

## **MENTALISTIC EXPLANATIONS FOR AUTISTIC BEHAVIOR: A BEHAVIORAL PHENOMENOLOGICAL ANALYSIS**

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**ABSTRACT:** In this paper we analyze autism as a hypothetical construct and explain how an Autism Spectrum Disorder diagnosis functions to derail scientific investigations of autistic behavior. To support this argument, we employ a series of behavioral phenomenological investigations to analyze potential sources of control over the verbal behavior of parents, who were asked to observe their children with autism and record explanations for each occurrence of problem behavior. Autistic behaviors were recorded cumulatively, and the parents' explanatory responses were then mapped onto the cumulative records to identify the controlling relations for each response. We then analyzed the parents' responses for mentalistic explanations for the children's problem behaviors. Parent reports are discussed in terms of the prevalence of mentalisms, the stimulus control exerted by autistic behavior, the relationship between parent and child, the conditioning of parents' observations throughout and across observation sessions, and how fictional explanations function for the speaker. We conclude with a discussion of the role of behavioral phenomenology in elucidating the histories of reinforcement provided by the verbal communities of parents of children with autism.

*Key words:* behavioral phenomenology, mentalism, autism spectrum disorder, challenging behavior

Effective intervention on challenging behavior begins with accurately identifying the contingencies of reinforcement maintaining such behavior. Once the function(s) of a problem behavior have been identified, individualized treatments can then be developed to extinguish the challenging behavior (cf. Fisher, DeLeon, Rodriguez-Catter, & Keeney, 2004) differentially reinforce a replacement behavior (cf. Watts, Wilder, Gregory, Leon, & Ditzian, 2013), bring the behavior under stimulus control (cf. Thomason-Sassi, Iwata, & Fritz, 2013), or suppress the rate at which the problem behavior occurs (cf. Lerman & Vorndran, 2002). Although technologies have been developed to identify such contingencies of reinforcement (Iwata, Dorsey, Slifer, Bauman, & Richman, 1982/1994; Lambert, Bloom, & Irvin, 2012; Northup et al., 1991; Sigafoos & Sagers, 1995), such functional analyses must be conducted and interpreted by professionals with sufficient training in behavior analysis.

In contrast, primary caregivers of children who frequently display problem behaviors (i.e., parents, teachers, and personal care assistants) often rely on hypothetical constructs to describe the cause of problem behavior. Mentalistic approaches to understanding behavior frequently rely on tautological statements in

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which the supposed explanation of the behavior is simply a restated description of the behavior. Often referred to as circular reasoning, the mentalistic cause and effect are not independent of one another (Baum, 2005; Vargas, 2013). For example, a child may be diagnosed with Autism Spectrum Disorder (ASD) because he or she exhibits weak communication and social skills, and engages in a particular repertoire of restrictive and repetitive behaviors. These problem behaviors are then said to be caused by the child's autism. Rather than identifying the contingencies of reinforcement maintaining the problem behavior, a hypothetical construct - in this case a diagnosis - has been created to "explain" it.

Moore (2012) describes how mentalisms are shaped through an overextension of verbal behavior. He notes that the adverb "intelligently" is initially used to describe a highly effective behavioral repertoire, but later derived into the noun form, "intelligence". This relatively minor change in semantics has profound implications - in the present case, a fictitious attribute residing within the individual and often credited with causality for the behavioral repertoire. In this same manner, Drash and Tudor (2004) pragmatically approach "autistic" behavior as a particular pattern of responding that results from a contingency-shaped disorder of verbal behavior, and from which other problem behaviors are derived. Sigafos, Arthur, and O'Reilly (2003) further observe that individuals at the severe end of the autism spectrum also tend to have disproportionately high rates of challenging behavior (e.g., aggression, self-injury, and tantruming among others) when compared with individuals with other intellectual disabilities and delays. Thus, according to Drash and Tudor's (2004) analysis, differentially reinforcing the individual's verbal repertoire would correspondingly weaken the frequency of both autistic and other challenging behaviors. However, when the adverb "autistic" is derived into an attribute of the individual (i.e., "autism"), the recommendations for treatment are obfuscated.

Reimers, Wacker, Derby, & Cooper (1995) identified a significant, negative correlation between parents' ratings of physiological attributions of their children with behavior problems and the acceptability of behavioral treatments. That is, the more they attributed challenging behavior to the child (as opposed to the environment), the more likely they were to dismiss behavior analytic intervention. Such representationalism becomes problematic when attention shifts to food sensitivities, toxins, sensory dysregulation, or neuro-chemical imbalances conjectured to be responsible for the child's autism, rather than examining the contingencies maintaining the problem behavior. Mentalisms therefore function to obfuscate the environmental stimuli that would have allowed for more effective action to be taken.

Behavioral symptoms associated with ASD include self-injury, and "disruptive/challenging behaviors are more common in children and adolescents with autism spectrum disorders than other disorders" (American Psychiatric Association, 2013, p. 56). Research has shown that the most effective methods for addressing these symptoms are based upon behavior analytic principles (Howard, Sparkman, Cohen, Green, & Stanislaw, 2005; Sallows & Graupner, 2005). Left untreated, the challenging behavior of children with ASD will not unto itself

dissipate with maturity. More likely, these problems can be exacerbated with adolescence and may thoroughly debilitate the adult with ASD, significantly impacting the quality of life for caregivers. Socially-mediated interventions to address challenging behavior have been the focus of investigations in applied behavior analysis for well over 40 years; The question is how best to promulgate these strategies, overcoming the obstacle of mentalisms.

