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Review article

Treating aggression in persons with autism spectrum disorders: A review

Johnny L. Matson, Jina Jang *

Louisiana State University, United States

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ABSTRACT

Aggression is one of the most frequent and debilitating problems observed among persons with autism spectrum disorders (ASD). It is common and can be more problematic than many core symptoms of ASD. Thus, treating the behavior is a high priority. A surprisingly limited number of studies have addressed treatment when taken in the context of the vast ASD literature. This paper reviews many of these papers and describes the types of interventions that have been used and the characteristics of the people who have been studied.

Contents

The field of developmental disabilities has seen tremendous positive change in the last few decades. Once considered untreatable, major advances have occurred with respect to intervention such that all persons with developmental disabilities are now considered good candidates for multiple therapies (Carr & Durand, 1985; Halle, Marshall, & Spradlin, 1979; Matson, Dixon, & Matson, 2005; Matson & LoVullo, 2009; Matson, Mahan, & LoVullo, 2009). Among the developmental disabilities, autism spectrum disorders (ASD) are now considered to be among the most prevalent and debilitating (Bromley & Blacher, 1991; Matson & Dempsey, 2008; Matson & Kozlowski, 2011). Core features of ASD include deficits in communication and social skills as well as rituals and stereotypies (Baranek, David, Poe, Stone, & Watson, 2006; Horovitz & Matson, 2010; Matson, Belva, Horovitz, Kozlowski, & Bamburg, 2012; Matson, Boisjoli, Hess, & Wilkins, 2010; Matson, Gonzales, Wilkins, & Rivet, 2008a; Matson, Kozlowksi, Hattier, Horovitz, & Sipes, 2012; Worley & Matson, 2012).

In multiple instances, the many co-occurring problems seen with ASD can be very debilitating as well. Sleep problems, feeding problems, general adaptive skill deficits, gastrointestinal disorders, and fine and gross motor issues are among the daily living and health problems that can commonly occur (Goldman, Richdale, Clemons, & Malow, 2012; Malow, McGrew, Harvey, Henderson, & Stone, 2006; Matson, Dempsey, & Fodstad, 2009; Matson, Dixon, et al., 2005; Matson, Rivet, Fodstad,

* Corresponding author at: Department of Psychology, Louisiana State University, Baton Rouge, LA 70803, United States. Tel.: +1 9098150565.
E-mail address: jinajang87@gmail.com (J. Jang).

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Dempsey, & Boisjoli, 2009; Molloy & Manning-Courtney, 2003; Symons, Davis, & Thompson, 2000). Intellectual disabilities also often co-occur with ASD and can exacerbate core symptoms of ASD, such as social behaviors (Matson, Carlisle, & Bamburg, 1998; Matson, LeBlanc, & Weinheimer, 1999; Matson, Smiroldo, & Bamburg, 1998; Njardvik, Matson, & Cherry, 1999). Other serious issues include co-occurring psychopathology and challenging behaviors (Lecavalier, 2006; Matson, Rush, et al., 1999; Matson & Smiroldo, 1997; Paclawsky, Matson, Bamburg, & Baglio, 1997). Of the challenging behaviors, aggression is among the most common and most disruptive (Kanne & Mazurek, 2011; Matson & Boisjoli, 2007). This behavior is so problematic that it may frequently take priority over some core symptoms of ASD. Because of these issues, aggression has become a priority for clinicians and researchers. Therefore, the purpose of this paper was to review evidence-based interventions for persons with ASD who also engage in aggressive acts.

1. Methods

A Scopus search was conducted using the keywords: aggression, autism, treatments, PDD-NOS, Asperger's and challenging behaviors. Review papers on the topic were cross-referenced for additional studies. Only primary source papers that used actual treatments for aggression were included. Some of these papers only treated aggression, while others also included other challenging behaviors such as self-injury, adaptive skills, and core symptoms of ASD.

2. Results and discussion

Using the methods described above, 27 papers were identified. These studies are presented in Table 1. Early intensive behavioral interventions were not included in the review. In some instances, aggression has been focused on in these papers, but core symptoms of ASD, adaptive behavior, attention, and compliance tend to be most frequently addressed.

