# Case Study: Audio Feedforward Treatment of Selective Mutism

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**ABSTRACT**

Selective mutism is a relatively rare and difficult-to-treat disorder. Audio feedforward is a potential intervention that involves having the individual with selective mutism listen to audiotapes edited to depict him or her speaking in situations in which he or she is not currently speaking. The successful use of this intervention for three children with selective mutism is reported. The intervention was used in both school and community settings. This intervention has not always proved successful, sometimes because children refused to make the audiotapes. *J. Am. Acad. Child Adolesc. Psychiatry,* 1998, 37(1):40–43. **Key Words:** selective mutism, feedforward, behavioral treatment, social phobia.

Selective mutism is a behavioral disorder characterized by a persistent failure to speak in specific social situations, despite speaking in other situations. It is thought to be rare, making up fewer than 1% of referrals to mental health settings (American Psychiatric Association, 1994). In most cases selective mutism begins during the preschool period, and at the time of referral for treatment approximately 90% of the children refuse to speak in school and with strangers (Steinhausen and Juzi, 1996). The majority of children with selective mutism are described as "shy," leading some investigators to suggest that selective mutism should be viewed as a variant of social phobia (Black and Uhde, 1992, 1995). However, in many cases high levels of anxiety are not isolated to situations involving social communication (Steinhausen and Juzi, 1996; Wilkins, 1985). The relationship of oppositional behaviors to selective mutism is less clear. Krohn and colleagues (1992) found that 90% of their sample had oppositional or controlling behaviors, even in situations in which they were verbal. Others have found that oppositional or aggressive behaviors occur in only 10% to 20% of their samples (Black and Uhde, 1995; Steinhausen and Juzi, 1996).

Selective mutism has been treated using behavioral, psychodynamic, family, and, most recently, pharmacological interventions. Behavioral interventions involving positive reinforcement for speaking, withholding of reinforcement for mute behaviors, shaping, and stimulus-fading procedures have been reported to be the most effective treatments (Dow et al., 1995; Pionek et al., 1996). Recently, fluoxetine has been reported to have a limited beneficial effect in the treatment of selective mutism (Black and Uhde, 1994). An intensive treatment involving empathetic dynamic interventions and firm behavioral expectations (including the criterion that the child does not leave the clinic until he or she has spoken at least one word) in conjunction with close family and school involvement was reported to result in complete resolution of the mutism in 85% of cases (Krohn et al., 1992). However, treatment is often described as difficult, and in the largest sample reported, persistence of symptoms despite treatment was found in more than 50% of cases (Steinhausen and Juzi, 1996).

Video self-modeling is one treatment approach that has been reported to be effective in children who are

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resistant to behavioral treatment (Dowrick and Hood, 1978; Kehle et al., 1990). Video self-modeling involves having individuals observe themselves on videotapes that show only adaptive behaviors. Feedforward is the variation of self-modeling in which the observed adaptive behaviors have not previously occurred in that form or context (Dowrick, 1991). When video feedforward is used to treat selective mutism, videotapes of the child talking obtained in situations in which the child talks fluently are edited with videotapes of the child in situations in which the child does not talk so that the edited intervention videotape depicts that child talking in situations in which he or she has been mute. Observation of the videotape by the child has been shown to result in elimination of selective mutism (Holmbeck and Lavigne, 1992; Kehle et al., 1990; Pigott and Gonzales, 1987).

In this study, we hypothesized that a similar feedforward intervention using audiotapes instead of videotapes may be effective for children with selective mutism. The audiotape intervention would be advantageous because the audiotape technology is more widely available and it eliminates the problem of having to make background scenery similar across the different situations as one would do with videotapes (Dowrick and Hood, 1978).

## METHOD

### Subjects

The children in our study were girls aged 6 to 9 years referred to us for the treatment of selective mutism. All had histories of seriously inhibited speech at school for at least 1.5 years, and some also had inhibited speech in the community. None of the girls had speech or language disorders or other known developmental disorders.

*Case 1.* N.C. was a 9-year-old child who would talk appropriately at home but was referred to us because she would only whisper one-word answers to her teacher in school and would not talk to any adults in the neighborhood. She had been retained in the second grade with the hope that a second year with the same teacher would help her speaking, but there had been no improvement. Attempts by parents and teachers to offer N.C. rewards for speaking had not been successful at school or with neighbors.

