

Are Initiation of Joint Attention and Response to Joint Attention on the Same Developmental Trajectory?

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ABSTRACT

Two studies investigated the relationship between initiation of joint attention and response to joint attention in children with Autistic Disorder. First crosstabulations were used to determine if joint attention behaviours covaried in a sample of 29 children with autism, aged 2 years 4 months to 6 years 4 months ($M = 3$ years 8 months, $SD = 11.3$ months). Initiation of, and response to joint attention were not significantly related. A number of children engaged in either initiation of joint attention ($N = 5$) or response to joint attention ($N = 6$), but not both. This indicates that children with autism may demonstrate differing patterns of development of joint attention behaviours. Subsequently a second study was conducted to investigate the strength of the relationship between initiation of joint attention and response to joint attention. Participants were 30 children with a diagnosis of Autistic Disorder, aged from 1 year 7 months to 6 years 8 months ($M = 3$ years 11.5 months, $SD = 14.58$ months). Although significant, the correlation between the two types of joint attention behaviours ($r = .47$) was not found to be significantly stronger than the correlation between joint attention and stereotypical behaviours ($r = .18$), a characteristic of autism not thought to occur on the same developmental trajectory as either type of joint attention behaviour. This indicates that the relationship between initiation of joint attention and response to joint attention may be due to their coexistence as symptoms of autism, rather than their being on the same developmental trajectory. Implications for theories of development of joint attention in children with autism are discussed.

INTRODUCTION

Joint attention refers to a triadic interaction between oneself, another person, and an object or event purely to share interest (Shertz & Odom, 2004). There are two types of joint attention behaviours, those which act to initiate a joint attention interaction (e.g., pointing), and those which occur in response to the joint attention bid of another (e.g., following a point; Charman, 1998). While development of initiation of joint attention closely follows development of response to joint attention in typically developing children (Schertz & Odom, 2004), such developmental proximity has not been documented in children with autism. It has been demonstrated that while children with autism may develop the ability to respond to joint attention at around 5 years of age, they are unlikely to develop the ability to initiate joint attention unless intervention occurs to target this behaviour (Charman, 1998). Abilities to engage in the types of joint attention have also been linked to subsequent development in different developmental domains. The ability to initiate joint attention appears to be closely linked to social development, while the ability to respond to joint attention appears to be closely linked to language/communicative development (Delincolias & Young, 2006). Thus it appears the types of joint attention may not occur on the same developmental trajectory. Our aim was to investigate the relationships between the abilities to initiate joint attention and to respond to the joint attention of another. First we explored the pattern of joint attention development in a sample of children with autism. Assuming the types of joint attention are on the same developmental trajectory, we expected abilities to respond to and initiate joint attention to covary. Given response to joint attention typically develops prior to initiation of joint attention, we did not expect children to initiate joint attention unless they also responded to joint attention. Secondly, we investigated the strength of the relationship between the abilities to initiate joint attention and respond to joint attention to determine if they are on the same developmental trajectory. We assumed that all symptoms of autism will covary to some degree in children with autism, due to their having to exhibit similar behaviours to meet diagnostic criteria. Comparing the relationship between initiation of joint attention and response to joint attention to no relationship may not be rigorous enough to determine if their relationship exists over and above their coexistence as symptoms of autism. Hence the relationship between initiation of joint attention and response to joint attention were compared to the relationships between joint attention behaviours and stereotypical behaviour, selected to reflect coexistence as symptoms of autism as stereotypical behaviour is not thought to occur on the same developmental trajectory as either type of joint attention behaviour yet is a symptom observed in children with autism.

STUDY 1

Method

Participants (n = 29)

*All participants had a diagnosis of Autistic Disorder
*Ages ranged from 2 years 4 months to 6 years 4 months ($M = 3$ years, 8 months, $SD = 11.3$ months)

Procedure

*Assessments were carried out at the Flinders Early Intervention House
*Initiation of joint attention (IJA) was assessed by asking the parents whether the child ever pointed to indicate interest. The parent's answer was recorded. If the parent answered "yes" they were asked to provide examples of such behaviour to ensure the question was understood.
*Response to the joint attention of others (RJA) was assessed by gaining the child's attention and pointing at an object in the room. The experimenter then recorded whether the child followed the point or not.

