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# Teaching Young Children With Autism: When Not to Cooperate With Instructions

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**Abstract**

Although many studies have focused on increasing cooperation among children with autism, very little research exists on teaching children with autism to discriminate when they should and should not cooperate with an adult-delivered instruction. Refusing to cooperate with some instructions in some contexts could prevent a child from becoming a victim of sexual or other forms of abuse. In this U.S. study, we used behavioral skills training with video modeling to teach three children with autism to discriminate the conditions under which they should not follow an instruction to remove their shirt. A multiple-baseline design was used to evaluate the effects of the procedure. The procedures were effective for all participants. We discuss the results in terms of teaching general self-advocacy skills to this population.

**Keywords**

autism, cooperation, abuse prevention skills, self-advocacy, conditional discriminations

## Introduction

### *Teaching Young Children With Autism Abuse Prevention Skills: When Not to Cooperate With Instructions*

Cooperation can be defined as a learner independently performing a requested action within a specific time frame (Lipschultz & Wilder, 2017). Learning to cooperate with adult-delivered instructions is important for young children. For example, cooperation with some instructions (e.g., "Play in the grass, not in the street") can prevent adverse outcomes. Further, cooperation with adults is often required to advance in academic and social (e.g., sports) endeavors.

Despite the importance of cooperation, there are some adult-delivered instructions with which children should not cooperate. Some instructions may place a child at risk for emotional, physical, or sexual abuse. In a recent review, Malone and Zimmerman (2023) note that teaching indiscriminate cooperation may be particularly risky for children with disabilities, as these children are much more likely to experience abuse than their typically developing peers (Smith & Harrell, 2013). Malone and Zimmerman further suggest that teaching children to discriminate among the social partners or contexts in which cooperation may or may not be appropriate could protect them from some of the risks involved with indiscriminate cooperation.

Discriminated cooperation, or cooperating with some but not all instructions, may also be important in classroom settings. For example, children may be given an instruction to "be quiet and stay in your seat", which can be important for maintaining a productive classroom environment. However, there are specific scenarios in which it would be appropriate to disobey those instructions, such as when a child needs to use the restroom, a medical emergency exists, or the child sees, smells, or hears dangerous stimuli (e.g., gunfire, smoke).

Positive behavior support (PBS), an applied science that uses applied behavior analysis and systems change methods to enhance an individual's quality of life, includes a number of critical features, including ecological validity, an emphasis on prevention of future problems, skills-based training, stakeholder participation, and person-centered values (Carr et al., 2002). From a PBS perspective, teaching cooperation is often necessary, but teaching indiscriminate cooperation may violate some core PBS values. Specifically, teaching indiscriminate cooperation may undermine autonomy, prevent self-advocacy, and inhibit social validity. Rather than teaching indiscriminate cooperation, behavior analysts and educators should be seeking ways to understand and communicate with learners, and working with them toward

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achieving fulfilling lives (Weiss & Knoster, 2008). Teaching discriminated cooperation is more consistent with the values of PBS.

Thus, instead of teaching cooperation with all adult-delivered instructions, children with disabilities should be taught to discriminate among the instructions with which they should and should not cooperate. Of course, the list of instructions with which children should not cooperate is long, so it may be more practical to identify some critical features of the instruction or the instructional context and teach the learner to discriminate based on that feature. In other words, children should be taught to make a conditional discrimination. As an example, a young child may be taught to cooperate with an instruction to "Come with me" when delivered by a parent or a teacher, but not cooperate with the same instruction when delivered by an unfamiliar adult. The critical feature or condition is the familiarity of the person delivering the instruction, so programming might focus on teaching the child to discriminate among known and unknown adults.

Few studies have focused on teaching children with autism to discriminate cooperation. Thus, the purpose of this study was to evaluate behavioral skills training (BST) with video modeling (O'Handley et al., 2016) to teach three children with autism when not to cooperate with an instruction to remove their shirt. Specifically, we taught participants not to cooperate with the instruction when there was another person in the room. We selected this specific instruction because, when asked, our participants' caregivers expressed concern about the possibility that their child could be vulnerable to sexual abuse, and because this and similar instructions might be used by child abusers as part of the abuse grooming process (Spenard & Cash, 2022).