*Case 2.* K.B., who was almost 6 years old, spoke fluently to family members and some neighborhood children. She was referred to us because she had never spoken in nursery school or during the first 6 months in kindergarten. K.B. was described as shy, but she seemed to enjoy school. The initial intervention involving positive reinforcement for speaking had resulted in inconsistent whispering to a teacher's aide, but K.B. would not speak to her teacher or the school psychologist.

*Case 3.* A.R. was a 7-year-old girl who spoke fluently to family members, adults and children in the neighborhood, and children in school. She was referred to us because she had never spoken to an adult in school since she enrolled in kindergarten at age 5 years. The parents and school psychologist had previously offered A.R. both verbal and tangible rewards for one-word verbalizations to the teacher, but there was no improvement in the mutism. In addition to the mutism, A.R. would not use the bathroom in school (resulting in diurnal enuresis three to four times per week) and refused to drink liquids in school, apparently to avoid wetting more frequently.

### Intervention

In consultation with the child's parent, we developed 15 open-ended questions (only 10 questions for case 1) about topics that interested the child and were likely to result in more than one-word answers (e.g., "what do you like to do with Mommy?"). The purpose of the audio recordings, "so you can hear what it will be like when you can talk to [target person]," was explained to the child. Ten of the questions were randomly selected and an audiotape was made of the child answering these questions when they were asked by her parents at home. A separate audiotape was made of the person to whom the child was not talking (i.e., the target person) asking the 10 questions. These two audiotapes were then edited together to create an intervention audiotape that portrayed the child giving answers in the context of questions asked by the target person.

Any behavioral contingencies related to speaking that were in place prior to the intervention were continued, but no new behavioral treatments were begun during the audiotape intervention. In the baseline condition, the target person asked the child the 10 questions that had been selected for the audiotape and noted any verbal responses. After baseline data collection, the parents were instructed to have the child listen to the audiotape at least twice a day for 1 week. At the end of this week, the target person asked the 10 questions on the audiotape plus the 5 questions (cases 2 and 3) that were not included on the audiotape. Verbal responses to the questions were noted on a data sheet.

## RESULTS

*Case 1.* Before the intervention, N.C. was asked 10 questions by a neighbor to whom she was not talking. She did not give a verbal response to any of these questions. After listening to the intervention audiotape over a period of 9 days, the neighbor again asked N.C. the 10 questions. N.C. whispered a response to each question. Shortly thereafter she was noted to begin answering more questions in school, although there had been no specific intervention in school. Within 1 month, N.C.'s parents reported she was talking with the neighbor in a normal tone of voice and would spontaneously initiate conversation with the neighbor. She also began talking to other adults in the community.

*Case 2.* Results for K.B. are shown in Figure 1. Before the intervention, K.B. was asked the 10 questions by the school psychologist on three occasions over a period of 1 week. She did not give a verbal response to any of the questions. During the next week she listened to the

audiotape at least twice a day, and her parents noted that she would clap when she heard herself answering the questions on the audiotape. After the intervention, K.B. gave a verbal response to all 10 questions that were on the audiotape. In addition, she answered all five questions that had not been on the audiotape. Over the next week, the psychologist met with her two more times and she again answered all 15 questions. Without any further intervention, she answered all 15 questions when they were asked by her teacher. She continued to speak with her teacher and school psychologist for the remainder of the school year.

*Case 3.* Results for A.R. are shown in Figure 1. Before the intervention, A.R. was asked 10 questions by her homeroom teacher. She did not provide a verbal response to any of the questions. After A.R. listened to the audiotape twice a day for 1 week, the teacher asked her all 15 questions. On the first day A.R. responded in a low but audible voice to the first four questions but remained silent for the subsequent 11 questions. A.R. continued to listen to the audiotape twice a day over the next 2 days, and the teacher again asked the questions. This time A.R. responded in a low but audible voice to all 15 questions. Over the next month, shaping procedures were used to gradually increase the volume of her verbalizations. Within 1 month A.R. was speaking freely with the teacher and raising her hand to answer questions in class.

