EFFECTS OF GENETIC COUNSELING UPON WOMEN AND COUPLES UNDERGOING PRENATAL DIAGNOSIS

by

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INTRODUCTION

Prenatal diagnosis for the purpose of detecting birth defects has become an established, frequently performed practice in the last decade. Numerous studies (1 - 10) have documented the safety and reliability of this procedure. However, only limited work has been done on the effectiveness of the concomitant genetic counseling. While individual genetic counselors have received occasional feedback from their own clients, this information is often limited to what is volunteered, and has not been actively sought by the counselor. Feedback gained in this way does not usually appear in the literature.

The objectives of this study are: (a) to determine the levels of genetic knowledge retention among couples who have undergone genetic counseling prior to amniocentesis; (b) to determine couples' anxiety levels at various stages of their amniocentesis experience; (c) to assess the degree of correlation between levels of knowledge retention and anxiety; (d) to identify items which are the strongest indicators of knowledge retention and anxiety; and (e) to seek ways of improving couples' level of knowledge retention and of decreasing their anxiety.

LITERATURE REVIEW

I. Studies Related to Genetic Counseling in Prenatal Diagnosis

Finley et al (11, 12) mailed a questionnaire to 267 amniocentesis patients after their pregnancies were completed. Eighty-four percent were returned. The questions concerned the patient's reason for referral, complications resulting from the procedure, where the patient first learned about amniocentesis, and family attitudes towards this and future pregnancies. Although the questions were not designed to measure the effects of genetic counseling, the results were useful because they elicited patients' responses to many aspects of amniocentesis. In particular, the results, although subjective, indicated that "the majority of the women found the experience reassuring, would recommend it to others, and would seek it again with another pregnancy."

Chervin et al (13) conducted a smaller survey. Questionnaires were mailed to 67 patients who had undergone amniocentesis. Of these, 31 (46%) responded. This low return rate and their failure to include the questionnaire in their paper prevents any meaningful statistical analysis. However, the report does include subjective responses by the patients, who felt that counseling was generally "reassuring," "helpful" and "clearly explained." Most women found the four-week wait for the results to be the "most serious and basic problem."

Sager (14) conducted a study of 85 couples undergoing prenatal diagnosis for a wide variety of indications. Her work focused on anxiety and various psycho-social aspects of amniocentesis, and was approached from the viewpoint of social work intervention. This social

work occurred in half the participants, and took place after the amniocentesis, and before the results were known. Anxiety scores in the intervention group were found not to be different from the control group. Other variables were also considered, which were either demographic, or were not compared before and after the social work intervention. This study is useful because it demonstrates that social work intervention does not reduce anxiety levels during the month-long wait for the amniocentesis results. However, it contributes little to our knowledge about the effects of genetic counseling because this was not the focus of the research.

II. Studies of Genetic Counseling Outside Prenatal Diagnosis

A. Studies of Different Genetic Disorders

Leonard et al (15) focused on genetic counseling of families with cystic fibrosis, phenylketonuria, (PKU) and Down syndrome children. The authors presented the results of parental interviews, which were based on questionnaires designed to determine parents' level of knowledge about the child's disorder. Their results indicated about 50% had a "good" level of knowledge after counseling, about 25% had "gained something" from the counseling, and 25% learned very little. The differences were attributed in part to the variations in the manner of counseling and the skills of the physician, as well as the counselees' prior knowledge of biology. If the counseling techniques had been standardized, some of the variation could have been eliminated. Their work did suggest that couples' reproductive attitudes are determined more by the burden of the disorder in question than by an exact risk of

recurrence.

Carter et al (16) and Emery et al (17), who studied a wide variety of disorders, concluded that most couples appeared to understand the information received during counseling. The work of Reynolds et al (18), which supports this finding, found that self-referred counselees, and those in the higher social classes, had better understanding. No correlation was found between the degree of understanding and the level of risk, or time elapsed since counseling.

Hsia and Silverberg (19) conducted a follow-up study in which 131 counselees were surveyed for their recollection of genetic risks, and their judgment of the value of counseling. Seventy seven percent correctly remembered their chance of having a healthy baby, while only 3% totally misunderstood the risk. Many of the counselees received a written account; this group had better retention of the genetic data, better perception of the counselor's non-directiveness, and better satisfaction with the counseling.

Another study by Hsia (20) determined that 63% knew their risk, and that 81% were satisfied with the counseling they received. Godmilow and Hirschhorn (21) mailed a questionnaire 6 months to 5 years after counseling. Half of the recipients were able to correctly state their risk, while most of the remainder gave an underestimate. In contrast to this study, Ives et al (22) found that 95% of patients at high risk remembered their chances, while only 40% of those at low risk did so. Gisi et al (23) mailed a questionnaire to 146 recipients of counseling. Although exact figures were not given, counseling was found to have "educated" the recipients, and apparently contributed to changes

in reproductive plans in some families.

Antley et al (24) explored the effects of genetic counseling on parental self-concepts. Eighteen couples who had borne a child with Down syndrome completed a questionnaire designed to measure their self concept. Immediately following this, they underwent genetic counseling, after which the same form was again completed. A slightly significant improvement in parental self concepts, particularly in the mother, was noted following counseling. Corgan (25) conducted a similar study in which 12 parents of children with various genetic disorders were assessed. These results indicated a significant ($p < .05$) change in parental self concept had occurred. The authors made no mention of the structure of the counseling or whether it was performed by the same person in each case. These potential variables may have influenced the results, and should be considered when interpreting their findings. A follow-up study a month or so later would have documented or refuted the permanence of the changes.

B. Studies of a Single Genetic Disorder

1. Studies Including Some Description of the Counseling Session

In a study similar to their previous work (24), Antley and Hartlage (26) assessed several effects of genetic counseling in 43 parents of Down syndrome children. Pre- and post-counseling measures of anxiety, hostility, depression, and self concept were obtained. Pre-counseling scores were compared with those of normal controls, and the pre- and post-scores were compared. Significant decreases in anxiety ($p \leq .0005$)

and depression ($p < .05$) were found, while self-concept scores increased significantly ($p < .01$).

These same authors (27) compared three groups of Down syndrome parents: 1) those counseled at a university medical genetics department, 2) those counseled by their family physician, and 3) those who received no counseling. The counseled groups scored significantly higher on questions regarding the genetic basis of Down's, probability, and prenatal diagnosis than those who did not receive counseling. This study indicated that the recipients of counseling benefit by increased awareness of the medical and genetic facts related to Down syndrome.

Parental understanding of phenylketonuria (PKU) was investigated by Sibinga and Friedman (28). Although the parents had many opportunities to learn about their child's disorder, only 19% gave "adequately correct answers"when asked to write out in essay form, what they knew about various aspects of PKU. Half gave answers which were described as "distorted." Parental education, intellectual status of the child with PKU, and the child's behavioral reactions were found not to be related to parental understanding.

Spiro et al (29) evaluated knowledge of genetic risks after counseling was performed by doctors at their hemophilia and muscular dystrophy clinics. About one third knew their recurrence risk. The level of knowledge was evaluated again after counseling by paramedical personnel; more than two-thirds knew their risk at this time. A similar study by Emery et al (30) determined that 49 of 53 women in families with Duchenne's muscular dystrophy clearly understood the risk.

Antley (31) showed that 46% of the parents of Down syndrome

children were knowledgeable about the nature of the condition prior to counseling, but 69% did not know the recurrence risk. Following counseling, 71% understood their risk, 69% understood the nature of the condition, and 57% thoroughly knew both topics.

2. Studies Without a Description of the Counseling Session

Reiss and Menashe (32) measured parent's knowledge of their child's congenital heart defect. Twenty-five percent could recall the recurrence risk one to four months after counseling. The authors suggested that the risk figure be reiterated at subsequent visits, and that a written description of the condition, including the risk, be supplied in order to improve parental knowledge. Halloran et al (33) conducted a similar study which compared counseled and non-counseled groups of parents. The counseled group performed better on all questions. These parents remembered the factual information much better than those of Reiss and Menashe. Halloran et al attribute this to the explanatory letter sent to each family. Since the follow-up contact was made by mail, it is possible that the counseled group referred to the letter when responding to the questionnaire.

Several authors measured parental knowledge of recurrence risks as part of a much larger study outside the realm of genetic counseling. McCrae et at (34) indicated that 21% of parents with cystic fibrosis children fully understood the inheritance. Pearn and Wilson (35) found that 26% of parents of Werdnig-Hoffman children knew the recurrence risk. Mothers of children with spina bifida knew the "full implications of further pregnancies" 49% of the time, according to Walker et al

(36). McLucas (37), quoted in Hsia (20), found that most mothers in families of Duchenne's muscular dystrophy did not know enough of the genetics involved to make informed reproductive decisions.

III. Subjective Studies of Genetic Counseling

Subjective studies have contributed information on how families perceive, assimilate, and respond to the factual information presented during counseling. Lippman-Hand and Fraser (38) qualitatively analyzed 30 tape recorded or observed genetic counseling sessions. Their results indicated that counselees "processed" the information they were given, and usually translated the recurrence risk in ways that emphasized the uncertainty involved. Many counselees requested guidelines for their behavior in responding to the factual information given. Counselees were often found to view their risks in an "either-or" (binary) form, which suggested to the authors that the consequences of having an abnormal child were more of a concern than the numerical chance of the event. To some extent then, parents were found to focus on issues other than recurrence rates when considering the consequences of subsequent childbearing.

The role of nonverbal communication (i.e. the content and manner of spoken interaction) in genetic counseling has been studied by Kurtz and Riccardi (39). Fifty physician-patient interviews were videotaped and scored for 22 nonverbal variables. Factor analysis revealed no significant relationships between patient satisfaction and nonverbal behavior. An additional, non-statistical study of the extreme cases in this sample suggested that verbal and nonverbal communication between

the counselor and counselee are both important. However, the limitations of this latter approach need to be realized when drawing conclusions.

IV. Genetic Counseling and Subsequent Reproduction

Several studies (15 - 17, 30, 40) measured the "effectiveness" and/or impact of genetic counseling by noting the reproductive habits of couples following counseling. This is a questionable criterion, for it implies that the clients received directive counseling, and that the counselors were attempting to see if they "succeeded" in their goal. Numerous variables can influence family planning besides genetic counseling. Some of these are: desired family size, attitude towards children, burden of the disorder in question, recurrence/occurrence risk, inheritance pattern, presence or absence of other affected family members, and religion. These variables need to be controlled before an adequate assessment of the relationship between genetic counseling and further reproduction can be obtained. Antley (41) discusses the role of many of these variables in family planning following genetic counseling.

Some authors have, however, simple noted the impact of counseling upon family planning without including this in the evaluation of their counseling. Morris and Laurence (42) found that 22% of the couples felt that the counselor was the strongest influence in reaching their decision. Godmilow and Hirshhorn (21) indicated that 56% had been influenced by counseling, while Reynolds et al (18) found this figure to be 42%. Reid showed that 45% were influenced and 10% were undecided about the influence of counseling.

V. Conclusion

Many aspects of genetic counseling have been investigated. However, none of the studies to date have systematically evaluated the effects of genetic counseling in a large, homogenous population. The prenatal diagnostic setting used in this research satisfies these criteria.

MATERIALS AND METHODS

I. The Target Population

The subjects used in this study were 200 women or couples referred because of advanced maternal age (35 and over) to the Prenatal Diagnosis Clinic at the University of Oregon Health Sciences Center in Portland, Oregon. This clinic serves the entire state of Oregon, as well as southern Washington and Idaho. The majority of patients were selected because they lived near metropolitan Portland.

II. Instruments of Measurement

Two major variables were measured for each patient: (1) anxiety levels, and (2) knowledge of Down syndrome and prenatal diagnosis. The instrument used to measure anxiety levels was the State-Trait Anxiety Inventory (STAI) developed by Spielberger et al (44). This instrument evaluates short-term (state) and long-term (trait) anxieties. The state anxiety scale has been shown to be sensitive to changes in anxiety over short time intervals, while the trait anxiety scale has been shown to be relatively insensitive to changes over long periods of time. The STAI is short, easily used, readily understandable, and has high reliability and validity (44).

The STAI consists of two parts, one part per page, with 20 items on each page. The first part measures "state," or situation-specific anxiety by asking the participants to respond to each item according to how they feel "at this moment." The second part is designed to measure long-term ("trait") anxiety, and estimates the subject's typical anxiety level by asking them to respond to each item according to how they

"generally" feel. Scores for state and trait anxiety can range from 20 (low) to 80 (high). A copy of this instrument is attached as Appendix 1.

The instrument to measure knowledge about Down syndrome and prenatal diagnosis was written specifically for this study. It consists of questions #1 to #13 on each of the three questionnaires, and was designed to determine if specific facts imparted during counseling were retained. Participants were instructed to leave questions blank if they did not know the answer. Guessing was permitted if they had some idea of the correct response.

Each questionnaire (hereafter termed "Q") also contains items designed to measure participants' level of anxiety about specific areas of prenatal diagnosis. This is called the "Specific Anxiety" scale in the following sections, and consists of questions #14 to #31 on Q I (questionnaire one), and the analagous items on Qs II and III.

In addition, a number of diverse questions were included in each Q. These inquired about participants' level of education, religion, degree of religious affiliation, and their spouse's influence upon the decision to undergo amniocentesis. Participants were also asked if they would recommend prenatal diagnosis to others, whether the pregnancy was planned because of the availability of amniocentesis, whether additional children were planned due to the availability of prenatal diagnosis, and what their response would be if a serious disorder was detected. After counseling was complete, participants were asked if their questions were answered satisfactorily. When the amniocentesis results were disclosed, participants were asked to identify the most trying aspect, and to

indicate whether counseling influenced their decision to undergo amniocentesis.

Some significant differences between the three Qs were necessary. Questions such as religion and the amount of education needed to be asked only once, so were included in only one form. Other questions, such as the one concerning their reaction to the counseling session, were inappropriate for the first Q. Because many husbands participated in the prenatal diagnosis experience, they were asked, if present, to complete a Q each time their wife did. Husbands were not given Q III if they were not present for either of the counseling sessions. The husbands' forms were the same as the wives'. Items which appeared on more than one Q were worded identically except for changes from the present to the past tense necessary in Q III. These Qs are attached as Appendices 2 - 4.

III. Counseling Format

The information from the counseling format was used to determine the recipients' degree of knowledge retention. Complete coverage of each item was obtained during each counseling session. This was achieved by referring to the following outline during counseling.

Factual information presented during counseling:

1) An extra chromosome 21 is responsible for Down syndrome.
2) There are two chromosome 21's in each cell of most normal people.
3) There are three chromosome 21's in each cell of people with Down syndrome.

4) Each couple's risk of having a fetus with Down syndrome was indicated.

5) The risk of miscarriage because of the needle was described as being very small, but unknown. The miscarriage rate following amniocentesis was described as being about 1.5%, and that this was considerably lower than the national average of 3.2% obtained from women who do not undergo amniocentesis (6).

6) The risk of injury to the mother was described as being very small, but unknown.

7) The disorders that amniocentsis would detect were given as:
   a) Chromosome disorders.
   b) Most (80 - 90%) of the neural tube defects.

