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Communicative Repair Strategies And Problem Behaviors Of Children With Autism

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Abstract

The use of strategies by children with developmental disabilities to repair communicative breakdowns has received little attention in the research literature to date. The research that is available suggests that children with severe communication impairments may be more likely to experience communicative breakdowns than their typically developing peers. These children may also have fewer strategies available to them to repair these breakdowns. The present article reviews some of the research in this area and discusses the possible links between communicative breakdowns and the emergence of problem behavior in children with autism. Theoretical and practical implications are considered and areas for future research are highlighted.

For typically developing infants and toddlers the prelinguistic stage of communication development involves making the transition from reflexive, preintentional behaviors to the use of behaviors that have communicative intent, together with the acquisition of more symbolic communicative forms (Bates, Camaioni, & Volterra, 1975). As a child begins to develop greater communicative competence, there are many occasions when their communicative attempts may fail, leading to a breakdown in the communicative exchange. The attempts made by a child to persist in the communication attempt and to modify or revise the communication signal when this occurs are called communicative repairs (Wetherby & Prizant, 1993). According to Alexander, Wetherby, & Prizant (1997), there are three achievements that are necessary to the ability to repair a communication breakdown: (1) the emergence of communicative intentionality or goal directedness, (2) the development of the ability to take the perspective of another to enable the recognition that a breakdown has occurred and to understand the needs of the communication partner, and (3) the development of effective verbal and/or non-verbal communicative means or forms.

A child at the preverbal stage of communicative development relies on a variety of non-verbal behaviors such as gestures and vocalizations to repair breakdowns. There has been little research conducted into non-verbal repair strategies since Golinkoff (1986) investigated the repair strategies used by typically developing children at around 12 months of age. Golinkoff coded interactions between mother and child dyads according to whether the child's communicative attempt: (1) met with immediate success, where the mother understood the child's intention; (2) was overlooked by the mother who failed to respond the child; or (3) led to negotiation, when the mother failed to understand the intent but helped the child to clarify the

meaning. When sampled at around 12 months, 49% of interactions involved negotiation, 13% were overlooked, and 38% met with immediate success.

Communication samples were also taken two more times at approximately 2-month intervals and as time elapsed, the proportion of communicative attempts coded as successes increased relative to the other two types of interactions. During negotiations, Golinkoff found that the child would repair, protest, or abandon the attempt to convey their message. Furthermore, the percentage of repairs increased as protests decreased over the sampling period.

Golinkoff (1986) also coded the child's repair strategies as repetitions or modifications to the original signal. A modification could involve adding to or changing the previous signal. Approximately 36% of repairs were repetitions and 32% were additions. Over the sampling period, children were more likely to repair a breakdown by changing the signal than repeating or adding something to the previous signal. Golinkoff's research provided important information about the occurrence of communicative breakdowns and the development of repair strategies in typically developing children through the prelinguistic period.

A further contribution to our knowledge in this area was provided by Alexander et al. (1997) who analysed the use of repair strategies in 120 typically developing children aged 8 to 24 months using the Communication and Symbolic Behavior Scales (CSBS) (Wetherby & Prizant, 1993). Children's communicative ability at the time of the study ranged from prelinguistic to the multiword stage of language development. Alexander et al. found that 98% of the children who communicated to request an action or object also produced at least one communicative repair when their request was overlooked,

suggesting that the ability to repair emerges at the same time as intentional communicative functions. An analysis of the types of repairs used by the children showed an initial increase in the use of repetition from the prelinguistic to early one-word stage followed by a decrease, and an increase in modifications and decrease in repetition as language competence developed. A particularly interesting finding from this research was the reliance on gestural forms to repair communicative breakdowns. The researchers found that 100% of the children who exhibited repairs used gestures as a component in one or more repairs. These studies have demonstrated that typically developing children frequently encounter breakdowns in their attempts to communicate, even with familiar communicative partners. Attempts to repair these breakdowns occur early in the child's development before the use of words, when the child often seeks to repair breakdowns using gestural forms that may repeat, modify or change the previous signal.

Communicative Breakdowns and Children with Autism

As with their typically developing peers, children with autism and severe communication impairment experience communication breakdowns. There is evidence to suggest, however, that these children experience such breakdowns more frequently than their typically developing peers. This evidence comes from our increasing knowledge and understanding of the nature of the communication and social impairments experienced by children with autism. These impairments include joint attention deficits, impaired theory of mind, and reliance on prelinguistic forms of communication.

