

INCREASING MARITAL SATISFACTION
BY
IMPROVING COMMUNICATION SKILLS
IN COUPLES AT RISK FOR MARITAL DISTRESS

by
Clara Doerksen

A Thesis
Submitted To The Faculty of Graduate Studies in Partial
Fulfillment of The Requirements For The
Degree of Masters of Art

Department of Psychology
University of Manitoba
Winnipeg, Manitoba

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To Gerry

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Abstract

The present research examined the effects of improved communication skills on marital satisfaction in couples at risk for distress [with scores on the Marital Adjustment Scale (MAS) between 78-100]. Four couples received communication training in a multiple baseline across couples design. The couples were videotaped weekly for 10 minutes while discussing topics of their choice. Training consisted of videotape feedback, instructions, behavioral rehearsal, and modeling. The Couples Interaction Scoring System was used to assess and train skills appropriate to each couple. Marital satisfaction was assessed weekly employing an interval rating scale, and pre- and post-training, with the MAS. After training, base rate counts demonstrated increased positive and decreased negative nonverbals. The improved communication skills generalized to new topics and maintained during follow-up. Marital satisfaction ratings improved and MAS scores indicated that the couples shifted from a distressed to a nondistressed category (above 100 on the MAS).

Increasing Marital Satisfaction by
Improving Communication Skills
In Couples at Risk for Marital Distress

Research on assessment and treatment of marital problems is imperative. Marriage breakdown has acquired public recognition as a major social problem (Azrin, Naster, & Jones, 1975; Stuart, 1975). Statistics on divorce confirm the problem. For example, during the 12 months ending in January, 1980, an estimated 1,169,000 divorces were granted in the USA touching the lives of 2,338,000 adults and an estimated 1,194,000 children (Stuart, 1980; p. 4). Statistics Canada reported that 65,172 divorces were granted in 1984, touching the lives of approximately 186,000 individuals (Statistics Canada, 1984).

Although some individuals may thrive in the new freedom, separation and divorce appear to have devastating effects in various degrees on the majority of individuals involved (Stuart, 1980, p. 8). On the other hand, Bloom, Asher, and White (1973) and Stuart (1980, p. 14) state that a stable marriage has many benefits. It seems to enhance personal, professional, and social living and to reduce the pain of many physical and emotional stresses. Stuart (1980, p. 11) notes that continued health and well-being are associated with a married versus a divorced status.

Because of the negative outcomes of marital separation and the positive effects of a stable marital relationship, techniques should be developed that improve marriage before the marriage becomes distressed and demands therapy. This need is underlined by research that indicates that clients rarely enter therapy with strong commitments to marriages they hope to enrich (Stuart, 1980; p. 2). Thus a relatively straightforward, uncomplicated plan for enhancing a marriage relationship while the couple is still amenable to change would constitute an important preventative strategy.

To develop a preventative strategy, one tactic is to consider what couples in therapy most frequently state as the primary problem. Couples seeking treatment most often indicate that improved communication is their primary goal (Luber, 1978; Margolin & Weiss, 1978; Rappaport & Harrel, 1975; Stuart, 1969; 1980, pp. 209-211; Thomas, 1977, p. 1). In fact, Markman (1979) related that unrewarding communication patterns precede the development of relationship distress. Therefore, techniques that aid couples in improving their communication skills could compose a helpful preventative strategy. Indeed, Rappaport and Harrel (1975) are of the opinion that adequate skills in this area form "the very heart of a successful marriage" (p. 258).

The question could be raised, "How can we justify a prevention emphasis when we cannot immediately assess

preventative effects?" The following analogy promotes the prevention concept. Correlational studies have shown that people who smoke are more prone to develop lung cancer than people who do not smoke. Therefore, if we reduce the number of smokers, we might be able to reduce the incidence of lung cancer. If the possibility of lung cancer is reduced, it is pragmatic to promote anti-smoking campaigns. Similarly, because poor communication is associated with marital distress, developing a communication skills training program would appear to be a prudent, preventative strategy for nondistressed couples or couples at risk for distress. Markman (1979) found that couples' dissatisfaction with their communication patterns at one point in time is predictive of continued dissatisfaction up to 2½ years later. These findings support the view that prevention of marital distress via a training program to improve communication skills would be an effective behavioral strategy.

Communication Training

The Nature and Measurement of Communication Training

Effective communication is a complex matter. Therefore, a training program for helping couples improve their communication skills would require a clear, concise, and well-structured design. In order to design a training program, information about what characterizes the communication patterns of distressed and nondistressed couples would

be essential.

Base rate analyses. Gottman, Markman, and Notarius (1977) coded videotaped dialogues of distressed and non-distressed couples and found two discriminatory categories: nonverbal (affect) and verbal (content) behavior. Examples of nonverbal behavior include eye contact, smiling, and repetitious body movements. Agreement and problem solving statements are examples of verbal behaviors. Notably, Gottman et al., (1977) found that nonverbal behaviors discriminated distressed from nondistressed couples better than verbal behaviors. Nondistressed couples emitted higher rates of positive and neutral nonverbals while engaging in verbal behavior. Conversely, distressed couples engaged in more negative nonverbals when emitting verbal behavior.

Clearly then, to improve their nonverbal behavior distressed couples or couples at risk for distress would need to increase their positive and neutral nonverbals and to decrease their negative nonverbals while engaging in verbal behaviors (Gottman, 1985). To increase positive and neutral nonverbals couples would need to be taught such skills. It is of significance that Gottman (1985) in his review of the use of observational measures in marital therapy states that when distressed and nondistressed couples were asked to fake good or fake bad, their verbal behaviors adjusted; their positive and negative nonverbal behaviors,

however, did not change. Specifically, distressed couples could not fake good even when they were instructed to do so, thus demonstrating that couples in marital conflict cannot readily pretend that their nonverbal (affect) behavior is positive. The implication of the research finding is that nonverbal behaviors are much less susceptible to demand characteristics (Sheridan, 1976, p. 370).

While it has been shown that nonverbal behaviors effectively discriminate between distressed and nondistressed couples, certain verbal behaviors differentiate between them also. Gottman et al., (1977) identified one of these as the ratio of agreement to disagreement statements. That is, the more agreement statements the couple emits the more probable it is that the couple is nondistressed. Conversely, the more disagreement statements a couple emits, the greater is the chance that the couple is distressed (Gottman, 1985).

It should be noted that when teaching communication skills the teaching of verbal behaviors could and probably should be included. Verbal behaviors refer to the information being communicated (Gottman, Notarius, & Markman, 1976). Teaching verbal and nonverbal behaviors concurrently would help couples develop a consistency between verbal and nonverbal behavior (Stuart, 1980, p. 213). The present research, however, focused mainly on the teaching of positive and neutral nonverbal behaviors.

Sequential analysis. The results of the Gottman et al., (1977) research also demonstrated clear differences in interaction patterns between distressed and nondistressed couples. For example, Gottman et al., (1977) state that nondistressed as compared to distressed couples engage in more sequence loops that include problem solving statements followed by agreement statements called "contract loops", and nondistressed as compared to distressed couples engage in more problem feeling statements followed by agreement statements called "validation loops." Interaction patterns were assessed by a process called sequential analysis. Sequential analysis refers to a method of behavioral analysis that takes into account the order in which behavior of a couple occurs (Notarius, Krokoff, & Markman, 1981).

Margolin and Wampold (1981) further elucidate the concept by defining it as "a sequential chaining of events as opposed to singular behavioral acts" (p. 554).

Sequential analysis of interaction patterns of dyads can be obtained for both verbal and nonverbal behaviors. An example of verbal behavioral chaining would be as follows: wife disagrees with husband's prior statement, husband restates his problem solving statement, wife agrees with husband's statement. An example of nonverbal behavioral chaining would be as follows: husband speaks in a negative tone of voice, wife speaks in a positive tone of voice,

husband speaks in a positive tone of voice. Clearly then, distressed couples or couples at risk for distress would need to increase positive verbal and nonverbal interaction patterns (Margolin & Wampold, 1981).

Assessment of communication skills. In the present study communication skills were assessed utilizing three different methods. First of all, to assess couple communication and to teach communication skills based upon that assessment, a well-defined coding system differentiating between verbal and nonverbal behavior was utilized: the Couples Interaction Scoring System (CISS) (Gottman, Notarius, & Markman, 1976). In reliability studies reported by Gottman (1979, cited in Notarius & Markman, 1981), Cohen's kappas for verbal codes averaged .909 (standard deviation = .404) and for the nonverbal behavior codes kappas averaged .715 (standard deviation = .169). According to Markman, Notarius, Stephen, and Smith (1981) the validity of the Couples Interaction Scoring System has not been fully established. They do, however, suggest that the validity of an interaction coding system can be demonstrated by its ability to discriminate between distressed and non-distressed couples. The Couples Interaction Scoring System has done this effectively (Gottman et al., 1977).

A second assessment instrument, A Marital Communication Inventory (Bienvenu, 1970), was used as pre- and post-measure

of the couple's communication skills. To test reliability of the Inventory, a split-half correlation coefficient on the odd-numbered and even-numbered statements was computed. The Spearman-Brown correlation formula had a coefficient of .93 (Bienvenu, 1970). Validity was established in a concurrent study of marital communication in 23 couples receiving marriage counseling and 23 couples who were not known to be having marital difficulties. Using the Mann-Whitney U test, a significant difference was found between them ($U < 117$, $p < .01$, Bienvenu, 1970).

A third method used to assess nonverbal communication skills was sequential analysis. As discussed previously, it measures the extent to which spouses influence one another's nonverbal behavior by determining whether knowledge of one spouse's nonverbal behavior reduces uncertainty about the following nonverbal behavior of the partner (Gottman et al., 1977; Margolin & Wampold, 1981; Notarius et al., 1981). Sequential analysis is based on defining successive links in behavioral chains; for example, when the nonverbal behavior of the husband is coded as positive and this is followed by a positive nonverbal behavior of the wife, this would be designated as Behavior 1 to Behavior 2, also known as Lag 1 effects. In the present study only Lag 1 sequences were analyzed because major effects can be shown at Lag 1.

Behavioral Techniques Employed in Training

Four often-used behavioral techniques were employed in the present research to train communication skills. These were videotape feedback, instructions, behavioral rehearsal, and modeling. Jacobson (1979) and Jacobson and Anderson (1980) used these four behavioral techniques in differing combinations when teaching problem solving skills, a specific type of communication skill, to groups of couples. They found that using a combination of behavioral techniques for teaching problem solving skills promoted skill acquisition. Furthermore, groups receiving a combination of three or four of these behavioral techniques showed significantly greater increases in problem solving skills than any other group. Employing a combination of these behavioral techniques should, therefore, improve communication skills in couples at risk for distress.

Marital Satisfaction

The Nature and Measurement of Marital Satisfaction

As will be recalled from earlier discussion, distressed couples entering therapy most often state that improved communication is their goal in therapy. Teaching communication skills to distressed couples then should improve their relationship; that is, their rating of marital satisfaction should improve as well. Wills, Weiss, and Patterson (1974) state that expressing affection and acceptance both verbally

and nonverbally is related to daily ratings of marital satisfaction. Borstein, Bach, Heider, and Ernst (1981) found that decreasing negative verbal communication increased marital satisfaction. Further, Weiss and Weider (1982) in their review of the literature on marital distress state that spouse communication predicts relationship satisfaction. From these studies then, marital happiness appears to at least partially reflect the communication skills of the couple.

In the present study, changes in marital satisfaction as a result of communication skills training were assessed in two ways. First of all, the couples were asked to complete a Marital Satisfaction Rating Scale once a week throughout the project. Secondly, the Marital Adjustment Scale (Locke & Wallace, 1959) which measures global ratings of marital satisfaction was used as a pre- and post- self-report measure of marital satisfaction. A score of 100 is typically used as a cutoff point between satisfied and dissatisfied couples (Jacobson, 1979).

Locke and Wallace (1959) state that the Marital Adjustment Scale clearly differentiates between persons who are well-adjusted and those who are maladjusted in marriage. Validity was determined by administering the Scale to 48 persons who were in therapy, divorced, or separated. The

well-adjusted group had a group mean of 135.9, and the maladjusted group had a group mean of 71.7. In addition the reliability coefficient of the test, computed by the split-half technique and corrected by the Spearman-Brown formula, is .90 demonstrating that the test has high reliability (Locke & Wallace, 1959).

Research Considerations

Research Rationale

A review of the literature that assessed the effects of communication on marital satisfaction provided a basis for the research rationale. Two types of studies are representative of the area: correlational and experimental. Since the majority of the studies are correlational in nature, a few of these will be reviewed first.

Tucker and Horowitz (1981) assessed 104 couples and found a significant relationship between marital adjustment and verbal and nonverbal communication. Improved verbal and nonverbal communication were associated with an increased frequency of agreement on issues and values which in turn was linked to marital happiness. Laurence (1982) sought to determine the variables of which marital satisfaction was a function by interviewing 25 self-selected couples who stated that they were happily married. One of the variables was clarity of communication: making an attempt at keeping communication open, even if communication were difficult at

times. Hayes, Chavex, and Samuel (1984) randomly selected 190 recently married couples from marriage license files. Thirty-three of these couples as defined by the Marital Adjustment Scale (Locke & Wallace, 1959) were classified as distressed. Interaction with these couples involved one session in which self-report questionnaires and one analogue tape-recorded marital communication dialogue was obtained. The results indicated that a large proportion of variance in marital distress could be accounted for in the measures of marital communication.

Turning now to experimental investigations, Rose (1977) demonstrated that teaching communication skills in a workshop format to distressed couples produced positive changes in both communication and marital satisfaction. Witkin, Edleson, Rose, and Hall (1983) compared two communication training programs: the Communication Skills Workshop and the Couples Communication Program. Relationship satisfaction, using the Marital Adjustment Scale, was one of the measures. Follow-up testing revealed no significant differences between groups. However, within group analyses revealed significant pre-to post-test changes [$t_{(16)} = 3.62$, $p < .01$] for the Couples Communication Program but not for the Communication Skills Workshop.

The above studies indicate that communication is interrelated with marital satisfaction. Since the studies

were either correlational in design or group workshops, I devised a communication skills program that involved teaching communication skills directly to individual couples that were at risk for distress. It was thought that individualized training in communication skills would benefit each couple to such an extent that their scores on the Marital Adjustment Scale that designated them as at risk for distress when entering the project would increase and place them within the range of scores of nondistressed couples. Significant to the the present study is Gottman's (1985) observation that although behavioral marital therapy has begun the process of observing how distressed and non-distressed couples differ, it has not demonstrated empirically that training communication skills changes the verbal and nonverbal behavior of the couple, and consequently, measures of marital satisfaction.

Complexity of Marital Research in Relation to Single-case Research Design

Behavioral research on marital interaction patterns and intervention for marital distress is not as far advanced as in other areas of application because of the complexity of investigating marriage relationships. Several problems had to be considered in the present study that are especially relevant to the methodology of behavior modification research.