## Method

### *Participants, Setting, and Materials*

Our inclusion criteria were children between the ages of 4 and 8 years with autism who could follow simple instructions and whose parents agreed to focus on this specific skill. Three children with autism participated; all participants also had a co-occurring mild intellectual disability. All children had the motor skills required to independently dress and undress themselves, and all scored at level 3 on the *Listener Responding* subscale of the Verbal Behavior Milestones Assessment and Placement Program (Sundberg, 2008). Mary was a 5-year-old, white female. She communicated vocally using three to five word phrases and could respond to a wide variety of instructions. Mary received behavioral services in-home for approximately 20 hours per week. Joe was a 4-year-old, white male. He communicated vocally using two to three word phrases and could respond to a wide variety of instructions. Joe received behavioral services at a community-based clinic for approximately 30 hours per week. Richard was a 6-year-old, white male. He communicated vocally using three to five word phrases and could follow a wide variety of instructions. Richard received behavioral services at a community-based clinic for approximately 30 hours per week. Participant dignity was maintained throughout the study; the experimenter and a second data collector (who was familiar to participants as a therapist and whose parents approved) were the only people who saw the participants remove their shirts, and participant faces and torsos were digitally disguised in videos (although viewers could still see a shirt removed). Videos were stored on a secure computer and destroyed once they were no longer needed. Caregiver consent and participant assent were obtained before data collection began. To obtain assent, we vocally described the study using age-appropriate language. If participants agreed to participate, we had them sign a one-sentence assent form indicating their approval. Participants were informed that they could stop participating in the study at any time. The university institutional review board (IRB) approved the study before data collection began.

Mary's sessions took place in a university-based clinic in a treatment room that had a one-way mirror and contained a table and chairs. Sessions for Joe and Richard took place in a small room at a clinic that contained a table and two chairs. There was no mirror in this clinic, so video cameras in the room were used to collect data. The experimenter could directly observe the participant via video in real time, which enabled the delivery of appropriate consequences during the treatment phase. Sessions were conducted one to three times per day, 1 to 3 days per week. Baseline and intervention sessions took approximately 1 to 2 weeks each to complete for each participant (total participation time was 2–3 weeks per participant). The materials included the participant's shirt, as well as a pencil and printed data sheets. Each session was approximately 50 minutes in duration. An adult female in her mid-20s served as the experimenter. The experimenter had previously served as a behavior therapist at the participants' clinic, so he was familiar with each participant.

### *Experimental Design*

We used a nonconcurrent multiple baseline design across participants (Watson & Workman, 1981) to evaluate the effects of behavioral skills training and video modeling on responding to an instruction. We also included a multielement component to compare levels of responding to the "should follow" instruction to the "should not follow" instruction. These two conditions (i.e., presence vs. absence of experimenter) were randomly alternated.

### *Dependent Variable, Interobserver Agreement, and Procedural Fidelity*

The dependent variable was the percentage of presented instructions with which each participant cooperated.

Cooperation was defined as completing the action in the provided instruction (e.g., "Take your shirt off") within 10 s after the instruction was presented. After each session, we calculated the percentage of cooperation by dividing the number of instructions with which each participant cooperated by the total number of instructions delivered to the participant.

A second, independent observer collected data on interobserver agreement (IOA) during 30% of sessions in each phase for each participant. We calculated trial-by-trial IOA by dividing the number of agreements per session by the number of agreements plus disagreements, and multiplying the result by 100. Mean IOA was 100% for all participants across all phases of the study.

A second, independent observer also calculated procedural fidelity by comparing the number of agreements on a checklist of procedures to the total number of steps on the checklist, multiplied by 100. We collected data on procedural fidelity during 30% of baseline and intervention sessions. The checklist included the researcher's location (inside or outside of the room) and the correct delivery of the instruction. During the BST plus video modeling phase, we collected fidelity data on the following four intervention components: whether the researcher correctly delivered the instruction, used modeling, delivered feedback, and allowed the participant to rehearse the skill. Mean procedural integrity values were 100% for all participants during baseline and BST plus video modeling phases. A second, independent observer collected IOA data on procedural fidelity during all sessions in which procedural fidelity data were collected; mean agreement was 100%.

## Procedure

*Baseline.* During baseline, participants were in the clinic treatment room. The experimenter presented the instruction using the same phrase ("Take your shirt off") and neutral tone of voice on each trial, and no other instructions were presented. The experimenter delivered the instruction on every trial in all phases.