Results

*Crosstabulations and the Corrected Pearson Chi-Square Statistic indicated that pointing to indicate interest (IJA) and following a point (RJA) did not covary in this sample $Chi-Square = .722, p = .396$
*See Table 1 for Crosstabulations

Table 1
Crosstabulations between Gaze Switching (IJA) and Following a Point (RJA)

		Follow a point		Total
		NO	YES	
Point to indicate interest	NO	11 (37.9%)	6 (20.7%)	17 (58.6%)
	YES	5 (17.3%)	7 (24.1%)	12 (41.4%)
	Total	16 (55.2%)	13 (44.8%)	29 (100%)

STUDY 2

Method

Participants (n = 30)

*All participants had a diagnosis of Autistic Disorder
*Ages ranged from 1 year 7 months to 6 years 8 months ($M = 3$ years, 11.5 months, $SD = 14.58$ months)

Materials

*The Abridged Version of the Early Social Communication Scales (ESCS; Mundy et al., 2003) was used as a measure of both initiation of joint attention (IJA) and response to joint attention (RJA)
*The ESCS is a structured observational measure that contrives situations in an attempt to elicit target behaviours
*A parental report measure of frequency of engagement in stereotypical behaviours was devised by the authors and found to have sufficient construct validity (Delincolias & Young, 2006)

Procedures

*Participants were recruited from the Flinders Early Intervention Research Program
*A single assessment was scheduled, either at the Flinders Early Intervention House or the child's home (no significant differences were found between environments)
*The ESCS was administered to the child, while the parent completed the stereotypical behaviours assessment

Results

*Using procedures outlined by Steiger (1980), the correlation between pointing to indicate interest (IJA) and following a point (RJA) ($r = .47, p < .05$) was not found to be significantly stronger than the correlation between IJA and stereotypical behaviours ($r = -.18, p = .34, Z = 1.19, p = .23$)
*No relationship was found between RJA and stereotypical behaviours ($r = .00$).

DISCUSSION

*The majority of children in Study 1 (37.9%) were unable to engage in either type of joint attention behaviour. This is consistent with previous research that has demonstrated children with autism have a marked difficulty engaging in joint attention behaviours. Study 1 also indicates that a proportion of children with autism develop one type of joint attention, but not the other. Previously, some children with autism have been found to develop the ability to respond to joint attention but not the ability to initiate joint attention (Charman, 1998). While 20.7% of children in this study were only able to respond to joint attention, 17.3% of children were only able to initiate joint attention. Behaviours that occur in response to joint attention are easier to teach to children with autism than those that initiate joint attention (Whalen & Schreibman, 2003), and the ability to follow a point is observed prior to the ability to initiate a point in typically developing children (Charman, 1998). Therefore it is unusual that 17.3% of children in this study demonstrate the ability to point, but not follow a point, unless these behaviours reflect different underlying skills.
*In Study 2, a significant, positive relationship was found between initiation of joint attention and response to joint attention. This relationship was significantly stronger than the relationship between response to joint attention and stereotypical behaviours, but not significantly stronger than the relationship between initiation of joint attention and stereotypical behaviours. The rationale for Study 2 assumed that symptoms of autism will covary to a degree in children with autism due to their needing to exhibit similar behaviours to meet diagnostic criteria, but that any relationships reflective of developmental proximity will be significantly stronger than these. The absence of any relationship between response to joint attention and stereotypical behaviours does not support this notion, but rather might indicate that is may have been presumptuous to assume that all symptoms of autism covary to some degree. If we therefore assume that our rationale was flawed, and that comparing the relationship between initiation of joint attention and response to joint attention to no relationship is sufficient, then it appears the two types of joint attention are significantly related which may indicate developmental proximity. Alternatively, we can assume that the majority of symptoms of autism covary to some degree, and that the absence of any relationship between response to joint attention and stereotypical behaviours is unusual. In this case, the results indicate that initiation of joint attention and response to joint attention may not be on the same developmental trajectory, as their relationship was not significantly stronger than the relationship between initiation of joint attention and stereotypical behaviour.
*The small sample sizes and non-experimental designs should be considered when interpreting the results of these studies. Further research using experimental or longitudinal designs with larger sample sizes is required before conclusions can be made. It should also be noted that Study 1 used parental report to assess initiation of joint attention, while response to joint attention was directly observed. These different methods of measurement may have affected the results.
*While further research in this area is required, both studies indicate that the abilities to initiate joint attention and to respond to joint attention are not always related and may not be on the same developmental trajectory for children with Autistic Disorder. Intervention strategies to teach joint attention behaviours to children with autism should therefore focus on explicitly teaching both behaviours to initiate joint attention and respond to joint attention, and not assume that teaching one behaviour will result in development of the other. Further, researchers in this field should ensure that abilities to initiate joint attention and respond to joint attention are operationalised and measured separately.

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