8) Examples of disorders that amniocentesis would not detect were given as:
   a) Cleft lip and/or palate.
   b) Club foot.

9) The reasons given for the ultrasound scan were:
   a) To measure the fetal head size, in order to determine the gestational age.
   b) To locate the placenta.
   c) To diagnose twins.
   d) To locate the fluid pocket to assist in placement of the needle.
   e) To locate the fetus in order to minimize the chance that it would be hit with the needle.

10) Ultrasound was described as being very safe, and that there was no known risk to the mother or fetus.

11) The cells obtained for the chromosome analysis were described as floating freely in the amniotic fluid.

12) The amniotic fluid contains cells that are both dead and living; the living cells would be cultured in the laboratory.

13) If the cells in the amniotic fluid fail to grow, this does not necessarily mean that the fetus is affected with Down syndrome or a neural tube defect.

14) If amniotic fluid could not be obtained, no inferences could be made about the fetus' health. Another attempt to obtain fluid would then be made in the near future.

IV. Design of the Survey and Procedures of Data Collection

The 200 women (or couples) were randomly assigned to one of two equal groups: (1) one routine and a second counseling session, and (2) only a single, routine counseling session. Those with two counseling sessions were usually seen in their homes for the first session. This usually occurred two days to two weeks before their clinic visit. At the beginning of the home visit, the STAI and Q I were given in order to establish baseline knowledge and anxiety levels. After the Q was completed, the couple (or wife if she was the only one present) was counseled regarding the nature, purposes and risks of amniocentesis. During their clinic visit, the couple (or wife) was counseled again. This was usually a shorter session, in which the factual information presented in the first session was summarized. Immediately following

this, the STAI and Q II were given. Amniocentesis was then performed. The STAI and final Q were given about one month later, after the results of the amniocentesis were known. This Q was usually given in person at the patient's home. When this was not possible, or when they lived too far away, the third Q was mailed.

The group with only the regular counseling session was seen once prior to amniocentesis. Upon arrival at the clinic, these couples completed the first Q and then were counseled. From this point on, the two groups were treated the same. The first Q that each group received was the same, as were the second and third. Patients' questions, anxieties, and concerns were dealt with as necessary in all counseling sessions. All counseling was done by the author.

The state anxiety scale was always completed first, due to its sensitivity to changes in anxiety levels over short periods of time. This was followed by the trait anxiety scale and the Q designed for this study, respectively. Participants were asked to complete state anxiety scales one and two according to how they felt at that moment. These directions were modified slightly in the third Q to include their feelings about the amniocentesis results.

The procedures of data collection were pre-tested on 15 couples. Analysis of the results from these participants indicated that no major changes in the research design or Q construction were necessary. The order of the items measuring knowledge retention was altered to place the more difficult items at the end of that section. Because these changes were not felt to be significant, these participants were included in the final sample.

V. Data Analysis

Analysis of the data gathered in this research centered around the measurements of knowledge and anxiety levels. The other variables assumed a peripheral role.

Participants' level of knowledge about amniocentesis was determined by scoring questions #1 - #13 on each of the three Qs. Each question except #1 and #6 contained one correct answer, and was worth one point if answered correctly, with no penalty for guessing. Question #6 contained five correct responses; each was worth 1/5 point if checked. Incorrect choices resulted in a deduction of 1/5 point. Question #1 contains two correct responses; each was worth 1/2 point. A response to a, b, e, h, i, or j on this question indicated a serious misunderstanding of the material. Consequently, these were each scored -1/2 point. The other incorrect responses, d and g, were alternate choices to the two correct responses; no penalty was assessed for choosing these. Negative scores on questions #1 and #6 were counted as zero. A score of 80 - 90% indicated a "good" level of knowledge about amniocentesis; 90% or better indicated "excellent" knowledge.

Participants' level of anxiety specific to prenatal diagnosis ("specific anxiety" scale, questions #14 - #31) and their specific concerns if amniocentesis were repeated on a subsequent pregnancy (#37 on Q III) were calculated by summing the numbers circled in these sections. Analysis of the state and trait anxiety levels was performed as described by Spielberger et al (44). Individual scores on each of these instruments were calculated, and an analysis of variance (ANOVA) performed to determine if any significant differences existed in the

levels between the sexes, research groups, or the three Qs.

The instruments themselves were analyzed by performing a path analysis and stepwise multiple linear regression analysis on each of the three Qs. These analyses determined which items were the most indicative of the variable being measured, and also assessed the relative importance of each item. Factor analysis was also performed on each administration of each Q to reduce the number of questions on each instrument to a smaller group of "source variables" accounting for the observed interrelations in the data. Oblique rotation was used in order to achieve the best possible separation of factor loadings. Data for the path analyses were first transformed into Ridit values, as described by Bross (45) and Lu (46). All analyses of the instruments were performed separately for men and women on each administration in each research group.

The miscellaneous questions (listed on page 17) were scored by the direct counting of responses, and where appropriate, comparisons will be made by calculating the mean and standard deviation.

Each of the three measurements of knowledge retention were compared via correlation analysis to all levels of state, trait, and specific anxieties, and specific concerns. This measured the degree of association between the levels of knowledge and anxiety. The changes in knowledge levels were also compared with anxiety levels in the same manner. Three different measures of knowledge retention were used: these were the differences in knowledge levels between Qs I and II, II and III, and I and III. This represents changes due to counseling, the one month period of waiting for the amniocentesis results, and the

overall change (counseling plus waiting period), respectively. This determined the degree of association between knowledge retention and the various anxiety levels.

The levels of knowledge, state and trait anxiety, and specific concerns were compared using one-way ANOVA to determine if differences existed between any of the following groups: (a) presence or absence of the husband during the clinic visit (women counseled once, all Qs), (b) number of patients present during counseling (Qs II and III), (c) amniocentesis results, normal versus non-normal (third Q), and (d) the manner in which the third Q was given (mailed or in person, third Q).

Path analysis was used to analyze the relationships among the following variables: levels of knowledge, state, trait, and specific anxieties, and specific concerns, the degree of religious affiliation, number of years of education of both the husband and wife, and the influence of the spouse upon the decision to have amniocentesis. This analysis was performed on each Q separately for men and women in both research groups.

RESULTS AND DISCUSSION

I. Knowledge Scores

An analysis of variance (ANOVA) was performed on all knowledge scores. Three main effects were considered: (1) number of counseling sessions, (2) sex, and (3) Q administration. Only the latter was found to have a significant effect on knowledge scores (Table 1). The mean scores (± standard deviation) for Qs I, II, and III were: 39.57 ± 18.79, 83.04 ± 12.46, and 77.49 ± 14.61, respectively. This indicates that: (1) counseling educated the participants, and (2) most of the knowledge gained as a result of counseling was retained until the results were disclosed.

When interactions of the main effects were considered, two were found to be significant (Table 1). These findings are expanded in Tables 2 and 3. No differences were found when the means in Table 2 were compared with Scheffe's test. With the least significant differences test, however, the scores of those counseled twice were found to differ significantly: the women scored higher, and the men lower than either sex among those seen once ($p < .05$). This indicates that women who had two counseling sessions learned significantly more material, while their husbands learned significantly less. It is possible that these women appreciated the additional counseling more than the men, and consequently made an extra attempt to benefit from it. Subjective observation supports this view; men appeared less interested and more aloof during the second session than their wives.

When the means in Table 3 were compared using Scheffe's test, the

differences between each Q were found to differ significantly among those counseled twice ($p < .05$). Those counseled once differed between Qs I and II, and I and III. No differences were found between the two research groups on any Q with the Scheffe test, but with the least significant differences test, these differences were significant ($p < .05$). This indicates that each research group knew different amounts of material on each Q. Inspection of Table 3 indicates that those with one session knew more material on Q I, and less on Qs II and III, than those with two sessions. The higher knowledge on the latter Qs seen in those counseled twice can be explained by their additional counseling, while their lower scores on Q I may reflect the fact that Q I in this group was administered earlier than for those counseled once. The earlier administration may have hindered these couples from seeking information about amniocentesis on their own prior to counseling, as some couples have been observed to do.

TABLE 1

KNOWLEDGE SCORES ANALYSIS OF VARIANCE

Source of Variation	Degrees of Freedom	Mean Square
Main effects		
Sex	1	656.0
Counseling	1	228.0
Questionnaires	2	166,231.0 †
Interactions		
Sex by counseling	1	1022.8 *
Sex by questionnaire	2	147.3
Counseling by questionnaire	2	1417.4 †
Sex by counseling by questionnaire	2	40.5
Residual	879	237.2
Total	890	613.5

* Significant at $p \leq .05$; † significant at $p \leq .01$.

TABLE 2

COMPARISONS OF MEAN KNOWLEDGE SCORES BETWEEN PARTICIPANT'S SEX AND THE NUMBER OF COUNSELING SESSIONS

	Counseling	
Sex	1 session	2 sessions
Females	66.07	68.57
Males	66.35	64.26

TABLE 3

COMPARISONS OF MEAN KNOWLEDGE SCORES BETWEEN QUESTIONNAIRE ADMINISTRATION AND NUMBER OF COUNSELING SESSIONS

	Questionnaire Administration		
Counseling	1	2	3
1 session	41.37	80.85	76.27
2 sessions	37.63	85.39	78.80

II. State Anxiety Scores

These data were analyzed by the same procedure as described for knowledge scores. Both the participants' sex and the Q were found to affect these scores, as shown in Table 4. With regard to sex, women had higher anxiety levels than men (33.47 ± 9.42 and 30.90 ± 7.84, mean ± standard deviation, for all administrations, respectively). This higher anxiety may reflect the fact that women are the ones who actually undergo the amniocentesis, and are consequently more anxious about the procedure. (This is discussed in more detail below, and in the Specific Anxiety section.)

The mean anxiety scores (± standard deviation) for each administration were 34.87 ± 9.32, 35.38 ± 8.81, and 27.65 ± 6.51 for Qs I, II, and III, respectively. These results indicate that state anxiety among all subjects rose slightly during counseling, but that the receipt of (usually normal) amniocentesis results decreased state anxiety considerably. Genetic counseling, whether performed once or twice, was only effective in reducing anxiety related to amniocentesis, not state anxiety. (See Specific Anxiety section.) This may indicate that state anxiety, although short-term in nature (44), is a generalized type of anxiety, difficult or impossible to affect by counseling, but highly susceptible to "changes" in one's situations (such as the elimination of an annoying problem or the successful completion of an unpleasant task).

Two interactions were found to be significant (Table 4). These findings are expanded in Tables 5 and 6. When the means in Table 5 were compared with Scheffe's test, several significant differences were found. Among the women, scores on Q III were significantly lower than

on either Q I or II, and among the men, the difference between Qs I and III were significant ($p < .05$ in all cases). These results indicate that the receipt of amniocentesis results reduced state anxiety levels, but counseling did not, as noted above.

Women had significantly higher levels of state anxiety than men on Qs I and II, but not on III. This provides evidence that womens' state anxiety scores are higher prior to amniocentesis because they are the ones who actually undergo the test.

The interaction between Q administration and number of counseling sessions (Table 6) also sheds some light on the effects of genetic counseling. Comparisons of these means by Scheffe's test indicates the existence of several significant differences ($p < .05$). Among those counseled twice, state anxiety scores were lower on administration one, possibly because this group completed the instrument in the familiar, relaxing environment of their home some days prior to their appointment, whereas those counseled once completed it in the clinical waiting area on the morning of the appointment and consequently may have been more anxious due to the imminence of the test.

The difference in anxiety levels between the research groups on Q II indicates that additional genetic counseling raised state anxiety levels. This is probably a result of discussing the pertinent medical and genetic facts a second time. Some subjects expressed mild displeasure during the second session, while others apparently felt it was unnecessary.

The similarity in state anxiety scores on Q III indicates that additional counseling has no long-term impact upon state anxiety levels.

TABLE 4

STATE ANXIETY SCORES ANALYSIS OF VARIANCE

Source of variation	Degrees of Freedom	Mean Square
Main effects		
Sex	1	1331.7 †
Counseling	1	125.2
Questionnaires	2	5550.8 †
Interactions		
Sex by counseling	1	7.6
Sex by questionnaire	2	632.0 †
Counseling by questionnaire	2	529.3 †
Sex by counseling by questionnaire	2	97.9
Residual	879	65.1
Total	890	81.2

† Significant at $p \leq .01$.

TABLE 5

COMPARISONS OF MEAN STATE ANXIETY SCORES BETWEEN QUESTIONNAIRE ADMINISTRATION AND SEX

	Questionnaire Administration		
	1	2	3
Sex			
Females	36.02	37.04	27.35
Males	32.48	31.95	28.27

TABLE 6

COMPARISONS OF MEAN STATE ANXIETY SCORES BETWEEN QUESTIONNAIRE ADMINISTRATION AND NUMBER OF COUNSELING SESSIONS

	Questionnaire Administration		
	1	2	3
Counseling			
1 session	36.54	34.49	27.76
2 sessions	33.06	36.34	27.52

III. Trait Anxiety Scores

This analysis was performed as described for the previous instruments. The results (Table 7) indicate that among the main effects, both sex and Q number are influential in determining anxiety scores. Women had higher scores than men (31.73 ± 6.78 compared to 30.69 ± 7.18), indicating that women in this study are slightly more prone to anxiety.

The mean scores for Qs I to III were 32.43 ± 7.16, 31.31 ± 7.00, and 30.42 ± 6.48, respectively. This decrease in trait anxiety contradicts the theoretical expectation (44), that trait anxiety scores should not change significantly over time. The results of this study, however, indicate that trait anxiety scores do change, and that they decreased significantly during the amniocentesis period. The magnitude of these changes however, is smaller than those observed for state anxiety. This suggests that trait anxiety is similar in some ways to state anxiety. Several observations support this view: (1) there is a small but significant correlation between these scales (Table 13), and (2) three items are present on both instruments in identical form, and five other pairs are similar This indicates that trait anxiety retains its validity in the large sense, but reflects some elements of state anxiety which are susceptible to change.

The only interaction found to be significant on the ANOVA was sex-by-counseling. These results are given in Table 8. Comparison of these values by Scheffe's test indicates that the women counseled twice had significantly higher scores than the other groups on this table. This may reflect the manner of selection of these subjects, and/or the

voluntary nature of their participation. As explained in the Materials and Methods section, women counseled twice were approached by phone, which resulted in a lower acceptance rate (see Appendix 9). Perhaps women prone to high anxiety were more likely to accept participation in this study, hoping that their anxiety would be decreased by early counseling.

TABLE 7

TRAIT ANXIETY SCORES ANALYSIS OF VARIANCE

Source of Variation	Degrees of Freedom	Mean Square
Main effects		
Sex	1	192.6 *
Counseling	1	172.0
Questionnaires	2	302.3 †
Interactions		
Sex by counseling	1	230.9 *
Sex by questionnaires	2	7.1
Counseling by questionnaires	2	10.8
Sex by counseling by questionnaires	2	9.0
Residual	879	47.1
Total	890	48.0

* Significant at $p \leq .05$; † significant at $p \leq .01$.