Skinner (1945) recognized the importance of a science of behavior in developing concepts and principles that would render much of psychological terminology superfluous. For instance, social psychologists often refer to “fundamental attribution errors” or “correspondence bias” to explain the perception that people’s actions are based upon their disposition (e.g., an ASD diagnosis), rather than the environmental factors that influence their behavior (Baron, Branscombe, & Byrne, 2008). These misattributions to hypothetical constructs contribute to the proliferation of fallacious treatments for ASD (Offit, 2008). Persistent recourse to such interventions illustrates superstitious behavior and spurious reinforcement (Skinner, 1953).

Behavioral phenomena can be explained without appealing to any invented operation originating from within the individual. Skinner (1977) provides an example from respondent conditioning:

Take, for example, the so-called process of association. In Pavlov's experiment a hungry dog hears a bell and is then fed. If this happens many times, the dog begins to salivate when it hears the bell. The standard mentalistic explanation is that the dog "associates" the bell with the food. But it was Pavlov who associated them! (p. 1)

In the given scenario, the observer, Pavlov, invented the process of *association* to explain the salivation of the dog, rather than more parsimoniously stating that the dog salivates upon hearing the bell. To surrogate the internal process of association for the environmental contingencies derails a scientific analysis. Noteworthy here is that observers inherently participate in the events they are observing, and the verbal community shapes the explication of such observations. Therefore, observations - as behaviors in their own right - are similarly subject to environmental control according to their own functional properties (Baum, 2005; Day, 1969; Fletcher & Hayes, 2008; Johnston & Pennypacker, 2009). That is, the verbal community conditions the use of such mentalisms to explain behavior.

As a method of inquiry, behavioral phenomenology is rooted in Skinner’s (1974) notion of a triumvirate of control over a given response: 1) An organism’s genetic predisposition, 2) the environmental conditions presently in effect, and 3) the organism’s history of reinforcement. Controlling for two of these three variables allows for the scientific analysis of the third. Behavioral phenomenology is most commonly employed to hypothesize about an individual’s history of reinforcement, with the overarching goal of shifting analyses of complex verbal

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phenomenon from the inference of internally mediating events to a discussion of researcher discriminated response classes (Dougher, 1989). This empirical approach aligns strongly with a phenomenological description of events as they are instantiated (Ihde, 2012), thereby mitigating the inference of mediating factors (Day, 1969).

Moreover, such a behavioral-phenomenological approach relies on the previous discrimination training of the observer to discern potential elements of causation and control as they occur in situ (McCorkle, 1978). Consequently, the observer is expected to describe the behavior-environment relations being discriminated (cf. Day, 1977). Such a debriefing requires the researcher to clarify discerned behavior-environment interactions without becoming overly idiosyncratic or resorting to mentalistic constructs (McCorkle, 1978).

Accordingly, the prevalence of fictional explanations for problem behavior in particular leads one to conclude that they must function in some way for the speaker who emits them. As such, identifying the contingencies responsible for mentalisms would be an appropriate first step in eliminating their use. The verbal community primarily maintains the use of mentalisms through generalized reinforcement. However, the antecedent stimuli that occasion these responses are largely unknown.

Leigland (1989) outlined a procedure for the operant analysis of verbal behavior, by revealing some of the controlling relations at the level of the individual person. Leigland's procedure involved human observers making explanatory statements to describe a pigeon pecking a response key in a controlled setting. By mapping the verbal responses of human observers onto the cumulative record of pigeon pecking, certain controlling relations for this verbal behavior could be identified. Leigland found that more "pure tacts" occurred when pecking behavior occurred under conspicuous and precise stimulus control, and concluded that more complex and subtle variables controlling relatively undifferentiated responding may occasion the use of mentalisms.

Since Skinner's (1945) seminal analysis of the use of psychological terms, researchers have been calling for a research program to extend the methodology of the functional analysis of verbal behavior (Day, 1969; Dougher, 1989; Leigland, 1996; Sanguinetti & Reyes, 2011). Given the implications for treatment (Howard et al., 2005; Reimers et al., 1995), substantiated research on mentalistic explanations for autistic behavior is imperative. Our review of the literature found that to date there have been no attempts to expand upon Leigland's (1989) findings or replicate his methodology in an applied setting. However, such methodology has important implications for conceptualizing autism, training parents, and furthering a research program for the functional analysis of the conditions under which mentalistic psychological terms are emitted. Using a slight modification of the procedures described by Leigland (1989), the current study consisted of two investigations in which parents of children diagnosed with ASD were asked to observe their children in an instructional setting and provide explanations for the problem behaviors that they observed. Specifically, we wanted to examine the extent to which children's autistic behaviors induced fictional explanations by their

caregivers, and analyze how these mentalistic explanations of problem behavior function for the speaker.

## **Study One**

### ***Participants and Setting***

Parent 1 was the aunt<sup>1</sup> of Child 1, who had been diagnosed with PDD-NOS and Expressive Language Disorder according to the DSM-IV-TR. Child 1 was enrolled in a university behavior analysis laboratory, where he received intensive functional communication training and social skills instruction four days a week. Parent 1 was asked to participate in this project because Child 1 demonstrated high rates of challenging behavior (i.e., those targeted to weaken), including tantruming and non-compliance. However, these high-rate behaviors did not necessarily represent the most severe behaviors in Child 1's repertoire. Using the Verbal Behavior Milestones Assessment and Placement Program (VB-MAPP; Sundberg, 2008), his verbal behavior was assessed between a Level 1 (mand, echoic) and Level 2 (tact, intraverbal).

This study took place in a verbal behavior laboratory on the campus of a local university. During the observation session, Parent 1 was seated in the corner of a large, open room where Child 1 received one-on-one behavior analytic intervention. The intervention for Child 1's autistic behaviors largely consisted of functional communication training (Tiger, Hanley, & Bruzek, 2008) based on incidental teaching procedures (Hart & Risley, 1978; 1980). Parent 1 was provided with a legal pad, pencil, and stopwatch with which to take notes during the observation.

