



NASET's Autism Spectrum Disorder Series

Aggression in Children with Autism Spectrum Disorders and a Clinic-Referred Group: A Critique

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This issue of **NASET's Autism Spectrum Disorder series** was written by Marissa Desiree Pardo of Florida International University. In the article "Aggression in Children with Autism Spectrum Disorders (ASD) and a Clinic-Referred Comparison Group", the researchers aimed to measure, categorize, and compare different subtypes of aggression in a large sample of participants between the ages of 7 to 21 with ASD and a comparison group where the possibility of being diagnosed with ASD was completely ruled out, referred to as the non-ASD (clinic-referred) group. The study took place across six different multi-state sites. The researchers also wanted to discover whether certain characteristics in both groups, including age, sex, IQ, adaptive behavior, and language skills affect aggression frequency within both groups. The researchers made no hypothesis as to which group may be more aggressive, but they did hypothesize that IQ and age may play a role in whether a participant in either group exhibits one or more of the subtypes of aggression. Upon reviewing and reading this literature, it was determined that the findings were important to a small but growing number of articles related to aggression in participants with Autism Spectrum Disorder; however, the researchers had multiple goals for this study which resulted in a more broad piece of research that addressed different types of discussions regarding aggression in participants with or without ASD in a clinical setting, rather than research aimed towards reaching one of the two goals posted.

Abstract

In the article “Aggression in Children with Autism Spectrum Disorders (ASD) and a Clinic-Referred Comparison Group”, the researchers aimed to measure, categorize, and compare different subtypes of aggression in a large sample of participants between the ages of 7 to 21 with ASD and a comparison group where the possibility of being diagnosed with ASD was completely ruled out, referred to as the non-ASD (clinic-referred) group. The study took place across six different multi-state sites. The researchers also wanted to discover whether certain characteristics in both groups, including age, sex, IQ, adaptive behavior, and language skills affect aggression frequency within both groups. The researchers made no hypothesis as to which group may be more aggressive, but they did hypothesize that IQ and age may play a role in whether a participant in either group exhibits one or more of the subtypes of aggression. Upon reviewing and reading this literature, it was determined that the findings were important to a small but growing number of articles related to aggression in participants with Autism Spectrum Disorder; however, the researchers had multiple goals for this study which resulted in a more broad piece of research that addressed different types of discussions regarding aggression in participants with or without ASD in a clinical setting, rather than research aimed towards reaching one of the two goals posted.

Research Problem

The main goal of the study is to empirically measure and categorize different forms of aggressive behavior in a large sample of participants with autism spectrum disorders (ASD) (Farmer, et al., 2014). A secondary goal was discussed, explaining that the observers also aimed to identify possible correlates of aggressive behavior, including sex, cognitive ability of participants, language, and adaptive behavior (Farmer, et al., 2014). The study is important, because it discusses the risks, the prevalence, and the structure that is linked to aggression in children with ASD, including later behaviors associated with aggressive behaviors, including substance abuse, criminal tendencies (Tremblay, et al., 2004), residential placement, loss of independent living (McIntyre, et al., 2002), removal from classroom or school settings, and stress for teachers,

parents, and caregivers (Hodgetts, et al., 2013). The observers also state that little research has been conducted in order to compare how children with and without ASD at the group level would vary by subtype of aggression (Farmer, et al., 2014). The observers of this study hypothesized that aggression levels for participants with and without ASD would vary by subtype of aggression, meaning that aggressive behavior can manifest as a result of the correlates listed and that certain characteristics can result in different forms of aggression including physical or verbal aggression. One example included in the text was that students with higher cognitive abilities may exhibit more subtle forms of aggression, such as hostility or bullying, whereas students who have lower cognitive abilities may exhibit more physical forms of aggression (Farmer, et al., 2014).