TABLE 8

COMPARISONS OF MEAN TRAIT ANXIETY SCORES BETWEEN NUMBER OF COUNSELING SESSIONS AND SEX

	Number of Counseling Sessions	
Sex	1 session	2 sessions
Females	30.94	32.52
Males	30.95	30.36

IV. Specific Anxiety Scores

This instrument (consisting of questions 14 - 31 on Q I, and the analagous items on Qs II and III) was analyzed by ANOVA, as described previously. The participant's sex and Q number were both found to affect specific anxiety scores (Table 9). Men had higher scores than women (41.96 ± 16.72 compared to 34.29 ± 12.79), in contrast to state and trait anxiety levels. There are several probable reasons for these differences. There may have been some selective process which influenced men to accompany their wives, i.e. those with higher anxiety about amniocentesis chose to come, or were urged to come by their wives, whereas those with lower anxiety felt little need to do so. Alternatively, men may have been more concerned than the women about one or more aspects of the testing. Whatever the case, it is interesting to note that the women in this study had higher levels of a more generalized form of anxiety, (i.e. state anxiety), while men's anxieties were more specific in nature, focusing on the testing itself.

The mean specific anxiety levels for Qs I to III were 43.79 ± 14.42, 37.83 ± 12.80, and 28.76 ± 12.53, respectively. The decrease in scores between administrations one and two indicates that counseling was effective in reducing this type of anxiety. The decrease between administrations two and three indicates that the reception of (usually normal) amniocentesis results effected an even greater reduction in anxiety than counseling.

The only interaction found to be significant on the ANOVA was sex-by-Qs. These results are given in Table 10. Comparison of these means by Scheffe's test indicates that each pair of means are significantly

different ($p < .05$), except for the differences between the sexes on Q III. Therefore, both counseling and the reception of amniocentesis results reduced specific anxiety levels in each sex.

Specific anxiety showed a greater reduction as a result of counseling than either state or trait anxiety. This is not surprising because many of the counseling sessions focused on couples' concerns about amniocentesis at least as much as they focused on provision of information. The basic facts about amniocentesis often corrected patients' misconceptions and this alone had an observable effect on many subjects' anxiety. Because counseling was oriented only towards amniocentesis, it is reasonable to expect this reduction, whereas it would be unreasonable to expect much reduction of more generalized types of anxiety (i.e. state or trait).

Males had higher levels of specific anxiety than females on all Qs, although according to Scheffe's test, this difference was significant only on Qs I and II ($p < .05$). Although mens' scores were reduced by counseling, their anxiety levels on Q II were higher than the womens' pre-counseling scores. It would be interesting to determine the levels of state, trait, and particularly specific anxiety among men who do not accompany their wives. If their anxiety scores were different than those of the men on Q I in the present study, some bias would likely be operating, and its nature could possibly be determined.

TABLE 9

SPECIFIC ANXIETY SCORES ANALYSIS OF VARIANCE

Source of Variation	Degrees of Freedom	Mean Square
Main effects		
Sex	1	11446.8 †
Counseling	1	4.7
Questionnaires	2	17014.4 †
Interactions		
Sex by counseling	1	4.8
Sex by questionnaires	2	998.7 †
Counseling by questionnaires	2	314.8
Sex by counseling by questionnaires	2	29.3
Residual	879	161.9
Total	890	214.1

† significant at $p < .01$.

TABLE 10

COMPARISONS OF MEAN SPECIFIC ANXIETY SCORES BETWEEN QUESTIONNAIRE ADMINISTRATION AND SEX

	Questionnaire Administration		
Sex	1	2	3
Female	39.86	35.77	27.25
Male	51.91	42.09	31.88

V. Specific Concerns Scores

Analysis of the data on this Q (question 37 on Q III) was performed as described previously. No significant differences were found. These data are presented in Table 11.

TABLE 11

SPECIFIC CONCERNS SCORES ANALYSIS OF VARIANCE

Source of Variation	Degrees of Freedom	Mean Square
Main effects		
Sex	1	40.4
Counseling	1	36.2
Interaction		
Sex by counseling	1	37.1
Residual	293	37.0
Total	296	37.0

VI. Effects of Mailing Questionnaire Three

The third Q was mailed to some participants in both research groups. In the remaining cases, it was administered in person. A one-way ANOVA was performed on the levels of knowledge, anxiety, and specific concerns in order to determine if mailing the Qs had any influence upon their scores. No differences were found. These results are given in Appendix 5.

VII. Comparisons Between Those Who Received Normal and Non-Normal Amniocentesis Results

There were 15 cases with abnormal or unusual karyotypes, which permitted a comparison with those families who received normal results. Two pregnancies were terminated; one was diagnosed with Down syndrome, and one was a 46,XX/47,XX,+15p+ mosaic. The remaining cases consisted of translocations, inversions, unusual marker chromosomes, or a single 46,XY cell in a 46,XX culture. In addition, two families were included who had two successive culture failures, and decided against a third amniocentesis. Most of the families with abnormal or unusual results returned to clinic for parental karyotyping in order to determine whether the fetal chromosome abnormality was inherited, or de novo. These families were very obviously concerned about the pregnancy, and consequently all received additional counseling. A one-way ANOVA was performed on the levels of knowledge, anxiety, and specific concerns on Q III in order to determine if the reception of non-normal amniocentesis results had any impact upon participant's scores. These results are given in Appendix 6. State and specific anxiety scores were

found to be significantly influenced by the amniocentesis results according to Scheffe's test ($p < .05$). Comparisons of the means indicated that those who received non-normal results had higher anxiety (31.67 compared to 27.43 for state anxiety, and 37.53 compared to 28.29 for specific anxiety). These results are to be expected, and are supportive of subjective observation. It is interesting to note that trait anxiety scores were not affected; this is in agreement with established theory (44). Specific concern scores were also unaffected. Fourteen of the 15 non-normal results did not increase couples' chances of bearing a child with a birth defect on a subsequent pregnancy, a point which was emphasized during counseling. This may be the reason why these couples' concerns about future amniocenteses (or pregnancies) are no different than those who received normal results.

VIII. Effects of Counseling More than One Family at a Time

Counseling was sometimes given to two women (or couples) simultaneously, however, subjects in the two different research groups were never counseled together. For those counseled once, time was provided at the end of the session for each family to see the counselor alone. This gave them an opportunity to raise questions and concerns in the same private manner as those counseled individually. Families counseled twice were always seen individually for their first session, but some were seen with another family the second time. These people were offered a chance to be seen privately after the second session, but few accepted, because their questions and concerns had usually been dealt with during the first session.

A one-way ANOVA was performed on the knowledge, anxiety, and specific concerns scores for all participants. No differences were found. These results are given in Appendix 7.

IX. Effect of the Husband's Presence During Counseling and Amniocentesis

The presence or absence of the husband during the counseling and amniocentesis procedure was considered as a potential source of variation affecting womens' knowledge and anxiety levels. Comparisons of knowledge, anxiety, and specific concerns scores on all Qs were performed with one-way ANOVA among the women counseled once to determine what effect, if any, the husband's presence had on the wife. Comparisons were not made for those counseled twice because many of these men were present for the first session but not the second (and amniocentesis), or vice versa.

The results are given in Appendix 8. Significant differences were found for trait and specific anxieties. In each case women who came with (or brought) their husbands had higher anxiety; (31.8 $\pm$ 6.8 compared to 29.7 $\pm$ 5.3 for state anxiety, and 35.7 $\pm$ 13.1 compared to 32.5 $\pm$ 13.1 for specific anxiety). There are several plausible explanations. First, women who are more anxious in general, or who were more anxious about the clinic visit, may have made an extra attempt to bring their husbands with them, while relaxed women were more likely to come alone. Second, it is possible that depending on the personal relationship of the couple, the husband's presence might have a negative influence upon the wife. Some husbands however, were visibly upset

before, during, and after counseling. Several refused to take part in this research, and some preferred not to be present during the ultrasound or amniocentesis procedure. These latter men may have influenced their wive's anxiety enough to account for the higher anxiety of the whole group.

X. Correlation Analyses Between Knowledge and Anxiety Scores

The levels of state, trait, and specific anxieties, and specific concerns were correlated with knowledge levels on each Q, as well as with the differences in knowledge levels between each of the three Qs. The results are given in Table 12. Several correlations among the levels of knowledge with state and specific anxieties were found; only once did a difference in knowledge correlate with anxiety. State and specific anxieties showed strong negative correlations on Qs I and III, but not on II. Trait anxiety and specific concerns did not correlate with any knowledge measurement. All statistically significant correlations were negative.

The inverse correlations between Q I state anxiety levels and knowledge levels on Qs II and III indicates that anxiety at the beginning of the amniocentesis experience is inversely related to knowledge levels following counseling. Levels of knowledge early in the amniocentesis experience, however, do not affect state anxiety levels at any point. These results indicate that state anxiety influences knowledge levels, but the reverse is not true. In order to improve knowledge retention during counseling, it may be beneficial to attempt to reduce counselee's state anxiety. As noted previously, however,

TABLE 12

CORRELATION COEFFICIENTS BETWEEN KNOWLEDGE AND ANXIETY LEVELS

	STATE 1	STATE 2	STATE 3	TRAIT 1	TRAIT 2	TRAIT 3	SPAN 1	SPAN 2	SPAN 3	CONCERN
KNOW 1	-.0795	.0065	-.0959	-.0634	-.0744	-.0751	-.1502 †	-.0404	-.0933	-.0232
KNOW 2	-.1231 *	-.0952	-.0171	.0197	-.0091	-.0234	-.1098	-.0798	-.1703 †	-.0272
KNOW 3	-.1565 †	-.0409	-.1281 *	-.0267	-.0618	-.0659	-.1636 †	-.1049	-.2384 †	-.0595
KNODIF 1	-.0021	-.0412	.0836	.0756	.0676	.0589	.0766	-.0124	-.0194	.0051
KNODIF 2	-.0423	-.0384	-.0037	.0427	.0264	.0239	.0230	-.0412	-.0922	-.0231
KNODIF 3	-.0573	.0047	-.1260 *	-.0483	-.0600	-.0510	-.0777	-.0409	-.1035	-.0403

Note: STATE 1, 2, and 3 are the levels of state anxiety on Qs I, II, and III, respectively. TRAIT 1, 2, and 3 are the levels of trait anxiety, and SPAN 1, 2, and 3 are levels of specific anxiety on each of the three Qs. CONCERN is the level of specific concerns measured on Q III. KNOW 1, 2, and 3 are the levels of knowledge on the three Qs. KNODIF 1 is KNOW 2 minus KNOW 1. KNODIF 2 is KNOW 3 minus KNOW 1, and KNODIF 3 is KNOW 3 minus KNOW 2.

* Significant at $p \leq .05$; † significant at $p \leq .01$.

genetic counseling was not effective in reducing this generalized form of anxiety. Although the observed correlations are low, an individual with high anxiety is likely to have impaired learning. In these cases, extra training of counselors or referral to a professional equipped to handle high anxiety is probably worthwhile.

The final level of knowledge, and the difference in knowledge levels between Qs II and III also correlate inversely with state anxiety. It cannot be determined which is the cause and which is the effect from these data, although the correlations among the early Qs suggests that state anxiety influences knowledge attainment, and there is no reason to expect that the relationships among these latter measurements should be different. It is, therefore, probable that state anxiety has an effect upon initial knowledge, and that the amount of information retained from counseling is also influenced by state anxiety.

The correlations between knowledge and specific anxiety are inversely related, as seen for state anxiety. Specific anxiety levels on Q I correlated significantly with knowledge levels on Qs I and III. These results suggest that knowledge levels throughout amniocentesis are affected by the initial level of specific anxiety, a finding similar to those of state anxiety.

Knowledge levels on Q II correlated inversely with specific anxiety on Q III. This is the only indication on Table 13 that knowledge levels influence anxiety scores. It is apparent from this comparison that knowledge gained during counseling can actually reduce specific anxiety. The effect is apparently long-term rather than immediate, as

TABLE 13

CORRELATION COEFFICIENTS BETWEEN THE ANXIETY LEVELS

	STATE 1	STATE 2	STATE 3	TRAIT 1	TRAIT 2	TRAIT 3	SPAN 1	SPAN 2	SPAN 3
CONCERN	.261 †	.347 †	.269 †	.211 †	.256 †	.311 †	.466 †	.526 †	.493 †
SPAN 3	.096	.124 *	.249 †	.084	.135 *	.145 *	.492 †	.477 †	
SPAN 2	.210 †	.322 †	.182 †	.216 †	.247 †	.243 †	.764 †		
SPAN 1	.135 *	.139 *	.167 †	.126 *	.131 *	.127 *			
TRAIT 3	.448 †	.483 †	.530 †	.799 †	.855 †				
TRAIT 2	.460 †	.543 †	.451 †	.892 †					
TRAIT 1	.406 †	.488 †	.409 †						
STATE 3	.358 †	.315 †							
STATE 2	.644 †								

For explanation of headings and symbols, see Table 12.

the correlation between these instruments on Q II was not significant.

The final knowledge and specific anxiety scores correlated inversely, indicating that long-term anxiety and knowledge are inversely related. In this case however, the cause-and-effect relationship is unknown. Because there is evidence that knowledge and specific anxiety can influence each other, it is possible that these variables are truly interrelated.

Correlation analyses were also performed between each of the anxiety and specific concerns measurements. These results are given in Table 13. Nearly all of the correlations were significant, indicating that these instruments measure similar variables. For the state and trait instruments, this agrees with section III.

XI. Miscellaneous Questions

Participants' responses to the miscellaneous questions, described in the Materials and Methods section, and compliance rates are given in Appendix 9.

XII. Path Analyses Among the Instruments

Path analyses were performed among numerous variables in order to test cause-and-effect relationships within the research groups. The analyses were performed in three different combinations: (1) separately for the men and women in each of the two research groups; (2) all women together and all men together; and (3) all subjects together. The "effect" variables were the levels of knowledge and the various types of anxiety measured on each Q. Each effect variable was considered one at

a time against a series of "cause" variables which consisted of the remaining knowledge and/or anxiety levels on that Q, and the levels of knowledge and anxiety measured on previous administrations (for Qs II and III). Other cause variables were also included; these were the levels of education for the husband and wife, the degree of religious affiliation, and the spouse's influence upon the decision to have amniocentesis performed. This latter variable was measured on Qs I and III. The value for Q I was employed on the path analyses for all three Qs, while the value on Q III was included only when the effect variable was from that Q.

Variables causing less than 4% of the total variation are not included on the tables in this section because small cause values are probably meaningless.

A. Questionnaire One

The primary contributor to participant's knowledge levels on Q I (Table 14) was level of education. Educational levels among women counseled twice accounted for less knowledge variation than in the other groups. Because women with more education may be more likely to inquire about amniocentesis on their own, a stronger relationship between education and knowledge might exist if the opportunity for personal investigation occurred. However, women seen twice did not have as much opportunity as discussed previously (section I). This may account for the observed difference. Educational levels among the two groups of men were about equally influential in determining knowledge levels, suggesting either that men inquire about amniocentesis earlier than women, or that they are more knowledgeable for other reasons.

Table 14 also suggests that women counseled once had a small role in educating their husbands about amniocentesis, because the wife's educational level influenced their husband's knowledge level. Among women counseled once, those who were influenced by their husbands to undergo amniocentesis knew more prior to counseling, suggesting that their husbands might have encouraged them to examine the risks and benefits of the testing. Women counseled twice did not have this same opportunity, as discussed previously.