### ***Procedures***

In this study, we employed a behavioral phenomenological methodology to analyze the parent's verbal behavior. Parent 1 was given the following instructions, adapted from Leigland (1989) for the applied setting:

In this experiment, your task is to observe behavior and explain it in any way you like. I'd like you to explain any instance of problem behavior that you see from the child throughout the duration of the session. You may use any kind of explanation of problem behavior that you like, using whatever terms or phrases feel comfortable to you. There are absolutely no right or wrong explanations for the behavior; whatever kind of explanation you choose will be fine. I'm more

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<sup>1</sup> According to the Individuals with Disabilities Education Act of 2004, a "guardian" is a person generally authorized to act as the child's parent, or authorized to make educational decisions for the child.

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interested in “explanation” than simple “description” of the behavior, except insofar as your descriptions of the behavior may aid you in your explanation. The term “explanation” may mean different things to different people, but whatever it means to you is what I’m looking for. You will be sitting in a chair facing the child, and you will be given paper on a clipboard and a pen (shown to the participant). Simply jot down whatever explanations occur to you as you are observing. You may want to write a sentence or two, perhaps a phrase, or perhaps just a word; write whatever kind of explanatory statement that you like as it occurs to you.

There are two things to remember: (a) number your explanatory statements as you make them on the paper so that each separate entry has its own number. So your first entry will be next to “1” and you may then observe for a while, so your next entry will be next to “2” and so on; and (b) you will also be given a stopwatch - please press the “Lap” button each time you begin to write down a new entry (this is demonstrated for the participant). Are there any questions? The experimental session will last 30 minutes.

The parent was reminded of these latter two points when taken into the observation area and seated, and the stopwatch operation was again demonstrated. Additionally, the parent was instructed that if her child approached her while she was collecting data, she should simply respond “Not right now,” or otherwise reduced the child’s approach behavior. Although the child’s challenging behavior was behaviorally defined for day-to-day recording purposes in the lab, the parent was not provided with these definitions. Rather, she was instructed to record an explanation for any behavior that she perceived to be problematic. The instructions to the parent specifically said to *explain* rather than *describe* the behavior, but it should be noted that an accurate explanation would necessarily include a description of the controlling relations within the environment. By emphasizing an explanation, however, we sought to strengthen the probability that the parent would describe the controlling relations responsible for the problem behavior, rather than the behavior itself.

A verbal cue was provided to simultaneously start the video camera and the parent’s stopwatch. Parent 1 was then left alone to record data for 30 minutes. At the end of the session, the legal pad, pencil, and stopwatch was collected, and Parent 1 was thanked for her assistance with data collection.

### ***Response Definition***

The parent observation session was digitally recorded. The video was then reviewed and coded for the occurrence of problem behaviors using partial interval recording. Using the timestamp feature on the video, each one-second interval was scored according to the presence or absence of problem behavior. The parent’s problem behaviors were behaviorally defined for treatment purposes. These

definitions were provided to the data collector for use in coding the video. Relevant to the behavior observed, non-compliance was defined as failing to respond to the instructor's demand within five seconds. Non-compliance was measured in duration until instructional control was re-established.

For each interval during which problem behavior was observed, the ordinate value increased by one. This provided a cumulative record of the child's problem behavior throughout the 30-minute observation. Interobserver agreement was calculated by an independent video coder using an interval agreement approach, in which the total number of agreements on intervals with problem behavior was divided by the total number of agreements plus disagreements and then multiplied by 100 to yield a measure of 95.79% agreement.

During the 30-minute session, Parent 1 observed Child 1, identified any occurrence of problem behavior, and explained the cause of the problem behavior. Each time Parent 1 identified a new problem behavior, she was asked to press the lap button on the stopwatch and then write down the time that the behavior occurred along with an explanation for the behavior. This timestamp allowed for the correlation of written responses to the corresponding problem behavior preserved in the video archive. Parent 1's explanations for problem behavior were then mapped onto Child 1's recorded response rates of problem behavior throughout the session.

Using an established definition of mentalism as "the employment of mentalistic concepts in the analysis and explanation of behavior" (Keat, 1972, p. 53), two Board Certified Behavior Analysts independently reviewed parent responses for mentalistic attributions of behavior. Interobserver agreement was calculated across the two observers to yield a measure of 92.86% agreement.

## Findings

The purpose of this study was to examine the extent to which the caregiver of a child with ASD uses mentalistic terms to explain the problem behavior of her child. We sought to determine the extent to which caregivers' fictional explanations were controlled by challenging behavior. Figure 1 is a cumulative record of Child 1's problem behavior throughout the observation session. The occurrences of problem behavior identified by Parent 1 are denoted with an open circle to draw the attention of the reader to the rate of behavior at the time of the parent's explanation. These markers are centered according to the timestamp recorded on the stopwatch by the parent, however the diameter of the circle was broadened to account for an expected latency between the parent's discrimination of the behavior and when she pressed the lap button on the stopwatch. Additionally, a larger marker allows for a clearer observation of the behavior occurring at the time of the explanation.

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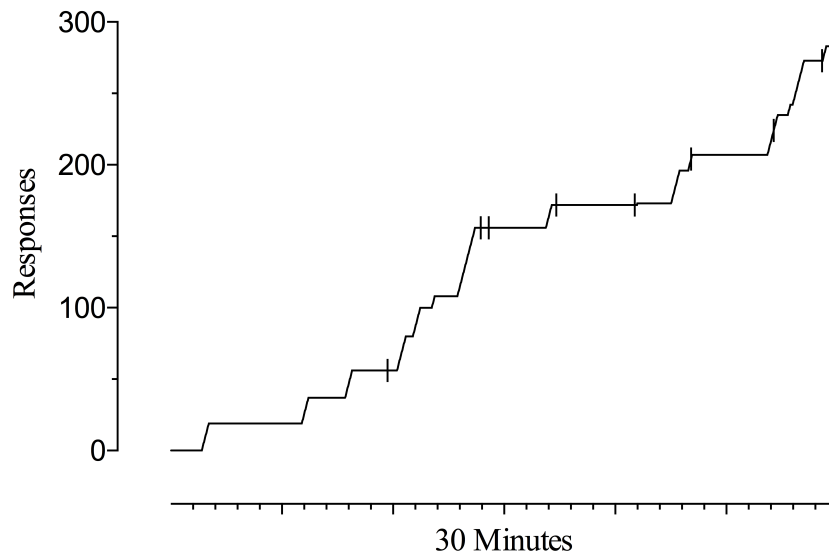


Figure 1: A cumulative record of Child 1's non-compliance. The markers indicate the timestamps at which Parent 1 responded to Child 1's problem behavior.