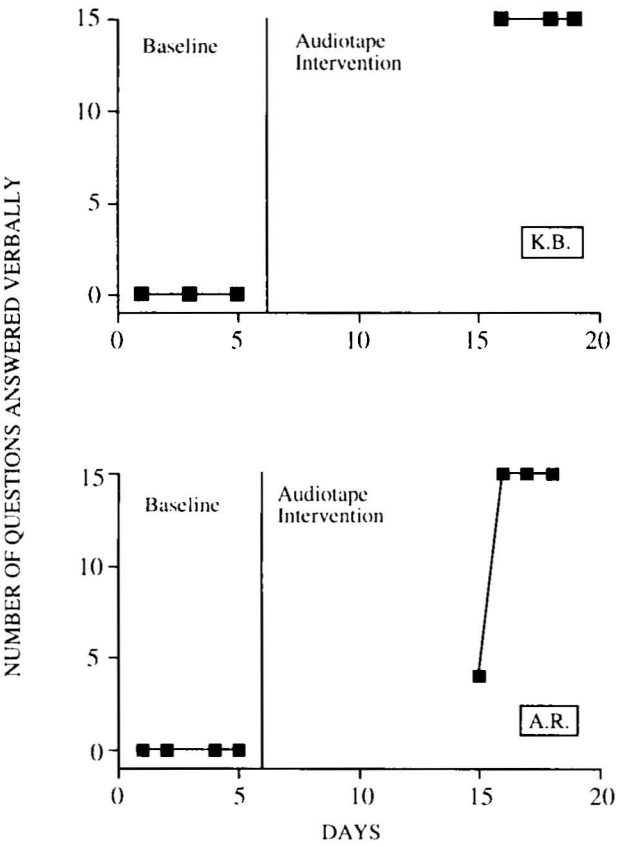


**Fig. 1** Number of questions K.B. and A.R. answered verbally during the baseline period and after the audiotape intervention.

## DISCUSSION

Video self-modeling interventions have been demonstrated to be effective in a wide range of situations including teaching skills (Hosford and Johnson, 1983), decreasing inappropriate sexual behavior (Dowrick and Ward, 1997), and treating selective mutism (Dowrick and Hood, 1978; Kehle et al., 1990; Pigott and Gonzales, 1987). In this case study, we report that an audio feedforward intervention can also be effective in the treatment of some children with selective mutism. In all three cases, previous attempts at treatment using positive reinforcement for speaking had resulted in minimal or no improvement. The audio feedforward intervention resulted in rapid behavior change in these children, who had been resistant to previous treatments. The use of behavioral treatments alone was not sufficient for these children; however, parents continued to offer rewards for talking, and it is possible that these contributed to the success of the audio feedforward intervention and/or its generalization.

In all three cases, the intervention generalized to other individuals the child had a history of not talking to, without the creation of another intervention audiotape. A similar generalization of the response has been described with the video feedforward intervention (Kehle et al., 1990; Pigott and Gonzales, 1987).

The audio feedforward intervention has not been effective for all children with selective mutism. We know of three children who have refused to participate in making a tape; this suggests that the intervention may be less effective in oppositional children. Two children who did participate in making the tape did not begin answering the questions after listening to their tape. In the studies of video feedforward, length of the videotape and number of exposures to the videotape have been believed to be important in obtaining a positive response (Dowrick and Hood, 1978; Kehle et al., 1990). Our intervention audiotapes were of 1 to

2 minutes' duration, a fraction of which was the child speaking, and the children listened to them twice a day for 1 week or more. Perhaps it is surprising that an intervention of such brevity should have any effect, and it is possible that longer tapes or more frequent listening to the tapes may have increased the efficacy of the intervention. Further research is needed to clarify the circumstances of children who respond positively.

Audio feedforward has several advantages over video feedforward. First, audiotape technology is more widely available and less expensive than videotape technology. Second, editing is technically easier because differences in background scenery are not evident on the audiotape (Dowrick and Hood, 1978). Third, the use of audiotapes does not require one to obtain permission for other students' involvement, which is often necessary if videotapes show other students in the school. However, the relative efficacy of the audio and video feedforward interventions is not known. It is possible that both seeing and hearing oneself speak may be more effective that just hearing oneself speak. Further research investigating the efficacy of these interventions is needed.

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