Specific anxiety levels among men counseled once also positively influenced their knowledge levels, suggesting that men anxious about the test make an attempt to learn more about it. Men and women counseled twice did not have as much opportunity to learn about amniocentesis prior to counseling, and their specific anxiety scores did not aid in predicting their knowledge levels. Specific anxiety levels among women counseled once apparently did not influence them to learn about amniocentesis prior to counseling, possibly because their husbands assumed this responsibility. Educational levels are slightly more influential in determining knowledge levels among men than women, suggesting that their knowledge gained from personal research is imperfectly relayed to their wives.

The cause variables among all women, all men, and all subjects appear to approximate the average values of their component groups. With only rare exceptions, this seems to be true for the remaining analyses as well.

Table 15 illustrates the relationships among the variables on Q I when state anxiety is the effect variable. The largest source of

TABLE 14

QUESTIONNAIRE ONE PATH ANALYSIS, EFFECT VARIABLE = KNOWLEDGE

	Cause Variables					
Group	Specific Anxiety	Wife's Educ.	Husb's Educ.	Spouse's Influence	Subtotal	Total Deter.
Women, 1 session		21.1		5.2	26.3	31.0
Women, 2 sessions		10.8			10.8	13.9
Men, 1 session	13.6	5.3	24.7		43.6	44.8
Men, 2 sessions			27.8		27.8	27.3
All Women		15.4			15.4	17.0
All Men	4.6		26.7		31.3	31.4
All Subjects		8.7	5.1		13.8	16.1

TABLE 15

QUESTIONNAIRE ONE PATH ANALYSIS, EFFECT VARIABLE = STATE ANXIETY

	Cause Variables				
Group	Trait Anxiety	Specific Anxiety	Husband's Education	Subtotal	Total Determination
Women, 1 session	5.5	4.2		9.7	10.9
Women, 2 sessions	19.4	5.0		24.4	25.5
Men, 1 session	51.9			51.9	53.6
Men, 2 sessions	25.5	5.0	4.2	34.7	38.1
All women	8.0	4.3		12.3	13.0
All men	40.0		4.0	44.0	44.5
All subjects	15.9			15.9	18.7

variation for state anxiety is trait anxiety, which supports Spielberger's theory (44) that trait anxiety levels are an indication of one's anxiety proneness, and, therefore, an indicator of one's present anxiety level. There are two possible reasons why men's trait anxiety contributions are higher than women's. First, men who are more anxious in general may be more likely to accompany their wives. Previous evidence also indicates that the woman's anxiety level influences the husband's attendance; therefore, these variables may both be influential, possibly synergistically. Second, trait anxiety may be a better predictor of state anxiety levels in men than in women. However, there is no data to support or refute this, other that given here.

Trait anxiety levels among men counseled once accounted for nearly twice the variation in state anxiety scores than in men seen twice. This may be another indication of the difference in administration of Q I between these groups. Men who completed Q I in the clinic had insignificantly higher levels of state anxiety than men who completed it at home (33.39 compared to 31.35).

Men who are anxiety prone may be more likely to have their anxiety heightened by the clinical atmosphere than men who are not as prone. Men counseled at home would not undergo this "triggering"; their trait anxiety levels would therefore not be as influential.

Trait anxiety among the women was more influential among those seen twice, in contrast to the men. In this case the "triggering" of state anxiety levels by trait anxiety could be a result of the phone converstion with the women which set up the first counseling session, and the subsequent appearance of the counselor at the door (even if it

was a week later). Mens' scores would not be triggered in this manner because nearly all the initial contacts were made with the women.

Specific anxiety levels were only mildly influential in determining state anxiety. This indicates that only a small portion of the very general state anxiety is due to anxiety about amniocentesis.

Table 16 illustrates the relationships among the variables on Q I when trait anxiety is the effect variable. State anxiety is the most apparent source of trait anxiety levels. These values bear a close resemblance to those of trait anxiety on Table 15, a fact which is probably not coincidental. According to Spielberger's theory (44), trait anxiety influences state anxiety, hence, trait is the "cause" and state the "effect." Comparing these variables in the manner shown on Table 16 is reversing the theoretical order. The similar results, however, emphasize the similarities noted in section IV. In addition, specific anxiety levels are mildly influential in determining trait anxiety, although only among men.

Path analysis results with specific anxiety as the effect variable are given in Table 17. Womens' specific anxieties on Q I are determined to a small extent by their state anxiety levels, and little else. This indicates that women's anxiety about amniocentesis prior to counseling is largely independent of other known variables. This is not the case among the men, where educational levels figured prominently. Knowledge levels among men seen once were the highest cause of specific anxiety, but among men counseled twice, knowledge was not influential. This is another indication that people, primarily men, made an effort to learn about amniocentesis prior to the clinic visit. Anxiety about

TABLE 16

QUESTIONNAIRE ONE PATH ANALYSIS, EFFECT VARIABLE = TRAIT ANXIETY

	Cause Variables				
Group	State Anxiety	Specific Anxiety	Husb's Educ.	Subtotal	Total Determination
Women, 1 session	5.8			5.8	6.5
Women, 2 sessions	19.1			19.1	26.5
Men, 1 session	48.5	5.8		54.3	56.6
Men, 2 sessions	24.2	4.9	4.8	33.9	41.1
All women	8.2			8.2	11.6
All men	39.5	4.8		44.3	45.2
All subjects	15.8			15.8	19.1

TABLE 17

QUESTIONNAIRE ONE PATH ANALYSIS, EFFECT VARIABLE = SPECIFIC ANXIETY

	Cause Variables							
Group	State Anx.	Trait Anx.	Know-ledge	Husb's Educ.	Degree of Rel. Affil.	Spouse's Influence	Sub-total	Total Deter.
Women								
1 session	4.4						4.4	6.5
2 sessions	6.1						6.1	8.8
Men								
1 session		8.6	15.8	9.2		5.4	40.0	35.7
2 sessions	4.2	4.3		31.6	7.5		47.6	47.8
All women	4.6						4.6	6.0
All men		5.9	4.5	17.9			28.3	32.9
All subjects							0.0	6.7

amniocentesis is caused in part by counselee's knowledge of the subject, providing they had ample opportunity to investigate amniocentesis (as those who were counseled once did). Educational levels among men counseled twice were more influential than those seen once, indicating that increased amounts of education contributed to anxiety about amniocentesis in the absence of specific information.

Trait and state anxiety levels, degree of religious affiliation, and their wive's influence upon the decision to have amniocentesis also caused increases in men's specific anxiety, though to smaller extents than knowledge and education. The large number of contributing variables among the men is probably the reason why their anxiety about amniocentesis is much higher than women's, as shown in section IV.

B. Questionnaire Two

Knowledge levels on Q II among the women were affected primarily by their prior knowledge levels (Table 18). State and specific anxiety levels among women seen once affected their knowledge to a slight extent. Knowledge levels increased slightly with anxiety, suggesting that those who were anxious made an extra effort to learn the material. It is also possible that the counselor, in sensing peoples' anxiety, made an extra effort to relieve that anxiety through facts about amniocentesis. This latter explanation is more likely, because of the negative correlations previously observed between knowledge and anxiety. Anxiety was not influential among women counseled twice, suggesting that their knowledge levels are based more on the actual facts presented during counseling than on their psychological state. This may be a result of their hearing the information twice, or having

two opportunities to discuss their concerns.

Men's knowledge on Q II is due to various levels of anxiety on Qs I and II, and is not related to their knowledge on Q I. This is in sharp contrast to the women. When all men are considered together, their educational level is seen to be the only variable contributing significantly to their knowledge. This is similar to their situation on Q I. Men's knowledge after counseling is therefore a function of their education, and is not based on their pre-counseling knowledge.

Table 19 gives the results when state anxiety level of Q II is the effect variable. The previous state anxiety level, followed by the trait and specific anxiety levels on Q II are the best predictors, respectively, of state anxiety on Q II. This indicates that the medical and genetic information presented during counseling had little effect on state anxiety, confirming the finding in section II, which showed little or no reduction in state anxiety due to counseling.

Table 20 indicates that trait anxiety levels on Q II were determined primarily by the level of this variable on Q I. State anxiety levels on Qs I and II had comparatively small influences, while the information presented during counseling had none. Post-counseling trait anxiety scores are therefore very similar to pre-counseling scores, indicating that information presented during counseling had little effect on this variable. This agrees with Spielberger's theory (44).

Specific anxiety levels on Q II were determined primarily by the level of specific anxiety on Q I (Table 21). State anxiety on Q II played a smaller role, while the information gained during counseling

TABLE 18

QUESTIONNAIRE TWO PATH ANALYSIS, EFFECT VARIABLE = KNOWLEDGE

	Cause Variables								
	Questionnaire 1			Questionnaire 2					
Group	State Anx.	Trait Anx.	Know-ledge	State Anx.	Trait Anx.	Spec. Anx.	Husb's Educ.	Sub-total	Total Determ.
Women									
1 session			11.3	6.3		6.4		24.0	30.3
2 sessions			15.0					15.0	24.7
Men									
1 session		18.5		9.0	-8.7	7.0		25.8	33.4
2 sessions	9.4				4.3		12.8	26.5	36.2
All women			11.0					11.0	19.3
All men							6.5	6.5	15.2
All subjects			8.3					8.3	14.3

TABLE 19

QUESTIONNAIRE TWO PATH ANALYSIS, EFFECT VARIABLE = STATE ANXIETY

	Cause Variables								
	Questionnaire 1				Questionnaire 2				
Group	State Anx.	Trait Anx.	Know-ledge	Spec. Anx.	Trait Anx.	Know-ledge	Spec. Anx.	Sub-total	Total Deter.
Women									
1 session	43.2				14.7		6.7	64.6	65.3
2 sessions	25.0			-4.8	15.7		16.4	52.3	60.1
Men									
1 session	44.2	-13.5	5.4		16.7	4.2	11.9	68.9	68.6
2 sessions	29.2			8.6	13.5		9.8	61.1	62.8
All women	27.9			-4.3	15.8		12.7	52.1	56.4
All men	38.9			5.9	4.4		10.2	59.4	61.9
All subj.	31.5				12.3		9.0	52.8	54.3

TABLE 20

QUESTIONNAIRE TWO PATH ANALYSIS, EFFECT VARIABLE = TRAIT ANXIETY

	Cause Variables					
	Questionnaire 1		Questionnaire 2			
Group	State Anxiety	Trait Anxiety	State Anxiety	Specific Anxiety	Sub-total	Total Determin.
Women, 1 session		65.6	9.0	4.6	79.2	78.7
Women, 2 sessions		70.0	6.5		76.5	83.5
Men, 1 session	8.1	82.3			90.4	93.2
Men, 2 sessions	5.7	69.3	6.5		81.5	82.1
All women		68.8	7.3		76.1	80.0
All men	9.6	75.6			85.2	87.2
All subjects		72.2	5.0		77.2	81.6

TABLE 21

QUESTIONNAIRE TWO PATH ANALYSIS, EFFECT VARIABLE = SPECIFIC ANXIETY

	Cause Variables							
	Questionnaire 1			Questionnaire 2				
Group	State Anx.	Trait Anx.	Spec. Anx.	State Anx.	Trait Anx.	Wife's Educ.	Sub-total	Total Determin.
Women								
1 session			65.4	5.0	5.6		76.0	73.9
2 sessions			52.4	13.5			65.9	67.2
Men								
1 session	7.0	6.0	46.0	11.7	-8.8		61.9	69.2
2 sessions			36.2	10.5		9.8	56.5	60.4
All women			59.4	9.2	4.0		72.6	68.6
All men			42.3	10.6		5.7	58.6	60.8
All subjects			57.1	7.0			64.1	64.6

had no effect. Section IV however, indicates that counseling significantly reduced specific anxiety. It is apparent that the reduction of specific anxiety between Qs I and II is a result of the counseling process, and not the information presented.

C. Questionnaire Three

Knowledge levels on Q III were determined primarily by the same variable on Q II, and to a lesser extent, by knowledge levels on Q I and the amount of education (Table 22). Among the men, specific anxiety levels also played a major role, especially for those counseled once: their specific anxiety on Q II was more influential in determining final knowledge levels than knowledge on Q II. Education was also more important, suggesting that better educated men who are anxious about amniocentesis are more likely to remember the relevant material. Among men counseled twice, specific anxiety on Q I was influential as well, and their educational level had a negative influence. When both groups of men are considered together, the primary influence is the amount of knowledge on Q II, while specific anxiety and education are not influential. This suggests that when the two groups of men are analyzed separately, the levels of these variables are spuriously high.

State anxiety levels on Q III were determined primarily by trait anxiety levels on this same Q (Table 23). Other types of anxiety on all three Qs were influential both in positive and negative manners, but to a lesser extent in most cases. This indicates that the final level of state anxiety is determined by a variety of both past and present anxiety levels. Knowledge about amniocentesis does not appear to influence state anxiety levels. This agrees with earlier findings,

TABLE 22

QUESTIONNAIRE THREE PATH ANALYSIS, EFFECT VARIABLE = KNOWLEDGE

	Cause Variables										
	Questionnaire 1			Questionnaire 2			Questionnaire 3				
Group	State Anxiety	Know-ledge	Specific Anxiety	Trait Anxiety	Know-ledge	Specific Anxiety	Specific Anxiety	Specific Concerns	Husband's Education	Sub-total	Total Determ.
Women											
1 session		16.4			21.3		5.5		4.0	47.2	50.2
2 sessions		4.8		4.1	25.8				7.0	41.7	45.7
Men											
1 session					8.2	19.7			12.4	40.3	41.1
2 sessions	4.7	7.9	15.5		35.6			4.7	-9.2	59.2	60.9
All women		8.8			24.0		4.4		5.2	42.4	45.3
All men	4.8				21.5					26.3	37.7
All subjects		7.5			23.0					30.5	39.3

TABLE 23

QUESTIONNAIRE THREE PATH ANALYSIS, EFFECT VARIABLE = STATE ANXIETY

	Cause Variables													
	Questionnaire 1			Questionnaire 2			Questionnaire 3							
Group	State Anx.	Trait Anx.	Know-ledge	Spec. Anx.	State Anx.	Trait Anx.	Trait Anx.	Spec. Anx.	Spec. Conc.	Husb's Educ.	Deg. Rel. Affil.	Spouse's Infl., Q 3	Sub-total	Total Deter.
Women														
1 session		12.7	4.5			-14.9	23.2						25.5	35.3
2 sessions	15.0					-5.6	19.8					5.0	34.2	42.6
Men														
1 session	7.1	-38.9		6.0	-4.1	15.0	69.8		4.6	12.4	9.9		81.8	81.1
2 sessions	9.3				-6.5	22.6	11.5	35.5	9.6				82.0	79.6
All women		4.4			4.9	-10.6	21.6						20.3	30.2
All men	4.5	-20.7				23.9	44.5	6.2	8.3		4.3		71.0	67.9
All subjects	5.4						26.8	4.9					37.1	37.1

namely that anxiety influences knowledge levels, but the reverse is not true.