Patterson, Weiss, and Hops (1976) suggest the following problems as most relevant. First, the couples in a marriage relationship hold equal shares of reinforcing contingencies. This means that each member in the dyad can increase or decrease his or her contribution to the overall reinforcement as he or she wishes (Azrin, Naster, & Jones, 1975; Stuart, 1975). Intervention with couples in therapy, therefore, requires simultaneous changes in contingencies, necessitating the design and monitoring of two programs, one for each partner. This is in contrast to the less complex task of intervening with children's behavior where adults manage most of the key contingencies which control the behavior of children (Baumrind, 1968). Nevertheless, in spite of the complexity due to equality in managing reinforcing contingencies, this equality can be used to advantage in teaching a couple communication skills. Theoretically at least, the individuals in a marriage hold equal shares of reinforcers and speaking time; they can be taught to establish a mutually positive reciprocity relationship while conversing (Azrin, et al., 1975). Further, since the present research employed a single-case design, each spouse in the dyad could receive individualized programming and monitoring of his or her skills. Thus, praise could be dispensed contingently for improved skills to either spouse.

The second problem in marital research that is specifically relevant to marriage relationships is that behaviors central to marital conflict often occur at low base rates, and consequently do not lend themselves easily to observational techniques. Communication, however, is one of the behaviors central to marital conflict that does occur frequently enough to use as observational data. Therefore, I did not attempt to observe behaviors that tended to produce conflict that occurred on a base rate so low that it was difficult to obtain data.

Thirdly, and finally, single-case research designs can lead to a high degree of certainty that the training variable is the agent responsible for observed changes in the target behaviors in an individual couple (Hersen & Barlow, 1976, p. 176, 226; Kazdin, 1982, p. 128). They have, however, not often been utilized because it was assumed a priori that couples would strongly reject the return to baseline in reversal designs or the waiting to instigate change in multiple baseline designs.

The present research utilized a multiple baseline across couples design, one of the more powerful designs (Hersen & Barlow, 1976, p. 126). This meant that some couples had to wait during an extended baseline until training could be instituted sequentially. The researcher told the couples prior to beginning the project that each of them would begin the training phase at different times. They

were assured that they would all receive the same number of training sessions. This information seemed to be sufficient for them. There was no indication that they were impatient or upset while waiting for the training phase to begin.

The nature and assessment of generalization and follow-up. Generalization and follow-up are two important components of applied research. For treatment to be effective it must generalize to target settings in the natural environment and generalize to similar behaviors in a response class. Furthermore, to determine whether or not the treatment has produced desirable ongoing change, a follow-up phase is important. According to Martin and Pear, (1983, pp. 182-185) whose definition of generalization follows the traditional operant conceptualization, the transferring of behavior to new settings and making it last, includes the programming of three specific areas: stimulus generalization, response generalization, and maintenance. In the present study these three areas formed the basis of a generalization programming package with different components in each of the three areas.

The first area includes the programming of stimulus generalization. Martin and Pear (1983) define it as a behavior that becomes more probable in the presence of one stimulus or situation as a result of having been reinforced in the presence of another stimulus or situation (p. 181).

Both Martin and Pear (1983) and Stokes and Baer (1977) outline a number of ways to program for stimulus generalization. Following are four procedures used in the present study.

The first component in the generalization programming package was to train sufficient exemplars (Stokes & Baer, 1977). In this component, "generalization to untrained stimulus conditions...is programmed by the training of sufficient exemplars (rather than all) of these stimulus conditions" (p. 355). Examples of exemplars used in the present study are: kind tone of voice, body turned toward spouse, using agreement statements.

A second component was to program common stimuli "by developing the behavior to specific stimuli that are present in both the training and test setting" (Martin & Pear, 1983, p. 183; Stokes & Baer, 1977). During training each spouse was taught and produced positive and neutral nonverbal behaviors in the presence of their spouse; these in turn became the common stimuli for the partner in generalization settings.

A third component used for promoting generalization is termed by Stokes and Baer (1977) as mediated generalization. It requires the learning of a new response that can be used in similar problems. Language is the most common mediator and can be used to transfer newly learned responses to a

generalization setting. For example, in the present research, I would say to the couple while pointing to the appropriate statement on the transcript: "That's an agreement statement." This learned response could then be transferred through private verbal behavior by the couple to a generalization setting.

A fourth and final component that was specifically programmed was to regard generalization as a response itself (Stokes & Baer, 1977). Applying a reinforcement contingency then becomes appropriate. In the present study this was accomplished during videotaped feedback. The researcher reinforced similar behaviors by saying, for example, "That body position is another instance of a positive nonverbal behavior."

An important component for producing generalization which was not explicitly assessed in the present research is to introduce trainees to natural maintaining contingencies. This technique refers to the transfer of behavioral control from the experimenter/training setting to the natural contingencies that operate in the daily environment of the couples (Stokes & Baer, 1977). Nevertheless, it was thought that improved communication skills used within the daily routine of married life would be highly reinforcing and thus natural contingencies would operate to maintain the new skills.

The second area in the generalization programming

package included the programming of response generalization. This occurs when a behavior becomes more probable in the presence of a stimulus or situation as a result of a similar behavior having been strengthened in the presence of that stimulus or situation (Martin & Pear, 1983, p. 181). Martin and Pear (1983) suggest two specific techniques. The first and most important for this research is to train sufficient response exemplars. Examples of different kinds of response exemplars are: a tone of voice that conveys empathy, warmth, and concern; a variety of agreement statements such "Okay," "You're right," or "Sure."

The second method is to vary the acceptable responses during training. Nonverbal behavior, for example, has multiple topographical configurations of each response class. Therefore, during training the couples were reinforced for positive and neutral nonverbal behaviors of any configuration as long as they belonged to that specific response class. For example, the couples were aware that positive body contact was desirable, therefore, when they would hold hands during a videotaping session, a behavior infrequently engaged in by the couples and not specifically taught during training, they were, nevertheless, positively reinforced for the behavior.

The third area in the generalization programming package included the program for maintenance of behavior

change. If the trained behaviors do not maintain over time, the training program has not been as effective as it should have been (Wilson & O'Leary, 1980, pp. 85-87). It should be noted that techniques used to promote generalization should also promote maintenance. Indeed the most powerful tactic for maintaining improved communication skills is one described by Martin and Pear (1983) as making use of the natural contingencies of reinforcement. Once the couples found that improved communication skills increased their marital satisfaction, the trained skills presumably became conditioned reinforcers for the couple.

Generalization in the present study was assessed by having the couples discuss two topics (See Method section for discussion of topic selection) from the baseline series to determine whether or not training generalized to topics for which they had received no training. The couples discussed two topics from the training phase to determine whether or not the relevant behaviors occurred without the benefit of training conditions (Stokes & Baer, 1977).

As mentioned previously, a follow-up phase is necessary in order to evaluate whether or not the training has produced desirable ongoing change. Follow-up in the present study was assessed by having the couples discuss two of the topics which they had discussed during both the training and generalization phase to determine whether or not the effects

of training had maintained over time. The couples also discussed two new topics. The purpose was to assess skills training maintenance over time for topics not previously discussed.

Description of the Experimental Design

The present study employed a multiple baseline across couples design, composed of four phases: baseline, training, generalization, and follow-up. Four couples were taught communication skills utilizing often-used behavioral techniques: videotape feedback, instructions, behavioral rehearsal, and modeling. Their videotaped 10 minute communication segments were coded by trained coders using the Couples Interaction Scoring System. The coded transcripts were used as a basis for assessment and training. The Marital Communication Inventory was employed as a pre- and post-measure of communication skills. Assessment of marital satisfaction was accomplished by having the couples complete a weekly rating scale as well as the Marital Adjustment Scale pre- and post-research.

The present research design offered some specific advantages. First of all, the design made it possible to demonstrate systematically that the changes in couple communication were the result of training.

A second advantage was that I could develop individual treatment programs for each couple. Each couple could be

trained in those skills that were relevant to their skill deficits. For example, one spouse needed training in decreasing body movements whereas the partner needed to increase eye contact. Another couple needed training in increasing agreement statements.

A third advantage related to the use of a single-case design is that generalization and follow-up phases could be included. Prior research had not included these two phases and the present research, therefore, was unique. Assessment for generalization and follow-up made it possible to ascertain whether or not improved skills generalized to untrained and new topics and maintained over time.

A fourth and final advantage was the possibility of more continuous assessment of changes in marital satisfaction as a result of communication skills training. In most studies marital satisfaction was assessed only before and after completion of the study. In the present project, assessment of marital satisfaction was ongoing throughout the research. Weekly ratings of marital satisfaction were obtained concurrently with the videotaping sessions. Therefore, it was possible to trace changes in communication and related changes in marital satisfaction on an ongoing basis.

In summary, the purpose of the present study was to test the hypothesis that teaching communication skills to

couples at risk for distress would increase their ratings of marital satisfaction. It was expected that as communication skills improved the couples' rating of their marital happiness would increase. In addition, the single-case design made it possible to monitor the relationship between improved communication skills and marital satisfaction throughout the research.

METHOD

Subjects

As I am employed as a Community Mental Health Clinician in a small town in rural Manitoba, I solicited couples from community groups and marital clinics in the town and surrounding areas. In order to qualify for the research, the mean couple score on the Marital Adjustment Scale (Locke & Wallace, 1959) was to fall within the range of 80-100. Gottman, Markman, and Notarius (1977) designated couples scoring below 80 as distressed; couples scoring 100 and above were designated as nondistressed. Jacobson (1979) designated couples scoring 80 and below as severely distressed. Therefore, couples scoring between 80-100 were designated as couples at risk for marital distress. As will be recalled, the goal of the present research was to increase the marital satisfaction of couples at risk for marital distress.

Of the 15 couples that volunteered for the study, four

couples scored within the designated range. One of the four couples withdrew because of time constraints. Another couple who scored 78 wanted to be part of the project. As this couple's Marital Adjustment Scale score was just below 80, they were also included in the research. Thus, couples that were part of the project scored between 78 and 97 on the Marital Adjustment Scale. The average age of the wives was 31 years; the average age of the husbands was 32 years. They had been married for 8 to 12 years and each of the four couples had three children. The couples' education ranged from Grade eleven to two years post-secondary training. All four wives were homemakers and were involved in community work. The husbands' vocations consisted of farming, plumbing, carpentry, and shop managing.

Setting and Equipment

A school library was used during the evenings for the videotaping sessions. The library was spacious, quiet, and free from disruptions. In addition, it presented a central location for the couples who came in from the rural areas for experimental sessions.

For the videotaping sessions two chairs were placed approximately 60 cm apart and about 10 m away from but facing the video camera. A small footstool was set in front of the couple and on it was a Sony Taperecorder, model #TC-110b, containing a 60 min cassette tape. The tape

recording was later transcribed by a dictaphone typist for coding. Also facing the couple was a JVC color video camera, model #277C, connected to a Sony Betamax video cassette recorder, model #SL2500 and a television monitor: Electrohome Caprio, model #118-C 50051-07 which in turn was attached to a Hitachi VHS, model #VT-11AR video recorder and a monitor: RCA XL-100, model #FGC446S. This double recording was necessitated by the fact that only a Betamax video camera was available at the school whereas for coding purposes the VHS equipment at the University had to be used. Several of the trained coders were students on campus and could only access the equipment at the University. A minute minder, brand name: Robertshaw-LUX, designated the 10 min time span (Margolin & Weiss, 1978) for each videotaping session.

Experimental Design

A multiple baseline across couples design was employed. Specific topics were designated for discussion during baseline having a range of 4-7 data points, training, generalization, and follow-up each having four data points. Thus each phase had relatively few data points due to the limited availability of relevant discussion topics and copious scoring required for each topic. Consequently, the number of data points for each phase was chosen arbitrarily.

Procedure

Initial Contact

The first session took place in the home of each couple. They were given five self-report measures to complete. The first one was a contract outlining their involvement in terms of time and homework (See Appendix A). This contract was signed by the couples and the researcher. Secondly, the couples completed a Registration Information Form which requested demographical data (See Appendix B). The third and fourth self-report measures were the Marital Communication Inventory and the Marital Adjustment Scale. Last of all, the couples were given a discussion topic list to be rank-ordered in terms of difficulty (See Appendix C).

The topic list had 24 topics which were chosen from previous research (Azrin, Naster, & Jones, 1975; Keefe, 1978; Thomas, 1977, p. 55). These topics represented issues that couples normally discuss between themselves. Each couple was asked to rank-order the items on the list in terms of difficulty. Topics were divided into three categories: difficult, medium, and easy to discuss. To qualify for a specific section, e.g., "easy" a topic had to be designated such by a minimum of three couples.

The topics mentioned most often as "difficult" by the couples were: decision-making, time spent together, rearing of children, demonstrations of affection, and

philosophy of life. Those designated as of "medium difficulty" were: personal and spouse independence, sex, jealousy and trust, and general happiness. The topics designated as "easy" to discuss were: recreation and social activities, money, church, and in-laws.

When the topics were assigned to each phase an effort was made to include "easy", "medium", and "difficult" topics, as appropriate, in each phase. The first baseline topic was an "easy" one in order that the couple would not be discouraged at their first videotaping session. The second topic was of "medium difficulty", and the next two were "difficult" topics. The first two topics in the training session were "difficult", followed by topics of "easy" and "medium" difficulty. During generalization the topics were ordered as follows: "easy", "medium", and two "difficult." In addition, during follow-up the topics were as follows: three consecutive "difficult" topics and last of all, an "easy" topic. The three "difficult" topics functioned as a final assessment of skills maintenance. In general, however, selection of topics and assignment to each phase was somewhat arbitrary because initially, topic choice was limited. Furthermore, assignment of topics involved the sampling of previously discussed topics thereby, restricting the choice even more.

One week after the first session, I picked up the questionnaires. At that time videotaping sessions were scheduled, to begin a week later. The videotaping session had the following format. The preliminaries included the collection of the rating forms, the setting of the date for the next videotaping session, and the checking of the equipment. I then handed them a card with identifying information, e.g., the date and topic to be discussed. The couple had 10 minutes to discuss the assigned topic. During this time the researcher left the library so that the couple could discuss the topic privately.

Baseline

Each of the four phases: baseline, training, generalization, and follow-up will be described in order. During baseline the couples were videotaped while discussing the assigned topics. They received no training or feedback during this phase. The purpose of this procedure was to assess the communication skills of each couple. Thus each couple became their own control in relation to improvements after training.

Training

The training phase consisted of the following procedures. The couple and I viewed a previously taped video with the purpose of using the information from the tape as a basis for training. The training sessions were approximately 1.5

hours in length.

Training strategies. At this point it is necessary to expand on several strategies related specifically to the training phase. Firstly, the behaviors targeted for training will be described. Secondly, the preparation of the transcripts for training, and thirdly, the behavioral techniques used during training will be explained. Lastly, the sequencing of the training videotapes will be described.

Target behaviors. The first behaviors targeted in the training phase were to have the couples understand the purpose of the training sessions and the application of the coding system. The latter explains the different codes used to designate skills training (See Appendices D and E). The second targeted behavior was to have the couples increase their base rate of positive nonverbal behaviors throughout the entire 10 min discussion. It was assumed that the positive nonverbal behavior of each spouse would increase. The third targeted behavior was to train the couples to increase the number of their agreement statements.

Training transcripts. The preparation of the training transcripts needs to be explained. Each transcript had the verbal and nonverbal codes clearly designated (See Appendix F) and these data were tallied on an appropriate form (See Appendix G). This tallied form, the coded transcript and the videotape were used to determine what areas of

communication needed training. The transcript was divided into five 2 min sections. Within each section I and a trained research assistant, a graduate psychology student, independently specified the verbal and nonverbal behaviors that needed to be trained. Only those behaviors on which I and the assistant agreed were targeted for training. These designated behaviors were listed on the trainer's transcript (Appendix H) and on a separate form for use by the procedural reliability coder who could then determine whether or not the treatment was administered as intended (treatment integrity) (Vermilyea, Barlow, & O'Brien, 1984; Yeaton & Sechrest, 1981) (See later section on procedural reliability).