The researchers made it clear that no prediction was made when considering which group of participants exhibited more aggression, as a result of little data or studies existing that can confidently support a hypothesis (Farmer, et al., 2014). The researchers did hypothesize that potential correlates including age, sex, IQ, cognitive ability, language skills, and adaptive behaviors can adversely or inversely affect aggressive behaviors, citing that participants who scored higher (or worse) in all or most of the correlates would exhibit more verbal or covert aggression, whereas participants who scored lower in all or most of the potential correlates exhibited more physical aggression (Farmer, et al., 2014).

Measurement

There is an independent and a dependent variable, or a variation between the class of objects, within this study. The independent variables is the setting and the method (C-SHARP and CBCL) in which to collect behavioral data, including the six multi-state site clinics where the participants are being observed. The dependent variable is the participants within the study including a group of ASD and non-ASD participants between the ages of 7-21. The researchers are not introducing any intervention or variables in which to affect the behavior of the participants, but the method in which to collect the data, C-SHARP and CBCL scores, remains

the same throughout the course of the study. The aim is only to observe behaviors of the participants in the clinical settings.

To be clear, the setting includes one of the six multi-state clinical sites where the participants will be observed. A participant includes a person with or without ASD between the ages 7-21, being observed in one of the six multi-state settings (Farmer, et al., 2014).

One method in which to measure the validity of the measurement tool is through the use of content-related evidence of validity. The instruments, the C-SHARP and the CBCL, are appropriate for the study, because it measures levels of aggression under specific subtypes, which also created ease in organizing the data using gender, IQ, language skills, adaptability, or an ASD label as possible functions of aggressive behavior. The researchers aimed to measure whether these characteristics impacted aggression levels throughout the study between the two comparison groups, if at all.

This information would be used to help the researchers find results for both of their goals in the study, as well as increase the data and research regarding aggression in a pool of participants in a clinical setting. The instrument was comprehensive (though not easily accessible to researchers trying to replicate the study) because the study aimed to find more than one goal and all hypotheses and research questions were answered, meaning the instruments served their purpose (Farmer, et al., 2014).

The C-SHARP and CBCL scores measured the levels and the frequency of aggressive behaviors exhibited and subtypes of aggression for the ASD and non-ASD (clinic-referred) group using a zero score (n), a mean score, a standard deviation, and a range. It was difficult to determine whether the instrumentation was reliable, because although every participant was provided with the same instrumentation to measure aggressiveness, it does not mention the effect size of the assessments used, nor is the assessment used more than once to determine whether the scores would produce the same results as the first trial. Results from these tables and assessments will be discussed in later sections (Farmer, et al., 2014).

Research Design

The purpose of research was to establish relationships between variables, the participants in the ASD group and the non-ASD group, and their correlation to aggression regarding certain characteristics (age, sex, IQ, etc.). In this study, the researchers use a quantitative research design. The researchers had established clear steps in which to administer the C-SHARP and the CBCL in order to measure aggression in the two comparison groups, while also measuring whether a specific set of characteristics has any correlation to aggression. The researchers are detached observers. In other words, they are simply observing and collecting data as the research goes on, rather than being immersed in particular situations that can further the research and affect the data, like that of a qualitative research design. The researchers sought to generalize information and results beyond the scope of the immediate situation and setting. They sought to discover how the results of this study could benefit future studies regarding participants with ASD and how the disability diagnosis may or may not correlate to aggression and what human characteristics can be the direct cause of aggression (Farmer, et al., 2014).

Some threats to external validity can be the approach that has been used in order to conduct the study, meaning that there was more than one goal in place that the researchers implemented in order to answer the research questions. This can muddle the context of the study, making it difficult to replicate this study with fidelity. It can also make the study difficult to clearly identify what the variables, the data, and the results are, because there isn't just one, but multiple. The assessments used for the study, the C-Sharp and the CBCL are also not immediately accessible, making it difficult to visualize how measurements took place to input data and conduct the research (Farmer, et al., 2014).