Because of the acute nature of state anxiety, previous levels of this variable are not expected to be influential, whereas, the long-term and comparatively stable nature of trait anxiety should be influential. These results support Spielberger's theory (44).

Levels of trait anxiety on Q III were determined primarily by the level of this variable on previous Qs, and to a lesser extent by the state anxiety level on Q III (Table 24). Trait anxiety, therefore, is relatively unaffected by other types of anxiety, or knowledge levels. This is similar to the findings of this variable on Q II, and agrees with theory (44).

Specific anxiety levels on Q III were influenced by a variety of anxiety levels on all three Qs and to a much lesser extent, knowledge levels (Table 25). The single largest predictor in most cases was the level of specific concerns. However, the two instruments are unrelated in their focus: the specific anxiety scale asked participants to indicate their present level of anxiety about amniocentesis, while the specific concerns scale requested them to indicate their concerns about a possible future amniocentesis. The results of this analysis suggest that these two variables may be related. This may indicate that after amniocentesis, participants are focusing their specific anxieties towards the future, since many of the potential problems indicated on this instrument have been ruled out by this time, and could only happen on a future amniocentesis. The majority of specific anxiety variation on this Q however, is due to other types of anxiety, indicating that a

TABLE 24

QUESTIONNAIRE THREE PATH ANALYSIS, EFFECT VARIABLE = TRAIT ANXIETY

	Cause Variables								
	Questionnaire 1		Questionnaire 2		Questionnaire 3				
Group	State Anxiety	Trait Anxiety	State Anxiety	Trait Anxiety	State Anxiety	Specific Anxiety	Specific Concerns	Sub-total	Total Determination
Women, 1 session			-6.0	56.0	9.7			59.7	72.9
Women, 2 sessions		7.0		63.7	5.5		5.3	81.5	84.0
Men, 1 session		36.7	4.3	24.1	30.6			95.7	91.7
Men, 2 sessions	6.5	23.3		34.0	7.7	16.6		88.1	86.4
All women		7.9		59.9	6.9			74.7	77.5
All men	4.3	31.6		22.2	22.0			80.1	84.2
All subjects		13.2		52.0	9.3			74.5	78.1

TABLE 25

QUESTIONNAIRE THREE PATH ANALYSIS, EFFECT VARIABLE = SPECIFIC ANXIETY

	Cause Variables															
	Questnnr 1		Questionnaire 2				Questionnaire 3									
Group	Trait Anx.	Spec. Anx.	State Anx.	Trait Anx.	Know-ledge	Spec. Anx.	State Anx.	Trait Anx.	Know-ledge	Spec. conc.	Wife's Educ.	Husb's Educ.	Spouse's infl. Q 1	Spouse's infl. Q 3	Sub-total	Total Deter.
Women																
1 session		12.1		4.3	7.5	5.2			4.9	9.7	4.1			6.4	54.2	55.2
2 sessions		15.4								22.6					38.0	42.1
Men																
1 session	-4.3			10.5	6.2	22.1				7.0		6.2			47.7	47.5
2 sessions	-14.3		4.4			8.7	25.9	18.1		29.3	6.7		6.7		85.5	85.1
All women		12.3			5.0				4.5	14.3					36.1	43.8
All men		5.8				10.3	10.5			17.8					44.4	45.6
All subjects		11.1				5.9	4.5			15.8					37.3	42.0

minority of the predictable variable is future oriented.

A stronger relationship between specific anxiety and specific concerns exists among those counseled twice than those seen once (Tables 25 and 26). These people may be orienting more of their thoughts towards the future, but the reason for this is unclear.

Path analysis results for the specific concerns scores are given in Table 26. Specific anxiety scores contributed the most variation in all groups. For those counseled once and twice, the levels of specific anxiety were most influential on Qs II and III, respectively. This is essentially the same relationship discussed in the specific anxiety section above.

Participant's concerns about a possible future amniocentesis are apparently due to their anxiety levels at numerous times throughout the past amniocentesis. Their concerns about the future are therefore a reflection of the experience they have recently completed. Knowledge scores are conspicuously without effect on this analysis, as in previous anxiety analyses. This indicates that subject's knowledge about prenatal diagnosis does not affect their level of concern about a future amniocentesis.

D. Summary

The path analysis results indicate that initial levels of knowledge are best predicted by participant's education, while latter knowledge levels are best determined by previous knowledge levels. Anxiety influences knowledge levels, but the amount of knowledge has little or no influence upon anxiety. The best indicators of anxiety are usually

TABLE 26

QUESTIONNAIRE THREE PATH ANALYSIS, EFFECT VARIABLE = SPECIFIC CONCERNS

	Cause Variables													
	Questionnaire 1			Questionnaire 2				Questionnaire 3						
Group	State Anx.	Trait Anx.	Spec. Anx.	State Anx.	Trait Anx.	Know-ledge	Spec. Anx.	State Anx.	Trait Anv.	Spec. Anx.	Spouse's Infl. Q 3	Spouse's Infl. Q 1	Sub-total	Total Deter.
Women														
1 session			5.6	5.4			26.4			10.2			47.6	53.1
2 sessions				10.3			4.5		17.1	20.2			51.9	48.6
Men														
1 session	11.5	-11.9	6.3	-5.8	16.3	4.8	19.2	10.0	-6.4	5.5	7.0		56.5	58.7
2 sessions		18.1	8.3		-11.9		4.6	11.9	-5.5	49.6		4.5	79.6	74.8
All women			4.1	10.3			13.6		8.0	14.2			50.2	44.0
All men	6.3		10.7				8.1	12.7		16.1			53.9	50.8
All subjects			6.0	6.2			11.1		7.6	15.4			46.3	43.4

previous levels of that anxiety type, or levels of other types of anxiety.

XIII. Path Analysis Within the Instruments of Measurement

A path analysis was performed on the data from each administration of the knowledge and anxiety scales. This determined the percent of each variable's variation caused by the component items. The analyses were performed in three different combinations: (1) separately for the men and women in each of the two research groups; (2) all women together and all men together; and (3) all subjects together. The results are given in Appendix 10.

The results on the knowledge instrument for each item on each Q are generally similar among the sexes and research groups. However, the results differ significantly between the Qs. Questions two through five accounted for high levels of variation on Q I, and low levels on Qs II and III. This indicates that some people knew the answers prior to counseling, but also, that many did not. These questions have answers that apparently are either obvious to many people, or are available in the lay press, and would therefore be known to couples who took time to learn about amniocentesis prior to counseling. Another possibility is that these questions are phrased such that people think they know the correct answer, even though they may not. This may encourage them to respond. Some would answer correctly and others would not, thereby creating a high level of variation. Following counseling almost everyone responded to these items correctly, and consequently the amount of variation was low.

Questions ten through twelve, which ask about the cytogenetics of normal and Down syndrome people, accounted for low levels of variation prior to counseling, and high levels afterwards. Most people left these questions blank before counseling; the amount of variation caused by these items was consequently low. Following counseling, almost everyone answered the questions. Because some people responded correctly, and others answered incorrectly, there was a high level of variation.

The remaining knowledge items usually followed a pattern similar to one of those above, although the magnitude of change was usually smaller. It is therefore apparent that counseling altered the amount of variation produced by each item. This influence was not seen among any of the anxiety questions.

The results of the state, trait, and specific anxiety path analyses, are remarkably uniform across the research groups, sexes, and three administrations. This contrasts sharply with the results of the knowledge instruments, and indicates that the items were nearly uniform in the contribution of their variation on each administration.

The results of the specific concerns instrument are slightly different. Questions one through five contributed slightly more than the average share of the variation, while items six through nine contributed slightly less than the average variation. Item ten contributed only slightly to the overall variation, and is not a good question. However, this was unique among all the anxiety items used in this research because it gave participants a chance to list "other" specific concerns. Few people took advantage of the opportunity, but those who did usually indicated a high level of concern on this

question. It was useful because it provided feedback that otherwise might not have been obtained.

The mean of each item's variation across the four groups considered first (men and women in each of the two research groups) was obtained, and the items ranked in order of their mean contribution. These results are given in Table 27.

These results illustrate the range of contribution by the items on these instruments. The rankings on Table 27 agree closely with the order in Appendix 10 when the data were analyzed by sex (all males together and all females together), and by all subjects together. This similarity however, is not as strong on the knowledge instrument because of the differences between Qs. In this case, the rank orders on Table 27 agree more closely with Qs II and III than with Q I. This is a direct result of the averaging employed to obtain the values on Table 27. When the administrations are analyzed separately, the results agree closely, as expected.

TABLE 27

ITEM CONTRIBUTION RANKINGS FROM THE PATH ANALYSIS

Ranking	Knowledge Item	Knowledge P*	State Item	State P	Trait Item	Trait P	Specific Item	Specific P	Specific Item	Specific P
1	11	.120	15	.067	33	.065	5	.070	3	.133
2	12	.114	10	.066	36	.063	14	.063	4	.133
3	10	.111	16	.064	27	.059	15	.063	5	.127
4	3	.096	17	.060	30	.058	17	.060	2	.155
5	2	.088	5	.060	40	.056	6	.063	1	.106
6	7	.081	1	.060	35	.054	12	.059	8	.098
7	4	.072	2	.060	21	.054	13	.059	6	.097
8	1	.067	11	.060	29	.054	1	.056	7	.092
9	5	.062	20	.057	31	.053	9	.054	9	.083
10	9	.059	3	.054	39	.052	16	.054	10	.017
11	6	.050	12	.053	28	.052	4	.054	-	-
12	13	.047	9	.052	26	.051	2	.053	-	-
13	8	.035	13	.047	32	.049	8	.053	-	-
14	-	-	7	.046	24	.047	18	.050	-	-
15	-	-	8	.045	37	.046	11	.050	-	-
16	-	-	19	.039	38	.042	7	.050	-	-
17	-	-	14	.037	34	.039	3	.046	-	-
18	-	-	6	.033	25	.036	10	.046	-	-
19	-	-	18	.025	23	.036	-	-	-	-
20	-	-	4	.021	22	.035	-	-	-	-

* Proportion of the total variation accounted for by each item.

XIV. Stepwise Multiple Linear Regression Analysis

Stepwise multiple linear regression analyses were performed to determine which items on each instrument were most responsible for influencing the level of the dependent variable (i.e. the score on the instrument). The analyses were performed separately on each administration of the knowledge and anxiety scales for men and women in the two research groups. The independent variables on each analysis were entered into the regression equation one at a time. The results are given in Appendix 11.

The items responsible for determining the 95% accuracy level were subjected to an additional analysis in order to ascertain which items were the most effective predictors of the dependent variable among all analyses. These calculations are illustrated in Appendix 12. The results indicate a wide range of efficiency by the various items. In order to simplify the Qs and retain 95% of their accuracy, one needs only to select the items on the top of the list on Table 28, including as many as are needed for the desired level of accuracy. For the 95% level, 10 items are needed for the knowledge instrument, and 9, 10, and 8 for state, trait, and specific anxieties respectfully. Six items would be needed for the specific concerns scale. It is apparent that these instruments can be shortened significantly without seriously affecting their reliability.

Stepwise multiple linear regression analyses were also performed on the items within these instruments with the groups combined by sexes, and with all subjects together. These results are also given in Appendix 11. The order that each item entered the regression equation

in these latter analyses was only slightly similar to the order of efficiency given in Table 28. This discrepancy may indicate that the items' variances at each step of the regression analysis were very similar. This would mean that small differences between the items could result in large differences in the order that each item entered. This is supported by the path analysis results (Appendix 10), which indicate that differences between the items are in fact small.

TABLE 28

ITEM EFFICIENCY RANKINGS FROM THE LINEAR REGRESSION ANALYSES

Efficiency Ranking	Knowledge		State Anxiety		Trait Anxiety		Specific Anxiety		Specific Concerns	
	Item	E*	Item	E	Item	E	Item	E	Item	E
1	7	.86	17	.76	33	.81	11	.80	4	.88
2	2	.86	20	.69	40	.63	5	.73	7	.76
3	3	.85	13	.64	36	.60	18	.71	3	.73
4	9	.84	10	.60	26	.60	9	.61	6	.69
5	10	.78	9	.59	31	.57	2	.56	2	.66
6	12	.71	16	.58	37	.54	8	.56	8	.66
7	11	.70	15	.57	27	.53	6	.56	9	.57
8	4	.67	1	.56	39	.52	15	.52	5	.44
9	5	.67	5	.55	28	.52	14	.49	10	.31
10	6	.60	12	.54	32	.51	1	.49	1	.20
11	1	.58	11	.52	29	.51	12	.48	-	-
12	13	.57	6	.50	30	.51	7	.45	-	-
13	8	.53	2	.48	23	.51	17	.44	-	-
14	-	-	8	.45	38	.50	13	.44	-	-
15	-	-	3	.44	24	.49	4	.44	-	-
16	-	-	4	.40	34	.47	16	.38	-	-
17	-	-	14	.35	21	.44	3	.38	-	-
18	-	-	19	.32	35	.43	10	.36	-	-
19	-	-	7	.27	22	.35	-	-	-	-
20	-	-	18	.22	25	.34	-	-	-	-

* E: efficiency.

XV. Combining the Path and Regression Analysis Results

In order to determine the best items when the path and regression analyses were given equal consideration, the item ratings given in Tables 27 and 28 were averaged. These results, given in Table 29, are the best overall indication of the performance of each item.

As indicated in the previous section, these Qs can be simplified, and still retain nearly all their accuracy. The results in Table 29 permit one to achieve this simplification, as described in the previous section, but utilizing the results of the regression and path analyses on an equal basis.

TABLE 29

ITEM RANKINGS CONSIDERING THE PATH AND REGRESSION ANALYSES

Rank	Knowledge	State Anxiety	Trait Anxiety	Specific Anxiety	Specific Concerns
1	2	10	33	5	4
2	3	17	36	15	3
3	7	15	40	14	2
4	10	16	27	6	7
5	12	20	31	9	6
6	11	1	26	11	5
7	9	5	30	18	8
8	4	13	39	2	1
9	5	9	28	12	9
10	1	11	37	17	10
11	6	2	29	1	-
12	13	12	32	8	-
13	8	3	21	13	-
14	-	8	35	4	-
15	-	6	24	16	-
16	-	7	38	7	-
17	-	14	23	3	-
18	-	19	34	10	-
19	-	4	25	-	-
20	-	18	22	-	-

XVI. Factor Analysis

A factor analysis was performed on each administration of each Q to determine if underlying source variables exist which contribute to the data's variation. The analyses were performed in three different combinations: (1) separately for the men and women in each of the two research groups; (2) all women together and all men together; and (3) all subjects together. The results are given in Appendix 13.

The number of factors and factor patterns varied somewhat between the research groups and administrations. In order to determine the presence of factors common to all sexes, research groups and administrations in a given instrument, the results of the first combination of analyses described above were compared. The number of times every possible pair of items appeared on the same factor was determined. The maximum possible appearances in common between any two questions was therefore twelve (two research groups and sexes, and three administrations). This comparison resulted in clear groupings of items with obvious similarities on all instruments. The source variables determined from these comparisons correspond strongly with the factor patterns obtained from the latter two combinations described above.