For the training session each spouse was given a transcript (See Appendix F). Since not every detail on a coded transcript was used for teaching purposes, the couples were given an unmarked transcript. An unmarked transcript made it easier for the couple to follow the videotape and my instructions when I indicated which verbal and nonverbal behaviors needed changing. For example, if I wanted the couple to change from a negative to a positive tone of voice, it was possible to point out to the couple which particular statements needed the change in associated nonverbal behavior.

Behavioral training procedures. The third strategy

involved the use of four behavioral training procedures: videotape feedback, instructions, behavioral rehearsal, and modeling (Jacobson & Dallas, 1981; Luber, 1978). In the operant model feedback can serve the function of a discriminative stimulus or as a consequence for behavior (Peterson, 1982). For the couples viewing the videotape, specific instances of verbal or nonverbal behavior became discriminative stimuli for continuing appropriate behavior or modifying inappropriate behavior. These instances became conditioned punishers for those behaviors that were inappropriate and conditioned reinforcers for those behaviors that were being taught as appropriate communication skills. The tallied sheet of verbal and nonverbal codes was another associated form of feedback. For example, if the couple had noted that the tallied form had the major behaviors specified under "negative body", by viewing the videotape they could discriminate whether this was "arms akimbo" or "nervous finger tapping." They could then use this feedback to change their nonverbal behavior in that particular area for the next videotaping session. If they then did not engage in those particular "negative" behaviors, the appropriate behaviors became a positive reinforcer for them as they again viewed the tallied sheet and the videotape.

As will be recalled, during videotaped feedback, the couple and I viewed the 10 min videotape in five 2 min segments. Prior to watching each segment the couple read the applicable section of the transcript. As we viewed each segment, I would indicate specific verbal and/or nonverbal behaviors that needed training. Thereupon, I would stop the videotape or if necessary, rerun a section. Combinations of the behavioral techniques: instructions, behavioral rehearsal, and modeling, would be employed to train a new skill. Upon completing a designated training sequence, we would again view the videotape. The entire procedure would be repeated as necessary until the 10 min videotape had been viewed.

The second behavioral procedure used during training was the giving of instructions. These are stimuli that describe to a spouse how to perform a desired response or set of responses (Dyer, 1985; Eisler & Hersen, 1975). For example, I might ask one spouse to maintain eye contact with his spouse when she is talking to him.

The third behavioral procedure used was behavioral rehearsal. This is a specific procedure whereby inadequate interpersonal responses are replaced by practicing the desired forms of verbal and nonverbal behaviors under the direction of a therapist (Wolpe, 1973, pp. 90-92). For example, if the couple used a negative tone of voice during

their interaction, they were asked to reread the statements coded "negative" in a positive tone of voice. Correct rehearsal responses were followed by praise.

Last of all, modeling was used when necessary. For example, when instructed behavioral rehearsal was not sufficient, modeling was incorporated into the training. This is a procedure whereby a sample of a given behavior is presented to the couple in order to help them engage in similar behavior (Martin & Pear, 1983). In the example above, I read the statements coded as "negative" in a positive tone of voice; then the couple was required to repeat the example; i.e., modeling was followed by behavioral rehearsal.

Sequencing of the videotaping. The final strategy used during the training phase that needs an explanation is the sequencing of the videotaping. To test for the effects of prior training sessions, the following strategy was utilized. Before each training session the couple was videotaped while discussing the assigned topic. Thus, the effects of the previous teaching session were recorded before further training was undertaken.

Generalization

During the third phase, the generalization phase, the couples discussed two topics from the baseline series and the first two topics of the training sessions. The purpose

of having them discuss two topics from baseline was to assess whether or not skills trained generalized to topics for which they had received no training. The purpose for having couples discuss topics from the training phase was to determine whether or not the relevant behaviors occurred without the benefit of training conditions (Stokes & Baer, 1977).

Follow-up

The fourth and last phase was the follow-up phase. Four weeks after the completion of the generalization phase, the couples came to discuss the topics designated for this phase. They discussed two of the topics which they had discussed during both the training and generalization phase. The coded verbal and nonverbal behavior would determine whether or not the effects of training had maintained. The couples also discussed two topics which they had not discussed previously. The purpose was to assess skills training maintenance during the intervening weeks from training to follow-up.

After the completion of the last videotaping session, I asked the couples to take home and complete the Marital Communication Inventory, the Marital Adjustment Scale, and the Goal Achievement Form (See Appendix I). About three weeks later I went to each home and collected the completed forms. At this time I also conducted the social validation interview.

Measures

The following measures were utilized during the research: The Couples Interaction Scoring System, the Marital Communication Inventory, the Marital Satisfaction Rating Scale (See Appendix J), the Marital Adjustment Scale, and two social validation procedures. A description of each measure follows.

The Couples Interaction Scoring System. The Couples Interaction Scoring System (CISS) (Gottman, Notarius, & Markman, 1976) provides independent coding of verbal and nonverbal aspects of communication. The codes are designed to assess specific communication skills which are described by researchers Markman, Notarius, Stephen, and Smith (1981) as being important to marital satisfaction. The Couples Interaction Scoring System has nine summary codes with several having major subdivisions. The content code "Information exchange" was one such code having as a subdivision "Problem solving." Since one of the goals in the training phase was to teach positive nonverbals while employing the "Problem solving" content code, it was essential to code "Problem solving" as a separate category in the present research.

Each transcript was coded and tallied for verbal and nonverbal behavior (Notarius, Krokoff, & Markman, 1981). An abbreviated list of both types of codes follows.

(a) Agreement (e.g., "Yea, you're right."); (b) Disagreement (e.g., "No."; "Yes, but."); (c) Communication talk (e.g., "We're getting off the topic."); (d) Mindreading (e.g., "You always get mad in those situations."); (e) Problem solving (e.g., "Let's take out a loan."); (f) Information exchange (e.g., "We're taking the kids to the park."); (g) Summary of other (e.g., "What you're saying is I drink too much."); (h) Summary of self (e.g., "I told you I am not going."); (i) Expressing feelings (e.g., "That makes me sad."); (j) Question (e.g., "What did you want?").

Note: A question would always have a double code because in addition to being a question, it has a specific content code. For example, "Would it help if I gave you a hand?" would be coded "Problem solving" and a "Question."

Each of the 10 verbal behaviors had three nonverbal categories: (a) voice, (b) face, and (c) body. Each nonverbal category could be expressed in three different ways: (a) positive, (b) neutral, and (c) negative. For example, positive voice includes voice tones that are warm, tender, cheerful, and happy. Negative voice includes tones that sound cold, fearful, impatient, angry, sarcastic, and tense. Positive facial cues include smile, head nod, and eye contact. Negative facial cues include frown, sneer, cry, and angry face. Positive body cues include neck and

hand relaxation, touching, and open arms. Negative body cues include neck and hand tension, stiff posture, and arms akimbo. Neutral cues were coded when nonverbal behavior could not be described by either a positive or a negative descriptor (See Appendix E).

The coded transcripts were analyzed for frequency or base rate counts. For example, the total number of agreement statements on one transcript might be 22. A second type of analysis was to obtain the percentage of content codes occurring when face, voice, and body were either positive, neutral, or negative. For example, the percentage of agreement statements for voice made with positive affect might be 80%.

In addition, the transcripts were analyzed for sequential analysis which measures the extent to which spouses influence one another's verbal and nonverbal behavior by determining whether knowledge of one spouse's verbal and nonverbal behavior reduces uncertainty about the following verbal and nonverbal behavior of the partner (Gottman et al., 1977). In the present research, each stimulus and response set was analyzed for positive or negative nonverbal behavior based on the descending hierarchy of face, voice, and body (Gottman, et al., 1977). For example, if a statement were made with a neutral face, the code for voice would be then considered. If this, too,

were neutral, then the code for body would be used as the stimulus or response code, i.e., if it were either a positive or negative code.

The Marital Communication Inventory. The second measure used was the Marital Communication Inventory. This is a 46-item self-report Inventory designed to measure various communication processes (Bienvenu, 1970) such as a couples' ability to express themselves and their style of expression, e.g., positive tone of voice. Furthermore, the Inventory is constructed in such a manner that each spouse rates his/her partner's communication skills. Each item is followed by four choices: usually, sometimes, seldom, and never; indicating the frequency of the particular communication activity (Witkin, Edleson, Rose, & Hall, 1983). The higher the scores on the self-report measure the better the communication skills of the couple.

The Marital Satisfaction Rating Scale and the Marital Adjustment Scale. The third measure was the Marital Satisfaction Rating Scale. Each day prior to the videotaping session each couple completed this rating scale. The rating scale is similar to the marital satisfaction rating scale on the Marital Adjustment Scale. It is a Likert-type scale with ratings from 1-9.

The fourth measure that was used was the Marital

Adjustment Scale (Locke & Wallace, 1959). This is a widely used inventory which provides an overall index of marital satisfaction and is highly discriminative for marital distress. In the present research it was used as a selection criterion and as a pre-baseline and post-research measure of marital satisfaction.

Social Validation Measures. Last of all, two types of social validation measures were specially designed for the present study: A Goal Achievement Form and a standardized Social Validation Interview (See Appendix K). The Goal Achievement Form had a list of 11 procedures used during the project. The couples were to indicate which procedures they found to be "most helpful", "somewhat helpful", and "least helpful". The 11 procedures were (a) videotaping, (b) viewing the videotape, (c) instructions, (d) trainer's reinforcement, (e) corrective feedback, (f) behavioral rehearsal, (g) modeling, (h) Marital Communication Inventory, (i) Marital Adjustment Scale, (j) General social interaction between trainer and you, (k) Other - specify. The purpose of the self-report was to assess the rank-ordering of the helpfulness of the procedures as specified by the couples (Margolin & Weiss, 1978; Wieman, Shoulders, & Farr, 1974).

The Social Validation Interview was conducted in the home of each couple one month after the completion of the

follow-up phase. The purpose of the interview was to determine the couples' views on the study. The following are some of the questions that I asked at the interview. Had the project been worth their time and effort? Would they have liked more teaching sessions? Were the topics relevant? What were some of their positive and negative experiences?

Interobserver Reliability

All videotapes and transcripts were coded by four trained coders who were students taking an undergraduate course in Behavior Modification. During a pilot project these raters were extensively trained in the use of the coding system. Interobserver reliability percentages of 85% or over were obtained on both verbal and nonverbal categories. Once during each phase of the research, I and the coders met to retrain and calibrate our coding with the Couples Interaction Coding Manual (Gottman et al., 1976), thus ensuring that the coders adhered to the behavioral definitions at a consistent level of accuracy. It was thought that feedback for accuracy in applying the definitions helped reduce drift from the original behavioral codes (Kazdin, 1980, p. 88). Agreement was assessed once within each phase of the research (Kazdin, 1982, p. 51). The range of interobserver reliability scores for the calibration sessions was from 85 to 100%, with a mean of

96%. The minimum percentage for acceptable reliability scores is 85% (Gottman et al., 1976; Jacobson & Anderson, 1980).

Two additional procedures which promoted agreement accuracy were implemented. First, I coded a transcript and checked codes with the coders once during each phase. Second, the coders learned to code both for verbal and nonverbal behaviors but a coder coded for only one type of behavior on one tape because nonverbal codes require careful attention to the nonverbal behaviors of the couple (Gottman et al., 1976).

Interrater reliability was computed by dividing the total number of instances in which both raters agreed on a given code by the total number of disagreements (when only one rater coded a response in a given category) plus the total number of agreements, multiplied by one hundred (Jacobson, 1977). This is a stringent criterion for agreement between observers because it ties agreement to the specific utterance; sometimes it is called a point-by-point agreement ratio (Gottman, 1980; Kazdin, 1982, p. 54; Wampold & Holloway, 1983). The interobserver reliability for base rate analyses for couples 1-4 for all phases had a range of 85 to 100% and a mean of 96%.

Procedural Reliability

Procedural reliability assessments were conducted to

insure that experimental procedures as outlined by me were followed as specified. An undergraduate Behavior Modification student served as an observer. She checked the experimental procedures once in each phase for each couple throughout the research (Billingsley, White, & Munson, 1980). She had a procedural checklist for each phase and a checklist applicable specifically to the training sessions (See Appendices L and M). The observer also checked the trainer's teaching procedures from a pre-planned list to ensure treatment integrity (See Appendix M). The procedural reliability (treatment integrity) scores were 100%.

Confidentiality

All coders, typists, equipment operators, data analysts, reliability checkers, thesis supervisor, and I signed a contract of confidentiality. The couples expressed concern regarding the need for confidentiality in regards to the information they disclosed about themselves. When I indicated that the above contract had been signed, the couples expressed their appreciation.

RESULTS

The results will be presented in two major sections. The first section provides analyses of the communication skills data; the second section provides analyses of the marital satisfaction data.

Communication Skills Data

Presentation of the communication skills data is in three parts: (a) percentage of agreement statements, (b) percentage of positive and negative nonverbals in the context of three specific verbal behaviors, and (c) sequential analyses. However, before discussing the communication skills data, several explanatory notes are necessary.

First, the data for husband and wife have been combined. All the positive, neutral, and negative agreement statements for each videotaped session have been combined. The disagreement statements have been combined in a similar manner. Moreover, all the positive nonverbals for face, voice, and body for husband and wife for each videotaped session have been combined and graphed as one data point. The negative nonverbals have been similarly combined. This method facilitates the graphing of large amounts of data (Gottman et al., 1977). Furthermore, such a presentation is consistent with the couple being the clinical target (Jacobson & Dallas, 1981; Weiss & Wieder, 1982). To obtain the percentage of neutral nonverbals, the positive and negative percentages may be totalled and subtracted from 100%, although the figures are not shown.

Second, the selection of verbal codes as the context for assessment of nonverbal behavior needs to be explained.

Inspection of the tallied codes indicated that the three most frequently used verbal codes were (a) agreement, (b) problem solving, and (c) problem feeling. Gottman et al., (1977) stated that the use of agreement and problem feeling statements with negative nonverbals was most characteristic of distressed couples. Further, Birchler, Weiss, and Vincent (1975) stated that distressed couples engaged in more problem solving statements with negative nonverbals than nondistressed couples. Therefore, increasing positive and neutral nonverbal behaviors in conjunction with these three verbal codes was targeted for training and consequently data analysis.

Percentage of agreement versus disagreement statements.

Gottman et al., (1977) stated that the ratio of agreement to disagreement statements discriminated distressed from nondistressed couples. In the present research, the total number of positive, neutral, and negative agreement statements combined was divided by the total number of agreements plus the total number of positive, neutral, and negative disagreements times 100. Figure 1 depicts the percentage of agreements for each videotaped session for couples 1-4. In general, all couples increased the percentage of agreement statements as compared to their baseline mean in one or more phases. During training Couples 1 and 4 demonstrated a clear increase over baseline.