Joint Attention

Joint attention behaviors that typically develop during the prelinguistic period are often not observed in children with autism (Osterling & Dawson, 1994). Joint attention behaviors involve coordination of attention between the child, another person, and an object or event. Children with autism rarely bring objects to show their parents, for example, or look at their parents for approval (Sigman & Kasari, 1995). Absence of these behaviors can make it more difficult for communication partners to notice or respond appropriately to the communicative attempts of children. This was evident in a study by Yoder, Warren, Kim, & Gazdag (1994), where four children with developmental disabilities participated in an intervention involving a milieu teaching method to facilitate intentional requesting. One of the analyses conducted on the results compared the transitional probability of the teacher and mother linguistically mapping intentional versus preintentional communicative acts. Results indicated that teachers and mothers were more likely to linguistically map intentional than preintentional communicative acts that lack joint attention.

Theory of Mind

Theory of mind is “the ability to predict relationships between external states of affairs and internal states of mind” (Frith, 1989, p.157). Sometimes referred to as mentalizing or mindreading (Baron-Cohen, Baldwin, & Crowson, 1997; Holroyd & Baron-Cohen, 1993), theory of mind is often measured by examining an individual’s understanding of false belief. To pass a false belief task, a child must distinguish between his or her own true belief and someone else’s false belief. A commonly used false belief task involves two characters and is known as the ‘Sally-Ann’ task (Baron-Cohen, Leslie, & Frith, 1985). One of the characters (Sally) hides an object in location

A and then leaves the room. A second character (Ann) then moves the object to another location B. Sally re-enters the room, and the child is asked where Sally will look for the object. To pass the task, the child must understand that Sally has a false belief about where the object is located (that differs from the child's own belief) and will look for the object at location A.

It has been suggested that an impaired theory of mind may explain some of the social and communication impairments experienced by individuals with autism, including the absence of joint attention behaviors (Baron-Cohen et al., 1985; Wetherby, Alexander, & Prizant, 1998). Typically developing children come to understand that someone (including themselves) can believe something that is not 'true' at around four years of age (Jordan, 1999). Children with autism, however, often fail false belief tasks such as the Sally-Ann task (Baron-Cohen et al., 1985; Happé & Frith, 1995; Swettenham, 1996), although severity of the disorder and language competency appears to influence task success (Eisenmajer & Prior, 1991).

Theory of mind is considered essential to being able to understand and interact with others. An impaired theory of mind can restrict the development and use of certain communicative functions (Tager-Flusberg, 1989). For example, Baron-Cohen (1989) found that pointing gestures tended to be confined to the purpose of requesting rather than commenting. The commenting function may fail to emerge in individuals with autism and is the function most closely related to the ability to attribute intentions to others (Tager-Flusberg, 1997). The limitations on communicative functions and impaired ability to understand the mental states of others, associated with impaired

theory of mind, have clear implications for children with autism in relation to communicative breakdowns and their ability to affect repairs.

Prelinguistic Forms

Approximately 50% of children with autism fail to develop speech (Wetherby & Prizant, 1992a) and may come to rely on non-verbal means of communication. Some of the non-verbal communicative forms seen in typically developing children, however, may be absent in the child with autism. For example, the use of eye gaze (Baron-Cohen et al., 1997), and gestures such as pointing (Mundy & Sigman, 1989; Stone, Ousley, Yoder, Hogan, & Hepburn, 1997) may be absent, used infrequently, or inconsistently. In the absence of more formal communication systems, some children with autism may come to rely on idiosyncratic and informal behaviors to communicate. They may use additional communicative forms that are not generally used by their typically developing peers. These additional forms may include the use of informal gestures, aggression, self-injury, and the direct manipulation of an adult's hand (Carr & Kemp, 1989; Stone et al., 1997). Some of these behaviors may be difficult for communicative partners to recognize and interpret (Butterfield, 1991). For example, children who flap their hands when offered an object may be requesting or rejecting the offer. There has been an increasing interest in the assessment and interpretation of these subtle and idiosyncratic behaviors that may be communicative (Keen, Sigafos, & Woodyatt, 2000, 2001; Sigafos et al., 2000). Some of these behaviors may be communicative, even though they do not meet the strict behavioral criteria for intentionality (Granlund & Olsson, 1999; Iacono, Carter, & Hook, 1998).

