

Commentary

A Commentary on Autism and Moral Development: What Can We Learn from the Sandy Hook School Shooting?

Michelle Hartley-McAndrew, MD, FAAP;* Donald Crawford, PhD*

State University of New York at Buffalo, Buffalo, NY
Women and Children's Hospital of Buffalo, Buffalo, NY
Children's Guild Foundation Autism Spectrum Disorder Center, Buffalo, NY

The Sandy Hook Elementary School shooting has left many people wondering whether the shooter's diagnosis along the autism spectrum is what caused the unthinkable crime that transpired. This commentary explores moral development in both the typical and autism populations. It reviews previous studies done on the autism population regarding their understanding of right and wrong actions even when they lack theory of mind. A lack of empathy is often attributed to individuals with autism spectrum disorders, but many studies show that while they may fail to articulate another person's point of view, they are not completely unresponsive to the distress or moral dilemmas of others. This commentary aims to dispel any misunderstanding that autism spectrum disorder equals lack of empathy, which leads to violence. It also hopes to alert the medical community treating those with autism spectrum disorders that the diagnosis of the patient may not end at autism alone. Thus other personality disorders may be present requiring intensive treatment and referral.

[N A J Med Sci. 2013;6(3):163-166. DOI: 10.7156/najms.2013.0603163]

Key Words: Sandy Hook, shooting, Autism, Asperger disorder, theory of mind, moral development

The horrific shooting at Sandy Hook Elementary has triggered an outpouring of grief and a lot of questions. We stood aghast as we witnessed the unfolding of events that took place on December 14, 2012 in Newtown, Connecticut. Adam Lanza fatally shot first his mother at home, and then went on to shoot twenty children and six adult staff members at the school. He subsequently committed suicide by a fatal shot to his head.¹ Adam Lanza was known to be intelligent, but uncomfortable socializing. He was believed to have a personality disorder and was reportedly diagnosed with Asperger Disorder² but as of this writing, no official diagnoses have been made available. Speculation has surfaced that Lanza had been under psychiatric care at some time in his life, but no official record is available or any record of any medications he may have been prescribed.

The suggestion that Lanza had Asperger Disorder has raised a lot of concern of among parents of young people with a diagnosis along the autism spectrum. The parents of 1 in 88 children felt the sting of the idea that a diagnosis on the autism spectrum could result in this heinous act. Could their child be capable of such a crime? Will there be social implications and stigma that might be attached to their child? Should other children be afraid of their child? If the diagnosis of that child is only autism spectrum disorder, in

short the answer is: No. However, the medical community must be alert to the fact that more than an autism diagnosis may be at hand. The responsibility of the practitioner does not end once a diagnosis on the autism spectrum is made.

Typically children on the autism spectrum have been described as having social impairment and a lack of empathy. At closer look we shall see that children with autism are not so unresponsive to the socioaffective cues of those around them.³ In addition, there are other conditions where empathy does not develop properly. Sociopathy or psychopathy are personality disorders in which the criteria include lack of remorse or guilt, callousness, lack of empathy and failure to accept responsibility for one's own actions.

The word moral which comes from the latin: *moralis* means, of or relating principles of right and wrong behavior. In order to act in a moral fashion, it is necessary to not only know the difference between right and wrong, but also conform to the standard of right behavior. It has been theorized how moral development occurs. Kohlberg describes typical stages of moral development that follow an invariant sequential advancement through 6 stages. The first 2 stages are Pre-Conventional. Initially, individual obedience to authority is motivated by avoidance of punishment. In the second stage, self-interest drives behavior as in "what's in it for me" or "I'll scratch your back if you scratch mine." Stages 3 and 4 are Conventional. Morality of actions is now judged by how well the actions fit society's views and expectations. The impact of one's actions on a person's relationships and maintenance of social roles becomes