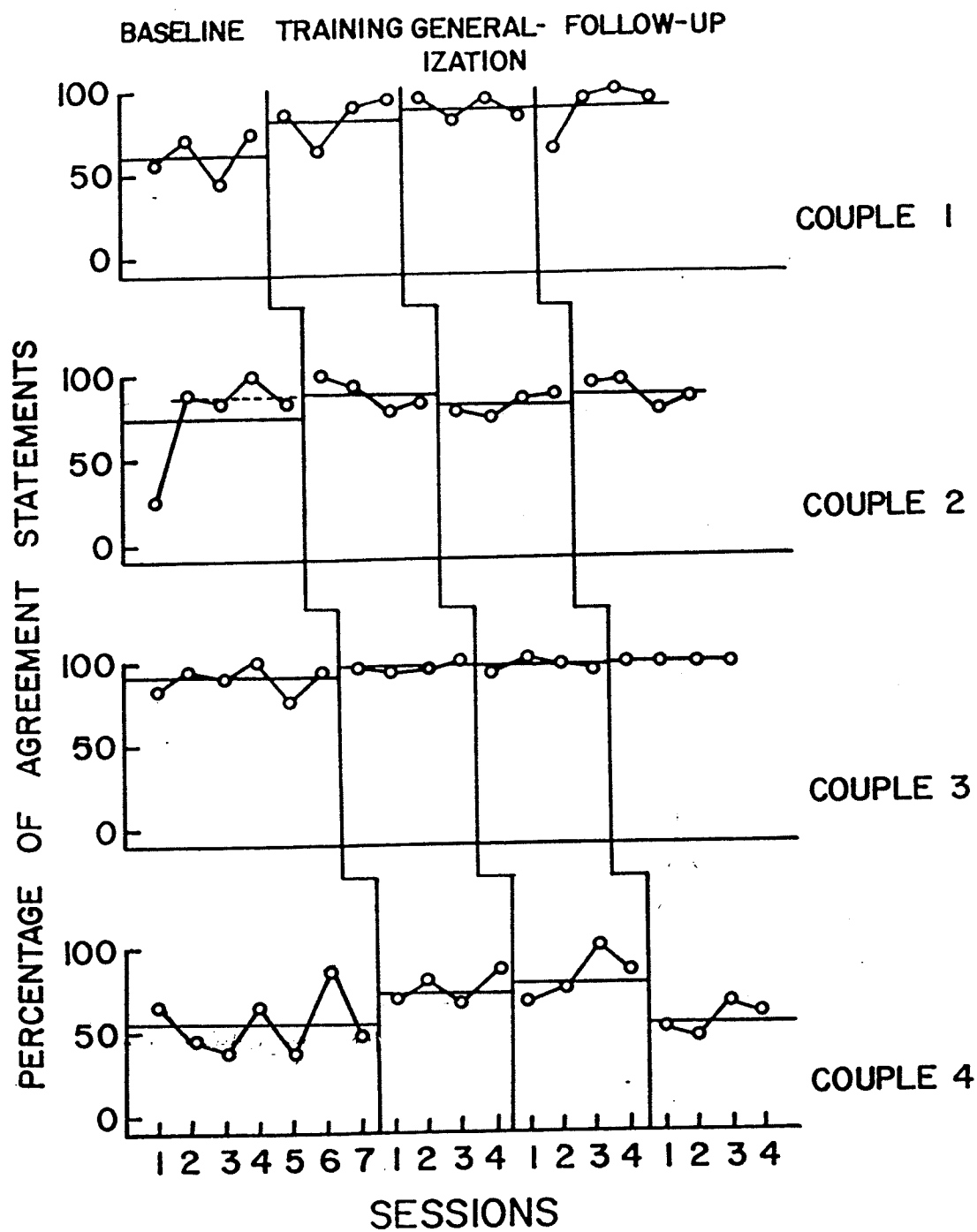


Figure 1. Percentage of agreement statements made by couples 1-4 during each videotaped session.

Couples 2 and 3 had a minimal increase because of a ceiling effect during baseline. It should be noted that the ceiling effect for Couple 2 is apparent when excluding the first baseline data point. Furthermore, this data point seems to be an artifact of a first session.

Therefore, excluding it from the baseline mean increases the accuracy of the data interpretation. Figure 1 (Couple 2) depicts the changed baseline mean with a discontinuous line. Although Couple 4 had three baseline data points within the range of the training data, the mean increased from 55% in baseline to 75% in training. During generalization couples 1, 3, and 4 maintained training effects whereas couple 2 evidenced a slight decrease. During follow-up couples 1 and 3 demonstrated continued effects of training and generalization. Couple 2 demonstrated minimal effects at follow-up. Couple 4 showed a reduction towards baseline levels but with less variability.

In summary, then, couples 1-3 showed an increase in agreement statements from baseline to follow-up. Couple 1 has a 44% increase; couple 2 has a 1% increase; and couple 3 has a 5% increase. As stated above, couple 4 showed a reduction to slightly above baseline level. It is interesting to note that couple 4 indicated prior to the research that agreeing on issues of any nature was difficult for them. This couple should probably have had more

training sessions with a greater emphasis on the teaching of agreement statements.

Percentage of positive and negative nonverbals within three content codes. Within each of the verbal content codes: agreement, problem solving, and problem feeling, the percentage of positive and negative nonverbals was calculated. To obtain the percentage of nonverbal codes within each content code, the total number of instances of the particular nonverbal code times 100 was divided by the total number of positive, neutral, and negative nonverbals for that specified content code. For example, to obtain the percentage of positive nonverbals, the total number of instances of positive nonverbal codes times 100 was divided by the total number of positive, neutral, and negative nonverbals for that specific content code. To obtain the percentage of negative nonverbals, a parallel calculational procedure was repeated.

Agreement code. Figure 2 depicts the percentage of positive and negative nonverbals for agreement statements made by couples 1-4. In general, all four couples had a varied and unstable baseline; however, upon instigation of training all couples demonstrated a marked change. A large and relatively immediate increase in positive nonverbals was demonstrated by all four couples. This was paralleled by a decrease in negative nonverbals. Generalization and

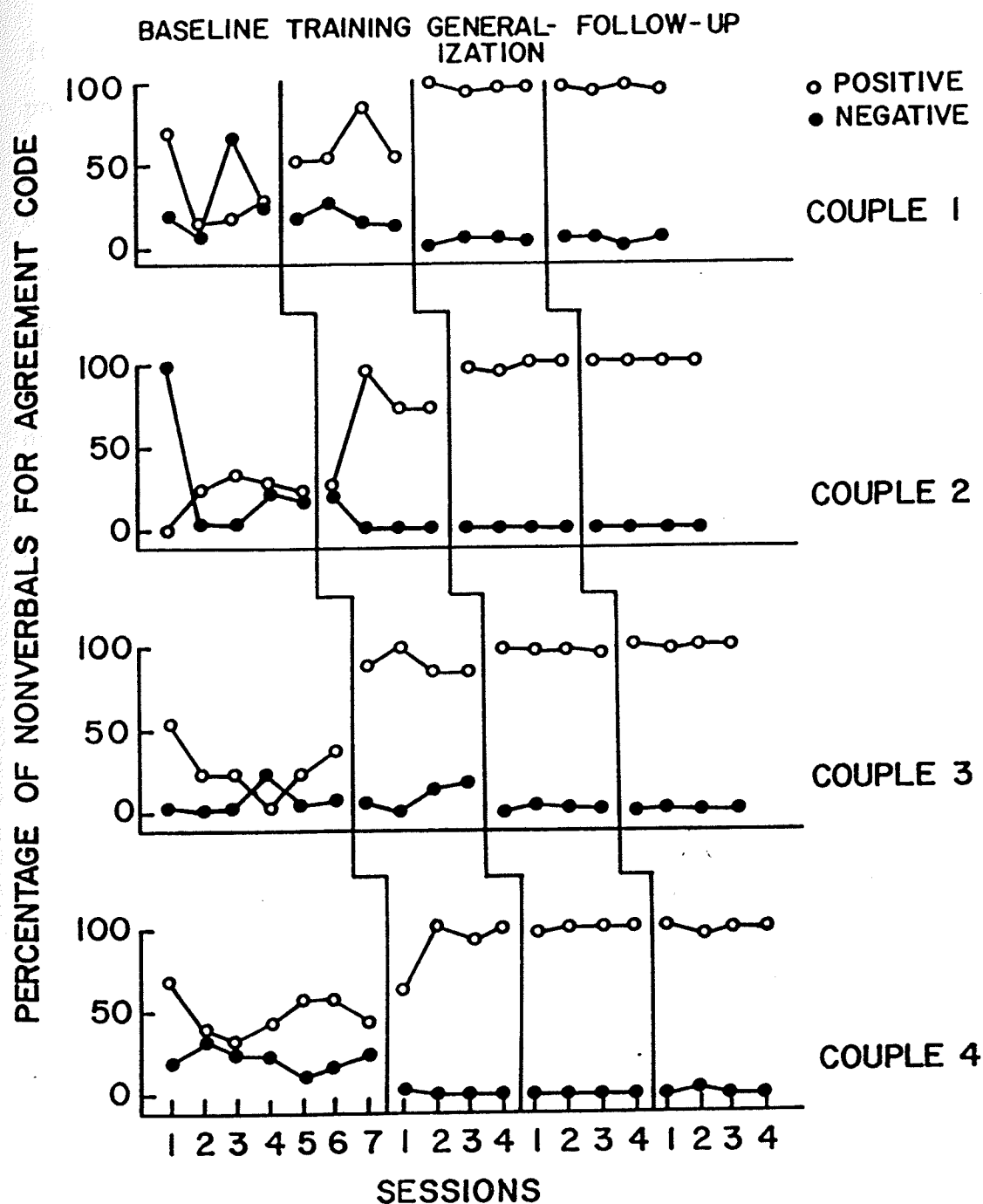


Figure 2. Percentage of positive and negative nonverbal behaviors performed during each videotaped session for couples 1-4 when making agreement statements.

follow-up continued with a high, almost perfect level of positives and a low, almost zero level of negatives.

Problem solving code. Figure 3 depicts the percentage of nonverbals for problem solving statements made by couples 1-4. The baseline data for all couples are varied and unstable with some overlap of data points for couples 1, 2, and 4. Upon instigation of training all couples demonstrated a large and relatively immediate increase in positive nonverbals. This was paralleled by a decrease in negative nonverbals. Generalization and follow-up continued with a high, almost perfect level of positives and a low, almost zero level of negatives.

Expressing feeling code. Figure 4 depicts the percentage of nonverbals for problem feeling statements made by couples 1-4. In general, all four couples had a varied and unstable baseline with some overlap of positive and negative data points for couples 1, 3, and 4. Upon instigation of training all four couples demonstrated an increase in positive and a decrease in negative nonverbals. During generalization and follow-up all four couples maintained a pattern of high, almost perfect level of positive, and low, almost zero level of negative nonverbals.

Sequential analysis. Sequential analysis, as described earlier, is a methodology for determining how in a dyad the behavior of one spouse has communicative value by increasing

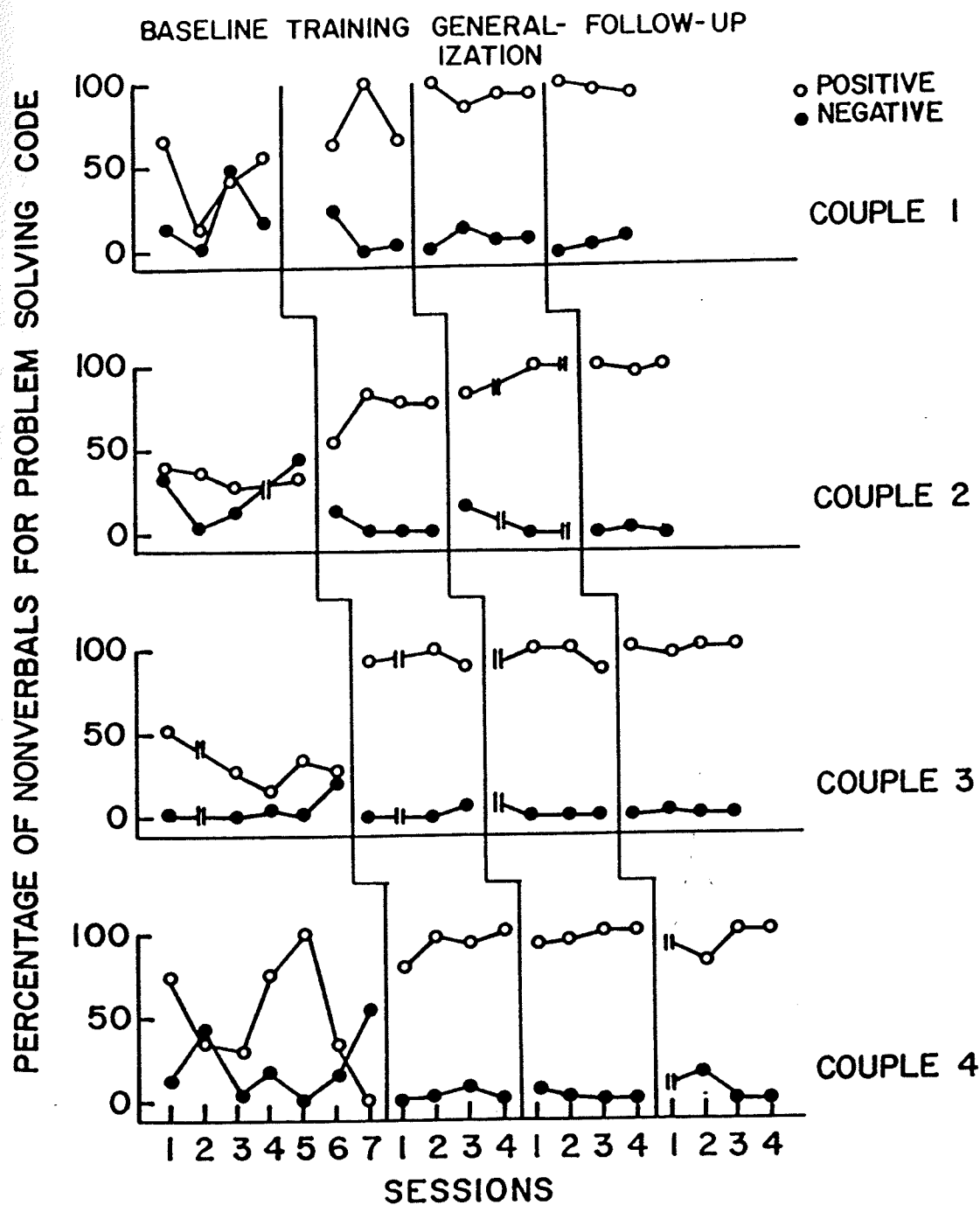


Figure 3. Percentage of positive and negative nonverbal behaviors performed during each videotaped session by couples 1-4 when making problem solving statements. (Note: the double bars "//" indicate that the couple engaged in no problem solving statements).