The treatment literature on ASD tends to mirror the research on other topics in ASD; the focus is almost exclusively with children and adolescents. Of the 27 papers reviewed, only five studies focused on adults (Hittner, 1994; King & Davanzo, 1996; Lundqvist, Andersson, & Viding, 2009; McDougle et al., 1996, 1998). As pointed out in reviews on related topics, the bulk of a persons' life is spent as an adults. Thus, the majority of people with ASD are adults. Additionally, a problem such as aggression is potentially much more serious and debilitating in adults. The types of interventions are likely to differ for adults, and they may have a longer history of evincing the aggressive behavior. Thus, the aggression in adults is often more serious and debilitating than what would typically be observed with children.

The number of participants in the reviewed studies was much smaller in general than what occurs with assessment, epidemiological, demographic, or cognitive studies. This result should come as no surprise to the reader. Intervention studies by their very nature are more time, labor, and resource intensive than just about any other type or research conducted with individuals who are diagnosed with ASD. This issue is compounded when discussing aggression due to the potential for harm, and the fact that these behaviors often are highly entrenched and difficult to mange. Thus, the range of participant numbers across studies varied from one to 218. Thirteen of the papers reported on the treatment of one or two individuals (Braithwaite & Richdale, 2000; Davis et al., 2013; Falcomata, Roane, Muething, Stephenson, & Ing, 2012; Fisher, Lindauer, Alterson, & Thompson, 1998; Foxx & Garito, 2007; Foxx & Meindl, 2007; Hittner, 1994; Kern, Carberry, & Haidara, 1997; Kuhn, Hardesty, & Sweeney, 2009; Luiselli, Blew, Keane, Thibadeau, & Holzman, 2000; Matson, LoVullo, Boisjoli, & Gonzales, 2008; Robertson, Wehby, & King, 2013; Sigafoos & Meikle, 1996), and two studies involved 100 or more people (Marcus et al., 2009; Silverman et al., 2014). The higher number of participated studies involved drug treatments (Arnold et al., 2003; Hellings et al., 2005; King & Davanzo, 1996; Marcus et al., 2009; McDougle et al., 1996; McDougle, Kem, & Posey, 2002; McDougle et al., 1998; Owen et al., 2009; Silverman et al., 2014; Troost et al., 2005), while the low number studies were largely psychologically based interventions. Again, this makes sense in that drug interventions for aggression are far less time intensive than psychologically based treatments. Additionally, most of the psychologically based studies adhered to applied behavior analysis (ABA) principles and procedures. Researchers who endorse this intervention model also often prefer to use single case research designs versus group designs. Following this model would also result in more papers with small numbers of participants but with many more data points for each person studied.

Target behaviors all fell within the overall term aggression. For the drug studies in particular, multiple other behaviors were also studied. Self-injurious behavior, irritability (which can mean about anything within the scope of challenging behaviors), externalizing behaviors, and impulsivity were among the behaviors that were co-studied. Since medication is a much blunter instrument than psychological interventions tailored to a given "target behavior," this approach is also very understandable. For psychologically based therapies, more detail about the aggression was usually evident. Behaviors targeted for intervention have included hitting, kicking, punching, hair pulling, property destruction, grabbing clothing, tantrums, spitting, throwing objects, and pushing.

Multiple medications have been tested for persons with ASD. These include aripiprazole, ziprasidone, risperidone, imipramine, valproate, clomipramine, atomoxetine, fluvoxamine, dextromethorphan, and buspirone. Thus, not only have at least ten different drugs been tested for efficacy for persons with ASD, but they also cross drug classes. Thus, the theorized mechanisms of action appear to be compromised. At this point, whether these drugs are simply sedating the individual with ASD and aggression or are directly affecting specific mechanism that promote or trigger aggression is an open question.

Psychological treatments are generally less intrusive and cause fewer harmful side effects. Thus, in clinical setting, medication is rarely used along. Rather, it is used in combination with various psychologically based treatments. Thus, a