The experimenter presented the instruction under both conditions (i.e., when in the room, which was the "should not cooperate" condition and when outside of the room, which was the "should cooperate" condition). A total of ten instructions were presented in each session (5 should and 5 should not be presented in randomized order established by an online random number generator). The inter-instruction interval was 5 min. When participants removed their shirt after instruction delivery, the experimenter waited approximately 3 min and then put the participant's shirt back on the participant without vocal interaction. Although participants were generally capable of putting their shirt on independently, we avoided prompting them to put their shirt back on themselves because of concerns that repeated prompts (vocal or otherwise) would provide attention that may interfere with the study's internal validity. That is, a lot of attention delivered after cooperation with the instruction may have affected subsequent cooperation, so we chose to have the experimenter put the participant's shirt back on with no vocal interaction. The participants were free to do whatever they wanted to do between instructions; moderately preferred toys were available during this time. After each instruction was presented, participants' responses were recorded, and no programmed consequences were provided. Participants were given access to a highly preferred item at the end of each session for participation, independent of their cooperation with the instructions.

*Behavioral Skills Training With Video Modeling.* The behavioral skills training (BST) condition consisted of four steps: instruction, modeling, rehearsal, and feedback. Participants were first provided with instructions, which were delivered vocally. The instruction consisted of information about when they should and should not follow an instruction for the scenario. Specifically, the experimenter explained that the participant should follow the instructions when they are alone in the room, but should not follow them when there are other people present in the room with them. The experimenter said, "Undressing should be done privately. It is okay to take your shirt off when you are alone. However, you should not follow instructions to take your shirt off when other people are in the room." The experimenter then demonstrated this using video modeling. The video included a depiction of correct responding in both conditions. In the video, the experimenter provided the instruction "take your shirt off" to a similar-age confederate while the experimenter was in the room with the confederate. The instruction was presented in the same manner (i.e., identical phrase, tone of voice, etc.) as in baseline. The confederate in the video did not remove their shirt, and after 10 s the experimenter in the video provided descriptive praise. The video also showed the confederate in the room alone as the experimenter delivered the instructions from outside the door. The confederate removed their shirt (but had an undershirt on), and the experimenter in the video provided descriptive praise. The confederate child and the caregivers of the confederate child depicted in the video provided consent for this video to be created and shared with study participants. To increase participant attendance to the video, the experimenter observed each participant watching the video, and if the participant looked away from the video, the experimenter prompted the participant to watch the video. Participants were then given the opportunity to rehearse following the video. These rehearsals were practice; they preceded the intervention phase sessions. The experimenter then delivered feedback on the participants' performance during the session. When the participants engaged in correct responding (took their shirt off in the

absence of the experimenter and kept their shirt on in the presence of the experimenter), praise and a highly preferred tangible item (identified before the study via a paired stimulus preference assessment; Fisher et al., 1992) were delivered. When the participants engaged in incorrect responding, the experimenter was scheduled to deliver a brief statement indicating that the participant should only remove his or her shirt when no other people are in the room. However, this statement was never necessary. As in baseline, the inter-instruction interval was 5 min, and the participants were free to do whatever they wanted to do between instructions; moderately preferred toys were available. When participants removed their shirt after instruction delivery, the experimenter waited approximately 3 min and then put the participant's shirt back on the participant without vocal interaction. The next trial then began; we randomly alternated between the appropriate (experimenter absent) and inappropriate (experimenter present) conditions under which the participants were to cooperate with the instruction to take their shirt off. Finally, we required each participant to achieve a mastery criterion of three consecutive sessions with 100% accurate responding in both the should and should not cooperate conditions.

### *Social Validity*

We showed caregivers their child's final session via video, then we sent each participants' caregiver a link to an anonymous, written digital social validity survey to determine their satisfaction with the procedure. To decrease the likelihood of demand characteristics (i.e., a caregiver responding in a way the experimenter might want them to respond), we told caregivers that the social validity results were completely anonymous and that the experimenter would be unable to identify individual caregiver responses.

As part of the survey, we asked caregivers if they thought the goal of the study was appropriate, if the instructional procedure was suitable, and if the outcome of the study was acceptable. We also asked if they would use a similar procedure to teach their children when not to cooperate with other instructions. All caregivers scored a 4 or 5 for all questions on the survey on a Likert-type scale, wherein 5 indicated "strongly agree" ($M = 4.6$ across all questions). We also gave the participants themselves a brief social validity questionnaire (delivered vocally) to determine if they enjoyed participating in the study and would participate again if given the opportunity. All participants answered yes to both questions.

## Results

Figure 1 depicts the results of the treatment evaluation. During baseline, participants cooperated with instructions in both conditions on most trials. During the BST with video modeling phase, all three participants showed decreased cooperation in the *should not cooperate* condition while maintaining or increasing cooperation in the *should cooperate* condition. Specifically, Mary's mean percentage of cooperation (upper panel) during the *should cooperate* condition was 95% (range, 80%–100%) during baseline and 100% during treatment; during the *should not cooperate* condition, she cooperated on 100% of opportunities in baseline and 0% of opportunities in BST with video modeling.