For Child 1, the only problem behavior observed by the researchers throughout the session was non-compliance, which was recorded using an established definition (Esch & Fryling, 2013; Wilder, Harris, Reagan, & Rasey, 2007). Across a 30-minute observation, Parent 1 identified eight occurrences of problem behavior listed in Table 1. Of the eight occurrences of problem behavior identified by Parent 1, four were simple descriptions of behavior rather than an explanation (13:57, 17:21, 20:53, 23:25). Child 1's problem behavior evoked four mentalisms from Parent 1 at 9:46, 14:19, 27:08, and 29:19.

Parent 1's observation of Child 1 being *over-energetic* (9:46) does not appear on the cumulative record, as jumping was not identified for reduction as part of his individualized plan a priori. That is, Child 1's stereotypies already occurred infrequently, and there was no intervention in place to weaken them further.

The next mentalism appeared at 14:19. Again, there was no observed change in behavior on Child 1's cumulative record. However, it must be noted that this response occurred less than half a minute after Parent 1's response at 13:57, which was only a description. Therefore, we may speculate that the response at 14:19 was an elaboration of the previous response to include an explanation. In this case, both of these responses were controlled by the non-compliance episode that occurred from 12:55-13:42. Incidentally, this was greatest single occurrence of non-compliance.



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Table 1

*Parent 1's explanations for, and descriptions of, Child 1's problem behaviors.*

<u>Time</u>	<u>Participant Responses</u>
9:46	Jumped around during activity - <i>excitement</i> or <i>over-energetic</i>
13:57	Said "no wannie" - but later said "I want"
14:19	Didn't follow directions. Later did. Perhaps <i>did not understand</i> or <i>didn't hear correctly</i>
17:21	Lay on floor during song. Followed along on song and did gestures
20:53	Did not follow directions while instructor chose song - did comply later
23:25	Did ladder instead of slide
27:08	<i>Trouble following directions</i> when instructor asked him to put
29:19	Not <i>listening</i> to instructor. Doing what he <i>wants</i> - Instructor had obstinance to get him to cooperate

The final two mentalisms occurred toward the end of the session. At 27:08, Parent 1 recorded an explanation in the middle of an ongoing episode. Interestingly, she noted that he was having "trouble following directions," which accounted for the extended latency between when the instruction was given, and when Child 1 engaged in the task. In contrast, Parent 1 identified the onset of another episode at 29:19, which she explained as "not listening". Thus, the recency of the instructions provided by the behavior tech controlled the mentalism "listening," which can be seen as a change in slope on the cumulative record. Whereas an increased latency between instructions and Child 1's response occasioned the responses "did not understand" (14:19) and "trouble following directions" (27:08), which can be observed on the cumulative record as an extended duration of problem behavior.

## Discussion

Not accounting for mere descriptions, 100% of Parent 1's explanations for problem behavior contained a mentalism. Her use of mentalisms largely related to the child's poor listener discrimination and a defective requesting or mand repertoire. Many children with ASD present manding deficits that are barriers to effective communicative and social skill development (Sundberg, 2008). In the absence of a pragmatic vocabulary to speak of such deficiencies, Parent 1 relied on mentalisms to account for Child 1's problem behavior.

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The high percentage of mentalisms may be attributed to the type of problem behavior observed throughout this session. Non-compliance requires an S<sup>D</sup> (delivered by either oneself or another speaker) to act in a particular way, and therefore may be less conspicuous than other problem behaviors because of its contextualism. Consistent with Leigland (1989), we found that these complex and subtle variables failing to exact stimulus control appear to increase the frequency with which mentalisms are used to explain behavior.

We should also note the use of free-operant procedures produced somewhat low rates of responding from the observer. The cumulative record shows 15 different episodes of non-compliance that varied in duration depending on when the assigned task was completed. Parent 1 responded to only 26.67% of opportunities. As noted above, we can likely attribute this low rate of responding to a weak discriminative repertoire for identifying problem behaviors, and a similarly weak repertoire of explaining them. In fact, the requirement to explain all discriminated problem behaviors may have taxed her responding.

However, we can also detect somewhat of a conditioning of the observer's behavior over the course of the session. For instance, after initially reporting a stereotypic jumping behavior, she failed to do so throughout the remainder of the session (even though behaviors similar to the one she identified appeared throughout the observation period). Rather, her reporting behavior was brought under the control of Child 1's non-compliance. Furthermore, we can examine her double reporting at 13:57 and 14:19 as successive approximations in which she self-corrects a simple description (13:57) to include an explanation (14:19). Finally, it is noteworthy that the majority of Parent 1's responses occurred over the second half of the observation session, and the last two responses were both explanations. Overall this shows a strengthening of both her discrimination of problem behavior and corresponding explanations.

A final limitation to this inquiry was the potential for observer bias. The extent to which the existing relationship between Parent 1 and Child 1 accounted for the frequency of mentalisms could not be determined from this experiment, and may present a confounding factor for this research. To address this and the above-mentioned limitations, a follow-up inquiry was conducted.