A. Knowledge Instrument

There was a general lack of factor patterns on Q I which is indicative of participants' low level of knowledge about amniocentesis at this point. Many questions were left blank or were answered incorrectly, resulting in little or no correlation between the items.

Factor patterns were present on Qs II and III. Questions 10, 11, and 12 (which inquired about the cytogenetics of normal and Down

syndrome people) described the most apparent source variable, knowledge about the cause of Down syndrome. Two other source variables were apparent as well: knowledge about the meaning of unavoidable problems, (questions 4 and 5), and risks associated with the procedure (questions 8 and 9).

The lack of additional factor patterns among the remaining items on Qs II and III may be a reflection of this instrument's composition. Each item was chosen because it represented a specific aspect of amniocentesis, about which couples should be knowledgeable. There is little or no redundancy among the items, unlike the anxiety scales. It was not expected that groups of questions would load onto factors in a systematic manner, since each should represent a different source variable. Weak patterns are evident though, among items dealing with the same general topic.

B. State Anxiety Instrument

The results of this series of analyses revealed five source variables which were described by items with similar definitions and connotations. (The state and trait anxiety scales consist of items with both positive and negative meanings; "I feel joyful" and "I am worried are examples of "positive" and "negative" items, respectively.) The first source variable was described by items 19 and 20 ("I feel joyful," and "I feel pleasant," respectively) and appears to define a positive, mentally-oriented emotion. Items 1, 2, 5, 10, and 15 ("I feel calm,...secure,...at ease,... comfortable," and "I am relaxed," respectively) describe the second source variable. These items also have positive connotations, but appear to be more physically oriented

than the first source variable.

The third source variable was composed of items 7 and 17 ("I am presently worrying over possible misfortunes," and "I am worried," respectively). These items describe a negative mental emotion, that of "worry." The fourth source variable was composed of questions 13, 14, and 18 ("I am jittery," "I feel 'high strung'," and "I feel over-excited and 'rattled'," respectively). These items describe emotions that are manifested physically.

The last source variable was composed of items 8, 10, 11, and 16 ("I feel rested,...comfortable,...self confident," and "content," respectively). Of these items, the first two are physically oriented, while the last two are mentally oriented emotions. The meanings of these items are more diverse than those of the previous source variables, although they all have positive connotations.

Items 3, 4, 6, 9, and 12 ("I am tense,...regretful," "I feel upset,... anxious," and "nervous," respectively) have negative connotations, and did not pair with any questions in a systematic manner. They did, however, load with items having a negative connotation far more often than those with positive connotations. These items describe both mental and physical emotions, and have more diverse meanings than the items in the previous source variables. These items could have paired with others of the same connotation and emotional type. The reason for their failure to do so on a consistant basis is unclear. It is interesting to note that the only item dealing directly with anxiety (#9, "I feel anxious"), is included in this list. Each of these items may therefore uniquely describe an underlying source

variable, i.e. they define areas of peoples' emotions not touched by the other items.

In summary, five source variables were delineated: (1) a positive, mentally oriented emotion, (2) positive and physically oriented feelings, (3) negative and mentally oriented emotions, (4) negative and physically oriented feelings, (5) positive items which are both physically and mentally oriented.

C. Trait Anxiety Instrument

The results of this series of analyses revealed three underlying source variables, which were described by items with similar connotations and definitions, as seen in the state anxiety instrument. However, the associations among the different items are not as strong.

Items 21, 30, 33, and 36 ("I feel pleasant," "I am happy," "I feel secure," and "I am content," respectively) described the first source variable. These items have positive connotations and appear to describe an emotion that is manifested mentally. The second source variable was composed of the remaining positive items (26, 27, and 39; "I feel rested," "I am 'cool, calm, and collected'," and "I am a steady person," respectively.) These items describe a physically manifested emotion, and were not as strongly associated as the items comprising the first source variable.

The third source variable is identified by questions 29, 31, 37, 38, and 40 ("I worry too much over something that really doesn't matter," "I am inclined to take things hard," "Some unimportant thought runs through my mind and bothers me," "I take disappointments so keenly that I can't put them out of my mind," and "I get in a state of tension

or turmoil as I think over my recent concerns and interests," respectively). The source variable described by these items appears to define a tendency to worry and become depressed.

The eight remaining items did not demonstrate any consistent associations. Each item however, may uniquely define a source variable, as described for the state anxiety scale.

In summary, three source variables were defined. The first was a positive, mentally oriented emotion, and the second was positive and physically oriented. The third defined a tendency to worry and become depressed.

D. Specific Anxiety Instrument

Very strong factor patterns were evident in this series of analyses. Each of the 18 items comprising this instrument paired frequently with two or more other items, resulting in the delineation of six different areas of anxiety about amniocentesis. The items in this discussion and in Appendix 13 have been numbered from 1 to 18 for simplicity. These correspond to numbers 14 to 31 on Q I, and the analagous items on Qs II and III.

These results indicate that the items' variation stems from six source variables. These are anxiety about: (1) accuracy of the testing (items 8, 11, and 13); (2) the spouse's reaction to various aspects of the amniocentesis (items 14 to 17); (3) pregnancy termination (items 9, 10, and 18); (4) fetal injury or miscarriage (items 1, 5, and 6); (5) pain or injury to the mother (items 3, 4, and 7), and (6) the amniocentesis results (items 2 and 12). These source variables apparently comprise all the major areas of anxiety related to prenatal

diagnosis.

It is interesting to note that every item associated very strongly with at least one other question. This was not seen in any of the other instruments. Although no attempt was made to create redundant items, the results clearly indicate the existence of many similarities between the items, and that six underlying source variables are responsible for the observed variation.

Counselors in prenatal diagnosis clinics who are concerned about couple's anxiety can now be aware of these sources of anxiety, and deal specifically with them, even though counselees may not be aware of all the reasons for their anxiety.

E. Specific Concerns

Strong factor patterns were also evident in this series of analyses. The items in this discussion and in Appendix 13 have been numbered from one to ten; these correspond to items a - j on question 37, Q III. Seven of the ten items loaded with one or two other questions in all analyses, resulting in three areas of concern related to future amniocenteses. These were concern about: (1) injury to the mother or fetus, (items 3, 4, and 5); (2) amniocentesis results and pregnancy termination (items 6 and 7); and (3) "having a doctor other than my own during the procedure," and "having my blood drawn" (items 8 and 9). The latter two questions have little in common, unlike the first two source variables. The remaining three questions (concern about pain during the procedure, having fluid withdrawn more than once, and "other") loaded without any apparent patterns, and are obviously dissimilar. It is probable that each of these items is a unique

description of a single source variable, as described for the state and trait anxiety scales.

These items were written with the intent of identifying every source of concern if amniocentesis were to be repeated. The results of this analysis indicate that two clear concerns exist: physical injury to the mother or fetus, and the test results.

SUMMARY AND CONCLUSIONS

A. Effects of Counseling

Knowledge scores on Qs I, II, and III were 39.6 ± 18.8%, 83.0 ± 12.5%, and 77.5 ± 14.6%, respectively (mean ± standard deviation). The differences among them were highly significant ($p < .001$ in all cases). These results indicate that counseling increased the knowledge level of participants and that 77.5% of the information presented during counseling was retained for one month. Anxiety about the amniocentesis fell on each test administration as these values were 43.8 ± 14.4, 37.8 ± 12.8, and 28.8 ± 12.5, for Qs I, II, and III, respectively. (Scale ranges from 18 to 90, $p < .001$ in all cases.) These results indicate that specific anxiety was reduced by counseling and receipt of the amniocentesis results. State and trait anxiety were not affected by counseling, but state anxiety decreased following receipt of the test results (35.4 ± 8.8, and 27.6 ± 6.5 for Qs II and III, respectively; (scale ranges from 20 to 80, $p < .001$). Additional counseling, as provided in this research, has not proven useful in improving knowledge retention or alleviating anxiety because knowledge and anxiety scores were unaffected by the number of counseling sessions.

B. Comparisons Between Those Who Received Normal and Non-normal Amniocentesis Results

Couples who received non-normal amniocentesis results had higher state and specific anxiety levels on Q III than those who received normal results (31.7 ± 10.1 compared to 27.4 ± 6.2 for state anxiety, and 37.5 ± 18.9 compared to 28.3 ± 12.0 for specific anxiety; $p < .05$ in

each case). These scores are high even though additional laboratory testing and counseling provided assurance, in 10 of 15 cases, of fetal normality. These results indicate that amniocentesis does not provide reassurance to all couples who eventually receive normal results.

C. Effects of the Husband's Presence

Women who brought their husbands to the clinic had higher trait and specific anxiety scores than women who came without their husbands (31.8 ± 6.8 compared to 29.7 ± 5.3 for trait anxiety, and 35.7 ± 13.1 compared to 32.5 ± 13.1 for specific anxiety). This suggests that women with high anxiety are more likely to bring their husbands, or that the husbands' own anxiety influences them to accompany their wives. These results indicate that anxiety of both the husband and wife are important in determining whether the husband comes to the clinic. This finding should be useful to genetic counselors in assessing patients' levels of anxiety.

D. Correlations Between Knowledge and Anxiety

These results indicate that knowledge scores on Qs II and III are associated with previous state anxiety measurements ($r = -.123$ for Q II, and $-.157$ for Q III; $p < .05$). However, state anxiety on Qs II and III are not affected by earlier knowledge measurements. A similar finding was made between specific anxiety and knowledge. These data indicate that: (1) patients with high anxiety are poor candidates for learning, and (2) knowledge gained from counseling is not responsible for the observed decrease in specific anxiety between Qs I and II. This latter

observation indicates that the counseling process itself is responsible for the reduced specific anxiety. These findings should be viewed with caution, however, because the correlations are all very low.

E. Path Analyses Among the Instruments

Path analyses among the instruments indicated that the participant's education was the best predictor of knowledge prior to counseling. This variable accounted for 15.4% and 26.7% of the total variation for women and men, respectively, while the remaining variables accounted for less than 2.0% of the variation. A total of 11.0% of the variation in knowledge scores of Q II was determined by the knowledge on Q I among the women, and 6.5% by the educational level for the men. Of the variation in knowledge scores on Q III, a total of 23% was determined by knowledge scores on Q II for both sexes. These results show that the effect of education on knowledge scores a month after counseling is minimal. This helps genetic counselors because it indicates that poorly educated people retain as much information after counseling as those who are highly educated.

State anxiety on Q I determined 8% and 40% of the variation in trait anxiety on Q I for the men and women respectively, and similarly, trait anxiety on Q I determined 8% and 40% of the variation in state anxiety on Q I. The remaining variables contributed little or nothing. A total of 31.5% of the variation in state anxiety scores of Q II were determined by state anxiety of Q I, and 12.3 and 9.0 % by trait and specific anxieties of Q II, respectively. Of the trait anxiety scores on Q II, 72.2% of the variation was determined by trait

anxiety on Q I. A total of 26.8% of the variation of state anxiety scores of Q III was determined by trait anxiety on Q III. Of the trait anxiety scores on Q III, 13.2% and 52.0% of the variation was determined by trait anxiety on Qs I and II, respectively, and 9.3% by state anxiety on Q III. These results indicate that state and trait anxiety are closely related. Trait anxiety is less susceptible to change over time, because 52.0% of trait anxiety on Q III was determined by trait scores on Q II, while state anxiety on Q III was unaffected by state scores on Q II. Because of the constancy of trait compared to state anxiety, it appears that trait anxiety is comparatively unaffected by time and circumstances, whereas state is susceptible to short term changes. These results agree with Spielberger's theory (44).

A total of 17.9% of the variation in specific anxiety scores among the men on Q I was determined by education, 5.9% by trait anxiety, and 4.5% by knowledge. Only 4.6% of the variation in specific anxiety on Q I was determined among the women and that by state anxiety. A total of 57.1% of the variation in specific anxiety scores on Q II were determined by this variable on Q I, and 7.0% by state anxiety on Q II. For specific anxiety on Q III, 15.8% was determined by concerns about a possible future amniocentesis (i.e. "specific concerns"), 11.1 and 5.9% by specific anxiety on Qs I and II, respectively, and 4.5% by state anxiety on Q III. These results indicate that specific anxiety scores are determined by different factors during the amniocentesis experience - education was most influential on Q I, specific anxiety levels on Q II were affected mostly by specific anxiety on Q I, while the Q III scores were affected mostly by specific concerns.

A total of 15.4%, 11.1%, and 6.0% of the total variation of specific concerns scores (measured only on Q III) was determined by specific anxiety on Qs I, II, and III, respectively; 6.2% was determined by state anxiety on Q II and 7.6 % by trait anxiety on Q III. These results indicate that concerns about another amniocentesis in the future are due to anxiety levels throughout the current prenatal diagnosis.

F. Rankings of the Items Comprising the Knowledge and Anxiety Instruments

The questions comprising the knowledge and anxiety instruments were subjected to path and linear regression analyses to determine which items were the best indicators of the variable being measured. The linear regression analyses indicated that about half the items on each anxiety scale and one third of the knowledge items can be eliminated, while retaining 95% of the initial accuracy. These results can be used to simplify these instruments by dropping some items, as follows: (1) knowledge, items 6, 8, and 13; (2) state anxiety, items 2-4, 6-8, 11, 12, 14, 18, and 19; (3) trait anxiety, items 21-25, 29, 32, 34, 35, and 38; (4) specific anxiety, items 1, 3, 4, 7, 8, 10, 12, 13, 16, and 17, and (5) specific concerns, items 1, and 8 - 10.

G. Factor Analyses

Factor analyses were performed on each instrument, which determined the presence of underlying source variables responsible for the data's variation. On the knowledge instrument, three basic factors evolved: (1) the cytogenetics of normal and Down syndrome people, (2) the meaning

of unavoidable problems, and (3) risks associated with the procedure. Basic factors derived for the state anxiety instrument were emotions that were: (1) positive and mental, (2) positive and physical, (3) negative and mental, (4) negative and physical, and (5) positive, with both physical and mental orientations. Three factors derived for the trait anxiety instrument were: (1) positive and mental emotions, (2) positive and physical feelings, and (3) a tendency to worry and become depressed. On the specific anxiety instrument, six factors were delineated. These are anxiety about: (1) accuracy of the testing, (2) the spouse's reaction to various aspects of amniocentesis, (3) pregnancy termination, (4) fetal injury or miscarriage, (5) pain or injury to the mother, and (6) the amniocentesis results. Three factors were present on the specific concerns instrument: (1) injury to the mother or fetus, (2) amniocentesis results, and (3) concerns about the procedure itself.

H. Conclusions

The results of this research will help genetic counselors, particularly those in prenatal diagnosis, to function more constructively and efficiently by recognizing the following factors: (1) Genetic counseling significantly improves counselee's knowledge and reduces their anxiety about prenatal diagnosis. (2) A second genetic counseling session is not useful either in improving knowledge retention or alleviating anxiety. (3) Education is the best positive predictor of knowledge prior to counseling. (4) Patients with high anxiety are poor candidates for learning. (5) Poorly educated people retain as much information a month after counseling as those who are highly educated.

