

Treatment of Aphasia Through Family Member Training

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A shift in emphasis from the structural properties of aphasic language to the functional use of language by aphasic communicators has been apparent. It is now widely recognized that effective treatment must take into account not only individual language problems but also the individual settings, speakers and contexts in which the aphasic person must function. Consequently, a shift from analysis of the aphasic speaker to analysis of dyads has provided important information on language in context -- especially in the familiar context of aphasic speaker and spouse.

A number of recent studies describe communication between aphasic speakers and family members (Larkins and Webster, 1981; Newhoff, Bugbee, and Ferriera, 1981; Florance, 1981; Webster, Dans, and Saunders, 1982; Linebaugh, Kryzer, Oden, and Myers, 1982; Linebaugh, Pryor, and Margulies, 1983). The results of studies in this area suggest that patient management might be enhanced by providing family members with information on intrafamily communication. It is, in fact, a widely accepted clinical belief that treatment should include patient-family education. This is reflected in the prevalent practice of offering counselling services, modeling strategies to facilitate communication, and providing family members with printed materials that suggest strategies for enhancing communication with aphasic individuals. What aphasia counselling packet would be complete without the familiar list of "do's and don'ts" that families of our aphasic patients are supposed to read, understand and follow? All too often the suggested techniques that we share with family members consist of rather broad, generic suggestions such as "speak slowly" or "use short sentences."

This educational approach seems to be based on three rather tenuous assumptions. First we assume that if we tell family members what they should be doing to improve communication, then they will modify their behavior as suggested. Secondly this approach assumes that if the family member does use the suggested techniques then this will, in fact, improve communication. Finally it is assumed that generalized and durable behavior change will occur. In other words the spouse or other family member will appropriately modify their communicative interactions in a variety of functional settings and conditions and that these improvements will be maintained over time. Needless to say there is little empirical support for these assumptions. Gravel and LaPointe (1980), for example, found that speech pathologists did not reduce their rate of speech when talking to aphasic patients. Thus, even trained professionals who should have known better, did not follow the frequently advocated "slow down" maxim. As Yorkston, Beukelman and Flowers (1980) have pointed out, generic strategies that apply to all aphasic patients may not exist. Perhaps an alternative to en masse counselling of families is needed.

Therefore, the purpose of this study was to examine the effectiveness and generalization of a spouse training program. The program was designed to systematically modify specific spouse behaviors that interfered with communication between the spouse and her aphasic husband. Specifically the following questions were asked.

1. Will training the spouse to recognize her own disruptive communication behaviors result in a decrease in their rate of occurrence during discussions of videotaped stimuli?
2. Will these improvements generalize to unstructured, spontaneous discussions?
3. Will the effects of recognition training generalize to untrained spouse behaviors that disrupt communication?
4. Will improvements in spouse interactive skills be maintained on one-month followup probes?

METHOD

Subjects. The subjects for this study were a 62-year-old couple that had been married for 40 years. The husband was 4 years post onset of aphasia. His performance on the Western Aphasia Battery was consistent with a diagnosis of Brocas' Aphasia. He had an aphasia quotient of 46. He had received language therapy for approximately 4 years. His spouse, a housewife with 12 years of education, was the primary subject of this study. Prior to initiation of the study and as a routine part of the treatment of her husband, she had received traditional "counselling and education" and had frequently observed her husband's therapy.

Design. The design used was a multiple baseline across behaviors. Following a baseline phase, treatment was sequentially applied to modify two spouse behaviors that were judged to interfere with communication between the spouse and her aphasic husband. The behaviors selected for training were spouse interruptions and excessive use of convergent questions.

Spouse interruptions occurred when the spouse began to talk while her husband was still speaking or when she did not allow sufficient time (20 seconds) for her partner to respond to her questions.

Convergent questions were defined as interrogatives that required a one-word response containing information which the wife already knew or had already stated. This category also covered questions that required only yes/no responses which were not being asked simply for confirmation purposes.

In addition a third behavior was monitored for generalization. This behavior, called negative teaching was not subjected to training.

Negative teaching occurred when the spouse corrected an already successful communication attempt. This included correcting articulation although the response was intelligible or instructing the aphasic partner to verbalize when the message was successfully transmitted nonverbally.

The two experimental phases of this study were baseline and recognition training.