### Study Two

A second study was conducted to extend the results of the first. Specifically, we were interested in observing a broader range of problem behaviors, further examining the conditioning of the observer, and identifying the extent to which a personal relationship with the child with ASD affected the use of mentalistic explanations. The following questions were addressed in our second inquiry:

1. To what extent do overt problem behaviors evoke fewer mentalisms than those with less conspicuous stimulus control?

2. To what extent do parents differentiate their verbal behavior when discussing the problem behavior of their own children with ASD compared to other children with ASD?

### ***Participants & Setting***

The study was conducted in the same setting and using the same materials as in the first experiment. Child 2 was a two-year-old boy diagnosed with Autistic Disorder using the DSM-IV-TR. He had no independent mand repertoire at the time of data collection, and emitted no functional speech. Child 2's verbal behavior was assessed at a Level 1 on the VB-MAPP. His problem behaviors consisted of elopement, property destruction, and tantruming. Parent 2 was the mother of Child 2.

Child 3 was a five-year-old girl, who had also been diagnosed with Autistic Disorder according to the DSM-IV-TR. Child 3 displayed a much more complex verbal repertoire, which was assessed at a Level 3 across all domains on the VB-MAPP. Her problem behaviors consisted of aggression, property destruction, tantruming, and non-compliance. Parent 3 was the mother of Child 3.

### ***Procedures***

Once again the behavioral phenomenological analysis that was used in Experiment 1 was similarly employed in Experiment 2. However, in this experiment, both parents were asked to first observe Child 2 for 30 minutes, and then observe Child 3 for 30 minutes. Prior to starting the first observation session, both parents were again reminded to number their explanatory statements so that each separate entry has its own number, and to press the "Lap" button on their stopwatches each time they began to write down a new entry. Parents 2 and 3 were then taken into the laboratory and seated at tables on either side of the lab to minimize influencing one another's responding while they simultaneously collected data.

A verbal cue was provided to simultaneously start the video camera and the parents' stopwatches. Parents 2 and 3 were then left alone to record data for 30 minutes. At the end of the first session, the video recording was stopped and the data sheet for Child 2 was collected from both parents. Parents 2 and 3 were then immediately asked to observe and record explanations for Child 3's problem behavior using the same exact procedures. Another verbal cue was provided to synchronize the video camera and both parents' stopwatches. Subsequently, parents were once again left alone to observe Child 3 for 30 minutes.

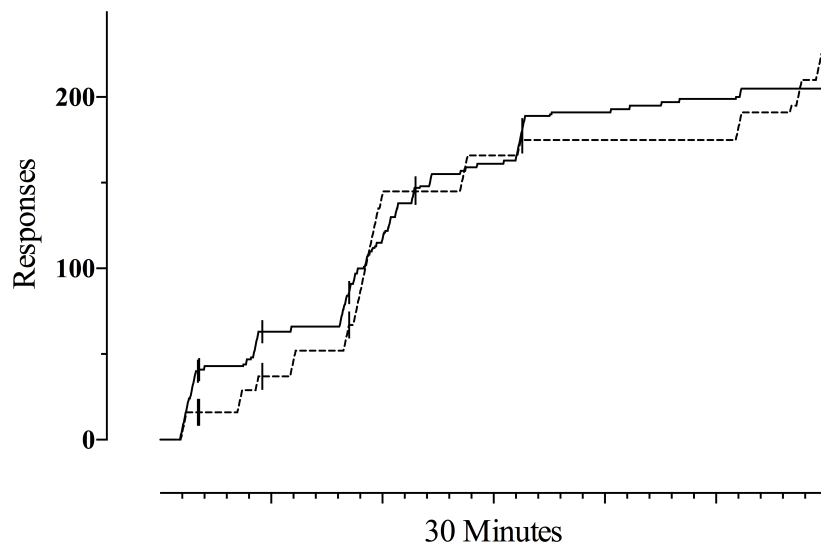
At the end of the second observation session, the parents were thanked for their assistance and dismissed. The videos of each session were then reviewed and coded using one-second intervals, to produce cumulative records of each child's problem behaviors throughout the corresponding observation session. The parents' responses were then mapped onto each cumulative record.

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### Findings

With this experiment, we sought to identify the extent to which more conspicuous problem behaviors led to fewer mentalistic explanations. Figure 2 shows a cumulative record of both the tantruming and elopement of Child 2. Parent 2's responses to Child 2's problem behavior appear across each behavior line. The markers are connected to indicate that they represent a single response from the parent.

Figure 2 shows that all six of Parent 2's responses occurred during, or in close approximation to, tantruming. The first, second, and fifth responses occurred in the absence of elopement. The remaining three responses show the potential for multiple control. However, we can more closely examine Parent 2's responses to further identify the source of control.



*Figure 2:* A cumulative record of Child 2's tantruming (—) and elopement (---). The markers indicate the timestamps at which Parent 2 responded to Child 2's problem behavior.