(6) Education is the best positive predictor of anxiety about prenatal diagnosis prior to counseling. (7) The act of counseling itself and not the information presented during counseling is responsible for the observed reduction in specific anxiety. (8) Women accompanied by their husbands are likely to have higher anxiety than women who come alone, and men who come to clinic have higher anxiety about prenatal diagnosis than women. (9) Prenatal diagnosis sometimes increases anxiety, even among those who eventually receive normal results, because couples who initially receive non-normal results continue to have higher than normal anxiety. This high anxiety occurred in spite of additional laboratory testing and counseling which provided assurance of fetal normality. (10) Anxiety about prenatal diagnosis is due to six factors: (a) accuracy of the testing, (b) the spouse's reaction to various aspects of the amniocentesis, (c) pregnancy termination, (d) fetal injury or miscarriage, (e) pain or injury to the mother, and (f) the amniocentesis results. Lastly (11), concerns about another amniocentesis in the future are due to anxiety levels throughout the current prenatal diagnosis.

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APPENDIX 1

State-Trait Anxiety Inventory

SELF-EVALUATION QUESTIONNAIRE

Developed by C. D. Spielberger, R. L. Gorsuch and R. Lushene

STAI FORM X-1

NAME _____ DATE _____

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate circle to the right of the statement to indicate how you *feel* right now, that is, *at this moment*. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

	NOT AT ALL	SOMEWHAT	MODERATELY SO	VERY MUCH SO
1. I feel calm	①	②	③	④
2. I feel secure	①	②	③	④
3. I am tense	①	②	③	④
4. I am regretful	①	②	③	④
5. I feel at ease	①	②	③	④
6. I feel upset	①	②	③	④
7. I am presently worrying over possible misfortunes	①	②	③	④
8. I feel rested	①	②	③	④
9. I feel anxious	①	②	③	④
10. I feel comfortable	①	②	③	④
11. I feel self-confident	①	②	③	④
12. I feel nervous	①	②	③	④
13. I am jittery	①	②	③	④
14. I feel "high strung"	①	②	③	④
15. I am relaxed	①	②	③	④
16. I feel content	①	②	③	④
17. I am worried	①	②	③	④
18. I feel over-excited and "rattled"	①	②	③	④
19. I feel joyful	①	②	③	④
20. I feel pleasant	①	②	③	④

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SELF-EVALUATION QUESTIONNAIRE

STAI FORM X-2

NAME _____ DATE _____

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate circle to the right of the statement to indicate how you *generally* feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

	ALMOST NEVER	SOMETIMES	OFTEN	ALMOST ALWAYS
21. I feel pleasant	①	②	③	④
22. I tire quickly	①	②	③	④
23. I feel like crying	①	②	③	④
24. I wish I could be as happy as others seem to be	①	②	③	④
25. I am losing out on things because I can't make up my mind soon enough	①	②	③	④
26. I feel rested	①	②	③	④
27. I am "calm, cool, and collected"	①	②	③	④
28. I feel that difficulties are piling up so that I cannot overcome them	①	②	③	④
29. I worry too much over something that really doesn't matter	①	②	③	④
30. I am happy	①	②	③	④
31. I am inclined to take things hard	①	②	③	④
32. I lack self-confidence	①	②	③	④
33. I feel secure	①	②	③	④
34. I try to avoid facing a crisis or difficulty	①	②	③	④
35. I feel blue	①	②	③	④
36. I am content	①	②	③	④
37. Some unimportant thought runs through my mind and bothers me	①	②	③	④
38. I take disappointments so keenly that I can't put them out of my mind	①	②	③	④
39. I am a steady person	①	②	③	④
40. I get in a state of tension or turmoil as I think over my recent concerns and interests	①	②	③	④

APPENDIX 2

Questionnaire 1

NAME:_____

EDUCATION: (Please circle the appropriate response).

wife: Highest grade in school completed:
7 or less, 8 9 10 11 12 (high school)
1 2 3 4 5 6 7 or more (college)

husband: Highest grade in school completed:
7 or less, 8 9 10 11 12 (high school)
1 2 3 4 5 6 7 or more (college)

PRESENT OR MOST RECENT OCCUPATION:_____

1) To the best of your knowledge, what disorder(s) will this test detect? (More than one answer may apply.)
_____a. All disorders
_____b. Most disorders; there are only a few that can't be detected
_____c. Most neural tube defects ("open spine" is an example)
_____d. A small percentage of neural tube defects
_____e. No neural tube defects
_____f. All chromosome disorders
_____g. A small percentage of chromosome disorders
_____h. No chromosome disorders
_____i. Cleft lip and/or palate
_____j. Club foot

2) The cells obtained for the chromosome analysis are:
_____a. floating freely in the amniotic fluid
_____b. obtained from membranes (sheets of cells) floating in the amniotic fluid
_____c. scraped off the uterus
_____d. obtained from the placenta

3) These cells are usually
_____a. all dead
_____b. all living
_____c. some are dead and some are living

4) If the cells obtained do not grow, this means that the fetus is
_____a. alive
_____b. likely to be miscarried
_____c. affected with Down's syndrome
_____d. it doesn't mean anything

5) If the doctor is unable to obtain fluid after trying several times, this means that the fetus is
_____a. affected with Down's syndrome
_____b. likely to be miscarried
_____c. it probably doesn't mean anything
_____d. affected with some unknown disorder

6) An ultrasound scan will be given before the procedure. What are the reasons for doing this? (More than one answer may apply.)

_____a. to relax the fetus
_____b. to measure the fetal head size in order to determine how far along my pregnancy is
_____c. to determine where the placenta is
_____d. to look for twins
_____e. to determine if my child will be born breech (feet first)
_____f. to locate the pocket of fluid in order to assist in placing the needle
_____g. to find out where the fetus is so it won't be hit with the needle
_____h. to relax my uterus and abdomen

7) How safe is ultrasound for pregnant women and their fetus?

_____a. very safe, no risk at all
_____b. very small, but unknown risk
_____c. medium risk (1-10%)
_____d. high risk (over 10%)

8) To the best of your knowledge, what is the risk of injury to the fetus, or miscarriage, because of the needle?

_____a. zero risk
_____b. very small but unknown risk of injury (less than half of 1%)
_____c. medium risk (1-10%)
_____d. high risk (over 10%)

9) To the best of your knowledge, what is the risk of injury to the mother?

_____a. zero risk
_____b. very small but unknown risk of injury (less than half of 1%)
_____c. medium risk of injury (1-10%)
_____d. high risk of injury (over 10%)

10) What chromosome when present in excess is responsible for Down's Syndrome (Mongolism)?_____

11) How many copies of this chromosome are found in each cell in most normal people?_____

12) How many copies of this chromosome are found in each cell in people with Down's syndrome?_____

13) To the best of your knowledge, what is your chance of having a child affected with Down's Syndrome?

_____a. about 1 in 1500
_____b. about 1 in 750
_____c. about 1 in 80
_____d. about 1 in 40
_____e. about 1 in 21
_____f. about 1 in 10
_____g. about 1 in 5

The following is a list of items related to amniocentesis about which you may be concerned. Please circle the number corresponding to your level of concern for each item on a scale of 1 through 5, where 1 is low and 5 is high. Please answer all the questions in this section.

I am concerned about:	level of concern low				high
14) The needle hitting the fetus	1	2	3	4	5
15) The results of the test	1	2	3	4	5
16) Pain associated with the procedure	1	2	3	4	5
17) Injury to the mother	1	2	3	4	5
18) Injury to the fetus	1	2	3	4	5
19) A miscarriage caused by the amniocentesis	1	2	3	4	5
20) Abdominal cramps following the procedure	1	2	3	4	5
21) Accuracy of the test	1	2	3	4	5
22) Having to terminate the pregnancy	1	2	3	4	5
23) Morality of terminating the pregnancy	1	2	3	4	5
24) The fact that this test won't detect all birth defects	1	2	3	4	5
25) A neural tube defect ("open spine") defect in the fetus	1	2	3	4	5
26) An error made by the laboratory	1	2	3	4	5
27) My spouse's reaction to the needle hitting... the fetus	1	2	3	4	5
28) My spouse's reaction to injury to the mother.	1	2	3	4	5
29) My spouse's reaction to pain associated with the procedure	1	2	3	4	5
30) My spouse's reaction to a miscarriage caused by the procedure	1	2	3	4	5
31) My spouse's reaction to terminating the pregnancy if a birth defect is found	1	2	3	4	5

---

32) If a serious disorder is detected, what do you think your response will be?

_____ a. terminate the pregnancy
_____ b. not sure
_____ c. continue the pregnancy

33) Did the availability of this test encourage you to start a pregnancy?_____

34) If the answer to the previous question was "yes," about how many children do you plan to have as a result of the availability of this procedure?_____

35) How many children do you currently have as a result of the availability of this test?_____

36) What is your religion?
_____a. Protestant
Which denomination?_____
_____b. Catholic
_____c. Latter Day Saints (Mormon)
_____d. Jewish
_____e. None
_____f. Other (please specify)

37) How would you rate your degree of religious affiliation?
_____a. none
_____b. mild
_____c. moderate
_____d. very substantial

38) Would you recommend this test to others?
_____a. yes
_____b. no
_____c. not sure
Why or why not?_____

---

39) How would you rate your spouse's influence upon your decision to have this test done?

My spouse was:
_____a. strongly influential and in favor
_____b. moderately influential and in favor
_____c. mildly influential and in favor
_____d. mildly influential and not in favor
_____e. moderately influential and not in favor
_____f. strongly influential and not in favor

Thank you very much for your cooperation. Any comments you wish to make will be appreciated.

APPENDIX 3

Questionnaire 2

NAME: _____

1) To the best of your knowledge, what disorder(s) will this test detect? (More than one answer may apply.)
   _____a. All disorders
   _____b. Most disorders; there are only a few that can't be detected
   _____c. Most neural tube defects ("open spine" is an example)
   _____d. A small percentage of neural tube defects
   _____e. No neural tube defects
   _____f. All chromosome disorders
   _____g. A small percentage of chromosome disorders
   _____h. No chromosome disorders
   _____i. Cleft lip and/or palate
   _____j. Club foot

2) The cells obtained for the chromosome analysis are:
   _____a. floating freely in the amniotic fluid
   _____b. obtained from membranes (sheets of cells) floating in the amniotic fluid
   _____c. scraped off the uterus
   _____d. obtained from the placenta

3) These cells are usually
   _____a. all dead
   _____b. all living
   _____c. some are dead and some are living

4) If the cells obtained do not grow, this means that the fetus is
   _____a. alive
   _____b. likely to be miscarried
   _____c. affected with Down's syndrome
   _____d. it doesn't mean anything

5) If the doctor is unable to obtain fluid after trying several times, this means that the fetus is
   _____a. affected with Down's syndrome
   _____b. likely to be miscarried
   _____c. it probably doesn't mean anything
   _____d. affected with some unknown disorder

6) An ultrasound scan will be given before the procedure. What are the reasons for doing this? (More than one answer may apply.)
   _____a. to relax the fetus
   _____b. to measure the fetal head size in order to determine how far along my pregnancy is
   _____c. to determine where the placenta is
   _____d. to look for twins
   _____e. to determine if my child will be born breech (feet first)
   _____f. to locate the pocket of fluid in order to assist in placing the needle
   _____g. to find out where the fetus is so it won't be hit with the needle
   _____h. to relax my uterus and abdomen

7) How safe is ultrasound for pregnant women and their fetus?
   _____a. very safe, no risk at all
   _____b. very small, but unknown risk
   _____c. medium risk (1-10%)
   _____d. high risk (over 10%)

8) To the best of your knowledge, what is the risk of injury to the fetus, or miscarriage, because of the needle?
   _____a. zero risk
   _____b. very small but unknown risk of injury (less than half of 1%)
   _____c. medium risk (1-10%)
   _____d. high risk (over 10%)

9) To the best of your knowledge, what is the risk of injury to the mother?
   _____a. zero risk
   _____b. very small but unknown risk of injury (less than half of 1%)
   _____c. medium risk of injury (1-10%)
   _____d. high risk of injury (over 10%)

10) What chromosome when present in excess is responsible for Down's Syndrome (Mongolism)?_____

11) How many copies of this chromosome are found in each cell in most normal people?_____

12) How many copies of this chromosome are found in each cell in people with Down's syndrome?_____

13) To the best of your knowledge, what is your chance of having a child affected with Down's Syndrome?
   _____a. about 1 in 1500
   _____b. about 1 in 750
   _____c. about 1 in 80
   _____d. about 1 in 40
   _____e. about 1 in 21
   _____f. about 1 in 10
   _____g. about 1 in 5

14) Would you recommend this test to others?
   _____a. yes
   _____b. no
   _____c. not sure
   Why or why not?_____
_____

15) What questions, if any, did you have when you first came here?
_____
_____
_____
Were they answered to your satisfaction? yes____ no____

The following is a list of items related to amniocentesis about which you may be concerned. Please circle the number corresponding to your level of concern for each item on a scale of 1 through 5, where 1 is low and 5 is high. Please answer all the questions in this section.

I am concerned about:	level of concern low				high
16) The needle hitting the fetus.....	1	2	3	4	5
17) The results of the test.....	1	2	3	4	5
18) Pain associated with the procedure.....	1	2	3	4	5
19) Injury to the mother.....	1	2	3	4	5
20) Injury to the fetus.....	1	2	3	4	5
21) A miscarriage caused by the amniocentesis....	1	2	3	4	5
22) Abdominal cramps following the procedure.....	1	2	3	4	5
23) Accuracy of the test.....	1	2	3	4	5
24) Having to terminate the pregnancy.....	1	2	3	4	5
25) Morality of terminating the pregnancy.....	1	2	3	4	5
26) The fact that this test won't detect all birth defects.....	1	2	3	4	5
27) A neural tube defect ("open spine") defect in the fetus.....	1	2	3	4	5
28) An error made by the laboratory.....	1	2	3	4	5
29) My spouse's reaction to the needle hitting...	1	2	3	4	5
the fetus.....	1	2	3	4	5
30) My spouse's reaction to injury to the mother.	1	2	3	4	5
31) My spouse's reaction to pain associated with the procedure.....	1	2	3	4	5
32) My spouse's reaction to a miscarriage caused by the procedure.....	1	2	3	4	5
33) My spouse's reaction to terminating the pregnancy if a birth defect is found....	1	2	3	4	5

Thank you very much for your cooperation. Any comments you wish to make will be appreciated.