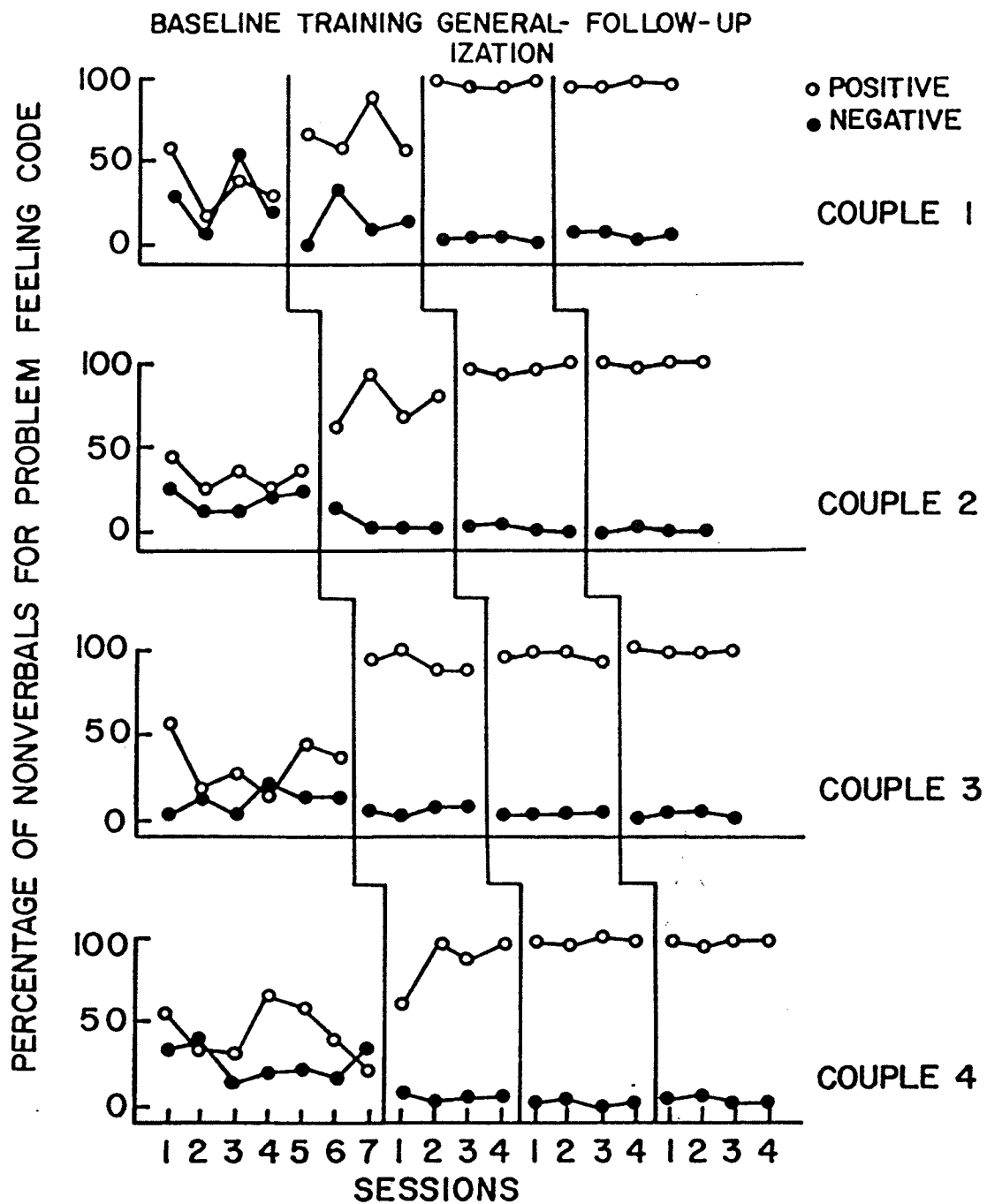


Figure 4. .Percentage of positive and negative nonverbal behaviors performed during each videotaped session by couples 1-4 when making problem feeling statements.

the ability to predict the behavior of the other spouse (Notarius, Krokoff, & Markman, 1981). Therefore, what must be demonstrated is that there is a significant difference between the conditional and the unconditional probabilities of a behavior's occurrence (Mettetal & Gottman, 1980). Gottman et al., (1977) described it succinctly in the following example.

The knowledge of the antecedent code, H+ [husband-positive], adds significantly to the ability to predict the occurrence of a W+ [wife-positive] code over and above prediction from simply knowing the relative frequency of W+ (p. 463).

Moreover, the Z-score statistic is the method used to determine the significance of the probability change (Mettetal & Gottman, 1980). Z-score calculations in the present study were employed to determine the probability change in the sequential analysis data. As noted above, training had increased the positive nonverbal base rate to an almost perfect level of positive nonverbals at generalization and follow-up. Sequentially speaking then, positive stimuli are virtually uniformly followed by positive consequences and these are the only type of sequences. Thus, sequential analysis is not appropriate because the antecedent and consequent nonverbal codes are not differential, i.e., they are all positive. Additional information about sequential analysis, lag effect,

conditional and unconditional probability, and the Z-score calculations are presented in the appendix (See Appendix N).

Marital Communication Inventory. Table 1 (left-hand side) presents the results of the pre-baseline and post-research Marital Communication Inventory completed by couples 1-4. The scores of all couples increased. Couple 1 increased their score by 20%. Couples 2 and 3 increased their score by 15%. Couple 4 showed the least effect with an overall increase of only 5%. Increased scores indicated that the communication skills of the couples had improved.

The analysis of the communication skills data has indicated unequivocally that the communication skills of the couples in the present research have improved. The original hypothesis stated that the improved communication skills would increase the rating of the couples' marital satisfaction. With anticipation I now turn to the marital satisfaction data: Will it support or negate the hypothesis?

Marital Satisfaction Data

The results for marital satisfaction will be analyzed in two sections. First, data from the Marital Adjustment Scale will be analyzed. Second, data for the Marital Satisfaction Rating Scale will be analyzed.

Table 1

Mean Scores for Marital Communication Inventory
and Marital Adjustment Scale

Couple	Measure				
	MCI ^a		Selection	MAS ^b	
	Pre-test	Post-test		Pre-test	Post-test
1	74	89	86	83	105
2	85	98	88	101	118
3	86	93	78	83	101
4	83	87	97	88	103

^aRange from 1-138

^bRange from 1-158

Marital Adjustment Scale. As well as being a selective device, the Marital Adjustment Scale was used as a pre-baseline and post-research measure of marital satisfaction. The results of these measures are depicted in Table 1 (right-hand side). (Note: Scores over 100 indicate that a couple is nondistressed). All couples increased their scores from pre- to post-test. Couple 1 increased their score by 26%, couple 2 by 17%, couple 3 by 22%, and couple 4 by 17%. The scores for all couples were over 100, placing them in the nondistressed category.

Marital Satisfaction Rating Scale. Each week the couples rated their marital satisfaction on a scale from 1-9. Figure 5 depicts the marital satisfaction data for couples 1-4 converted into percentages. On the original scale from 1-9, this means that the weekly scores ranged from 4 to 8 or from 64% to 89%. For clarity of visual presentation marital satisfaction measures have been combined across weeks. In addition, data for training and generalization phases were averaged. However, when weekly data were graphed separately sequential changes appropriate to phases of the multiple baseline design were evidenced (See Appendix O).

All couples demonstrated an increase in marital satisfaction from baseline to follow-up. Couples 1 and 2 demonstrated an abrupt increase in marital satisfaction

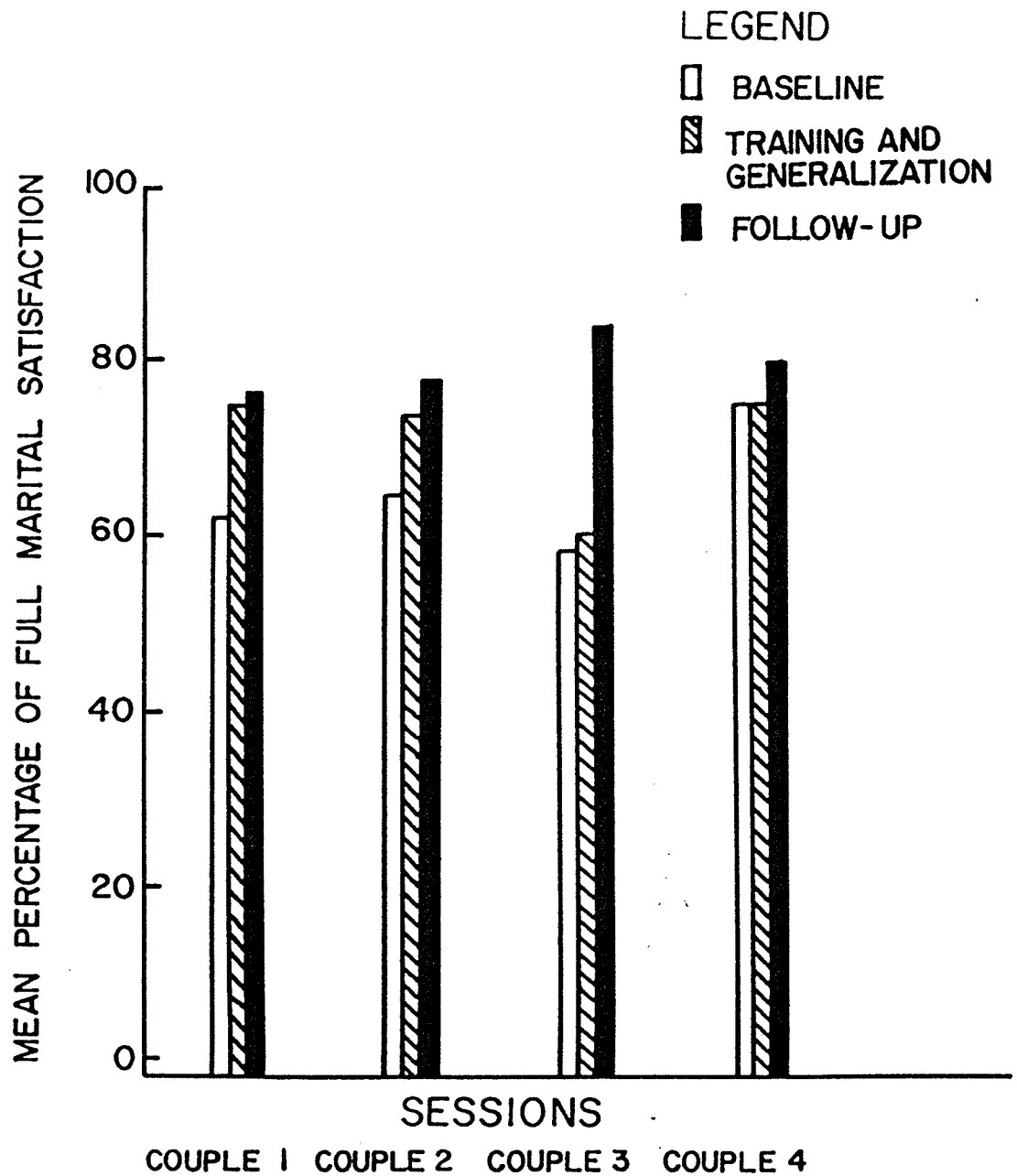


Figure 5. Mean percentage of full marital satisfaction as specified by couples 1-4 throughout the project. (Note: Data are averaged across weeks and the training and generalization data are combined. Transformed from a 9-point rating scale to percentages.)

upon instigation of training with a slight increase at follow-up. Couples 3 and 4, on the other hand, evidenced a large increase from training to follow-up with only a slight increase from baseline to training. Couple 1 had a mean of 62% during baseline and a mean of 78% at follow-up, an increase of 26%. Couple 2 had a mean of 65% during baseline and a mean of 78% at follow-up, an increase of 20%. Couple 3 had a mean of 58% at baseline and a mean of 84% at follow-up, an increase of 45%. Couple 4 had a mean of 75% at baseline and a mean of 80% at follow-up, an increase of 7%, showing the least effect among the couples. Nevertheless, couples 1-4 had a mean increase of 25% in marital satisfaction from baseline to follow-up.

DISCUSSION

The results of the present study demonstrate that teaching communication skills to couples at risk for distress increased their marital satisfaction. These results will be discussed in the following sequence. Firstly, the communication skills data will be discussed. Secondly, the marital satisfaction data will be considered. Thirdly, benefits of the research design will be mentioned. Fourthly, issues of social validation will be studied. Finally, suggestions for future research will be made.

The results indicated that the use of the training package: videotape feedback, instructions, behavioral

rehearsal, and modeling, increased communication skills. First of all, couples 1 and 3 increased the number of agreement statements and decreased their disagreement statements. These results correspond with the findings of Gottman et al., (1977) who found that nondistressed couples have proportionately more agreement statements than disagreement statements.

Couples 2 and 4 were an exception. Couple 2, as noted earlier, demonstrated a ceiling effect in baseline. Presumably in regards to agreement statements Couple 2 functioned at their optimal level. For example, the means of the training, generalization, and follow-up phases remained within a few points of the baseline mean. In conversation with Couple 4 they indicated that agreeing on issues of any nature was difficult for them. They, nevertheless, were cooperative during the training and demonstrated a gradual increase in agreement statements until the end of the generalization phase. They might, however, have benefitted by more teaching sessions with stronger emphasis on producing agreement statements.

Second, the base rate percentage of positive nonverbal codes increased as the analysis of the three content codes: agreement, problem solving, and problem feeling, demonstrated. All showed a dramatic increase; in fact, an almost perfect level of positive nonverbal behavior was

achieved upon instigation of training. Conversely, negative nonverbal behaviors decreased virtually to zero. This is in agreement with the findings of Gottman et al., (1977) that nondistressed in contrast to distressed couples used these three codes with positive nonverbal behaviors instead of negative nonverbals. Thus the present research demonstrated that training produced positive changes in nonverbal behaviors in the couples.

Third, the Z-score, a statistical method used to determine the significance of probability change (Mettetal & Gottman, 1980), was applied to the sequential analysis data. Due to the high, almost perfect levels of positive nonverbal behaviors arrived at via training, the sequential analysis was not appropriate (Mettetal & Gottman, 1980). The present research applied the Z-score statistic to the sequential analysis data of each session for each couple. Past research, on the other hand, applied the Z-score statistic to the sequential analysis data of groups of distressed and nondistressed couples (e.g., Gottman et al., 1977; Margolin & Wampold, 1981), which did result in different sequences of behaviors for distressed and nondistressed couples. Again, detailed explanation of the sequential analysis data can be found in the Appendix N.

It should be noted, however, that if spouses engage mostly in positive nonverbal behaviors, such communication

would result in an ongoing exchange of positive nonverbal behaviors; conversely, it would decrease the exchange of negative nonverbal behaviors. Such a pattern of nonverbals would represent the ideal state of communication behavior. We might conclude that the couples in this study began to train each other to use positive instead of negative nonverbals. Furthermore, they began to function as non-distressed rather than couples at risk for distress.

The final indication that communication skills training improved communication was obtained from the results of the Marital Communication Inventory. The scores for all the couples had increased after the research was completed. Although Bienvenu (1970) does not specify a definite score as a cut-off point, he does state that the higher the scores the better are the communication skills of the spouse. In the present research this meant that each spouse had improved his/her communication skills. The Inventory is constructed in such a manner that each spouse rates his/her partner's communication skills. Therefore, the increased rating indicates that the spouse recognized the improved communication skills of his/her partner.

As will be recalled, it was hypothesized that improved communication skills would increase the marital satisfaction of the couples in the present study. Furthermore, it was hypothesized that their scores on the Marital Adjustment

Scale would shift from an at risk for distress to a non-distressed category. The communication training data indicate that the communication skills of the couples have indeed improved. Therefore, we will now discuss the marital satisfaction data to determine its status and relationship to the communication training results.

The results indicated that the marital satisfaction of the couples increased after training. The weekly ratings of marital satisfaction increased slowly but consistently after the training sessions had begun. When the project was completed, the marital satisfaction data for all four couples had increased from baseline ratings. This was further corroborated by the increased scores on the Marital Adjustment Scale; all couples had shifted from an at risk for distress to a nondistressed category (Jacobson, Folette, & Elwood, 1984): over 100 on the Marital Adjustment Scale, which measured marital satisfaction pre- and post-research.