With reliance on subtle and idiosyncratic communicative forms, lack of clarity with respect to intentionality, absence of joint attention behaviors, and theory of mind impairments, children with autism are at increased risk of breakdowns occurring in their communicative interactions. The ability to repair these breakdowns is therefore of significant importance. Little research investigating repairs used by individuals with autism or related disorders has been conducted to date.

Brady, McLean, McLean, & Johnston (1995) investigated the initiation and repair behaviors of 28 individuals with severe to profound intellectual impairment living in an institution. All the individuals communicated through nonsymbolic gestures. Participants engaged in 10 tasks involving scripted interactions designed to evoke or discriminate different types of communication repair strategies. Two communicative functions, requesting help and requesting attention to an object or event, were chosen as the basis for scripted interactions. When these requests were misinterpreted or overlooked, most participants attempted at least one repair, although this was more likely to occur with the function of requesting help. Repair strategies employed by participants tended to be repetitions or changes to the original signal rather than additions.

Alexander et al. (1997), in their analysis of repair strategies using the CSBS, conducted a similar analysis with six children with hearing impairment (HI) and six children with pervasive developmental disorder (PDD). For both groups, four of the children were at the prelinguistic stage and two in the early one-word stage. All of the children were found to use gestures to repair. The children with PDD tended to rely on the use of modification as a repair strategy compared with the HI group that

depended more on repetition. Interestingly, both the children with HI and those with PDD tended to use repair gestures that were more forceful and energetic than the previous signal. For the children with PDD, it was also noted that prosodic changes were made to vocalizations that consisted primarily of increased loudness. The children with HI never used vocal repetition and rarely used vocal modification. However, the children with PDD used vocal repair 63% of the time for the prelinguistic group and 75% for those at the one-word stage. These vocal repairs consisted predominantly of vowel sounds or nontranscribable utterances rather than words. The authors concluded that prosody changes could have resulted from negative emotion displayed by the children in the study expressed through increased loudness of their communicative repairs. This will be discussed further when considering the relationship between problem behaviors and repair strategies later in this paper.

While Brady et al. (1995) found a greater reliance on repetitions or changes and Alexander et al. (1997) found greater dependence on modification rather than repetition in their sample, it is clear that individuals with development disabilities differ in the frequency and type of repair strategies used. Together with studies that have looked at communicative repairs in verbal individuals with developmental disabilities, it appears that individuals with a developmental disability attempt fewer repairs even though they are likely to encounter more frequent communication breakdowns.

Problem Behaviors and Communicative Breakdowns

The rates of problem behavior among children with autism and related disabilities are high, often occurring more frequently than once per day (Dunlap, Robbins, & Darrow,

1994). These problem behaviors can have a significant impact on the child's quality of life, often restricting their access to learning opportunities and their participation in a range of activities. Similarly, these behaviors also affect the quality of life of family members, disrupting daily routines and restricting access to many opportunities and activities (Lucyshyn, Dunlap, & Albin, 2002). The consequences of problem behaviors on the family can be considerable and include marital breakdown, health issues and psychological problems within the family (Lucyshyn et al., 2002). Understanding factors that may contribute to the emergence of problem behaviors is therefore of vital importance to research and clinical interventions for individuals with autism.

This paper has reviewed research that suggests children with autism at the prelinguistic or early word stage, are more likely to experience communicative breakdowns but may make fewer attempts to repair the breakdowns and may use less sophisticated strategies. Brady et al. (1995) stated "repairing communication breakdowns may decrease frustration and thereby decrease aberrant behavior if the repaired communication is responded to by the communication partner" (p 1345). Wetherby et al. (1998) also raised the importance of considering the interaction between repair strategies and challenging behaviors. They suggested exploring the number of failed communicative attempts that an individual can tolerate before displaying challenging behavior and intervening to increase this tolerance while prompting the use of appropriate repair strategies.