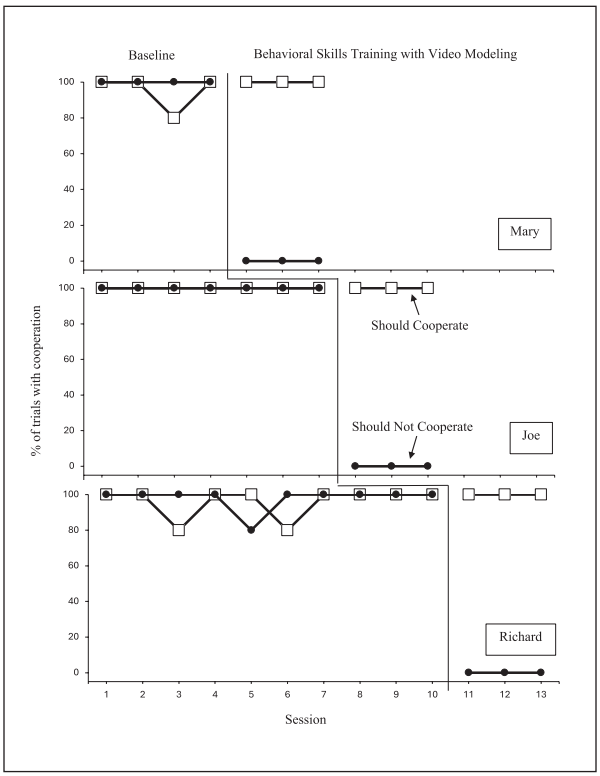


**Figure 1.** Cooperation With Should and Should Not Instructions Across Participants.

Joe's mean percentage of cooperation (middle panel) during the *should cooperate* condition was 100% during baseline and 100% during treatment; during the *should not cooperate* condition, he cooperated on 100% of opportunities in baseline and 0% of opportunities in treatment. Richard's mean percentage of cooperation (lower panel) during the *should cooperate* condition was 96% (range, 80%-100%) during baseline and 100% during treatment; during the *should not cooperate* condition he cooperated on a mean of 98% (range, 80%-100%) of opportunities in baseline and 0% of opportunities in treatment.

## Discussion

We used BST with video modeling to teach three young children with autism to discriminate when they should and

should not follow an instruction to remove their shirt. The key environmental feature that differed between the conditions was the presence of an adult either in the same room as the participant or outside of the room. All three participants learned to make this conditional discrimination; all met the mastery criterion within 3 sessions.

The instruction we used (i.e., "*Take your shirt off*") may be delivered to young children by therapists and other non-familial adults in the context of routine hygiene, medical, or safety exercises. However, this and related instructions might also be used by potential abusers in the context of grooming (Spenard & Cash, 2022). Thus, future researchers and practitioners might teach cooperation with this instruction when delivered by a specific therapist, as long as the child's parents agree. Still, teaching children, particularly those with disabilities, not to cooperate with this instruction in the presence of unfamiliar adults seems prudent. Although children older than our participants might be more common targets of abuse, teaching abuse prevention skills at an early age may prevent late childhood and adolescent abuse. Behavior analysts and educators might consult with parents to determine whether teaching abuse prevention skills should be a goal for an individual child.

The scenario we presented to participants in this study should be thought of as a simplified analog rather than a direct model of real-world safety situations. That is, instructions to undress when alone might also be unsafe depending on who is delivering the instruction and the context of the request. Future researchers might create more ecologically valid scenarios in which to teach cooperation with this and other instructions.

Of course, it is possible that some young children with autism could learn to engage in conditional discrimination using a less intensive form of training. That is, written or vocal instructions alone, or a video or in-vivo model alone, may be sufficient to teach some young children to make this discrimination. However, the relatively rapid alternation between the appropriate (experimenter absent) and inappropriate (experimenter present) conditions under which the participants were to cooperate may have been a particularly important training component in our study. This rapid alternation provided repeated examples and non-examples of the conditions under which cooperation should occur.

The ability to discriminate when and when not to cooperate might be conceptualized as a precursor to self-advocacy skills (Test et al., 2005). Advocating for oneself is important, and even necessary for success in many facets of life (e.g., when an employee must promote their accomplishments to earn a promotion). In addition, learning self-advocacy skills is likely important to many neurodivergent individuals in the autism community; satisfaction with ABA and PBS among this community might be enhanced by a focus on teaching these and related skills.