Sampling

The sample was made up of two different comparison groups, including 414 participants with ASD and 243 clinic-referred participants without ASD between the ages of 1-21, but neither group was selected for aggressive behavior (Farmer, et al., 2014). One group was made up of

participants diagnosed with ASD ($n = 414$: 69% with autistic disorder, 24% with pervasive developmental disorder not otherwise specified (PDD-NOS) and 7% diagnosed with Asperger's disorder) (Farmer, et al., 2014). Some comorbid disorders that are associated with participants in this group include Attention Deficit Hyperactivity Disorder (ADHD) ($n = 36$, 9%), speech disorders ($n = 51$, 12%), Oppositional Defiant Disorder (ODD) ($n = 9$, 2%), anxiety disorder ($n = 20$, 5%), mood disorder ($n = 13$, 3%), learning disorder ($n = 2$, 0%), speech disorder ($n = 51$, 12%), Tourettes or Tic disorder ($n = 3$, 1%), and Non-ASD developmental delay ($n = 37$, 7%) (Farmer, et al., 2014).

A comparison group of children observed in a behavioral clinic who have been ruled out of having an ASD diagnosis include 243 participants, including 12% who have received no diagnosis ($n = 28$). In the comparison clinic-referred group, some comorbid disorders that are associated with the participants include ADHD ($n = 85$, 35%), speech disorders ($n = 65$, 27%), Oppositional Defiant Disorder ($n = 40$, 16%), anxiety disorder ($n = 46$, 19%), mood disorder ($n = 9$, 4%), learning disorder ($n = 7$, 3%), speech disorder ($n = 65$, 27%), Tourettes or Tic disorder ($n = 3$, 1%), and Non-ASD developmental delay ($n = 29$, 12%) (Farmer, et al., 2014). The population represents both the participants in the ASD group and the non-ASD (clinic-referred) participants accurately and uses percentages and exact numbers to describe how many participants fall under the groups for ASD or non-ASD participants and what characteristic set them apart (Farmer, et al., 2014).

The type of sampling used for the study is considered purposeful sampling, or a sample of participants that were selected based on their ability to provide data that is needed to answer the research question. The research question included a group of participants with ASD and participants where the possibility of being diagnosed with ASD has been ruled out. This sample was selected for the purpose of not only comparing and categorizing subtypes of aggression, but to also measure whether sex, IQ, language skills, and adaptive skills determine aggressive expression in the participants (Farmer, et al., 2014). The sampling served the purpose and the function of the research. The comparison groups were utilized to measure and observe behaviors without any intervention or interruptions throughout the study. The groups provided accurate data to reinforce the hypothesis or add knowledge to the research in the area of aggression in

participants with ASD or other medical diagnoses associated with aggression (Farmer, et al., 2014).

The study implies and directly states that there are threats to external validity, including comorbid disorders, other diagnoses, and medications that may influence the behavior or the participants. If a participant is given medications that reduce aggression including mood medications or antipsychotic medications, certain participants may exhibit less or more aggression than participants who do not receive the medications. Also, many of the participants have other diagnoses or comorbid disorders that increase aggression or problem behaviors, including mood disorders, anxiety disorders, and Oppositional Defiant Disorder. Furthermore, the researchers excluded participants with ODD and anxiety disorders from the study entirely after concluding that the correlation to aggressive behaviors is an effect of the disability or diagnosis (Farmer, et al., 2014).

Data Collection/Data Analysis

The selection is of a quantitative approach in order to factor in scores from a series of variables, including sample characteristics (age, sex, IQ, adaptive behavior, ASD diagnosis, Vineland-II Communication scores, other diagnoses, and medications), C-SHARP, Children's Scale for Hostility and Aggression: Reactive/Proactive assessments, (measuring verbal aggression, bullying, covert aggression, hostility, and physical aggression), CBCL or Child Behavior Checklist Aggressive Behavior assessment scores, and an ASD diagnosis or lack thereof (Farmer, et al., 2014).