Baseline. The baseline phase consisted of taping conversation in three conditions to collect data on the rate of occurrence of spouse interruptions, convergent questions, and negative teaching. No feedback was given during this phase. One baseline condition consisted of a five-minute "spontaneous discussion" between the spouse and her aphasic partner about whatever they chose, such as activities of the day, what they were planning, etc. This discussion took place at the beginning of each session. Following this spontaneous discussion the couple viewed videotaped segments of TV news programs, sports, and a popular talk show. The tape was stopped after each three-minute segment to allow the couple to discuss the segment for five minutes. Their spontaneous conversation and discussions of TV segments were videotaped and analyzed for the presence of nonfacilitative spouse behaviors. In addition the couple audiotaped their breakfast conversations at home during baseline and periodically throughout the study.

Recognition training. Following the baseline phase, recognition training sessions were conducted four times weekly. The goal of training was to train the spouse to reliably identify the nonfacilitative behaviors that she produced while talking with her aphasic husband. The expected result of recognition training was that she would systematically develop a better appreciation of when the behaviors occurred, learn to monitor herself, and subsequently stop exhibiting the behavior.

At the beginning of each treatment session the clinician reviewed the definition of the target behavior and explained the procedure for scoring the videotaped interactions. Subsequently, the clinician and spouse viewed and scored the previous day's taped interaction of the couple discussing the daily news segment. Training sessions only occurred on news segments. The clinician and spouse watched the tape and independently scored a + for target behavior present, or - for target behavior absent. A time-sampling procedure was used to score the tapes. That is, they would watch for 10 seconds and score for 5 seconds. At the end of each one-minute interval the clinician and spouse compared their scores. The clinician replayed the tape and provided feedback regarding scoring discrepancies. Recognition training continued in this manner until 10 one-minute taped interactions were scored and reviewed during each training session. The criteria for termination of training on a behavior was 90% recognition and 10% or fewer occurrences of the nonfacilitatory behavior across two consecutive training sessions.

Generalization Probes. Baseline procedures were continued as probes during the training phase to determine if the spouse's behavior changed relative to trained and untrained behaviors across the various conditions. Data for generalization of training of target behaviors (interruptions and questioning) were collected for: (1) The same condition used in training (the news discussion), (2) discussion of novel stimuli not used in training (sports and talk show), and (3) spontaneous conversation in the clinic and at home. Data for generalization to the untrained behavior, negative teaching, was probed in discussions of the news and spontaneous conversation in the clinic.

Reliability. Interobserver reliability was obtained for the three variables of interest by having two speech pathologists independently score videotapes from all conditions. Reliability tapes were selected from baseline, training and criterion sessions. Fifteen tapes were scored. Across all conditions and behaviors trial-by-trial agreements between judges averaged 87%. Interjudge reliability measures were well above the calculated levels of agreement expected on the basis of chance.

RESULTS AND DISCUSSION

Training. The first question asked whether recognition training would effectively modify spouse production of interruptions and convergent questions. Probe data for the two trained target behaviors during the discussions of the news videos are shown in Figure 1. In the upper left panel of the graph it can be seen that spouse interruptions stabilized at 40% for the last two baseline sessions. During the subsequent training phase, the rate of spouse interruptions gradually decreased until the criterion (10%) was reached in the 18th session. These improvements were maintained during training for the second behavior (sessions 19-41). The last data point (X) shows that no interruptions were produced on the one-month followup probe.

Probe data for convergent questions are presented in the bottom graph of Figure 1. Examination of the baseline data reveals a high, somewhat variable response rate, with the last four baseline sessions at approximately a 50% rate.

Recognition training began following session 18, and there was a gradual decrease in questioning through session 31, when the criterion of 90% recognition was met. However, the spouse had not reduced her convergent questioning to 10% as required to terminate training. Therefore an additional instruction was added (arrow). The spouse was instructed to substitute open ended, divergent questions for convergent questions during conversations with her husband. The result was an immediate decrease in convergent questioning. Criterion was met after 10 additional sessions, and as the data point (X) on the bottom graph indicates, there was a 31% occurrence of convergent questions on the one-month followup probe.

