FUNCTIONAL ANALYSIS OF INAPPROPRIATE SOCIAL INTERACTIONS IN STUDENTS WITH ASPERGER’S SYNDROME

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We analyzed the inappropriate social interactions of 3 students with Asperger’s syndrome whose behavior was maintained by social positive reinforcement. We tested whether inappropriate social behavior was sensitive to social positive reinforcement contingencies and whether such contingencies could be reversed to increase the probability of socially appropriate responding. Our results show that social positive reinforcers can be identified for inappropriate social interactions and that appropriate social behaviors can be sensitive to reinforcement contingency reversals.

Key words: autism spectrum disorder, Asperger’s syndrome, social skills, social interaction, functional analysis

The prevalence of high-functioning autism or Asperger’s syndrome (AS) among the autism spectrum disorders has increased substantially over the last decade (Fombonne, 2009). One of the defining features of AS is social deficits, including inappropriate social interactions such as vocal stereotypy, rituals, and restricted verbal interests (American Psychiatric Association, 1994). Although social behaviors have long been a topic of analysis and intervention for students with severe autism, less is known about inappropriate social interactions for children with AS (Klin, McPartland, & Volkmar, 2005). If inappropriate social behaviors are viewed as problem behaviors, then an assessment of these behaviors may be amenable to analogue functional analysis techniques. If researchers can identify the variables that maintain inappropriate social interactions in children with AS, this information may help in the development of interventions to improve social outcomes (Kennedy, 2004; Rehfeldt & Chambers, 2003).

In the current investigation, we identified three students with AS whose inappropriate social behaviors were reinforced by social attention. During the analogue functional analysis, we observed occurrences of inappropriate and appropriate social behavior under various putative reinforcement contingencies. For students who engaged in both inappropriate and appropriate social behaviors during the analysis, we reversed the reinforcement contingencies to assess their effects on social behavior and test the hypothesis that these behaviors were members of the same response class.

METHOD

Students and Response Definitions

The students were three individuals who had been diagnosed with AS and who attended public elementary schools. They had been nominated by their special education teachers as engaging in inappropriate social behaviors that interfered with social interactions with peers without disabilities. For all students with AS, inappropriate and appropriate social behaviors were identified through a combination of record reviews, teacher interviews, and direct observation.

Carl was a 9-year-old boy. He participated full time in regular education classes, and his academic functioning level and adaptive behaviors were estimated to be at the fifth-grade level.
His inappropriate social behavior was defined as any speech on a restricted topic that occurred more than once in a conversational exchange or reoccurred across exchanges within a session (i.e., repeating conversational topics related to Sonic the Hedgehog and ninja fighting). Appropriate behavior was defined as any verbal comment related to the topic of conversation. Bryan was an 8-year-old boy. He participated in regular education classes except for daily speech pathology sessions. His academic functioning level and adaptive behaviors were estimated to be at the third-grade level. His inappropriate social behavior was defined as "lecturing" others. This was defined as any time Bryan corrected others by saying, "You should just—" or "Did you know you should—" during a social interaction. Appropriate social behavior was any verbal social interaction that did not include these two phrases. Stephen was a 6-year-old boy. He participated in regular education classes except for daily speech pathology sessions. His academic functioning level and adaptive behaviors were estimated to be at the first-grade level. His inappropriate social exchanges, defined as for Carl, were making comments on restricted topics not related to the conversation (i.e., Mario Kart and "other worlds"). Appropriate behavior was defined as any comments that were related to the topic of conversation. To assess social interactions, we also recruited a peer without disabilities who was paired with the student with AS to conduct the experimental analyses of social interaction. Each dyad had known each other for a minimum of 6 months and had a history of positive social interactions. Peers were within 1 year of age of the student with AS.

**Procedure**

All sessions occurred in a classroom at the student's school. The classroom (6.5 m by 9 m) contained a table and several chairs. An adult sat on one side of the table, and the student and peer sat side by side on the opposite side. All sessions were videotaped for analysis.

A mixed ABA multielement design was used to study inappropriate social behavior (Kennedy, 2005). The initial experimental phase used standard analogue functional analysis conditions as described by Iwata, Dorsey, Slifer, Bauman, and Richman (1982/1994) but was adapted to social interactions for students with AS, including (a) contingent social attention for inappropriate social behavior (attention-social), (b) contingent withdrawal of social attention for inappropriate social behavior (escape-social), and (c) a control arrangement to reduce social behavior (each described below). We reversed the contingencies for the attention-social condition in the second phase of the study such that attention was provided contingent on the occurrence of appropriate social behavior. All sessions lasted 10 min.

Prior to the initial session for each student, an adult trained each peer without disabilities how to act during the experimental analyses. Each peer received two videotaped training sessions. The peers appropriately restricted or provided attention given the condition in effect with 100% accuracy after training.