A disadvantage in the way the participant sample characteristic data was collected is that it heavily influenced the results in a biased manner. When looking at the participants in the Non-ASD (clinic-referred) participant group, the number of participants with comorbid disorders or other diagnoses was much higher than that of the group of participants with ASD. In the group of participants with ASD, only 0%-12% of the participants had other diagnoses that can be linked to aggression, whereas the participants in the non-ASD (clinic-referred) group had 0%-35%

participants with other diagnoses and comorbid disorders that can be associated with aggression. It must also be noted that of the two groups, only the participants in the non-ASD (clinic-referred) group had a population of participants with no diagnoses at all. It is possible that participants of this group may exhibit more or less aggression as a result of a lack of behavioral diagnosis. It is also important to note that the number of participants with ASD receiving medication for their behavior or their other diagnoses was higher than number of participants in the non-ASD (clinic-referred) group; however, the percentage of participants receiving medication for their other diagnoses is higher for the participants in the non-ASD (clinic-referred) group, because the number of participants in that group is smaller. The participants of the non-ASD (clinic-referred) group has 243 participants, whereas the participants of the ASD group has 414 participants (Farmer, et al., 2014).

The data was analyzed using four tables and a graph. In the first table, sample characteristics, including age, sex, IQ, adaptive behavior, ASD diagnosis, other diagnoses, and medications. In this table, there are two sections labelled ASD and non-ASD (clinic-referred) group, which describes the exact number of participants who had subtypes under any of these characteristics, including the percentages of participants in each group that fall under these subtypes. There is a second table with the C-SHARP and CBCL scores for each group, providing a zero score, a mean/ standard deviation, and a range score for both the group of ASD participants and the non-ASD participants. The scores ranged from high to low instances of aggression based on the C-SHARP and the CBCL aggression subtypes (verbal aggression, bullying, covert aggression, hostility, and physical aggression). The third table included diagnosis and other correlates of behavior related to aggression, including how sex, IQ, adaptive behavior, communication, and age correlated to the multiple subtypes of aggression (verbal aggression, bullying, covert aggression, hostility, and physical aggression). The fourth table included data about whether participants of the ASD and non-ASD group behaved proactively, neutrally, and reactively regarding the five subtypes of aggression and how many of the students reacted this way on the provocation scale. The final table simply shows a visual representation in a line graph of the C-SHARP scores for verbal aggression, bullying, hostility, and physical aggression. This graph

demonstrates the interactions between the participants in the ASD group and the non-ASD group (Farmer, et al., 2014).

Results and Implications of Findings

According to the C-SHARP scoring in all of the subscales, including verbal aggression, bullying, covert aggression, hostility, and physical aggression, the non-ASD (clinically referred) group received significantly worse scores than the participants of the ASD group. In verbal aggression, the non-ASD group scored a standard deviation score of 7.05, whereas the ASD groups scored a 6.14. When it came to the frequency of bullying, the ASD group scored 6.42, whereas the non-ASD group received a standard deviation score of 8.42. In the subscale of covert aggression, the non-ASD group received a standard deviation score of 7.05, while the ASD participants scored a 6.08. For acts of hostility throughout the study, the participants with ASD had a standard deviation score of 6.98, while the non-ASD group scored 7.5. In the final subscale, participants in the ASD group scored 2.7 when committing acts of aggression and the non-ASD group received a 4.02 standard deviation score (Farmer, et al., 2014).

The non-ASD group also scored worse in the CBCL Aggressive Behavior Subscale, with researchers citing that the participants of the comparison group were much more likely to score higher than the participants of the ASD group, with a standard deviation score of 12.38 in comparison to a standard deviation score of 10.67 in the ASD group. Based on the data, the rank order of scores remained the same for both of the groups. The highest score as far as frequency of occurrences was in the subscale of hostility. Covert aggression, bullying, verbal aggression, and physical aggression followed afterward. The researchers stated that a portion of both of the ASD and the non-ASD (clinic-referred) participants had a diagnosis of ODD/CD, which is associated with aggressive behavior, resulting in the exclusion of the participants with this medical diagnosis. It was also suggested that participants with disruptive behavior disorders are responsible for behaviors associated with hostility and physical aggression, but were also excluded from the study (Farmer, et al., 2014).