It has been recognized for some time that problem behavior such as self-injury and aggression can serve a communicative function (Donnellan, Mirenda, Mesaros, &

Fassbender, 1984; Mirenda, 1997). In the absence of more appropriate communicative forms, individuals may exhibit aggressive or self-injurious behavior to communicate a message, and these behaviors may prove effective in meeting their needs. For individuals with severe disabilities, avoidance, attention, tangibles, and self-stimulation have been identified as communicative functions that may motivate challenging behavior (Carr & Durand, 1985; Donnellan et al., 1984). Behavior associated with avoidance may send a message such as “I don’t want to do this”. Attention seeking behavior may communicate “Look at what I’m doing”. Tangibles refer to behavior associated with wanting to obtain something, for example, “I want the toy”. Self-stimulation may communicate that the child needs more environmental stimulation, the message being “I’m bored”. In the absence of intervention, problem behaviors may persist as a means of communication. Functional communication training (FCT) has emerged as an effective intervention for children with problem behaviors. FCT involves identifying the communicative function of the problem behavior and then replacing the behavior with a more acceptable form of communication that serves the same function (Carr & Durand, 1985; Carr et al., 1994; Iwata, Vollmer, & Zarcone, 1990; LaVigna & Willis, 1992).

If we are to not only replace problem behaviors after they are established, but attempt to prevent them, it is important to consider how problem behaviors may come to be associated with communicative functions. Two possible explanations related to the use of prelinguistic communicative behavior by individuals with developmental disabilities will be considered.

The first explanation has gained much attention in the literature and will therefore be mentioned only briefly here. This explanation, as suggested by Brady et al. (1995) and Wetherby et al. (1998), is that problem behavior may be a form of protest or frustration at failed attempts to express needs and wants. The behavior may occur at the time of a breakdown in communication but does not actually represent an attempt to repair the breakdown. This explanation accounts for much of the literature that has investigated problem behaviors in children with developmental disorders such as autism (Durand, 1990; Durand, 1999; Iwata, Dorsey, Slifer, Bauman, & Richman, 1982; Wacker, Berg, Harding, & Asmus, 1996).

Second, some problem behavior may actually be a type of repair strategy (Keen et al., 2001). When analysing repairs used by individuals with hearing impairment and PDD, Alexander et al. (1997) observed prosody changes associated with repairs, specifically gestures and vocalizations were more exaggerated and emphatic. While further research is needed to confirm these observations, some problem behaviors may represent a modification to the previous signal (i.e., an exaggeration of that signal). For example, a child may make a vocalization in an attempt to request a drink of milk. If given a drink of water, indicating a misinterpretation of the signal, the child may then scream in order to repair the communicative breakdown. The screaming may be a more exaggerated or emphatic form of the initial vocalization. In a further example, a child's attempt to reach for a toy that is on a shelf out of reach might be overlooked, and the child may then hit the wall below the shelf on which the toy is located. Again, the hitting behavior may represent a more emphatic form of the original reaching behavior that the child employs in an attempt to repair the communicative breakdown.

If the repair strategies suggested above prove successful for the child, that is, the child's message is communicated effectively through the use of a problematic form, this form may be strengthened and come to replace the original, non-problematic form. That is, in certain contexts, the child may associate a problematic form with a particular communicative function, and use this form to initiate communicative attempts such as requesting an object or protesting. The behavior may continue to be used as a repair strategy but may also become a primary communicative form for the child.

Implications for Assessment and Intervention

Viewing some problem behaviors as repair strategies may have important implications for the development of communicative competence in individuals with developmental disorders. In particular, assessment and intervention efforts may be more effective if they focus on decreasing the risks of overlooked or misinterpreted communications while also teaching repair strategies that encourage non-problematic forms. These approaches are considered in more detail below.

Decreasing Risk of Communicative Breakdown

Assessment and intervention approaches that decrease the risk of communicative breakdowns may have a dual focus: developing more conventional and symbolic communicative means and sensitizing the communication partner to subtle behaviors that may represent communicative attempts. A number of studies have investigated ways of profiling the communicative behavior of children at the prelinguistic stage as a means of developing effective interventions (Iacono, Waring, & Chan, 1996; Schuler, Peck, Willard, & Theimer, 1989; Wetherby & Prizant, 1992b; Wetherby &

Prizant, 1993). In one recent study, Keen, Woodyatt, & Sigafoos (2002) used an interview protocol called the Inventory of Potential Communicative Acts (IPCA) (Sigafoos et al., 2000) together with naturalistic and structured observations to verify the perceptions of teachers concerning the prelinguistic behavior of eight children with autism. The results indicated that many of the children's gestures, body movements, and facial expressions that teachers interpreted as forms of communication could be verified through observation. Parents, teachers, and other professionals may be able to respond more consistently to communicative attempts by using assessment procedures such as these that help to identify subtle and idiosyncratic prelinguistic behaviors of children with developmental disabilities.