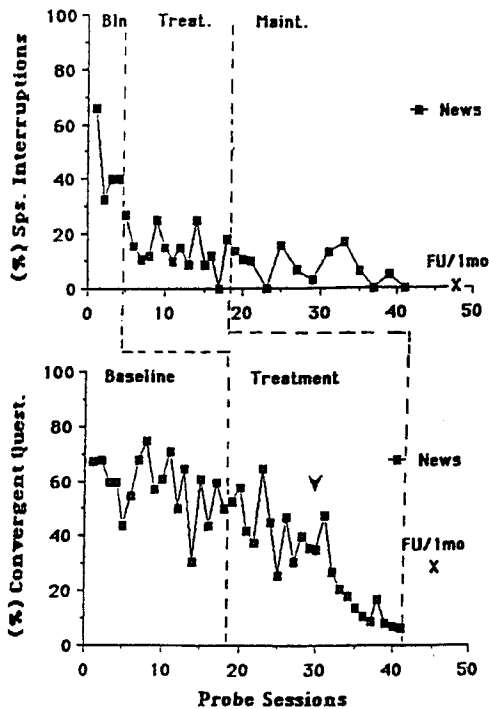


Figure 1. Percent occurrence of trained spouse behaviors during spouse-partner discussions of news segments. Unreinforced probes of baseline, treatment, and maintenance conditions are shown. Data from one month followup probes (x) are also shown.

Generalization - Spontaneous Interactions. Daily probes of the spontaneous conversation condition were examined to determine if the effects seen on the trained news condition generalized to spontaneous conversations.

Data for the spontaneous generalization of spouse interruptions are presented in Figure 2. Pretreatment levels of spouse interruptions during spontaneous conversation averaged 38% during baseline. Interruptions decreased to approximately 12% after criterion was reached (session 18) for recognition training for spouse interruptions (Tx 1). By the completion of training for the second behavior (session 41), interruptions were below 10% with continued low rate maintained at the one-month followup.

Considerably more variability was evident in the generalization data for spontaneous production of convergent questions (Figure 3). After a high rate of convergent questioning during baseline (65%), there was a gradual decrease throughout each treatment phase. At the completion of training (session 41) convergent questions during spontaneous conversation had reduced to 10% with maintenance at 1 month followup (23%).

Overall it appeared that generalization and maintenance of training effects to spontaneous interactions was found for both target behaviors.

Generalization: Sps. Interruptions

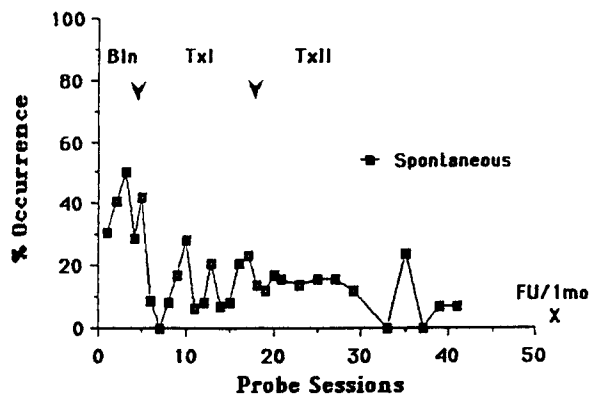


Figure 2. Generalization. Percent occurrence of spouse interruptions during spontaneous spouse-partner discussions. Data from one month followup probes (x) are also shown.

Generalization: Convergent Quest.

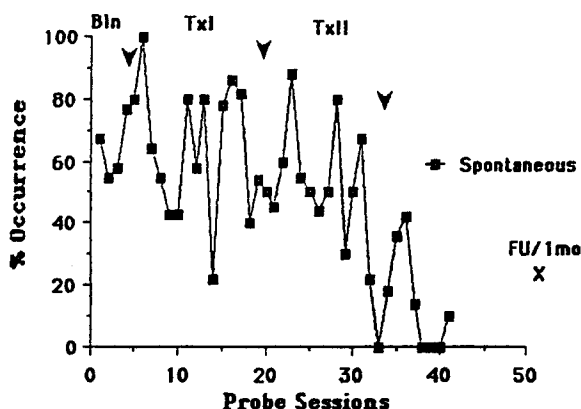


Figure 3. Generalization. Percent occurrence of spouse convergent questions during spontaneous spouse-partner interactions. Data from one month followup probes (x) are also shown.