Communication skills training improved communication and was accompanied by an increase in the marital satisfaction of the couples. This concurs with the findings of Bienvenu (1970) and Billings (1979) who state that communication and marital satisfaction are highly related. The present research demonstrated that the two behaviors covary and as a result of training can be changed in a positive direction. Of note here is Gottman's (1985)

statement that what is needed in the marital therapy research is an empirical demonstration that couples in therapy really change.

The positive results of the communication skills training are due in part to the research design used in the present study which offered some specific advantages. A few of the general advantages were discussed earlier; what will be discussed presently are the advantages related to the four phases: baseline, training, generalization, and follow-up of the multiple baseline across couples design. First of all, the baseline provided an empirical base for the training of communication skills (Gottman, 1985) by identifying the communication deficits in the individual couple.

Secondly, the identification of the communication deficits in individual couples and the contribution of previous research on how distressed and nondistressed couples differed in their communication patterns (Gottman et al., 1977) made it possible to train skills that would enhance the communication of each individual couple. Gottman (1985) stated that good indices of effective marital conflict resolution are: (a) an increased ratio of agreement to disagreement statements, (b) increased positive nonverbals, and (c) increased reciprocation of positive nonverbals (p. 319). The first two indices were targeted

for training in the present study. The third index, increased reciprocation of positive nonverbals, was expected to increase as a result of the increase of base rate positive nonverbals.

Previous research combining communication skills training and marital satisfaction had not included a generalization phase. Its inclusion and the results obtained, therefore, make a unique contribution to the marital research literature.

In the present research a generalization programming package was used to ensure generalization. This package included three categories: stimulus and response generalization and maintenance. Each area consisted of specific components. The research design made it possible to determine whether or not the couples utilized their newly acquired skills when discussing previously discussed but untrained and new topics. Furthermore, it was possible to ascertain whether or not the behaviors maintained over time. It is important to note that for generalization to occur, you must program for it. The components in the generalization programming package used in the present study were as follows: train sufficient exemplars, program common stimuli, mediate generalization, regard generalization as a response, train sufficient response exemplars, vary the acceptable responses during training, and make use of the

natural contingencies of reinforcement.

As will be recalled, consistent results for the generalization of agreement statements for couples 1-4 were not obtained. Couple 1 and 3 demonstrated skills generalization; couple 2 demonstrated minimal changes throughout the research; couple 4 demonstrated generalization of skills but they did not maintain at follow-up. However, the generalization of trained positive nonverbal behaviors for couples 1-4, as demonstrated by the change from baseline to follow-up, extended to previously discussed but untrained topics and to trained and to new topics.

A research design that demonstrates positive results should elicit positive social validation from its participants. I assessed three types of social validation upon completion of the research project. Firstly, the goals of a project should be important to the consumer: in this case the couples (Bornstein & Rychtarik, 1983; Wolf, 1978). One indication that the goals of the project were important to the couples was that after explaining to them the extensive time commitment involved, they, nevertheless, were willing to commit themselves to the project and signed the contract. More generally, however, most couples committed to their marriage relationship wish for improved communication.

A second aspect of social validation should include assessment of whether the treatment procedures are acceptable to the participants (Bornstein & Rychtarik, 1983; Wolf, 1978). To determine whether or not the treatment procedures were acceptable to the couples in the present research, they were asked to complete a Goal Achievement Form given to them at their last videotaping session. This form specified three categories to indicate the "helpfulness" of the procedures used during the project. The couples stated that viewing the videotape, trainer's reinforcements, instructions, corrective feedback, and behavioral rehearsal were the "most helpful" procedures for improving communication skills. They stated that videotaping itself and modeling desired behaviors by the researcher were "somewhat helpful." They found it "least helpful" to complete the pre- and post-self-report measures. Of special note is the fact that of the four behavioral procedures used during training, three are mentioned as "most helpful." The fourth behavioral procedure "modeling" is mentioned as "somewhat helpful."

A third aspect of social validation is one in which the consumer indicates posttreatment satisfaction (Bornstein & Rychtarik, 1983; Wolf, 1978). In the present research posttreatment satisfaction was determined in the following manner. One month after follow-up I went to each couple's

home for a social validation interview to determine their satisfaction with the project. All the couples stated that the project had been "worth their time and effort;" they would be happy to recommend it to other couples. Furthermore, they all stated that they had improved their communication skills. All of them said they were using some of the newly acquired skills because they found it much more rewarding to converse with each other now than prior to having had the communication skills training. One couple stated that they were using some of the nonverbal behaviors such as a kind tone of voice in their interactions with their children (Gottman, 1985).

While conversing with the couples the researcher observed that they were utilizing some of the skills that had been taught during the training sessions. The most obvious ones were such nonverbal behaviors as eye contact and a pleasant tone of voice.

In spite of the successful elements in a research project, possibilities for improving and extending the work are a natural and progressive outcome. The present research generated a number of suggestions for future research.

First of all, it appeared that topic ratings of "easy" or "difficult" had some effect on the outcome of video-taping sessions. In future research it would be useful to

individualize topics chosen by the couples and have them discuss only the ones they specify as "difficult." This would make topic difficulty consistent for each couple.

Second, since the couples in the present research were from a rural area, having the same ethnic and religious background, and designated as "couples at risk for distress," more research should be undertaken with couples of different geographical, religious, and ethnic backgrounds. Furthermore, it would be useful to teach communication skills to distressed and severely distressed couples, couples who score below 80 on the Marital Adjustment Scale. It would be interesting to note whether or not severely distressed couples would cooperate with the trainer when requests were made to change aversive to adaptive behaviors. Such couples, however, in contrast to the couples in the present study, would have opportunity to increase their communication skills and marital satisfaction scores by a wider margin.

Third, teaching additional verbal behavioral skills to couples would be a beneficial inclusion in future research. Gottman, et al., (1977) specify that nondistressed couples as compared to distressed couples engage in more sequence loops that include problem solving statements followed by agreement statements called "contract loops" and engage in more problem feeling statements followed by agreement

statements called "validation loops."

Fourth, the compilation of an assessment and training package for teaching communication skills would be a valuable contribution to the area of marital intervention. It could meet the need for a preventative approach, as mentioned in the introduction, when working with couples at risk for distress. In fact, it could be used by individuals involved in pre-marital counselling. Furthermore, it could be used by clinicians to teach communication skills to couples who indicate that their primary goal is improved communication. Such a training package would include a videotape of a couple demonstrating positive verbal and nonverbal communication skills, a manual with a transcript of the videotape and two self-report questionnaires: The Marital Communication Inventory and the Marital Adjustment Scale. Certainly such a training package would be cost-effective for the professional working with couples as well as for the couples who wished to improve their communication skills. In addition, these couples might accrue the benefit of increased long-term marital satisfaction.

Finally, the generalization programming package was an important and unique part of the present study. It combined a number of component procedures to assure generalization of training, a tactic which is parallel to Azrin's (1977) approach to the development of treatment packages

themselves. Future research could include a component analysis of the generalization programming package determining which components would be most useful (Azrin, 1977).

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Appendix ACONTRACT AND CONSENT FORM

We, _____ agree to participate in a research program evaluating the therapeutic effects of a communication skills training program. We understand that this research is a time limited program consisting of the following components:

1. completing several pencil and paper tests: pre, post and during the research
2. discussing topics relevant to marriage, having them videotaped, audiotaped, and coded
3. having a procedural reliability coder present at random intervals to check on the procedures designated for the researcher
4. coming for weekly, biweekly or bimonthly sessions for videotaping; schedules being mutually adjustable throughout the length of the research: 4-7 months
5. included in the research will be two follow-up sessions; one, a month after the completion of the basic research design; one, nine months later.

We understand that the information gathered during the program will be used for analysis and development of a therapeutic communication skills program. We have been informed, however, that confidentiality is guaranteed. Information used for research analysis will exclude any details that may reveal our identity.

It is further understood that the researcher, Clara Doerksen, is a graduate student in Clinical Psychology in the Psychology Department of

the University of Manitoba. She is trained in the conduct of research and therapeutic behavioral procedures under the direct supervision of her faculty advisor, Dr. S. Holborn.

We agree that Clara Doerksen under the supervision of Dr. Holborn shall be the sole owner of all rights in regards to the audio and video tapes and that they will receive no financial compensation for the taking and use thereof. Further, we understand that the audio/video tapes will be erased when no longer needed for research or teaching purposes. We agree that the audio/video tapes are to be used for research and teaching purposes. If they are to be used for any additional program, our further consent will be required.

Although we understand that the consent to be part of this research project may be revoked at any time, we do agree to participate in the research until its completion barring any unforeseen circumstance. We understand that our participation is vital for the completion of this particular research design.

We have read, understand and agree to the conditions for the participation in the research program as stated above.

Researcher

Spouse

Faculty Advisor

Spouse

Date

Appendix BREGISTRATION INFORMATION FOR COMMUNICATION SKILLS TRAINING PROGRAM

All responses are confidential.

NAME _____ BIRTHDATE _____

ADDRESS _____ TELEPHONE (Home) _____

(Work) _____

OCCUPATION _____

AGE AT MARRIAGE _____ NO. OF YEARS MARRIED _____

<u>CHILDREN:</u>	<u>NAME</u>	<u>SEX</u>	<u>AGE</u>	<u>OCCUPATION</u>
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HOW LONG DID YOU KNOW EACH OTHER BEFORE MARRIAGE? _____

EDUCATION _____ RELIGION _____

YOUR INCOME (do not include spouse) _____

Appendix CTOPIC LIST

Name _____

Please rank order as to how difficult you would find it to discuss these topics with each other.

Random ListYour Ranking by Number

- | | |
|---------------------------------|-------|
| 1. Rearing of children | _____ |
| 2. Household responsibilities | _____ |
| 3. Communication | _____ |
| 4. Sex | _____ |
| 5. Personal/Spouse independence | _____ |
| 6. Privacy/company | _____ |
| 7. Recreation | _____ |
| 8. Demonstration of affection | _____ |
| 9. Friends | _____ |
| 10. Values/philosophy of life | _____ |
| 11. In-laws | _____ |
| 12. Time spent together | _____ |
| 13. Career progress | _____ |
| 14. Jealousy/trust | _____ |
| 15. Religious faith | _____ |
| 16. Church activities | _____ |
| 17. Alcohol/drugs | _____ |
| 18. Money | _____ |
| 19. Social activities | _____ |

20. General happiness

21. Decision making

22. Appearance

23. Habits

24. Closeness

Your own suggestion

Your own suggestion

Appendix D

Communication Skills Training

Purpose:

In good communication a couple's goal is the support of one another, that is, to be sympathetic and understanding of what the other person is saying. The goal is to understand the feelings of your spouse (nonverbal behavior) in addition to his or her words (verbal behavior), and the message that seems to be behind the words. In good communication, especially between members of a couple, the goal is to convey information to each other in a kind and gentle way. If there are issues that cause disagreement, the goal is to deal with them efficiently, stating how you feel but in a neutral tone and with neutral body messages (nonverbal behaviors). The goal is to come to a mutual agreement. Although this might not always happen in a 10 min segment, this is a desirable goal.

During the training sessions, consider the following suggestions. Try to avoid a power struggle, thinking, "I must win; he or she is wrong; I am right." Rather, one should consider how a mutual agreement can be reached. "Can we compromise? Can we contract? Can we in some way make a mutual decision so that we can both live with it? Can we both accept some responsibility for it; and yet feel that in this process our relationship has been strengthened? How can our conversation increase a sense of intimacy, of closeness, of mutual understanding and goal-oriented behavior, rather than a feeling of

isolation, of being misunderstood, of being put down, and/or of being a second-rate spouse?"

In these teaching sessions the different codes that are being used are there to help you understand how you have been communicating. Specifically, they will indicate areas in which you are communicating effectively and in what particular areas some teaching and consequent practice will enable you to employ skills that will lead to desirable communication goals.

Appendix ECODING SYSTEMVerbal coding - content

Each statement, set of statements or a thought unit is given a code.

There are ten different verbal codes.

I. Agreement (AG)

A. Direct agreement

- direct acknowledgment of agreement with other's views

e.g. You're right/OK/well put

B. Accepts responsibility

- accepts responsibility for past or present problem.

- includes apologies or acceptance of criticism

e.g. I'm sorry for the way I acted

C. Accepts modification

- changes opinion from other's influence

e.g. Yes, I see how it could be.

D. Compliance

- complies with preceding request or command

e.g. OK, I'll do it.

E. Assent

- a brief verbal response that demonstrates listening and attention, including repeat of the other's statements in a neutral voice.

e.g. Yeah, Mmmmm.

II. Disagreement (DG)

A. Direct disagreement

- disagreement or denial of responsibility for self or both for a past/present problem

e.g. I never said I would / We had nothing to do with it

B. Yes but

- qualified agreement or apology

e.g. I'm sorry but / OK, however / I agree, but

C. Disagreement with rationale supplied

- justification, reason, or explanation for the disagreement

e.g. We have to go; she appreciates visits / No, it's important to save money / I disagree; I've never done that

D. Command

- telling/ordering partner to do/not to do something

e.g. listen / let me / shut up / write down #3 / stop

III. Communication Talk (CT)

A. Back on Beam #1

- directs talk back to topic at end of restatement / redescription of problem

B. Back on Beam #2

- directs talk to resolution of problem at end of recognizing that some action must be taken towards resolution

e.g. We must reach a decision / We have to decide / Let's talk only five more minutes.

C. Metacommunication

- statement about the conversation which stops it to talk about it
including critique/evolution/examination/understanding or lack of it
e.g. We're getting nowhere / We're going in circles / I like this
relating / I can't get thoughts out.

D. Clarification Request

- including request for repetition / rephrasing due to not hearing
or not understanding
e.g. I didn't get that / Say that again

IV. Mindreading (MR)

A. Mindreading feelings, attitudes or opinions

- motive are inferred of the spouse/couple
e.g. You hate / You love? You see only one side / You're lying.

B. Mindreading behavior/facts

- attributed only to other person, including past, present, future
e.g. You didn't study / You won't go / You spent

V. Problem Solving (PS)

A. Specific plan or method of a solution

- e.g. Your way last time/ my turn now / Car died; let's walk

B. Nonspecific plan which suggests a solution

- e.g. I think you should never be late again / Let's be happy / I'll
just have to be more consistent

VI. Information Exchange (IE)

A. Relationship information

- information or behavioral facts about couple or speaker in past,

present, future, including sensory reports

e.g. We're taking the kids to the park

B. Nonrelationship information (not self-disclosure)

- facts or information not directly associated with relationship

e.g. My pencil lead broke / It's 3:00 pm

C. Nonrelationship information not related to couples relationship

- subjective expression about speaker's preferences unrelated to relationship

e.g. This chair is comfy / I feel her husband is wrong.

