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Self monitoring to promote on-task behavior by two high functioning boys with autism spectrum disorders and symptoms of ADHD

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ABSTRACT

We assessed a self-monitoring procedure to promote on-task behavior in classroom by two high functioning boys with autism spectrum and attention deficit hyperactivity disorders. A second aim of the study was to reduce stereotyped behaviors for both boys. Finally, a third goal was to verify the effects of the intervention on the participant's mood. The study was conducted according to a non concurrent multiple baseline design across participants. Results show an increase of on-task behavior and indices of happiness during the intervention phase. Moreover, the stereotyped behaviors decreased during intervention phase for both boys. Participants maintained their performance during the maintenance phase, which occurred a month after the end of the intervention. The effectiveness of the rehabilitation program was confirmed by 72 university students involved in a social validation assessment as raters. Psychological and practical implications of the findings are discussed.

1. Introduction

Children with autism spectrum disorders (ASD) are commonly characterized by social and communication impairment, stereotyped and tantrum behaviors, self-injuries and aggression (Lequia, Machalicek, & Rispoli, 2012; Matson, Rieske, & Williams, 2013; O'Reilly et al., 2010; Palmen & Didden, 2012). Moreover, they may generally show co-existing variables such as repetitive/ritualistic behaviors, intellectual disabilities and symptoms of attention deficit hyperactivity disorders (ADHD) (Mayes, Calhoun, Mayes, & Molitoris, 2012; White et al., 2011). Due to the neuro-developmental disorder, the aforementioned challenge behaviors interfere with academic activities, constructive engagement and adaptive skills, with negative consequences on controlling, regulating and directing the on-task behavior, even among high functioning ASD children (Jahromi, Bryce, & Swanson, 2013; Southall & Gast, 2011; Wilkinson, 2008). In fact, they are unable to modulate their emotional experiences or to achieve their goals, with poor interpersonal interactions and failures in school settings (Calkins, & Mackler, 2011; Singh et al., 2011). Many students are reported with learning difficulties, lack of organization skills, impulsivity, inabilities to discriminate relevant from irrelevant information, inattention and incapacities to process visual and auditory information (Mruzek, Cohen, & Smith, 2007). Since people with ASD frequently rely on support of

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caregivers, independent functioning is considered a crucial issue for children with high functioning ASD (Palmen, Didden, & Lang, 2012; Stasolla, Damiani, & Caffò, 2014). Furthermore, several studies analyzing the effectiveness of behavioral interventions on adaptive skills for children with ASD point out that early intensive behavioral intervention is the most successful approach (Cappadocia & Weiss, 2011; Makrygianni & Reed, 2010; Peters-Scheffer, Didden, Korzilius, & Sturney, 2011).

ASD children, with and without intellectual disabilities, have been the subject of most studies, and behavioral interventions such as task analysis, instruction cues, modeling, prompt, fading and differential reinforcements of other or alternative behaviors prove to be particularly effective (Koegel, Vernon, & Koegel, 2009; Paterson & Arco, 2007). Among high functioning children with ASD evidence for self-management and video (self)-modeling has also been found (Bellini & Akullian, 2007; Lee, Simpson, & Shogren, 2007). Specifically, Machalicek et al. (2008) and Palmen et al. (2012) reviewed studies about behavioral intervention on adaptive and social skills in school settings emphasizing that those strategies are strongly supported by empirical data, with practical and clinical implications. Beside the aforementioned behavioral techniques, self-monitoring has been adopted (Robinson, Goddard, Dritschel, Wisley, & Howlin, 2009; Soares, Vannest, & Harrison, 2009; Williams & Happé, 2009).

Self-monitoring consists of an ongoing process allowing students to acquire and collect information about their task performance related to established standards. It prepares students to observe, record and track their own (on-task and off-task) behaviors. Students are requested to self-identify and self-monitor a specific target behavior. The procedure represents an alternative to teacher-managed activities or contingencies and has been successfully implemented for children with learning disabilities, ADHD and ASD in school, educational and rehabilitative settings (Afshari, 2012; Deutsch, Dube, & Mc Ilvane, 2008). The literature on self-monitoring is substantial (Cavalari & Romanczyk, 2012; Ganz, Heath, Davis, & Vannest, 2013; Parker & Kamps, 2011; Wilson, 2013). Most of the studies are focused on the reduction of challenge behaviors and the enhance of academic or vocational production (Plavnick, Ferreri, & Maupin, 2010; Purper-Ouakil, Wohl, Michel, Mouren, & Gorwood, 2004; Szymanski & Zolotor, 2001), using one or two components of intervention package (Soares et al., 2009). Surprisingly, the literature on the effects of self-monitoring on quality of life (e.g. indices of happiness) and on social validation assessment is lacking (Felce & Perry, 1995), as well as the evidence of self monitoring on its maintenance over the time (Matson, 2012, 2009).

The present study is an attempt to replicate and extend the applicability and the effectiveness of a self-monitoring procedure on two high functioning boys with ASD and symptoms of ADHD-C sub-type (combined) in school setting, and pursue three main objectives: (a) assess its validity over time (with a maintenance phase carried out after one month from the end of the study), (b) check out the effects of the intervention on the increase of on-task-behavior and on indices of happiness on one hand, and on the decrease of stereotyped behaviors on the other, and (c) conduct a social validation assessment involving 72 university students as raters.

2. Method

2.1. Participants and setting

The participants, Jack and Michael, were two high functioning ASD boys, they were 7.5 and 8.5 years old and showed a score of 44 and 48 to the *Childood Autism Rating Scale* (CARS), respectively (Schopler, Reichler, De Vellis, & Daly, 1980) at the beginning of the study. Although no formal IQ score was available, both were estimated as borderline between normal and mild intellectual disabilities from clinical observations. For this reason, they attended regular class with a special training. Furthermore, they presented symptoms of ADHD C-subtype (combined) with off-task and tantrum behaviors during classroom. Jack presented body rocking and voice noises, while Michael exhibited hand flapping and washing (stereotyped-behaviors). The study was carried out in school setting, during academic activities.

They had awareness of sphincter control and were able to communicate their needs, although their language was not easily understandable. Both participants were able to ambulate independently and autonomous on personal needs (i.e. hygiene), although they continuously needed reminders to be on task. Jack and Michael presented relationship problems with peers and caregivers, they had no resilience to frustration, showing aggressive behaviors against people around them. They were recruited for the study by their neurologist. Their families and teachers considered the intervention program high desirable and signed up a formal consent for the participation to the study for both boys, which was performed in accordance with the Helsinki Declaration and its later amendments and approved by the Review Board of the Institution.

2.2. Target behaviors

For both participants target behaviors consisted of: on-task behavior, stereotyped behaviors, indices of happiness. The on-task-behavior was recorded if Jack and Michael: (a) remained sitting on their desk, (b) kept silent, (c) listened to the teacher's explanation, (d) focused on their task, gazing on their sheet, reading carefully the task and achieving it. The stereotyped behaviors were recorded when Jack produced (a) voice noises, (b) body rocking and when Michael presented (a) hand washing, and (b) hand flapping. Finally, the indices of happiness were recorded when both boys were (a) smiling, (b) laughing, (c) exhibiting excited body movements with or without vocalizations, and (d) singing.