Despite their importance, little research has focused on teaching self-advocacy skills. Test et al. (2005) provide a conceptual framework for self-advocacy involving four components: knowledge of self, knowledge of rights, communication, and leadership. These researchers propose that this framework be used as an instructional and curriculum guide to teaching self-advocacy skills, and the framework serves as a good place to start for behavior analysts and educators who want to incorporate these skills into their clients' programming. Of course, we should emphasize that the ability to discriminate when and when not to cooperate with an instruction to "Take off your shirt", which was taught in the current study, is not a direct measure of self-advocacy. Future researchers should examine teaching children with disabilities direct self-advocacy skills, such as making refusal statements, reporting wrongdoing to adults, and seeking help from others.

Discriminating the conditions under which cooperation is appropriate may also be a preliminary step toward communicating needs and expressing dissent. That is, oftentimes self-advocacy requires a verbal response (e.g., speaking out to maintain placement in a queue when others are cutting the line). Although participants in the current study were not taught to emit a verbal response to communicate dissent, teaching refusal to cooperate with an adult-delivered instruction may be a first step toward nurturing and formally teaching these skills. Other, more basic skills (including cooperation with instructions necessary to prevent exposure to dangerous situations) may be best taught first, but self-advocacy skills should be a part of the curriculum for many children with autism and related disabilities.

The focus of this study is consistent with a number of critical PBS features. One core PBS feature, prevention, often refers specifically to prevention of challenging behavior (Carr et al., 2002). Teaching young children to discriminate when they should and should not cooperate with adult instructions may prevent sexual and perhaps other forms of abuse. Abuse may beget future challenging behavior, so preventing abuse is highly aligned with this PBS feature. Another core PBS feature, improving quality of life, also seems to be addressed by the focus of this study. As described above, teaching discriminated cooperation to children at a young age has the potential to increase autonomy and self-advocacy, which should ultimately enhance quality of life. Finally, another core PBS feature, ecological and social validity, is also addressed by the focus and procedures used in this study. We conducted this study in participants' clinics (as opposed to an analog setting), and caregivers readily agreed that the goal, methodology, and study outcomes were meaningful to their families.

One limitation of this study is that we taught participants to discriminate when they should not comply with only one instruction in one setting. Future researchers should teach more than one instruction or discriminable environmental

feature. We conducted this study in therapy rooms at participants' clinics. A more important setting might be a public restroom or other small room in a public setting. Also, the experimenter was relatively familiar with the participants, which could have influenced participants' responses. Although abuse perpetrators often know their victims (Smith & Harrell, 2013), future researchers might employ adults who are less familiar with participants. A second limitation is the extent to which the results might be applicable to others. Our participants had relatively strong listener repertoires and discrimination skills; children whose listener repertoires and discrimination skills are not as strong may not learn the skill as readily. A third limitation is that we taught cooperation based solely on the presence or absence of another person. Other contextual factors, such as the instruction itself and the child's history with the person delivering the instruction, play a role in determining whether cooperation is appropriate. A fourth limitation is that the experimenter did not vocally interact with participants when putting their shirt back on. We did this to limit the delivery of attention, as we were concerned that attention could have influenced future shirt removal (independent of video modeling and BST). However, in practice, a therapist would likely want to interact with a client to make them feel at ease. Another limitation is that we did not collect data on maintenance and generalization, which are particularly important in the context of demonstrating safety skills. It would have been interesting to evaluate the extent to which participant responses would have generalized to other adults and settings. Future researchers should do this. Still another limitation is that we did not collect participants' intelligence quotient (IQ) scores or measures of adaptive behavior. Future researchers should do this, as it may help to identify participants for whom this intervention would be most effective. Finally, we should emphasize that in addition to BST and video modeling, participants received praise and access to a preferred tangible item contingent upon a correct response during the intervention. Thus, the extent to which the BST and video modeling versus the praise and access to a preferred item were responsible for the results is unknown. Future researchers should consider conducting a component analysis to identify the most important intervention features.

To summarize, these results suggest that BST with video modeling can be used to teach children with autism to discriminate when and when not to follow at least some instructions delivered by an adult. Teaching this skill on a larger scale might be a step toward equipping many young children with autism with the skills necessary to advocate for themselves.

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## Ethical Considerations

The authors followed all relevant ethical guidelines. The study was formally approved by the institution's review board.

## Author Contributions

All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by Ashlyn McChristie and David A. Wilder. The first draft of the manuscript was written by David A. Wilder, and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

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## Declaration of Conflicting Interests

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## Data Availability Statement

Additional data to support the findings of this study are available from the authors upon request.

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