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Review

# Conspicuous by the their absence: Studies comparing and combining risperidone and applied behavior analysis to reduce challenging behavior in children with autism

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ABSTRACT

Both risperidone, an atypical antipsychotic drug, and function-based behavior-analytic interventions are popular and empirically validated treatments for reducing challenging behavior in children with autism. The kind of research that supports their effectiveness differs, however, and no published study has directly compared their effects or examined the two in combination. The research methods characteristic of applied behavior analysis may provide a useful basis for comparing the effects of risperidone and behavior-analytic treatments, alone and in combination, and researchers are encouraged to pursue this line of investigation.



Autism is characterized by impairments in social interaction, atypical language development, and patterns of behavior that are restricted and repetitive (American Psychiatric Association, 2000). In addition to exhibiting these core symptoms, children with autism sometimes engage in self-injury, aggression directed towards property or other people, temper tantrums, and other behaviors that cause problems and therefore are targeted for reduction (see review by Matson & Nebel-Schwam, 2007). In October of 2006, the Food and Drug Administration of the United States (U.S. FDA) approved the antipsychotic drug, risperidone (Risperdal®), for the treatment of such behaviors, collectively labeled as "irritability", in children with autism between the ages of 5 and 17 years (U.S. FDA, 2006). The decision to approve risperidone for this purpose was based on the results of two 8-week placebo-controlled trials involving 156 children with autism. Overall, irritability as measured by the Aberrant

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Behavior Checklist was lower when risperidone was administered, although the drug's effects differed across children.

A number of other published studies also demonstrated generally beneficial effects and it now appears that risperidone is reasonably effective in reducing challenging behavior in children with autism (e.g., Miral et al., 2008; McCracken et al., 2002; Shea et al., 2004). It is the case, however, that not all children benefit from risperidone and the drug can produce a range of side effects, including tremor, drowsiness, fatigue, drooling, weight gain, and enuresis (e.g., Ghanizadeh & Kianpoor, 2008; Scahill, Koenig, Carroll, & Pachler, 2007). Nonetheless, risperidone is a popular treatment for reducing problem behavior in children with autism (and other autism spectrum disorders). For example, results of a 2006 survey completed by the parents of 552 children with autism indicated that 12.2% of them had been treated with the drug in the past and 10.2% were currently using it (Green et al., 2006). The values are probably higher at present, because the drug has now been FDA-approved for more than 2 years.

Of course, other interventions are also available for reducing problem behaviors in children with autism. A substantial literature suggests that function-based behavior-analytic interventions (which comprise a range of specific treatments) are useful (e.g., Athens, Vollmer, Sloman, & Pipkin, 2008; Dwyer-Moore & Dixon, 2007; Langdon, Carr, & Owen-DeSchryver, 2008) and applied behavior analysis (ABA) is widely used to reduce problem behavior (as well as to establish desired behavior) in children with autism (e.g., Ahearn, Clark, MacDonald, & Chung, 2007; Foxx, 2008; Jones, Feeley, & Takacs, 2007). Results of a survey by Green et al. (2006), described previously, indicated that the children of 22.7% of respondents had been treated with ABA in the past and 36.4% were currently being treated with it.

Both risperidone and ABA are empirically validated treatments for reducing problem behaviors in children with autism. The kind of research that supports their effectiveness differs, however. Most studies evaluating risperidone used a substantial number of participants, indirect measures of problem behaviors, and statistical data analyses (for a review see Jesner, Aref-Adib, & Coren, 2007). In contrast, most studies evaluating behavior-analytic interventions used relatively few subjects, direct measures of problem behaviors, and visual data analysis (for a review see Fahmie & Hanley, 2008). These are fundamentally different research strategies and people who favor one approach are frequently dismissive of the other. For example, most conventional research design and statistics textbooks devote few pages to within-subject, small-N designs and essentially dismiss them collectively as "quasi-experimental" or "case studies" (see Dermer & Hoch, 1999). On the other hand, many behavior analysts are openly critical of research that uses indirect measures of behavior and assesses treatment effects by statistically comparing group means (e.g., Johnson & Pennypacker, 2009; Kazdin, 1982; Poling, Methot, & LeSage, 1995).

Given that both risperidone and ABA are popular, empirically validated treatments for reducing problem behaviors in people with autism, an obvious and important question is: Which is more effective? The best way to answer this question is to compare the two in a single, well-controlled study. To our knowledge, no such study has appeared.

In fact, a recent (May 7, 2009) search of the Scopus, PsychInfo, and MedLine data bases using risperidone, autism, and behavior analysis as key words failed to reveal *any* study that directly compared risperidone and ABA in children with autism. Therefore, a well-informed caregiver choosing between the two would have to make her or his decision based on a comparison of findings from studies that used fundamentally dissimilar research tactics. This is an "apples to oranges" comparison. How, for example, does a statistically significant difference in the mean level of irritability as measured by the Aberrant Behavior Checklist in a group of children with autism who received risperidone relative to a group who received placebo relate to a 50–70% reduction in daily occurrences of directly observed tantrums in two children going from a baseline to a function-based treatment condition under a multiple-baseline arrangement? In the absence of a standard metric, which appears to be lacking, there is no meaningful comparison.

Even if she or he was fully aware of the relevant research literature, a caregiver, such as a parent, searching for an intervention to reduce problem behavior in a child with autism would have a difficult time determining whether risperidone or ABA would be a better option. If the caregiver sought an expert's opinion, that opinion is likely to vary across experts, depending on their disciplines, hence training and experience. A psychiatrist would probably, and from her or his perspective appropriately,