VII. Summarizes Other (SO)

A. Summarizes previous statement of other

e.g. It seems to me you're saying / In other words

B. Summarizes couples previous statements

e.g. Yesterday we talked about / Thus far we discussed

VIII. Summarizes Self (SS)

A. Self summary

- reviews or sums own previous statements (especially at end of long message), including word for word repetition of own previous statement

e.g. I guess what I'm saying is / What I've said so far is

IX. Expressing feelings about a problem (PF)

A. Generalized Problem Talk

- statement directly about relationship but phrased in abstract terms or which generalizes to a whole population

e.g. most people are selfish about / There isn't anywhere in the world that

B. Relationship Issue Problem Talk

- statements directly related to the problem including feelings, opinions, attitudes or thoughts of the speaker

1. Existence of a problem e.g. We have a problem with kids
2. Nature of problem e.g. Our financial situation is bad because...
3. Cause of problem e.g. Maybe it exists because...
4. Effect of problem e.g. I've been trying so hard that I feel tired.
5. Implications of problem or predictions e.g. If you do our relationship will likely end.
6. Attitude/opinion of problem e.g. We should have explained before we got there

C. Feelings

- which directly reveals the immediate affective expression of the speaker occurring in the past, present, future

e.g. I'm nervous now / I've always gone and I always have been miserable / I'm always happy when...

X. Questions (Q)

A. Question

- usually with 1) relationship
2) non-relationship
issues/opinions/attitudes

e.g. What do you have for #3? Q/PS

Don't you think you're off topic? Q/CT

Did you send a card to my family? Q/PF

Nonverbal coding - affect

The coder tries to describe the face, voice, and body using either a positive or negative descriptor. If no adjective is suitable then the non-verbal behavior is coded neutral.

FACE:

Positive face (F+)

- smile
- laugh
- empathic face
- head nod
- eye contact
- joy
- interest

Negative (F-)

- frown
- sneer
- fear face
- cry
- mocking laugh
- smirk
- angry face
- disgust
- glare
- shame
- distress
- worry
- boredom
- contempt
- scorn

Neutral (FO)

VOICE

Positive (V+)

- caring
- warm
- soft
- tender
- relieved
- empathic
- concerned
- affectionate
- loving
- satisfied
- buoyant
- bubbly
- cheerful
- chuckling
- laugh
- assent
- happy

Negative (V-)

- cold
- tense
- scared
- impatient
- hard
- clipped
- staccato
- whining
- blaring
- sarcastic
- angry
- furious
- hurt
- depressed
- accusing

Neutral (Vo)

BODY

Positive (B+)

- neck relaxation
- hand relaxation
- touching
- distance reduction (forward lean or moving chair closer)
- asymmetrical limb placement (toward each other)
- sideways lean
- open arms
- shakes whole body in agreement

Negative (B-)

- neck tension
- hand tension
- distance increase
- rejection of contact or attempt at contact
- cold shoulder posture
- symmetrical limb placement
- stiff posture
- arms akimbo
- throws hands up in disgust
- shakes whole body in disagreement

Neutral (Bo)

Sample of Transcript

W: 'Cause any time I still try and hold your hand you still are

V- FH+ BH+
FW+ BW-

embarrassed. You still.../MR

V+ FH- BH+
FW+ BW-

H: No, no.../DG

V+ FH+ BH+
FW+ BW-

W: Don't want to do it./MR

V- FH+ BH+
FW+ BW-

V0 FH+ BH+
FW+ BW-

H: No./DG When's the last time you tried? Name a day./Q/PF

W: When we go to a restaurant it's the few times we are by ourselves.

Even if I take your hand 'cause, or take your arm 'cause it's

slippery. Then you still always hold it like this a little bit

V- FH+ BH+
FW+ BW+

like you, you're only doing this 'cause you have to. That's how

it feels./MR

V- FH+ BH+
FW+ BW+

H: Oh well. Maybe it's been so long that I just.../PF

V- FH+ BH+
FW+ BW+

W: Well it's not my fault./DG

V- FH+ BH+
FW+ BW+

H: Well I didn't say it was./DG

V- FH- BH+
FW- BW+

W: No, but you're making it sound that way./DG

V0 FH- BH+
FW- BW+

H: I suppose it's both of our faults./AG

V- FH- BH+
FW+ BW-

W: Well, sure it is./AG

V+ FH- BH+
FW+ BW+

H: So what's the solution?/Q/PF

V- FH+ BH+
FW+ BW-

V0 FH- BH+
FW+ BW-

W: I don't know./PF What is the solution?/Q/PF

Tallied Form

COUPLE NO 4

CODE 7/3

TOPIC Demonst. of Affection

[illegible]

Appendix HSample - Training Procedure

Segment 1 - reinforce both husband and wife - tallied sheet

indicates more positive nonverbals than negative nonverbals.

- instruct wife regarding negative body - moving fingers and hands.

- reinforce husband and wife for good eye contact.

- request behavioral rehearsal of husband for agreement statement, e.g., "Yes, that's true; you are trying."

Segment 2 - reinforce both husband and wife - tallied sheet

indicates mostly positive nonverbals.

- reinforce husband for good eye contact.

- instruct husband not to have arms akimbo.

Appendix IGOAL ACHIEVEMENT FOR COMMUNICATION SKILLS TRAINING

A. Check the response which is most appropriate.

1	2	3	4	5
Not achieved	Somewhat better	Satisfied with improvement	Much improved	Marriage directly benefitted

B. Check which procedures were most helpful, somewhat helpful, least helpful in achieving the goal mentioned above.

1. Videotaping itself
2. Viewing the tape
3. Instructions
4. Trainer's reinforcements
5. Corrective feedback
6. Behavioral rehearsal
7. Modeling
8. Marital Communication Inventory
9. Marital Adjustment Scale
10. General social interaction
between trainer and you
11. Other: specify

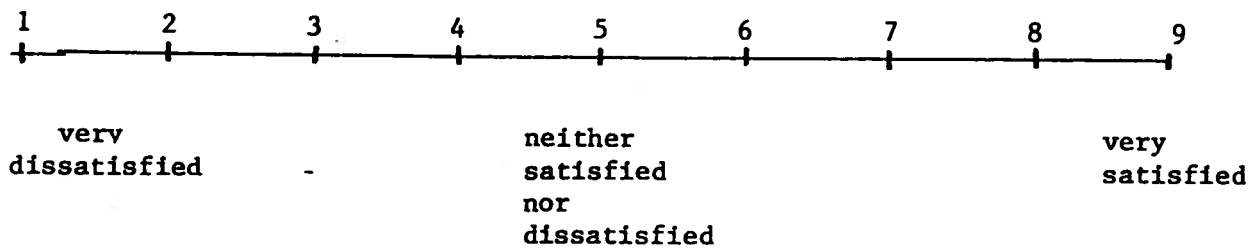
Most Helpful	Somewhat Helpful	Least Helpful

C. Additional Comments:

Appendix JMARITAL SATISFACTION RATING SCALE

Date _____ Name _____

Circle the most appropriate number.



Appendix KSOCIAL VALIDATION INTERVIEW

1. How did you feel about the project in general? Would you recommend such a training program to other couples?
2. As the sessions progressed, would you have liked more information about the research?
3. Would you have liked more teaching sessions?
4. Were the topics relevant? Would you have liked different topics or an opportunity to choose your own topics?
5. If you would have had the opportunity to plan the research what might you have done differently?
6. In general, how has the program helped you? Was it worth your time and effort?
7. What were some positive experiences?
8. Did you have some negative experiences?
9. Do you feel that you have made some permanent changes in your communication?
10. What changes in regards to communication skills would you still like to make?

Procedural Reliability for Communication Skills Program

DATE _____ COUPLE _____
 TRAINER _____ TOPIC _____
 OBSERVER _____ PHASE _____

INSTRUCTIONS: check "✓" the appropriate column based on trainer response.

PROCEDURAL ELEMENTS	CORRECT	INCORRECT	COMMENTS FOR IMPROVEMENT
1. Trainer greets couple with a smile and chats.			
2. Trainer accepts M.S.R.S.			
3. Trainer sets date for next taping, if possible.			
4. Trainer gives couple M.S.R.S.			
5. Trainer explains procedure, if necessary.			
6. Topic is assigned and explained if necessary.			
7. Couple sits down; equipment is adjusted if necessary.			
8. Videotape and dictaphone is switched on.			
9. Timer is switched on, trainer leaves room.			
10. Trainer returns to room in 10 minutes.			
11. Trainer switches off equipment.			
12. Trainer thanks, says "good-bye" to couple; small talk if suitable.			
TOTALS			

$$\text{P.R.O.} = \frac{\# \text{ correct procedures} \times 100}{\text{total \# of procedures required}}$$

$$\text{P.R.O. Score} = \frac{\quad}{\quad} \%$$

PROCEDURAL RELIABILITY FOR THE COMMUNICATION SKILLS PROGRAMTraining Phase

DATE _____ COUPLE _____
 TRAINER _____ TOPIC _____
 OBSERVER _____ TWO-MINUTE SEGMENT # _____
 PHASE _____ SUMMARY ANALYSIS _____

INSTRUCTIONS: Check "✓" the appropriate column based on trainer response.

PROCEDURAL ELEMENTS	CORRECT	INCORRECT	COMMENTS FOR IMPROVEMENT
1. Trainer & couple prepare for 2 minute segment.			
2. Trainer & couple view 2 minute segment.			
3. Trainer reinforces positive skills.			
4. Trainer asks spouse for his/her suggestion/explanation, if necessary.			
5. Trainer instructs on how to change, if necessary.			
6. Trainer requests behavioral rehearsal, if necessary.			
7. Trainer models required skill, if necessary.			
8. Trainer & Couple engage in generalized social talk.			
TOTALS			

P.R.O. = $\frac{\# \text{ correct procedures}}{\text{total \# of procedures required}} \times 100$ P.R.O. Score = _____%

Appendix N

Sequential Analysis

Sequential analysis refers to a method of behavior analysis that takes into account the order in which the behaviors of a couple occur (Notarius, Krokoff, & Markman, 1981). Margolin and Wampold (1981), further elucidate this concept by defining it as "a continuous and circular influence that occurs between marital partners, . . . a sequential chaining of events as opposed to singular behavioral acts" (p. 554).

Sequential analysis of interaction patterns of dyads can be obtained for both verbal and nonverbal behaviors. An example of verbal behavioral chaining would be as follows: wife disagrees with husband's prior statements, husband restates his problem solving statement, wife agrees with husband's statement. An example of nonverbal behavioral chaining would be as follows: husband speaks in a negative tone of voice, wife speaks in a positive tone of voice, husband speaks in a positive tone of voice.

Clearly then, distressed couples or couples at risk for distress would need to increase positive verbal and nonverbal interaction patterns, i.e., to increase positive reciprocity (Margolin & Wampold, 1981). At this point the terms reciprocity and reactivity, used to describe specific types of communication, need to be clarified. Stated

simply, reciprocity implies more of the same kind of behavior, for example, a positive nonverbal stimulus followed by a positive nonverbal response. Reactivity refers to behavior opposite to the partner's behavior with the descriptor, positive or negative, referring to the initial stimulus in the sequence; for example, a positive nonverbal stimulus followed by a negative nonverbal response would qualify as positive reactivity. More formal definitions follow.

Positive reciprocity, for example, describes the likelihood that a positive response given a positive stimulus is greater than the unconditional probability of positive behaviors. Conversely, negative reciprocity is defined as the likelihood that a negative response given a negative stimulus is greater than the unconditional probability of negative behaviors (Margolin & Wampold, 1981). Positive reactivity is defined as a positive stimulus followed by a negative nonverbal response; and conversely, negative reactivity is defined as a negative stimulus followed by a positive response (Margolin & Wampold, 1981). Therefore, when teaching communication skills to couples the goals are to increase positive reciprocity and negative reactivity and to decrease negative reciprocity and positive reactivity.

Lag Effects. A note of explanation is needed regarding the use of lag effects. Since sequential analysis is based on defining successive links in behavioral chains, the behavior of one spouse followed by the behavior of the other spouse is designated as Lag 1, or Behavior 1 to Behavior 2. Behavior 1 to Behavior 3 then becomes Lag 2. For example, the following sequences consist of three lags: (a) husband speaks in a negative tone of voice, (b) wife speaks in a positive tone of voice (Lag 1=a and b), (c) husband speaks in a positive tone of voice (Lag 2=a and c), (d) wife speaks in a positive tone of voice (Lag 3=a and d) (Notarius et al., 1981). In the present research only Lag 1 sequences were analyzed. Margolin and Wampold (1981) analyzed data on groups of couples for Lag 1 and 2. Gottman et al., (1977) analyzed data on groups of couples up to six lags. Both studies, however, demonstrated that the important discriminations between distressed and nondistressed couples were evidenced at Lag 1. For example, Lag 1 data indicate that distressed couples are less likely than nondistressed couples to emit a positive response to a negative stimulus. Conversely, nondistressed couples are more likely to emit a positive response to a negative stimulus. Furthermore, they are more likely to demonstrate positive reciprocity in contrast to distressed couples who are more likely to demonstrate negative

reciprocity. In addition, Margolin and Wampold (1981) in commenting on the extended lag analyses of the Gottman et al., (1977) research state: "Multiple lag sequences on reciprocity of affect reveal a picture that is supportive of but more complicated than data" (p. 555) from Lag 1 effects. Thus, sequential analysis of Lag 1 behavior could convincingly demonstrate changes in a couple's interaction pattern and therefore only Lag 1 sequences were analyzed in the present study.

Conditional and Unconditional Probability

In the data analyses of sequential behavior, the issue of conditional and unconditional probability is important. Clearly, we gain information from a sequence of events only in situations in which we have some degree of uncertainty (Notarius, Krokoff, & Markman, 1981, p. 201). To determine whether or not the nonverbal behavior of one spouse is contingent on the nonverbal behavior of his/her partner, we need, for example, to ask, "If the husband's nonverbal behavior is coded positive, what is the probability that the wife's consequent nonverbal behavior will be positive?". Theoretically, it is stated as follows: "A conditional probability tells us the probability that behavior A is observed given that behavior B has previously occurred" (Notarius et al., 1981, p. 202), or as a formula: $P(A/B)$.

Further, the unconditional probability or the base rate of the occurrence of the behavior, expressed in the formula: $P(A)$, must be taken into account as well when determining the reduction of uncertainty. To assess the reduction of uncertainty, we need to compare the difference between a behavior's conditional and unconditional probability (Notarius et al., 1981). If indeed the conditional probability is greater than the unconditional probability we could conclude that there is a sequential link between the behaviors selected for analysis.

In the present study probabilities for each nonverbal stimulus and response set were calculated as follows. The calculations were based on the hierarchy of face, voice, and body (Gottman et al., 1977). For example, if a statement were made with a neutral face, the code for voice would be considered. If this, too, were neutral, then the code for body would be used as the stimulus or response code, i.e., if it were either a positive or negative code. Thereupon, the total number of positive nonverbals followed by either positive, neutral, or negative nonverbals became the denominator and was divided into the number of positives followed by positive nonverbals times 100 to obtain the probabilities for positive reciprocity. The same denominator was used to obtain positive reactivity; the numerator consisted of all the positive nonverbals followed

by negative nonverbals. Substituting negative nonverbals for positive nonverbals, a similar procedure was used to obtain the probabilities for negative reciprocity and reactivity. The interobserver reliability for the sequential analysis for couples 1-4 for all phases had a range of 96 to 100% and a mean of 99%.

Z-Score

Having computed a behavior's conditional and unconditional probability, we still need to compare the conditional and unconditional probability (Notarius et al., 1981). A statistical procedure which consists of calculating a Z-score can be used to assess whether or not the difference between the conditional and unconditional probability is a reduction in uncertainty greater than would be predicted from chance alone (Notarius et al., 1981).