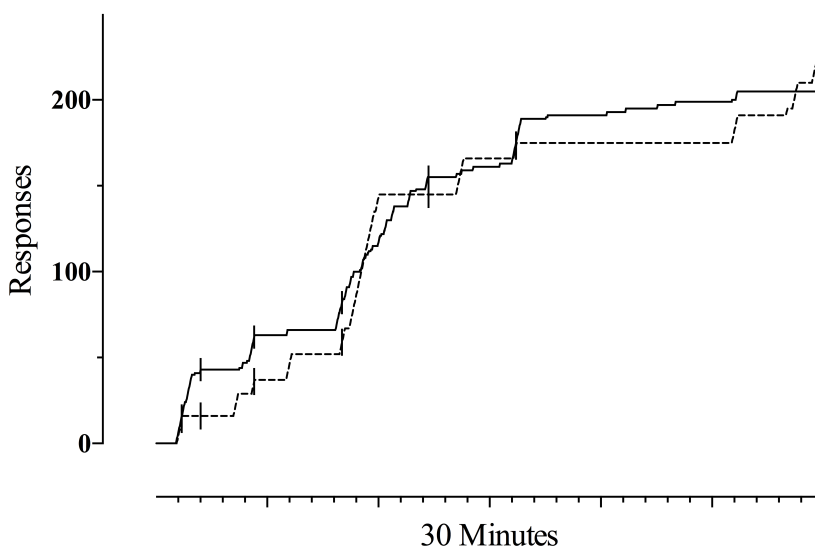
Table 2 displays the time stamps and corresponding responses of Parent 2 as she observed Child 2 over a 30-minutes period. Five of the six responses include a mentalistic explanation for the problem behavior. The sixth response was a simple description. At 4:37 and 11:29, Parent 2 directly referenced Child 2's tantruming ("crying") as a result of his being "sad". Parent 2's remark about a "fake cry" hints at a discrimination between respondent and operant control. A total of four of five mentalisms (1:43, 1:46; 4:37, and 11:29) can be attributed to Child 2's tantruming. The remaining explanation (8:31) and the simple description appeared under the occurrence of both tantruming and elopement.

Table 2

*Parent 2's explanations for Child 2's problem behaviors.*

<u>Time</u>	<u>Participant Responses</u>
1:43	Saw mami - just <i>wanted</i> attention.
1:46	Upset for a sec when iPad was out. He probably <i>wanted</i> to use it right away.
4:37	Stop the swing/maybe cause he saw the door opening - crying not <i>mad</i> but <i>sad</i> .
8:31	Taken away from where he <i>wanted</i> to go.
11:29	<i>Bored...doing a fake cry/tired.</i>
16:17	Not responding to name.

The stimulus control that problem behaviors exerted over Parent 3's responding can be observed in Figure 3. As with Parent 2, Parent 3 recorded six instances of problem behavior. Four of Parent 3's responses may be attributed to the multiple



*Figure 3: A cumulative record of Child 2's tantruming (—) and elopement (---). The markers indicate the timestamps at which Parent 3 responded to Child 2's problem behavior.*

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control of both tantruming and elopement, whereas two responses were controlled solely by tantruming. Regarding the four responses that appeared under multiple control, once again an examination of Parent 3's explanations can provide further insight into which of the two had primary control.

Table 3

*Parent 3's explanations for Child 2's problem behaviors.*

<u>Time</u>	<u>Participant Responses</u>
1:10	Upset because he doesn't <i>want</i> to follow directions.
2:02	Change to new activity.
4:26	Avoiding change.
8:22	<i>Doesn't like</i> to stop swinging. <i>Doesn't like</i> the sound of the animal toy.
12:16	Upset/hits when <i>doesn't like</i> sound - <i>scared</i> .
16:12	Done spinning <i>wants</i> out.

Table 3 displays Parent 3's timestamps and corresponding responses to Child 2's problem behavior. Her first response at 1:10 describes Child 3 as "upset", which points to his tantruming. Additionally, the sixth response at 16:12 implies that Child 2 was spinning in a swing, a behavior incompatible with elopement. Across both parents, a total of eight out of 11 explanations were controlled by tantruming. Clearly parent responses were largely controlled by tantruming rather than, or in addition to, elopement.

Our second research objective in this inquiry was to identify the extent to which parents were more likely to provide fictional explanations for their own children's problem behavior. Parent 2 provided five explanations, all of which included a mentalism. All six of Parent 3's responses included an explanation of the problem behavior, however only four of these included a mentalism.

Finally, we sought to determine the extent to which observer behaviors changed over time. Immediately after observing Child 2, both Parents 2 and 3 were asked to then observe and record explanations for the problem behavior of Child 3, the daughter of Parent 3. Figure 4 shows a cumulative record of Child 3's problem behavior across a 30-minute observation.

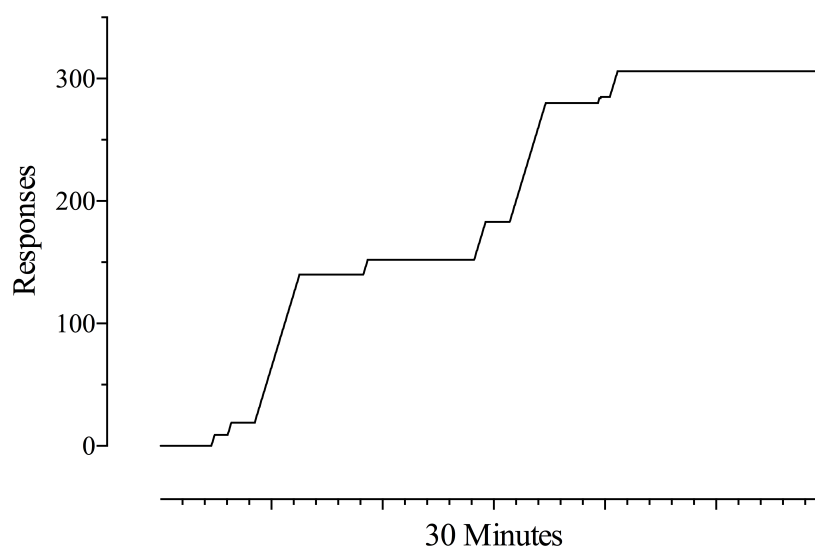


Figure 4: A cumulative record of Child 3's non-compliance. No explanations for Child 3's problem behavior were emitted during the observation session.

Neither parent recorded any instances of problem behavior for Child 3. Overall, both parents' responding appears to have discontinued shortly after the 16-minute mark during the first observation. Although Parents 2 and 3 were prompted to again record explanations at the start of Child 3's observation session, neither parent identified an instance of problem behavior. However, it is noteworthy that at the end of Child 3's observation session, Parent 2 asked if she should have been recording Child 3's non-compliant behavior.