As part of the C-SHARP assessment, an analysis was conducted in order to measure provocation levels (reactive, neutral, and proactive), which varied between the two comparative groups.

Researchers discovered that the groups showed differences in three subtypes including verbal aggression, hostility, and bullying. In the Provocation subscales, participants with ASD were more likely to be rated as neutral in the area of verbal aggression, whereas the comparison group was rated as more likely to be proactive. The comparison group was also proactive in the area of bullying and hostility, while the group with ASD was rated as more likely to be reactive in these areas. Although sample characteristics such as sex were unrelated to all of the listed variables, age and IQ were positively or weakly associated with aggression. Participants that were younger and/or had a lower IQ were rated low scores in the areas of verbal aggression and covert aggression, but they were given much higher scores for exhibiting aggression in the areas of bullying, physical aggression, and CBCL Aggression assessment scores (Farmer, et al., 2014).

I believe the findings are consistent with the research questions that were posted. The researchers aimed to measure levels of aggression in participants with ASD and a comparison group of participants where ASD was ruled out but was initially referred for assessment of this label. When observing the data, I noticed that the participants in the non-ASD (clinic-referred) group performed worse than the participants in the ASD group. The researchers also aimed to observe whether certain characteristics of the participants in both groups, such as age, sex, IQ, adaptive behavior, and language skills, impact whether the participants in both the ASD and the non-ASD (clinic-referred) group exhibit aggression and if these characteristics themselves have any correlation to aggressive behaviors (Farmer, et al., 2014).

When looking at the sample characteristics, I observed that there are a higher number of participants in the non-ASD group who suffered from comorbid disorders and other diagnoses that are associated with aggression, including, but not limited to, ODD or CD, ADHD, and mood disorder. Participants in the ASD group received more medications that reduced levels of aggression as well, including medications that affected moods, antipsychotics, and behavioral medications. This may have affected the data because it showed that the non-ASD group scored worse than the non-ASD participants as far as exhibiting all the subtypes of aggression. It can be assumed that these factors may have impacted the behavior of the participants (Farmer, et al., 2014).

The researchers cited that several limitations existed, including the lack of consistent instrumentation to measure aggression and missing data. Some participants were too impaired to complete an IQ test, meaning that they did not receive a standardized score on the test. Also, some sites created differences in scoring, meaning some sites may have had all the participants score higher in aggression in some or all of the subtypes (Farmer, et al., 2014).

The implications of this study are that the data presented can contribute to a small group of studies and literature that may confirm the existence of aggression in participants with ASD. It was also among the first studies to identify behaviors as proactive or reactive in literature. It was stated that the findings of the research remained consistent with existing literature regarding the research topic. The study ultimately found that aggression does not stem from ASD, but as a result of increased incidences of risk factors associated to the population of participants with ASD (Farmer, et al., 2014).

The significance of the findings are important regarding, especially when considering pursuing education with students diagnosed with ASD or working with students who have other medical diagnoses associated with aggression. This can not only diminish the predetermined notion that aggression is associated with an ASD diagnosis, but it can also increase awareness of what characteristics (sex, IQ, adaptive behavior, lingual skills, and so forth) are interrelated with aggression and what subtypes are more prominent depending on the characteristics listed. Personally, the correlation between these characteristics and aggression was the most important finding, because it is important to distinguish which types of aggression a student may display based on them (Farmer, et al., 2014).