The Z-score formula as noted by Notarius et al., (1981) and Mettetal and Gottman (1980) is as follows:

$$Z = \frac{X - NP}{\sqrt{NPQ}}$$

where X = the observed joint frequency of the antecedent-consequent pair; N = the frequency of the antecedent event; P = the unconditional probability of the consequent event; and Q = 1 - P. "If the Z-score calculation equals or exceeds +/- 1.96, the difference

between observed and expected probabilities has reached the .05 level of significance" (Notarius et al., 1981, p. 205).

Tables 2-5 depict the Z-scores for positive reciprocity and reactivity and negative reciprocity and reactivity for couples 1-4. The tabulated results support the view that the application of the Z-score to the sequential analysis in the present study was not appropriate because the training had increased the positive nonverbal base rate until there was no longer any uncertainty of the outcome.

Tables 2-5 also depict the conditional and unconditional probability scores for positive reciprocity and reactivity and negative reciprocity and reactivity for couples 1-4. Again, due to the high positive nonverbal base rates, Z-score analysis was not advisable because as will be recalled conditional probabilities are based on different outcomes with different antecedents such as positive, neutral, or negative. With a 100% positive outcome there is no differentiation; no degree of uncertainty.

In summary, in the present research, the Z-score calculations substantiated the view that sequential analysis which is based on conditional and unconditional probabilities was not appropriate. Furthermore, it was not significant because of the high positive nonverbal base rate of the trained behavior. Actually such a pattern of positive nonverbals represents the ideal state of communication behavior for the couples in the present study.

TABLE 2

Z-scores and conditional and unconditional probability scores for
positive reciprocity and reactivity and for
negative reciprocity and reactivity for Couple 1

		Positive reciprocity			Positive reactivity			Negative reciprocity			Negative reactivity		
		Z ^a	C ^b	U ^c	Z ^a	C ^b	U ^c	Z ^a	C ^b	U ^c	Z ^a	C ^b	U ^c
Baseline	1	-0.165	+0.933	+0.937	+0.165	+0.066	+0.063	+0.686	0	+0.063	+0.686	+1.000	+0.937
	2	-0.073	+0.432	+0.438	+0.725	+0.162	+0.123	-0.111	+0.111	+0.123	+1.380	+0.666	+0.438
	3	-0.633	+0.412	+0.458	+0.663	+0.588	+0.542	-0.631	+0.500	+0.542	+0.631	+0.500	+0.458
	4	-1.020	+0.500	+0.576	+0.811	+0.386	+0.329	-0.575	+0.281	+0.329	+0.561	+0.625	+0.576
Training	1	-0.452	+0.685	+0.713	+0.444	+0.315	+0.287	-0.638	+0.231	+0.287	+0.638	+0.769	+0.713
	2	-0.435	+0.620	+0.649	+0.435	+0.380	+0.351	-0.592	+0.296	+0.351	+0.592	+0.703	+0.649
	3	+0.327	+0.946	+0.937	-0.327	+0.054	+0.063	+1.259	+0.200	+0.063	+1.259	+0.800	+0.937
	4	0	+1.000	+1.000	0	0	0	0	0	0	0	0	0
Generalization	1	-0.007	+0.993	+0.993	+0.007	+0.007	+0.007	+0.086	0	+0.007	+0.087	+1.000	+0.993
	2	-0.110	+0.962	+0.964	+0.043	+0.385	+0.361	-0.434	0	+0.036	+0.434	+1.000	+0.964
	3	+0.092	+0.959	+0.961	+0.092	+0.041	+0.039	-0.455	0	+0.039	+0.455	+1.000	+0.961
	4	0	+1.000	+1.000	0	0	0	0	0	0	0	0	0
Follow-up	1	0	+1.000	+1.000	0	0	0	0	0	0	0	0	0
	2	0	+1.000	+1.000	0	0	0	0	0	0	0	0	0
	3	0	+1.000	+1.000	0	0	0	0	0	0	0	0	0
	4	0	+1.000	+1.000	0	0	0	0	0	0	0	0	0

^aZ-score ± 1.96 ; $p^* < .05$

^bC = conditional probability

^cU = unconditional probability

TABLE 3

Z-scores and conditional and unconditional probability scores for
positive reciprocity and reactivity and for
negative reciprocity and reactivity for Couple 2

	Positive reciprocity			Positive reactivity			Negative reciprocity			Negative reactivity		
	z^a	c^b	u^c	z^a	c^b	u^b	z^a	c^b	u^c	z^a	c^b	u^c
Baseline 1	+1.070	+0.690	+0.610	-0.616	+0.310	+0.350	+0.927	+0.474	+0.371	-1.247	+0.474	+0.613
2	-0.660	+0.725	+0.769	+0.279	+0.025	+0.019	-0.140	0	+0.019	+0.548	+1.000	+0.769
3	-0.143	+0.760	+0.770	+0.186	+0.048	+0.042	-0.209	0	+0.042	-1.800	0	+0.771
4	+1.090	+0.640	+0.540	-0.754	+0.321	+0.391	+0.286	+0.429	+0.391	-0.858	+0.428	+0.543
5	-0.764	+0.490	+0.550	+1.029	+0.457	+0.373	-1.227	+0.214	+0.373	+0.706	+0.643	+0.549
Training 1	-0.055	+0.872	+0.875	-0.101	+0.085	+0.089	+1.482	+0.333	+0.089	+1.140	+1.000	+0.875
2	0	+1.000	+1.000	0	0	0	0	0	0	0	0	0
3	0	+1.000	+1.000	0	0	0	0	0	0	0	0	0
4	0	+1.000	+1.000	0	0	0	0	0	0	0	0	0
Generalization 1	0	+1.000	+1.000	0	0	0	0	0	0	0	0	0
2	0	+1.000	+1.000	0	0	0	0	0	0	0	0	0
3	0	+1.000	+1.000	0	0	0	0	0	0	0	0	0
4	0	+1.000	+1.000	0	0	0	0	0	0	0	0	0
Follow-up 1	0	+1.000	+1.000	0	0	0	0	0	0	0	0	0
2	0	+1.000	+1.000	0	0	0	0	0	0	0	0	0
3	0	+1.000	+1.000	0	0	0	0	0	0	0	0	0
4	0	+1.000	+1.000	0	0	0	0	0	0	0	0	0

^a z -score ± 1.96 , $p^* < .05$

^b c = conditional probability

^c u = unconditional probability

TABLE 4
Z-scores and conditional and unconditional probability scores for
positive reciprocity and reactivity and for
negative reciprocity and reactivity for Couple 3

	Positive reciprocity			Positive reactivity			Negative reciprocity			Negative reactivity		
	Z ^a	C ^b	U ^c	Z ^a	C ^b	U ^c	Z ^a	C ^b	U ^c	Z ^a	C ^b	U ^c
Baseline 1	-0.008	+0.986	+0.999	+0.018	+0.258	+1.400	-0.161	0	+0.013	+0.161	+1.000	+0.987
2	-1.954	+0.473	+0.627	+1.153	+0.184	+0.136	-1.120	0	+0.136	+2.181*	+1.000	+0.627
3	-0.855	+0.637	+0.682	+0.802	+0.075	+0.055	-0.539	0	+0.055	+1.529	+1.000	+0.682
4	+1.116	+0.524	+0.404	+0.181	+0.381	+0.362	-2.380*	+0.066	+0.362	+0.495	+0.466	+0.404
5	+0.691	+0.594	+0.547	+0.165	+0.189	+0.200	-1.730	0	+0.200	-1.422	+0.333	+0.538
6	-0.991	+0.580	+0.641	+0.649	+0.274	+0.239	-0.409	+0.200	+0.239	+0.984	+0.750	+0.641
Training 1	-0.001	+1.000	+1.000	+0.083	+0.018	+0.017	-0.231	0	+0.016	+0.228	+1.000	+0.982
2	0	+1.000	+1.000	0	0	0	0	0	0	0	0	0
3	-0.198	+0.928	+0.933	+0.191	+0.071	+0.067	-0.760	0	+0.067	+0.758	+1.000	+0.933
4	-0.017	+0.981	+0.981	+0.017	+0.019	+0.019	-0.140	0	+0.019	+0.139	+1.000	+0.981
Generalization 1	0	0	0	0	0	0	0	0	0	0	0	0
2	-0.050	+0.963	+0.964	+0.065	+0.037	+0.036	+0.332	+0.107	+0.323	+0.332	+1.000	+0.964
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	+1.000	+1.000	0	0	0	0	0	0	0	0	0
Follow-up 1	0	+1.000	+1.000	0	0	0	0	0	0	0	0	0
2	0	+1.000	+1.000	0	0	0	0	0	0	0	0	0
3	0	+1.000	+1.000	0	0	0	0	0	0	0	0	0
4	0	+1.000	+1.000	0	0	0	0	0	0	0	0	0

^aZ-score ± 1.96 , $p^* < .05$

^bC = conditional probability

^cU = unconditional probability

TABLE 5

Z-scores and conditional and unconditional probability scores for
positive reciprocity and reactivity and for
negative reciprocity and reactivity for Couple 4

		Positive reciprocity			Positive reactivity			Negative reciprocity			Negative reactivity		
		Z ^a	C ^b	U ^c	Z ^a	C ^b	U ^c	Z ^a	C ^b	U ^c	Z ^a	C ^b	U ^c
Baseline	1	-0.016	+0.976	+0.976	+0.024	+0.024	+0.024	-0.157	0	+0.024	+0.157	+1.000	+0.976
	2	+0.003	+0.985	+0.983	0	+0.017	+0.017	0	0	0	0	0	0
	3	+0.238	+0.848	+0.833	-0.636	+0.030	+0.055	-0.244	0	+0.055	+0.448	+1.000	+0.833
	4	+0.763	+0.909	+0.878	-0.762	+0.091	+0.122	+2.186*	+0.375	+0.122	-2.190*	+0.625	+0.878
	5	+1.109	+0.868	+0.796	-1.109	+0.132	+0.204	+2.060*	+0.455	+0.204	-2.062*	+0.545	+0.796
	6	-0.886	+0.784	+0.831	+0.885	+0.216	+0.169	+1.687	0	+0.169	+1.689	+1.000	+0.831
	7	+1.003	+0.583	+0.481	-0.864	+0.375	+0.436	+0.984	+0.565	+0.463	-1.278	+0.348	+0.481
Training	1	-0.060	+0.957	+0.959	+0.060	+0.425	+0.410	-0.291	0	+0.041	+0.293	+1.000	+0.959
	2	0	+1.000	+1.000	0	0	0	0	0	0	0	0	0
	3	+0.939	+0.969	+0.942	0	0	0	0	0	0	0	0	0
	4	0	+1.000	+1.000	0	0	0	0	0	0	0	0	0
Generalization	1	-0.011	+0.989	+0.989	+0.011	+0.011	+0.011	-0.104	0	+0.011	+0.104	+1.000	+0.989
	2	0	+1.000	+1.000	0	0	0	0	0	0	0	0	0
	3	0	+1.000	+1.000	0	0	0	0	0	0	0	0	0
	4	0	+1.000	+1.000	0	0	0	0	0	0	0	0	0
Follow-up	1	0	+1.000	+1.000	0	0	0	0	0	0	0	0	0
	2	0	+1.000	+1.000	0	0	0	0	0	0	0	0	0
	3	0	+1.000	+1.000	0	0	0	0	0	0	0	0	0
	4	0	+1.000	+1.000	0	0	0	0	0	0	0	0	0

^aZ-scores ± 1.96 , $p^* < .05$

^bC = conditional probability

^cU = unconditional probability

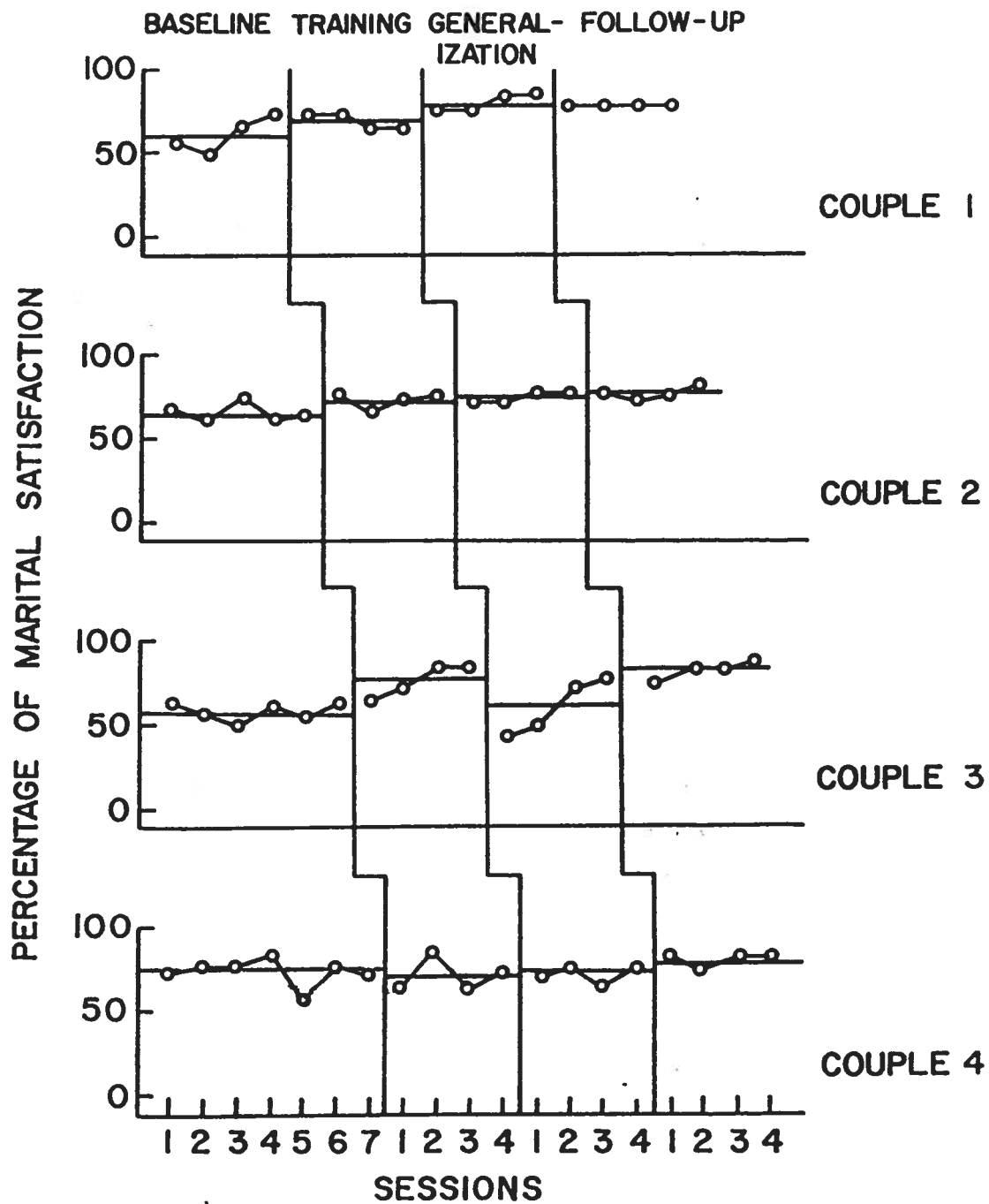


Figure 6: Percentage of marital satisfaction as specified by couples 1-4 throughout the project.