The six responses from each parent that were recorded during Child 2's observation offer little data for analysis. For Parent 2, the only simple description that was recorded occurred last among a string of mentalistic reports. Additionally, Parent 3 provided two environmental explanations for Child 2's problem behavior within the first five minutes of the observation, before shifting her responses to mentalisms.

## Discussion

Both Parent 2 and 3's responses were primarily controlled by Child 2's tantruming behavior, while elopement may have further strengthened some of their responses. Although tantruming clearly occasioned more of both parents' responses, their use of mentalisms was prolific. These results differ from Leigland (1989) who stated that, "it is perhaps tantalizing that fewer mentalistic terms and more "pure facts" occurred when the subjects observed behavior under conspicuous and precise stimulus control" (p. 17). Child 2's tantruming appears to have controlled the majority of Parent 2's responses, which may speak to the salience of this tantrums compared to elopement. However, it did not have a discernable effect on her use of mentalisms.

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Frequently it is the context in which the behavior emitted, rather than the behavior itself, that makes the behavior problematic. Tantruming may be more conspicuous than some other problem behaviors, like elopement. This likely due to the behavioral definitions that we used which defined tantruming independently of other people, while elopement was, in this case, defined in regard to proximity to others (Falcomata, Roane, Feeney, & Stephenson, 2010). In natural environment training elopement is further convoluted, as children are encouraged to engage in more physical activity. In such settings, rather than simply measuring proximity, the observer would also have to attend to the verbal and nonverbal stimuli provided by the behavior technician.

Parent 2's consistently remarked about what Child 2 "wanted" while he was tantruming. She used the word "wanted" to explain three different episodes of Child 2's problem behavior (1:43, 1:46, and 8:31). Two of these (1:43 and 1:46) were evoked by tantruming alone. The other, at 8:31, occurred in the presence of both tantruming and elopement. Similarly, Parent 3 primarily described Child 2's wants (1:10 and 16:12) and dislikes (8:22 and 12:16). We can more accurately describe the tantruming as a defective mand as a function of Child 2's motivating operations and inability to mechanically access his preferred reinforcers. That is, Child 2's tantruming has been reinforced in the past with access to attention and tangibles. Parent 2, the mother of Child 2, would be in a much more advantageous position to discuss his history of reinforcement. However, only Parent 3 used environmental explanations (2:02 and 4:26) for Child 2's problem behavior. Therefore, we can hesitantly conclude that parents of children with ASD may be more likely to use mentalisms than non-relative observers to explain their child's autistic behaviors. However, additional research must be performed to substantiate this proclamation.

Interestingly, whereas Parent 1 appeared to sharpen her observation skills over the course of observing Child 1, both Parents 2 and 3 recorded high rates of explanations initially, but this reporting ceased midway through Child 2's observation session. As noted above, the requirement to explain all discriminated problem behaviors may have contributed to their diminishing rate of responding. Furthermore, the lack of responding throughout Child 3's observation session can likely be attributed to a weak discriminative repertoire. Compared to Child 2, whose challenging behavior was significantly more overt, Child 3's non-compliance required a precise behavioral definition. Once again, we can concur with Leigland (1989) that such a complex and subtle variable failed to exact stimulus control.

It is noteworthy that the responses between Parents 2 and 3 appear to be frequently yoked. For instance, Parent 3's responses at 4:26, 8:22, and 16:12 were all closely followed by responses from Parent 2 at 4:37, 8:31, and 16:17, respectively. Thus, in addition to Child 2's tantruming and elopement, Parent 2's responses were likely also under the control of Parent 3's recording behavior. This confounding variable might also account for the simple description provided by Parent 2 at 16:17. That is, Parent 3's writing may have served as an  $S^D$  for



recording her own response, but this same attention to the other observer may have kept her from discerning an explanation for Child 2's autistic behaviors.

A few discrepancies were observed between Parent 3's observations and the cumulative record. For instance, at 12:16 she recorded an instance of aggression. However, this was not observed when coding the video record of Child 2's observation session. Such a discrepancy may be the distinction between her live recording and our archival coding. But it should be pointed out that Parent 2 also omitted this response.

Similarly, at 16:12, Parent 3 noted that Child 2 was "done spinning *wants* out". However, according to the cumulative record, Child 2 had just ceased eloping, and therefore was not in the swing. This discrepancy may have been due to a latency between when Parent 3 observed the problem behavior and when she pushed the lap button on the stopwatch. Speculatively, we may consider that she was thinking about how to explain the behavior in the interim.

## General Discussion

It's been said that if you meet one person with autism, you've met one person with autism. Underlying this statement is the notion that autism accounts for a broad, perhaps infinite, range of responses. But if this is the case, what is the benefit of an ASD diagnosis? Mentalistic explanations for autistic behaviors may be negatively reinforced, allowing the speaker to avoid or escape an aversive stimulus. Culpability shifts from the speaker, who is part of the autistic individual's environment, to the individual with ASD. Removing this aversive stimulus likely reinforces such mentalistic explanations, which thereby strengthens the dualistic notion of autism. As evidenced by the proliferation of mentalisms in the explanation of problem behavior reported here, the verbal community of parents of children with autism likely reinforces discussion of autism as an inner dimension or hypothetical construct that either directly causes or mediates challenging behavior. Poor conceptual models of autism lead to ineffective practices that attempt to address autism as something independent of the organism/environment interaction. However, the person is not an originating agent. As the locus of control, the person is the culmination of genetic endowment, individual history of reinforcement, and present context (Skinner, 1974). Although the phenotype for autistic behavior varies widely, the sources of control are largely homogeneous. While no two people with ASD behave in precisely the same way, the autistic operant class largely links back to a contingency-shaped disorder of verbal behavior (Drash & Tudor, 2004).