In an attempt to teach adults to be more responsive to the child's communication attempts, Warren & Yoder (1998) have used various intervention techniques such as linguistic mapping, scaffolded modelling, contingent imitation of, and contingent responsivity to, the child's behavior (Yoder & Warren, 1993).

More recently, in a study by Keen et al. (2001), non-problematic prelinguistic behaviors of four children with autism were replaced with more symbolic and conventional communicative forms that served the same communicative function. A teacher in-service was used to instruct teachers to create communicative opportunities and respond to a replacement behavior while ignoring an existing prelinguistic form. Teachers were also encouraged to increase the number of communicative opportunities for the child to express certain communicative functions. For example, to encourage requesting, a time would be chosen when the child would normally have a snack, and preferred food and drink items were placed within view but out of reach.

When a request was made using the desired replacement behavior, the teacher would acknowledge the request and provide the item. Results showed that it was possible to replace a subtle and idiosyncratic behavior that was open to misinterpretation or oversight with a more conventional form by consistently responding to the replacement behavior. This approach may form part of an intervention to decrease the risk of communicative breakdowns in children with severe communication impairments by encouraging communicative forms that are more conventional and symbolic. The focus on replacing non-problematic forms may not only reduce the risk of communicative breakdowns but may also help to prevent the emergence of problematic forms.

Teaching Repair Strategies

Communicative breakdowns and the subsequent use of repair strategies have been of interest for some time. Studies have been conducted with typically developing children, bilingual children, individuals with speech and hearing disorders, and on occasion with individuals with intellectual and other developmental disabilities. As mentioned previously, however, little research has been conducted in this area with children that are at the prelinguistic stage of communication development, and even fewer studies have focused on the teaching of repair strategies to these children as an intervention. Wetherby et al. (1998) state that the “development of repairs can be easily targeted within intervention contexts by holding out for an extra turn” (p 156). Examples of incorporating repair opportunities within a broader intervention can be found in approaches described by Warren, Yoder, Gazdag, Kim, & Jones (1993) and the Picture Exchange Communication System by Bondy & Frost (1994). Unfortunately, empirical studies that have evaluated the effectiveness of these

approaches in specifically teaching repair strategies to prelinguistic communicators are lacking.

Future Research

There is clearly a need for further research that addresses the possible relationship between problem behavior, repair strategies, and early communicative behavior in children with developmental disabilities. While some research has described children's attempts to repair communicative breakdowns, little is known about the nature of these repairs in children with autism and related disorders and their association with problem behavior. Future research needs to consider how caregivers and other communication partners respond to problematic and non-problematic communicative forms, particularly to those that are attempts to repair communicative breakdowns.

There is also a need to consider repair as a possible motivation for problem behavior when conducting functional assessments and engaging in functional communication training. Research is needed to determine whether problem behaviors motivated by a communication breakdown can be viewed in the same way as problem behaviors that are used to initiate communication. That is, should we use the same approach with problem behaviors regardless of whether the motivation for the behavior is to communicate a particular function or to repair a breakdown in that communication? Many of our current approaches to problem behavior involve a functional assessment using a variety of techniques such as interviews, questionnaires, and functional analyses. These techniques may not, however, be sensitive to identifying the 'repair' function of problem behavior and may misidentify the motivation behind the

behavior, leading to the development of a less effective intervention. Techniques used to assess repair strategies, such as those devised by Wetherby & Prizant (1993) in the Communication and Symbolic Behavior Scales may be useful to include when conducting a functional assessment.

Finally, consideration must be given to the development of effective interventions for children whose problem behavior may be associated with the repair of communication breakdowns. Suggestions have been made here that such interventions may need to focus on decreasing the risk of breakdowns while simultaneously teaching appropriate repair strategies. Wetherby et al. (1998) recommend that communication partners should recognize increased forcefulness or emphasis of gesture and some subtle or idiosyncratic behaviors as repair attempts and should respond to them as repairs. Further research is needed to explore how this can be done so that the effectiveness of intervention approaches for children with autism and related disorders can be enhanced.

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