Received 05/24/2012; Revised 07/09/2013; Accepted 07/12/2013

*Corresponding Author: The State University of New York at Buffalo, The Children's Guild Foundation Autism Spectrum Disorder Center, Women and Children's Hospital of Buffalo, 219 Bryant Street, Buffalo NY 14222. (Email: hartley4@buffalo.edu)

paramount. In stage 4 there is a shift beyond individual approval to the recognition that laws and conventions are important to the functioning of society. The final 2 stages are Post-Conventional. These are principled stages where one's actions are driven by what advances life, liberty, and justice. There is a realization that some laws may be unjust and that laws should be revised in the direction of greater truth and universality.⁴

To further build on the theory of moral development, the Social Domain Theory is one that further expounds on the way in which early moral behavior and development occurs. This theory operates on the premise that children require interaction and socialization in the development of moral behavior. Children require social experience with their peers, parents, teachers and siblings in order to form their social knowledge of morality.⁵ Their experiences of conflict and resolution of conflict often require an adult to encourage the child to take on the other child's perspective and discuss individual rights. Parents are often critically important to moral development due to the affective relationship and extensive history with their children.

In this way as typical moral development occurs, it has been localized to certain parts of the brain as studied in functional MRI (fMRI) techniques. As we look closer at the neural connections that result in moral behavior we know that it is from the integration and interconnection of multiple brain regions that results in moral actions. Certain brain regions have been attributed as necessary to moral behavior that has been evidenced from early accounts of frontal lobe damage. Phineas Gage, one of neuroscience's most famous patients, was an American railroad construction foreman who survived an accident in which a large iron rod was driven through and destroyed much of his frontal lobe. Initially it was thought that it was primarily his left frontal lobe, however modern neuroscience suggests it was both left and right prefrontal cortices. While his intelligence, memory and motor skills remained intact, his respect for social conventions was gone. He was no longer responsible, marked by his poor judgment and he was irreverent and profane.⁶ It was from here that it was discovered that patients with such frontal lobe damage have emotional deficits and have impaired autonomic response when faced with difficult decision-making. This makes it more difficult to, as Greene remarks, "feel their way through life, which suggests that normal decision making is more emotional and less reasoned than many believed."⁷ We have learned that ventromedial prefrontal cortex lesions result in impaired moral reasoning and behavior and lesions of the dorsolateral prefrontal cortex typically of the right hemisphere also leads to changes in moral behavior. The anterior temporal lobes are also important in moral behavior along with the limbic and paralimbic structures.⁸

Specific brain areas implicated to be affected in the socialization of children with autism include the orbitofrontal cortex, the anterior cingulate cortex, the fusiform gyrus, the superior temporal sulcus, amygdala, inferior frontal gyrus and the posterior parietal cortex.^{8,9} Differences in activation during theory of mind tasks in the autism population include

decreased activation of frontal cortical components, decreased amygdala and increased superior temporal gyrus activation.⁹ Autism has been associated with a deficit in theory of mind tasks, which is the ability to understand the mental states of others including their beliefs, thoughts and desires.¹⁰ For example, a child with autism might see a bird or a rainbow in the sky and would think that the person next to them also sees it, because they themselves see it or, if they are not feeling particularly sad, would have trouble understanding why another person would be feeling sad. These specific brain regions described are affected in those with autism and overlap with those important in socialization. While empathy is crucial to the development of moral judgment, we know that many with autism display moral concern, feeling and a sense of duty or conscience.¹¹