Across both investigations, parents of children with ASD were asked to tact the controlling variables for their children's problem behaviors. Any explanation would necessarily include a description of the controlling relations within the environment, rather than a description of the behavior itself. While in some cases parents appropriately attributed the behavior to the environmental relations, their

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verbal behavior repertoire also included a large number of circular explanations. The parents' use of mentalisms to explain such behavior points to multiple causation for their own verbal behavior. Specifically, the use of such mentalisms can be attributed to supplementary stimulation in the form of thematic suggestion (Skinner, 1953; 1957). Furthermore, given that the parent's verbal responses could not be identified in advance, we can more precisely identify the supplementary variables as thematic probes. Thus, the parents' tacting of the controlling relations responsible for problem behavior is under the control of a supplementary source of strength stemming from her personal history of reinforcement provided by her own verbal community.

With regard to supplementary stimuli, Skinner (1953) also points out that we can refer to the parents' mentalisms as *projections* because their verbal behavior is less specifically controlled by the supplementary stimuli. That is, the parents have reacted with a response which is formally imitative of the behavior of the children, but which is controlled by different variables in their own behavior. For example, a parent may recall an instance from her childhood in which tantruming was reinforced with access to a preferred item. Additionally, her verbal community may have strengthened her use of mentalisms in describing such an incident: "I cried because I wanted the teddy bear." The mentalism *wanted* displaces a description of the controlling variables for crying (i.e., in the past, crying has been reinforced with tangible access to the teddy bear). As such, when she presently sees her son crying - and perhaps more specifically when his crying ceases upon the presentation of a toy - the crying serves as an imitative stimulus under which she transfers (i.e., projects) the same controlling relations of her own prior crying behavior onto the present behavior of her son: "He was crying because he *wanted* the toy."

Parents often ask questions about *why* their children engage in various problem behaviors. The answer, of course, lies in the contingencies of reinforcement. For children with ASD, the issue is more commonly found along the dimension of frequency. That is, individuals with ASD rarely emit responses categorically different than individuals without ASD. Rather, the primary difference between autistic behavior and typical behavior is one of rate. Thus, the question becomes, why do children with ASD engage in various problem behaviors so frequently. The answer, of course, lies in the schedule of reinforcement. Skinner (1953) states, "The effects of a schedule are due to the contingencies which prevail at the moment of reinforcement under it. Such schedules are, in other words, *simply rather inaccurate ways of reinforcing rates of responding*" (p. 105). Similarly, mentalistic explanations are rather inaccurate ways of describing the specific contingencies and/or schedule of reinforcement in effect.

Notably, the parents' observations play an important role in this type of inquiry. The prevalence of mentalisms identified throughout the observations reported here might have been a function of the directions and other demands placed on the parents as observers. Accordingly, it is critical to identify these observations as behaviors in their own right. Across the two investigations

presented here, we saw both the shaping of Parent 1's explanations, and what we may tentatively describe as extinction curves for Parents 2 and 3. Future research should hold this variable constant, or explore it in its own right, through proper conditioning.

Moreover, a systematic analysis of mentalistic explanations emitted by parents about their own child's behavior may allow for specific pinpointing of parent training objectives. The procedures employed here may be used as the basis for an experimental analysis of parent observations. Although individualized programming is now the standard for children with disabilities, this consideration is only rarely extended to the parents of children with disabilities. The specificity of parent trainings may occasionally be narrowed through self-reports data or descriptive assessments, but a standard procedure for experimentally identifying the deficits and outcomes of parent training at an individualized level has not yet been developed.

Baum (2005) explains that mentalisms often arise from a molecular analysis of causes present at the moment the behavior occurs. Indeed, this is exactly what we asked the parents in this study to provide. As such, it could be anticipated that the interactional histories between parents and their children with ASD would provide additional control over the emission of mentalisms; although historical accounts may certainly be no less mentalistic. The prevalent tendency observed in this study was for caregivers to use more mentalisms when explaining their own children's behavior when compared to other children. Additional research is warranted to control for differences that may occur across immediate analyses, as were conducted here, and the analyses of extended temporal patterns of problem behavior. Though it should be noted that without the appropriate theoretical framework any attribution of causality to the environment is unlikely.

Across three observations, we only examined a small sample of the range of autistic behaviors. Non-compliance, tantruming, and elopement all occurred at high rates across the three observation sessions. It is likely that these behaviors occur at high rates in other environments as well, which may have a conditioning effect on family-member observers. Given that the parents were instructed to freely record problem behaviors, they may have disregarded many of the typical problem behaviors that they encounter daily. The behaviors observed in this study were relatively minor, although no less autistic, when compared to other challenging behaviors, such as aggression and self-injury, which likely would have exerted greater stimulus control over the parents' responses. Future research should extend the results of the current study to a greater range of autistic behaviors, including those more severe and overt.

Finally, future research should also examine the observations of other direct caregivers, such as teachers, therapists, and others invested in reducing the frequency of autistic behaviors. Caregiver responses are largely controlled by the individual's conceptual model of autism, and the frequency of mentalisms may prove to be a sensitive dependent variable for assessing the competencies of autism service providers. A comparison of such simultaneous observations between parents and other caregivers may lead the way to more effective communication

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when developing individualized treatment plans and assessing the short- and long-term outcomes of environmental modifications designed to weaken autistic behavior.

Behavioral phenomenology showed to be an effective methodology for identifying the stimuli that controlled parent responding in the present study, and may provide the basis for a more experimental examination of mentalisms in the future. Whereas the present study was conducted using free-operant responding in vivo, a more tightly controlled variation of this research could employ video recordings of autistic behaviors under both precise and obscure stimulus control. Such additional controls may provide for a more thorough and functional analysis of the use of mentalisms.

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