Generalization - Novel Stimuli. Probes of discussions of television sports and talk show segments provided data regarding generalization of training effects to untrained or "novel stimuli." Production of spouse interruptions in this condition (Figure 4) showed a gradual decrease over time. At the completion of training (session 41) spouse interruptions were produced on fewer than 20% of the opportunities during discussions of both sports and talk show segments, with maintenance of improved performance at one-month followup.

Figure 5 shows generalization data for convergent questions during discussions of sports and talk show segments. These data replicate the findings from the spouse interruptions. That is, there is a gradual decrease in the frequency of convergent questioning behavior. Moreover, improvements were maintained on the one month followup probe.

Generalization - Untrained Behavior. Recall that generalization to an untrained behavior, negative teaching, was also periodically probed throughout the study. Generalization of negative teaching to the news discussions, a condition that paralleled the training condition, is shown in Figure 6. After a variable rate of negative teaching during baseline, there was an eventual decrease in this behavior to 0% during the final two probes at the completion of training, with maintenance at a low response rate on followup.

Generalization: Sps. Interruptions

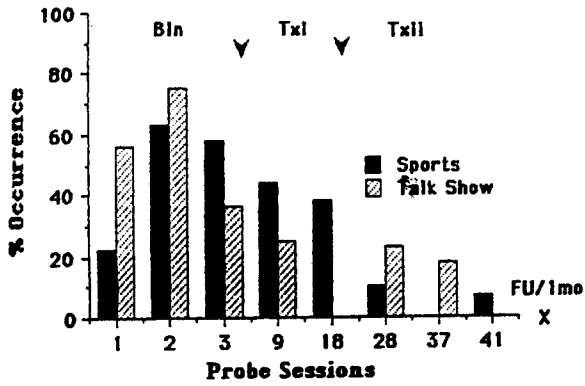


Figure 4. Generalization. Percent occurrence of spouse interruptions during spouse-partner discussions of novel stimuli (T.V. sports; talk show). Data from one month followup probes (x) are also shown.

Generalization: Convergent Quest.

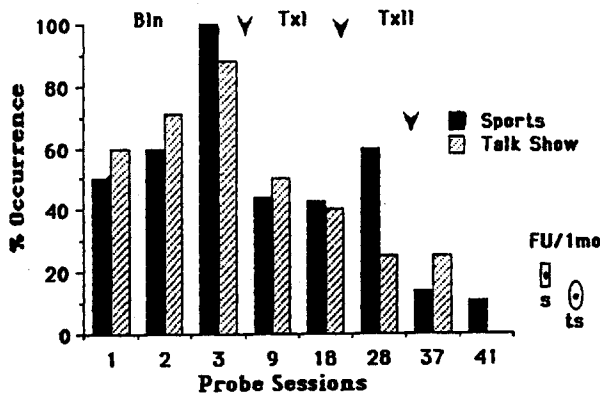


Figure 5. Generalization. Percent occurrence of spouse convergent questions during spouse-partner discussions of novel stimuli (T.V. sports; talk show). Data from one month followup probes (x) are also shown.

Generalization: Negative Teaching

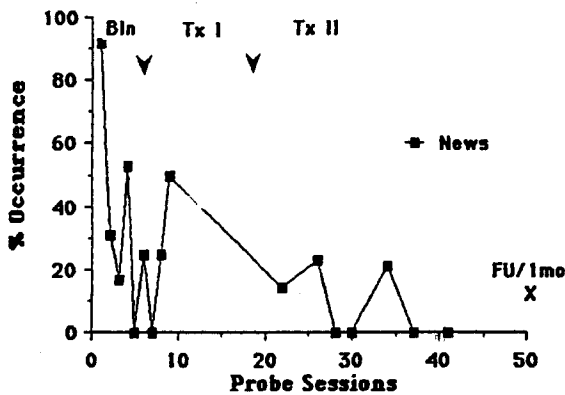


Figure 6. Generalization. Percent occurrence of an untrained spouse behavior (negative teaching) during spouse-partner discussions of news segments. Data from one month followup probes (x) are also shown.

Figure 7 depicts generalization of negative teaching to spontaneous interaction. Following baseline, there was an immediate decrease in negative teaching. This improvement was temporary. Following introduction of recognition training for convergent questions (Tx II, session 18) the spouse again began consistently to use a negative teaching strategy. It appeared that she resorted to this behavior because she did not know what to do if she could

not ask a closed question. In other words she substituted an equally non-facilitative strategy. Fortunately, adding the instruction to use an open ended, divergent question during the final treatment phase resulted in an immediate and dramatic reduction in negative teaching which was maintained on followup.