In one study by Blair the ability of children with autism to judge moral vs "conventional" transgressions was compared to typically developing children.³ When discussing moral and conventional transgressions, moral transgressions are defined by their consequences for the rights and welfare of others such as harming another person while conventional transgressions are defined by their consequences for social order such as wearing pajamas to school. Children were first given two theories of mind or false belief tasks. The Sally-Anne task was used in which Sally places an object in one area and walks away. While she has walked away, Anne has moved the object to a different hidden place. The question follows, where will Sally look for the object? A child with autism will state that Sally will look where Anne has placed it, having difficulty understanding Sally's perspective in that instance, that Sally was not present and did not see the object get moved. Once their level of theory of mind was determined, the subjects were exposed to four moral stories: a child hitting another child; a child pulling the hair of another child and the victim crying; a child smashing a piano; and a child breaking the swing in the playground. Four conventional stories were: a boy wearing a skirt; two children talking in class; a child walking out of the classroom without permission; and a child who stops paying attention to the lesson and turns their back on the teacher. What was found was that even though children with autism may perform poorly on theory of mind tasks, they showed that children with autism made a distinction between moral and conventional transgressions and were sensitive to the distress of others. The subjects were tested by exposing them to certain stories where a rule was broken that was either moral or conventional in nature. They were then asked whether it was a permissible transgression and how serious an act it was. The subjects were then exposed to the same story, but it was prefaced by the teacher telling them it was "ok" to engage in that transgression. For example, a moral story involved a child hitting another child. Then, each group was asked if it was "ok" that the story character did the transgression, secondly was this a "bad" transgression and thirdly if it was "ok" to do the transgression if the teacher said the child could hit the other child. A conventional story involved a boy wearing a skirt. The same three questions were then asked including whether this transgression was "ok" if the teacher said the boy could wear a skirt. Children

with autism compared to controls with mild learning disability and typically developing children were equally able to make moral and conventional distinctions for all the questions presented to them. This study found that children with autism were not only able to make a distinction between moral and conventional transgressions in their judgments, but their level of ability on theory of mind tasks had no bearing on their ability to make this distinction. Importantly, this indicates that according to Kohlberg's moral development theory that children with autism demonstrate at least a level 3 or 4 because they thought that it was still wrong to hit a child even if the teacher said it was "ok." Even the ones who were the most impaired in their ability on false belief or theory of mind tasks were recognizing this distinction.³

In a separate study, Blair investigates the autonomic and psychophysiological responsiveness of children with autism to facial expressions of sadness by examining their skin conductance responses to visualizing this expression.¹² Each of the subjects was shown a series of slides, which included distress cues, threatening images and neutral objects. They found that children with autism as compared to typically developing children and children with moderate learning disability showed significantly greater skin conductance response to distress cues than to neutral stimuli, which implies that children with autism are responsive to the sadness of others. There were no significant group differences in the appropriate responsiveness to distress cues. While it is difficult to state exactly what the emotion was that the children with autism were feeling, there were subjects who covered their eyes in response to the distress cues stating that they did not like the picture and did not want to look at it. This confirms that children with autism are capable of experiencing some type of emotion in response to the distress of others. They are however, unable to cognitively and verbally represent the internal state of another. In contrast to those with sociopathy or psychopathy who are able to cognitively and verbally represent the internal state of others, they lack the autonomic and psychophysiological response to the distress of others.^{12,13}

In 2005 a study by Grant et al. compared children with autism spectrum disorders, moderate learning difficulties and typically developing children in their ability to reason culpability in a number of scenarios in which there was accidental or deliberate harm to a person or property.¹⁴ The children listened to pairs of stories being read which were accompanied by pictures illustrating key events in the story. In some story pairs, the motive of the protagonists' behavior differed, but the outcomes of the behavior were identical. In other story pairs, the motive of the protagonists' behavior was the same, but the outcome in each was different and in a third set of pairs, both the outcome and the motive of the behavior differed. After they had listened to a pair of stories, they were asked which of the protagonists in the stories were naughtier and why. Aspects investigated included whether children with autism were able to recognize motive as a factor for judging culpability and whether they were able to understand whether that culpability changed based on a positive or negative outcome. The results of the study were

unexpected. Children with autism were as likely as those with moderate learning disability and those who were typically developing to use motive for the basis of culpability judgments and did so even when the outcome of the behavior was negative; for example, accidental injury or property damage. Children with autism were also just as likely as children in the other two groups to judge damage to people as more culpable than damage to property. Again, because they were aware of motive and not just outcome, children with autism demonstrate a more developed ability for moral reasoning, at around Kohlberg's level 3 or 4.

