. Results from this study clearly demonstrate that the behavioral intervention was more effective in reducing SIB than the sensory-integration therapy. Finally, in the best treatment phase, the behavioral intervention only was implemented and further reduction was observed in the frequency of SIB.

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A considerable amount of research conducted over the past number of years has focused on the treatment of self-injurious behavior (SIB), a serious and chronic disorder that poses significant physical, social, and educational risks. The most effective interventions developed to date have been based on operant conditioning principles (e.g. Bachman, 1972; Johnson & Baumeister, 1978; Mason & Iwata, 1990; Vollmer, Iwata, Zarcone, Smith, & Mazaleski, 1993). Various other therapies within the

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literature have claimed to be effective in the treatment of SIB, particularly interventions based on developmental and physiological hypotheses. However, these therapies have much less empirical support (Linscheid & Valvano, 1987; Mason & Iwata, 1990).

The most prevalent of these 'interventions' reported and the most commonly applied is sensory-integration therapy (SIT). Despite the fact that there is a paucity of controlled research to support the effectiveness of SIT in the treatment of self-injurious behavior, some qualitative studies have demonstrated wide-spread applications of SIT in the treatment of SIB. A survey of occupational therapists revealed that 82% of respondents reported that they "always" use a sensory integrative approach when working with children with autism (Watling, Deitz, Kanny, & McLaughlin, 1999). Parents of children with autism in applied behavior analysis programmes were surveyed on their use and perceptions of supplemental treatments. Results from this study indicated that 56% of respondents had their children exposed to sensory-integration techniques (Smith & Antolovich, 2000). Because of the potentially dangerous effects of SIB, it is hugely important to review the efficacy of sensory-integration procedures in the treatment of self-injurious behavior.

SIT was first introduced by Ayres (1972) as the "neurological process that organizes sensation from one's own body and from the environment and makes it possible to use the body effectively within the environment" (p. 11). Subsequent authors have referred to problems with sensory integration as "the inefficient neurological processing of information received through the senses, causing problems with learning, development and behavior" (Stock Kranowitz, 1998, p. 292) which may be alleviated through various types of physiological stimulation.

Sensory-integration dysfunction is thought to impair the vestibular, proprioceptive and tactile systems. The vestibular system provides sensory input to the brain about the body's movement through space. Signs of vestibular impairment include poor posture and difficulties in planning and sequencing motor activities. The proprioceptive system provides sensory input for muscles and joints. Impairment to this system is said to be manifested by stereotyped body movements such as repeated hand-flapping. Impairments in the tactile system are shown by lack of sensitivity or over-sensitivity to sensory stimuli. SIT is designed to restore effective neurological processing by enhancing each of these systems. The application of a "sensory diet" is a common clinical practice by sensory-integration therapists and can involve individualized activity plans to ameliorate the sensory needs of the individual. Such a plan may involve activities such as jumping on a trampoline, swinging, rolling and riding on scooter boards. Other activities involve the delivery of "deep pressure", "joint compression", and body brushing. In addition, the use of weighted vests, oral motor exercises and body massage are all said to alter and improve arousal states (Wilbarger, 1995).

Practitioners using the SIT approach have reported three types of benefits: (a) enhanced ability to focus on relevant materials in educational, therapeutic, and social environments (Wilbarger & Wilbarger, 1991), (b) reduction in the rate of aberrant behaviors such as self-injury (Bright, Bittick, & Fleeman, 1981) and (c) generalized improvements in nervous system functioning, reflected in gains in higher cognitive activity such as language and reading (Ayres, 1979; Magrun, Ottenbacher, McCue, & Keefe, 1981). However, inspection of the literature reveals that there is no scientific basis for these assertions (Arendt, MacLean, & Baumeister, 1998).

Many studies have attempted to demonstrate beneficial effects of sensory integration as a therapy for children with developmental disabilities, presenting with self-injurious behaviors. Lemke (1974) proposed that SIB seen in developmentally delayed populations might be a reflection of poor sensory-motor integration. In support of this position, Lemke (1974) presented an uncontrolled case study in which a self-injurious client was exposed to multiple forms of stimulation (e.g. finger massage and ice to the mouth, tooth-brushing, towel massage to the arms, feet slapping and body rolling). Quantitative measures were not a feature of this study and the author simply noted that the subject was freed from restraint.

Bright et al. (1981) administered tactile, vestibular, and social stimulation (rocking in a hammock, stroking the back, holding in a rocking chair while providing social interaction), and reported that their subject's frequency of SIB decreased during treatment sessions. No objective, quantitative measures were reported in this study. Wells and Smith (1983) provided similar types of sensory stimulation as Bright et al. as a treatment for SIB. Results from this study indicated that, compared to baseline, the frequency of SIB decreased during therapy sessions.

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