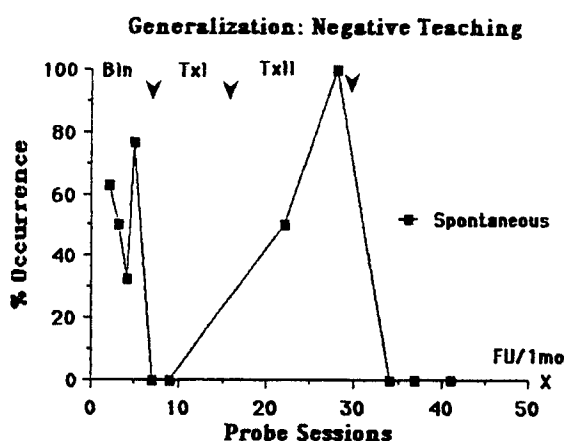


Figure 7. Generalization. Percent occurrence of an untrained spouse behavior (negative teaching) during spontaneous spouse-partner interactions. Data from one month followup probes (x) are also shown.

Generalization - Home. Data for generalization to the home are shown in Table 1. The data for use of convergent questions at home reveals a baseline level of 87% and a subsequent reduction to 40% after criterion was met for training of convergent questions. This represents greater than 50% improvement. Data for spouse interruptions were less revealing. The spouse rarely interrupted her husband at home during breakfast. In fact, spouse interruptions in this condition began and remained at a low rate. This appeared to be an artifact of the breakfast condition, since there were few opportunities for this behavior to occur. The more important information gleaned from home probes concerns changes in the husband's performance. He doubled the percentage of his verbal responses by the end of training, from 10% verbal responses during baseline to 43% by the end of training. There was also a concomitant increase in the average length of his verbal responses from 1 content word per utterance during baseline to 3 words per utterance at the end of his wife's program. Thus, generalized changes in the spouse's behavior and improvement in the responsiveness of her aphasic partner were observed after spouse training.

Table 1. Results of probes to home conversations.

	Baseline	Criterion Treatment I	Criterion Treatment II
Spouse			
Convergent Questions	87%	60%	40%
Interruptions	7%	20%	13%
Husband			
% Verbal	20%		43%
Content Words per utterance	1		3

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ACKNOWLEDGMENT

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DISCUSSION

- Q: The patient was four years post-onset and stable. How much treatment had he received and was he getting some treatment at the same time as the spouse or was treatment strictly relating to the spouse?
- A: Treatment was given only to the spouse. The husband had received about four years of treatment.
- C: I would like to highlight one of the things that you mentioned incidentally in your presentation -- that when the wife began to recognize the problems with convergent questions, and substituted another maladaptive strategy, it was necessary to teach her a positive thing to do. You really do need to provide substitute strategies in many cases, to give them something positive to substitute for the maladaptive behavior.
- A: I think it is also interesting relative to how we generally "work with" families that she had been observing therapy for years and making assumptions based on playing the role of therapist rather than conversation partner, which was not appropriate in general conversations.
- Q: Why did you pick this particular spouse to do this?
- A: Other couples were screened and were not considered appropriate because they basically represented a nonfunctional marriage. I don't think we can always train communication that is maladaptive for other reasons. It looked like Mrs. B had the potential for changing her behavior, and was motivated to do so.
- Q: One of your measures -- perhaps your principle measure of social validation -- was a questionnaire. I wonder if you and your coauthors would mind commenting on social validation and the kinds of tools that we might use as a profession to make sure that the changes we get when we are watching them closely are changes that stay when we turn our backs.
- A: We thought about doing a variety of things. We used open-ended, non-leading questions to interview the spouse. Of course, one problem with doing a questionnaire at the end of training is that the time invested, and the fact that someone participates for that long, might influence

how they feel about it. We also talked about having other people look at the tapes, and see if they (untrained people) felt like there was any difference in the way the couple interacted -- if it looked like it was more fun or successful after treatment. We have not done this.