Student's Contribution

There are various ways in which a study can be enhanced in order to maximize its impact in the realm of action research. One method that can be used in order to improve this study would include more specific criteria when selecting sampling groups. The broad range in age may have impacted the study unintentionally because multiple varying assessments had to be used to

collect data for each specific age group. To improve the study the observers should narrow the age range rather than including participants between the ages of 7-21. Such a large sample of participants can be affected for various reasons. Young participants would be administered different behavioral and lingual assessments than older participants. They would also be held to different standards when considering language development, adaptive behavior, and cognitive abilities as a result of their age. Participants that are 21 years of age would have had more time to receive intervention and services for aggressive behaviors than a participant that is 7 years old, which can result in data that varies from one age group to another, especially considering that it is implied that younger participants of other studies had higher rates of physical aggression than older participants (Farmer, et al., 2014)..

When it comes to gender, each group had more male participants than female participants. As part of the study, the observers wanted to determine whether sex correlated to aggression, implying that participants of other studies who were male were known to be more physically aggressive; however there were very few female participants in both groups to be able to compare this hypothesis. In the ASD group, there were 347 male participants out of 414 participants (84%) and in the non-ASD (clinic- referred) group there were 167 male participants out of 243 participants in total (69%) (Farmer, et al., 2014). Despite the results stating that sex has no correlation to aggression, it would have been more beneficial if there were a more even number of female participants in order to more accurately come to that conclusion (Farmer, et al., 2014).

As part of the study, the researchers had implemented two goals that they sought to find answers for. Initially, there was a primary goal that stated that the observers wanted to characterize different subtypes of aggressive behaviors in a large multisite sample, including participants that have been diagnosed with ASD and a comparison group for which an ASD diagnosis has been ruled out, but has been referred for a behavioral/psychological evaluation involving an ASD diagnosis (Farmer, et al., 2014). It is implied by this goal that the study aims to find out whether aggression is more prominent in participants with ASD or non-ASD (clinic- referred) participants, and what subtypes of aggressive behaviors exist in both groups as a result of a diagnosis of ASD or a lack thereof, including verbal aggression, bullying, covert aggression,

hostility, and physical aggression. The secondary goal aimed to address whether certain correlates, such as age, sex, cognitive ability, language skills, and adaptive behavior would manifest aggressive behavior in the participants of the study in the ASD group (Farmer, et al., 2014). It is also mentioned that the researchers aimed to find out whether the potential correlates (age, sex, IQ, adaptive behavior, and language skills) resulted in more physical aggression or more verbal aggression from the participants involved (e.g. participants with a higher IQ would be more verbally aggressive, whereas participants with a lower IQ would exhibit more physical aggression) (Farmer, et al., 2014). Because there were two goals and a variety of other lesser goals aimed at the study, it was difficult to analyze the results and the data coherently. It would be beneficial for the researcher to select only one goal and be as clear as possible. The study could either address whether potential correlates (age, sex, IQ, adaptive behavior, and language skills) in participants with ASD resulted in aggression and defined what subtypes were most prominent as a result of the correlates, or the study could have been aimed to determine which group exhibited more aggression, the group of ASD participants or non-ASD (clinic-referred) participants.

Data were collected across multiple six different states in the United States, including three sites for participants with an ASD label located in Columbus, Ohio, Seattle, Washington, and Dayton, Ohio. The sites that included the non-ASD (clinic-referred) participants were located in Columbia, Missouri, Salt Lake City, Utah, and Chicago, Illinois. This must be considered when thinking about laws, policies, and practices that involve these participants and how they vary from state to state. One state may not have the same resources or funding as another state when considering the provisions of care or interventions for aggressive behaviors (Farmer, et al., 2014).

A part of the study that was beneficial to finding the results was a sample characteristics table that provided data for both comparison groups, including age, sex, IQ, adaptive behaviors, assessment data, ASD and other diagnoses, and medications. Although no clear limitations were cited in the study, the table showed there are a few limitations in how data can be collected. As previously mentioned, it displayed that there were a larger number of participants with ASD than without an ASD label. It also made it clear that participants with an ASD label were less likely to

receive medication than the non-ASD (clinic-referred) participants percentage-wise, which can impact the study (Farmer, et al., 2014).

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