A further study was conducted to investigate whether this autonomic response was a type of "knee jerk" response to visualizing a distressed individual without true understanding of the moral implications. Leslie explained a "knee jerk" response to mean an automatic reaction to distress in the absence of moral reasoning.¹⁵ In this study, subjects were exposed to scenarios of a "cry baby" in which the character wanted to take not only their turn, but another person's as well and when this failed to occur exhibited some type of distress in the form of crying. When compared to typically developing children, children with autism responded just as correctly to cry baby stories indicating that their judgments can distinguish between the distress of a "cry baby" and that of a victim. This suggests that the reaction a child with autism has to distress cues in moral transgressions is not "knee jerk" but does involve moral reasoning. Of note, the children with autism continued to do poorly on theory of mind or false belief tasks as would be expected. While their ability to understand "theory of mind" may be affected, it would suggest that their moral reasoning and judgment is not. The two therefore would function independently of one another.¹⁵

In a more recent study at MIT/Harvard, by Moran et al. adults with autism spectrum disorders were compared to neurotypical adults in their ability to morally judge intentional vs. accidental harms.¹⁶ They discuss that moral judgment is a complex social cognitive task that relies on theory of mind. Unlike the previous studies with children, adults with autism spectrum disorders were able to make accurate theory of mind judgments about the actions of another person based on simple false belief tasks. They found that adults with autism spectrum disorder and neurotypical adults demonstrated nearly identical ability to understand simple false beliefs in other people. However, when assessing intention vs. outcome scenarios, where intention was either negative (intentional harm) or neutral (attempted harm) and outcome was either neutral (no harm) or negative (accidental harm) they found that individuals with autism spectrum disorder were less willing to exculpate the protagonists for accidental harms on the basis of innocent intentions than their neurotypical counterparts. This study uses this to conclude that those with autism spectrum disorders have impaired moral judgment. The authors did not discuss the previously mentioned study by Grant, nor were the actual scenarios (personal injury vs. property damage) given. What they failed to discuss is that compared to neurotypical adults, other ratings did not differ between

groups. In other words, moral permissibility was high when intention and outcome were both neutral and conversely moral permissibility was low when intention was negative and outcome was negative. It is especially noteworthy that moral permissibility was also low between both groups when intention was negative and outcome was neutral. This shows that individuals with autism do not merely find low moral permissibility based on outcome, but also consider intentions. Higher moral reasoning is required to understand that although there may be no immediate consequence, an intentional harm is not morally permissible and knowledge of this is what individuals with autism spectrum disorders demonstrated here.

A key take home point is that while children with autism may experience difficulty with theory of mind, or explaining and conceptualizing another person's point of view, they do feel the distress of others and are able to make moral judgments between right and wrong. As evidenced in the studies above they do have the capacity to display moral concern and a sense of conscience. We also must not forget that individuals with an autism spectrum disorder may have a concurrent psychiatric disorder just as those in the general population might suffer from a mental health illness. Accurate and reliable diagnosis of a comorbid psychiatric disorder is imperative in order that those might receive proper treatment. Clinicians who are not familiar with autism spectrum disorders may think that many of the behaviors are secondary to the autism features themselves, however this is not the case. It is important to be knowledgeable about the features of autism such that one can understand where the behaviors of autism end and the features of another mental health disorder begin. Rates of psychiatric comorbidity are often unrecognized clinically and can be challenging to diagnose because it may be difficult for individuals with autism to describe their mental states and experiences. One study of children with autism confirmed the rates of a co-occurring psychiatric disorder in 72% with specific phobias, obsessive-compulsive disorder and attention deficit hyperactivity disorder (ADHD) being the most common.¹⁷ Only approximately 7% of children with autism in this study met the DSM-IV criteria for oppositional defiant disorder (ODD). "Many children with autism do not understand the concepts of spitefulness, vindictiveness and intentionality including deliberately annoying others and blaming others for one's behavior and mistakes."¹⁷ None of the children in the study met criteria for schizophrenia or panic disorder consistent with other studies estimating the prevalence of these disorders in autism to be low.¹⁸ However they can occur. As shown in the studies discussed, individuals with an autism spectrum disorder demonstrate a more sophisticated and advanced moral development despite their difficulty with