We do have some other data that we did not have time to include. We also obtained data on clinicians' interactions with the same patient in the same conditions as the spouse to determine whether or not clinicians interacted differently a la Gravel and LaPointe (1982). The results were as follows:

Interruptions by Clinicians

Clinician #	News Condition	Spontaneous Conversation
1	20%	15%
2	42%	25%
3	27%	3%
4	25%	20%

Convergent Questions by Clinicians

Clinician #	News Condition	Spontaneous Conversation
1	91%	63%
2	58%	59%
3	80%	27%
4	58%	80%

Interestingly, clinicians did not seem to contribute to the best conversational exchange. Basically we found that there was a fairly high rate of interrupting by clinicians. This was a chronic, fairly low-level Broca's patient and clinicians also used very convergent questions. Our view is that these clinicians did not give this patient an opportunity to communicate either verbally or nonverbally. There is a lesson there in terms of social validation and in terms of where we might go with all of this. One of the directions we may go is to train clinicians on how to behave.

Q: What was his MLU?

A: I cannot tell you exactly. We can tell you that initially he was producing one-word responses and at the end three-word responses. Those are content units so it is pretty close to MLU.

Q: Did you show the wife the data on what happened to his speech when she backed off?

A: No.

Q: Wouldn't the most direct way of looking at social validation be to videotape some normal couples talking, record the number of interruptions versus convergent questions, and then use that to establish what criteria or what level you would want to get the wife to to get them to a "socially adequate or normal level"?

A: I don't think so. We know that this patient has a really disordered system. Maybe you would want to approximate what their prior interaction was, but a lot of the behavior that she was demonstrating was, we felt, a response to the disorder and not a response to the interaction.

- Q: The time that you spend to train family members -- is it reimburseable?
- A: I think it depends on how you document it. Data such as these might help justify that for third party payers.
- Q: Do you think there are any sorts of training procedures that would be applicable to the patient that would improve the communicative interaction even further?
- A: This is a patient that had four years of quality VA treatment. This couple seemed to us to have certain maladaptive behaviors that we targeted for intervention, largely because of the way they interacted. There was a feeling that the patient had more than his wife gave him a chance to produce both nonverbally and verbally. I think we had taken him as far as we could take him.
- Q: It seems to me that some of the behaviors that you are considering maladaptive might be quite adaptive for certain purposes. If you want to get some very specific information from the aphasic individual really fast, the things you are calling maladaptive might be the very things to do (interrupt, ask convergent questions). But if you want an aphasic person to have equal participation in a conversation and to feel like he's contributing, some of these might be maladaptive.
- A: Yes, and I think that is why it has to be looked at on an individual basis. What this spouse was doing (her convergent questions) was not even seeking information. For example, relative to a news segment asking "What is the President's name?", and before he could even attempt to get out that one right answer, she would say, "You remember him. Who did you vote for?" So it was not really give and take of information; she was using a strategy to demand that he get a right answer. In other patients convergent questions might be the most appropriate way of interacting.
- Q: How much were judgments discussed with the spouse and even the patient before the treatment began? Often the speech pathologist is very quick to judge these maladaptive and adaptive behaviors outside of what's been going on for the last 40 years in the marriage and a lot of things may have been happening beforehand (the wife might have been interrupting for 40 years and the husband loved it). How much discussion with the family occurred in your study?
- A: There was not a lot of it in this study. Basically what we did was go into it with a large body of preconceived ideas from the literature on what we might look for. Florence's (1981) Family Interaction Analysis provided a list of possible behaviors and we added to that. We also took into account knowledge of this individual's language, and what he could do under certain conditions. Also, the wife did not object to the changes. In fact, initially she was verbalizing things like, "Oh, I probably shouldn't have done that" when she saw the videotapes.
- C: It seems to me that any measure of social validity will have to encompass some measure of acceptability. Simply to measure the number of communicative interactions that you, on some a priori basis decide are adequate or good is incomplete. It seems to me that it is only disordered when you demonstrate that it is to someone else, particularly the patient. It may seem disordered by some convention that you bring to it, but it may be okay with other participants.

A: We did get a measure of social validation that we thought was an initial attempt. That is, we had a structured questionnaire in which we elicited first, the spouse's perceptions of the overall value of the program; secondly, of her perception, if any, of change in her behaviors; and thirdly, we asked her about any potential changes in his behavior in what we thought was a nonleading way. So I think we attempted to get a measure of social validation. There may be other means but we did not want to bias her.