In the attention-social condition, the adult directed conversations only to the peer without disabilities to establish the availability of social interaction. The adult asked the peer various age-appropriate conversational questions (e.g., "What did you do this weekend?") every 15 s, to which the peer provided a brief, appropriate response. An occurrence of inappropriate social behavior from the student with AS resulted in the peer directing attention to the student for 30 s. No attention was provided for appropriate social responses. During this period, the adult refrained from asking additional questions of the peer. After the 30 s of peer attention had occurred, the adult once again began asking conversational questions of the peer.

In the escape-social condition, the adult asked the student with AS conversational questions similar to those asked of the peer in the attention-social condition every 15 s to establish the opportunity for escape from social
interaction. Appropriate answers by the student with AS received a brief, positive comment from the peer. Each occurrence of inappropriate social behavior by the student with AS resulted in the termination or postponement of conversational questions for 30 s.

During the control condition, the student with AS and peer were instructed to eat their lunch quietly. The adult told the students that she had work to do and they should eat quietly. If a student or peer tried to interact with each other, the adult reminded them that she needed quiet so she could work. Inappropriate social behavior was expected to be low in this condition because the antecedents manipulated in the other conditions were absent and differential consequences were not provided for the behavior.

In the second phase, contingencies were reversed in the attention-social condition if both inappropriate and appropriate social behaviors were observed in Phase 1. Therefore, only appropriate social behaviors in this phase resulted in 30 s of attention, and all inappropriate social behaviors were ignored. No changes were made in the escape-social or control conditions.

Observers collected data on inappropriate and appropriate social behavior using a pencil-and-paper 10-s observe, 5-s record time-sampling procedure. A second independent data collector scored 40% of sessions. Interobserver agreement was calculated by dividing the sum of the number of interval agreements by the number of agreements plus disagreements and converting the proportion to a percentage. A mean agreement of 88% (range, 79% to 93%) was obtained for Carl, 95% (range, 83% to 100%) for Bryan, and 94% (range, 88% to 97%) for Stephen.

RESULTS AND DISCUSSION

Figure 1 shows the percentage of intervals of inappropriate social behavior (top panel) and appropriate social behavior (bottom panel) for the analyses conducted with Carl. During the first phase, he engaged in frequent inappropriate social behavior during the attention-social condition ($M = 46\%$), with lower levels of inappropriate verbalizations occurring in the escape-social and control conditions. His appropriate social behaviors occurred at low levels. Reversal of the attention-social condition contingency in the second phase resulted in decreases in inappropriate social behaviors ($M = 10\%$) with little change in appropriate verbalizations ($M = 23\%$). Returning to Phase 1 conditions resulted in a pattern of behavior that was consistent with the first phase.

Bryan’s data are shown in Figure 2. Results of the first phase showed that Bryan’s inappropriate social behavior was highest in the attention-social condition ($M = 27\%$). His appropriate social behaviors remained at low levels. A reversal of the reinforcement contingency in the attention-social condition in Phase 2 showed a decrease in inappropriate social behaviors ($M = 7\%$) and an increase in appropriate social behaviors ($M = 18\%$). Returning to the conditions of Phase 1 resulted in a pattern of social behavior that was similar to the initial baseline.

The findings for Carl and Bryan suggest that their inappropriate and appropriate social behaviors constituted a response class of behaviors that were maintained by positive reinforcement in the form of social attention. Which topography of social behavior that occurred most frequently was a function of the reinforcement contingency for social attention. Such an observation suggests that interventions that manipulate matching law variables (Davison & McCarthy, 1988) may serve as appropriate approaches for increasing social behaviors, just as they do for decreasing behaviors such as self-injury or aggression.

Stephen’s data are shown in Figure 3. Levels of inappropriate social behaviors gradually differentiated across sessions, with the highest level occurring during the attention-social condition ($M = 21\%$). No occurrences of appropriate social behaviors were observed. The absence of any appropriate behavior during
the analysis suggests that the student may not have had these behaviors in his repertoire. Anecdotal evidence suggested this was the case in that teachers reported the absence of appropriate social interactions; however, it could be that the behaviors occurred at an extremely low rate. To test the social skills deficit hypothesis, we could have placed all inappropriate social behaviors on extinction to determine if this would evoke other social behaviors. If results indicated a social skills deficit, social skills instruction would be the first intervention, so that alternative behaviors could be established in his repertoire.
Although the participants’ inappropriate social behavior was maintained by positive reinforcement, it is likely that similar behaviors can be maintained by social negative reinforcers. Negatively reinforced social behavior also may be amenable to function-based analysis. When analyzing escape-based social behavior, our procedures should be augmented to eliminate the provision of positive social comments by the peer. In addition, we
speculate that some forms of inappropriate social behavior may serve an automatically reinforcing function for students with AS, similar to other forms of stereotypy. Whether instances of nonsocially reinforced behaviors occur in this population remains unknown. We offer these observations to help occasion additional research on the operant functions
of inappropriate social behavior in individuals with AS, both in terms of assessment development and the construction of interventions.

REFERENCES


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