theory of mind tasks. Along that same vein in exploring moral development, Adam Lanza displayed, as with others who engage in criminal behavior, very poor moral development as his behavior was not modified by even the pre-conventional level fear of authority (Kohlberg's level 1). As clinicians the onus is upon us to truly understand autism spectrum disorders and diagnose accurately propelling us to refer when more than an autism diagnosis may be present. We must be careful that we do not simply assign a lack of empathy as solely a feature of autism and not investigate further if more troubling behaviors arise.

CONFLICT OF INTEREST

None.

REFERENCES

1. Barron J. Children were all shot multiple times with a semiautomatic, officials say. (<http://www.nytimes.com/2012/12/16/nyregion/gunman-kills-20-children-at-school-in-connecticut-28-dead-in-all.html>). The New York Times. 2012. Accessed on 2/ 22, 2013.
2. Rochman B. Troubling legacy of Sandy Hook may be backlash against kids with autism". <http://www.cnn.com/2012/12/19/health/shooting-autism/index.html>). Accessed on 2/ 22/2013.
3. Blair RJ. Brief report: morality in the autistic child. *J Autism Dev Disord*. 1996;26(5):571-579.
4. Crain WC. Kohlberg's Stages of Moral Development in Theories of Development: Concepts and Applications New Jersey: Prentice-Hall; 1985: 118-136.
5. Smetana JG. The Role of Parents in Moral Development: A Social Domain Analysis. *J Moral Educ*. 1999;28(3):311-321.
6. Damasio H, Grabowski T, Frank R, Galaburda AM, Damasio AR. The return of Phineas Gage: Clues about the brain from the skull of a famous patient. *Science*. 1994;264(5162):1102-1105.
7. Greene J, Haidt J. How (and where) does moral judgment work? *Trends Cogn Sci*. 2002; 6(12):517-523.
8. Moll J, Zahn R, De Oliveira-Souza R, Krueger F, Grafman J. The neural basis of human moral cognition. *Ann N Y Acad Sci*. 2008;1124:161-180.
9. Hartley-McAndrew M, Weinstock A. A review of the neurobiological basis of autism. *N A J Med Sci*. 2011;4(3):107-111.
10. Baron-Cohen S, Leslie AM, Frith U. Does the Autistic Child have a "Theory of Mind"? *Cognition*. 1985;21(1):37-46.
11. Kennett J. Autism, Empathy and Moral Agency. *Philos Q*. 2002; 52(208):340-357.
12. Blair RJR. Psychophysiological responsiveness to the distress of others in children with autism. *Pers Individ Dif*. 1999;26(3):447-485.
13. Blair RJR. Responsiveness to distress cues in the child with psychopathic tendencies. *Pers Individ Dif*. 1999;27(1):135-145.
14. Grant CM, Boucher J, Riggs KJ, Grayson A. Moral understanding in children with autism. *Autism*. 2005;9(3):317-331.
15. Leslie AM, Mallon R, DiCorcia JA. Transgressors, victims, and cry babies: Is basic moral judgment spared in autism? *Social Neuroscience*. 2006;1(3-4):270-283.
16. Moran JM, Young LL, Saxe R, et al. Impaired theory of mind for moral judgment in high-functioning autism. *Proc Natl Acad Sci USA*. 2011;108(7):2688-2692.
17. Layfer OT. Comorbid psychiatric disorders in children with autism: Interview development and rates of disorders. *J Autism Dev Disord*. 2006;36(7):849-861.
18. Volkmar FR, Cohen DJ. Comorbid association of autism and schizophrenia. *Am J Psychiatry*. 1991;148(12):1705-1707.