APPENDIX 4

Questionnaire 3

NAME: _____

1) To the best of your knowledge, what disorder(s) could this test have detected? (More than one answer may apply.)
   _____a. All disorders
   _____b. Most disorders; there are only a few that can't be detected
   _____c. Most neural tube defects ("open spine" is an example)
   _____d. A small percentage of neural tube defects
   _____e. No neural tube defects
   _____f. All chromosome disorders
   _____g. A small percentage of chromosome disorders
   _____h. No chromosome disorders
   _____i. Cleft lip and/or palate
   _____j. Club foot

2) The cells obtained for the chromosome analysis were:
   _____a. floating freely in the amniotic fluid
   _____b. obtained from membranes (sheets of cells) floating in the amniotic fluid
   _____c. scraped off the uterus
   _____d. obtained from the placenta

3) These cells are usually
   _____a. all dead
   _____b. all living
   _____c. some are dead and some are living

4) If the cells obtained had not grown, this would have meant that the fetus was
   _____a. alive
   _____b. likely to be miscarried
   _____c. affected with Down's syndrome
   _____d. it doesn't mean anything

5) If the doctor had been unable to obtain fluid after trying several times, this would have meant that the fetus was
   _____a. affected with Down's syndrome
   _____b. likely to be miscarried
   _____c. it probably doesn't mean anything
   _____d. affected with some unknown disorder

6) An ultrasound scan was given before the procedure. What were the reasons for doing this? (More than one answer may apply.)
   _____a. to relax the fetus
   _____b. to measure the fetal head size in order to determine how far along my pregnancy is
   _____c. to determine where the placenta is
   _____d. to look for twins
   _____e. to determine if my child will be born breech (feet first)
   _____f. to locate the pocket of fluid in order to assist in placing the needle
   _____g. to find out where the fetus is so it won't be hit with the needle
   _____h. to relax my uterus and abdomen

7) How safe is ultrasound for pregnant women and their fetus?
   _____a. very safe, no risk at all
   _____b. very small, but unknown risk
   _____c. medium risk (1-10%)
   _____d. high risk (over 10%)

8) To the best of your knowledge, what was the risk of injury to the fetus, or miscarriage, because of the needle?
   _____a. zero risk
   _____b. very small but unknown risk of injury (less than half of 1%)
   _____c. medium risk (1-10%)
   _____d. high risk (over 10%)

9) To the best of your knowledge, what was the risk of injury to the mother?
   _____a. zero risk
   _____b. very small but unknown risk of injury (less than half of 1%)
   _____c. medium risk of injury (1-10%)
   _____d. high risk of injury (over 10%)

10) What chromosome when present in excess is responsible for Down's Syndrome (Mongolism)?_____

11) How many copies of this chromosome are found in each cell in most normal people?_____

12) How many copies of this chromosome are found in each cell in people with Down's syndrome?_____

13) To the best of your knowledge, what was your chance of having a child affected with Down's Syndrome?
   _____a. about 1 in 1500
   _____b. about 1 in 750
   _____c. about 1 in 80
   _____d. about 1 in 40
   _____e. about 1 in 21
   _____f. about 1 in 10
   _____g. about 1 in 5

14) If a serious disorder had been detected, what do you think your response would have been?
   _____a. terminate the pregnancy
   _____b. not sure
   _____c. continue the pregnancy

15) With respect to the overall procedure, the most trying aspect was

_____a. finding the right buildings to go to
_____b. having the procedure performed in a different place than the counseling
_____c. the stinging sensation caused by the local anesthetic
_____d. having the needle stuck in my abdomen
_____e. waiting to have the test done
_____f. the counseling session
_____g. deciding to have it done
_____h. trying to cope with the complexities of a big medical center
_____i. having my blood drawn
_____j. keeping my bladder full
_____k. other (please specify)_____

16) Would you recommend this test to others?

_____a. yes
_____b. no
_____c. not sure

Why or why not?_____

The following is a list of items related to amniocentesis about which you may be concerned. Please circle the number corresponding to your level of concern for each item on a scale of 1 through 5, where 1 is low and 5 is high. Please answer all the questions in this section.

At this moment I am concerned about:	level of concern low				high
17) The possibility that the needle hit the fetus	1	2	3	4	5
18) The results of the test	1	2	3	4	5
19) Pain associated with the procedure	1	2	3	4	5
20) Injury to the mother	1	2	3	4	5
21) Injury to the fetus	1	2	3	4	5
22) A miscarriage caused by the amniocentesis	1	2	3	4	5
23) Abdominal cramps following the procedure	1	2	3	4	5
24) Accuracy of the test	1	2	3	4	5
25) Having to terminate the pregnancy	1	2	3	4	5
26) Morality of terminating the pregnancy	1	2	3	4	5
27) The fact that this test won't detect all birth defects	1	2	3	4	5
28) A neural tube defect ("open spine") defect in the fetus	1	2	3	4	5
29) An error made by the laboratory	1	2	3	4	5

At this moment I am concerned about:	level of concern low				high
30) My spouse's reaction to the needle hitting...1	2	3	4	5
the fetus.....1	2	3	4	5
31) My spouse's reaction to injury to the mother.1	2	3	4	5
32) My spouse's reaction to pain associated with the procedure.....1	2	3	4	5
33) My spouse's reaction to a miscarriage caused by the procedure.....1	2	3	4	5
34) My spouse's reaction to terminating the pregnancy if a birth defect is found....1	2	3	4	5

---

35) How would you rate your spouse's influence upon your decision to have this test done?
My spouse was:

_____a. strongly influential and in favor
_____b. moderately influential and in favor
_____c. mildly influential and in favor
_____d. mildly influential and not in favor
_____e. moderately influential and not in favor
_____f. strongly influential and not in favor

36) Did the counseling session(s) influence your decision regarding the procedure in any way?

_____a. it convinced me to go through with it
_____b. it convinced me not to go through with it
_____c. no influence was felt at all
_____d. other (please specify)_____

37) What would be your greatest concerns if you were to have this test performed again for another pregnancy?

I would be concerned with	not at all				very much so
a. pain associated with the procedure....	0	1	2	3	4
b. having fluid withdrawn more than once.	0	1	2	3	4
c. possible injury to the fetus.....	0	1	2	3	4
d. possible injury to the mother.....	0	1	2	3	4
e. possible miscarriage.....	0	1	2	3	4
f. having to decide whether to end the pregnancy.....	0	1	2	3	4
g. the results of the test.....	0	1	2	3	4
h. having a doctor other than my own during the procedure.....	0	1	2	3	4
i. having my blood drawn.....	0	1	2	3	4
j. other (please specify).....	0	1	2	3	4

Thank you very much for your cooperation. Any comments you wish to make will be appreciated.

APPENDIX 5

Analysis of Variance: Effects of Mailing Questionnaire Three

Source of Variation	Degrees of Freedom	Mean Square
Knowledge		
Between groups	1	66.2
Within groups	295	213.9
State Anxiety		
Between groups	1	127.9
Within groups	295	42.0
Trait Anxiety		
Between groups	1	15.4
Within groups	295	42.0
Specific Anxiety		
Between groups	1	335.5
Within groups	295	156.4
Specific Concerns		
Between groups	1	28.0
Within groups	295	37.0

APPENDIX 6

Analysis of Variance: Comparisons Between Thoses Who Received Normal and Non-Normal Amniocentesis Results

Source of Variation	Degrees of Freedom	Mean Square
Knowledge		
Between groups	1	529.3
Within groups	295	212.2
State Anxiety		
Between groups	1	255.3 *
Within groups	295	41.6
Trait Anxiety		
Between groups	1	0.0
Within groups	295	42.1
Specific Anxiety		
Between groups	1	1215.7 *
Within groups	295	153.4
Specific Concerns		
Between groups	1	41.7
Within groups	295	37.0

* Significant at p = .05 according to Scheffe's test.

APPENDIX 7

Analysis of Variance: Effects of Counseling More Than One Family at a Time

Source of Variation	Degrees of Freedom	Mean Square
Knowledge		
Between groups	1	2073.5
Within groups	889	611.9
State Anxiety		
Between groups	1	209.6
Within groups	889	81.1
Trait Anxiety		
Between groups	1	20.3
Within groups	889	48.0
Specific Anxiety		
Between groups	1	11.3
Within groups	889	214.3
Specific Concerns		
Between groups	1	1.7
Within groups	295	37.1

APPENDIX 8

Analysis of Variance: Effect of the Husband's Presence During Counseling

Source of Variation	Degrees of Freedom	Mean Square
Knowledge		
Between groups	1	211.3
Within groups	298	521.2
State Anxiety		
Between groups	1	1.2
Within groups	298	92.5
Trait Anxiety		
Between groups	1	314.2 *
Within groups	298	38.7
Specific Anxiety		
Between groups	1	741.1 *
Within groups	298	171.8
Specific Concerns		
Between groups	1	103.3
Within groups	298	30.3

* Significant at p = .05 according to Scheffe's test

APPENDIX 9

Results of Miscellaneous Questions

A. Education Levels

The mean level of education for women was 3.1 ± 2.4 years of college. Men averaged 4.2 ± 2.6 years of college. Most couples are well-educated, an observation which has been observed in this clinic for many years.

B. Participants' Intended Response to Abnormal Amniocentesis Results

Each participant was asked what their response would be if amniocentesis detected a serious disorder. This question appeared on Qs I and III, in order to determine if participants' feelings changed during this time. Because many women first experience fetal movement during the month they are waiting for the test results, it was thought that maternal attachment might become strong enough to change some people's minds about terminating their pregnancy. The results, given in Table A1, are very similar on each Q. Some of the people in the "not sure" category of Q I made their decision by the time Q III was administered. Most of these people decided they would not terminate the pregnancy.

TABLE A1

PARTICIPANTS' RESPONSE IF A SERIOUS DISORDER IS DETECTED

	women				men			
questionnaire	1		3		1		3	
	#	%	#	%	#	%	#	%
terminate the pregnancy	149	74.5	150	75.0	72	74.2	73	75.3
not sure	43	21.5	37	18.5	22	22.7	19	19.6
continue the pregnancy	8	4.0	13	6.5	3	3.1	5	5.2
total	200	100.0	200	100.0	97	100.0	97	100.0

C. Number of Pregnancies Encouraged by the Availability of Amniocentesis

Fourteen percent of the women said conception was encouraged by the availability of amniocentesis. Four percent were unsure or were only partly encouraged.

D. Number of Children Planned Due to the Availability of Prenatal Diagnosis

Twenty four women said they planned one pregnancy because of the availability of amniocentesis, seven women planned two pregnancies, and two women were unsure about the number of children they planned. Among the 200 women studied, at least 40 children were planned because of the

availability of prenatal diagnosis.

The discrepancy between this and the prior question could be accounted for in two ways. One or both questions may have been misunderstood, or some unplanned pregnancies were allowed to continue because of the availability of prenatal diagnosis. More accurate determination of the effects of prenatal diagnosis on family planning would involve long-term follow-up of these families.

E. Recommendation of Amniocentesis to Others

This question was posed on all three Qs in order to determine if any changes occurred during the amniocentesis process. The vast majority said they would recommend the testing to others. These data are given in Table A2. Most of those who said "no" or were unsure, felt it was not appropriate for them to make such a recommendation.

TABLE A2

RECOMMENDATION OF AMNIOCENTESIS BY PARTICIPANTS

	women						men					
questionnaire	1		2		3		1		2		3	
	#	%	#	%	#	%	#	%	#	%	#	%
response												
yes	164	82.0	176	88.0	188	94.0	70	72.2	84	86.6	91	93.8
no	0	0	1	0.5	2	1.0	1	1.0	1	1.0	3	3.1
not sure	36	18.0	23	11.5	10	5.0	26	26.8	12	12.4	3	3.1
totals	200	100.0	200	100.0	200	100.0	97	100.0	97	100.0	97	100.0

F. Religious Preference

These data are given in Table A3.

TABLE A3

RELIGIOUS PREFERENCE OF PARTICIPANTS

	women		men	
	number	percent	number	percent
Protestant	126	63.0	57	58.8
Catholic	32	16.0	15	15.5
Mormon	3	1.5	1	1.0
Jewish	4	2.0	3	3.1
None	25	12.5	15	15.5
Other	10	5.0	6	6.2
totals	200	100.0	97	100.0

G. Degree of Religious Affiliation

These data are given in Table A4.

TABLE A4

DEGREE OF RELIGIOUS AFFILIATION

	women		men	
	number	percent	number	percent
none	34	17.0	29	29.9
mild	67	33.5	32	33.0
moderate	54	27.0	19	19.6
very substantial	45	22.5	17	17.7
total	200	100.0	97	100.0

H. Spouse's Influence Upon the Decision to Have Amniocentesis

The influence of each participant's spouse upon the decision to have amniocentesis was determined on Qs I and III. These data are given in Table A5. Most participants indicated that their spouse was in favor of the procedure, a result which was expected because those opposed to amniocentesis would probably not undergo the testing (or would not want their wife to, in the husband's case).

TABLE A5

INFLUENCE OF THE SPOUSE UPON THE DECISION TO HAVE AMNIOCENTESIS

questionnaire	women				men			
	1		3		1		3	
	#	%	#	%	#	%	#	%
In favor and:								
strongly influential	68	34.0	82	41.0	58	59.8	73	75.3
moderately influential	51	25.5	56	28.0	22	22.7	16	16.5
mildly influential	78	39.0	59	29.5	15	15.5	7	7.2
Not in favor and:								
mildly influential	2	1.0	2	1.0	2	2.1	1	1.0
moderately influential	1	0.5	1	0.5	0	0	0	0
strongly influential	0	0	0	0	0	0	0	0
totals	200	100.0	200	100.0	97	100.0	97	100.0

I. Did Counseling Answer all the Participants' Questions?

This question was asked on Q II, immediately following counseling. Ninety eight percent of the women, and 96% of the men responded "yes." The remainder left the question blank, perhaps because they did not see the question, as it was on the bottom of the page, following a "fill-in" question. Counselees were usually asked at the

end of counseling if they had any (more) questions, and if so, they were answered. These results are therefore expected. However, some people asked questions the counselor could not answer. It is interesting to note that even these people said their questions had been answered.

J. Influence of Counseling Upon Participant's Decision to have Amniocentesis

This item on Q III was designed to determine if counseling biased people regarding their decision to undergo prenatal diagnosis. The results are given in Table A6.

TABLE A6

INFLUENCE OF COUNSELING UPON THE DECISION TO UNDERGO AMNIOCENTESIS

	women		men	
	number	percent	number	percent
"It convinced me to go through with it"	86	43.0	39	40.2
"It convinced me not to go through with it"	0	0	0	0
"No influence was felt"	60	30.0	28	28.9
"Other"	52	26.0	30	30.9
total	200	100.0	97	100.0

Although the counselor made a resolute attempt not to influence people regarding their decision to undergo amniocentesis, over 40% felt that counseling convinced them to have the test. In contrast to this, no one who completed this item decided against the procedure. However, this question was asked on Q III, which was given only if amniocentesis was performed. Some of the people who were contacted for the group counseled twice decided against amniocentesis after their first counseling session, basing their decision on the slight risk of the procedure, and not because of the counseling. No one who came into the clinic in either research group decided against the testing, except for one women who had been pregnant for 22 weeks. She declined amniocentesis because the results would not be available until after the deadline for pregnancy termination.

About 30% said counseling had no influence on their decision, while about 28% responded "other." This latter group usually included a reason for their response; most said counseling was "informative," or "helpful." These people were apparently not talked into (or out of) the procedure, but neither could they say that counseling was not influential.

K. The Most Trying Aspect of the Overall Procedure

This question was aimed at the <u>one</u> worst aspect of each participant's <u>clinic visit</u>. However, some people gave more than one response, and others did not give any. Therefore, the percentages on Table A7 do not total 100. Numerous people chose the "other" category, usually because their worst part was waiting for the test results.

However, this was not meant to be a choice, as it was already known that this is the worst part for the vast majority of people, and is not actually part of the clinic visit.

Two of the choices were not appropriate for every woman. Some physicians routinely gave a local anesthetic, while others did not, and many women did not have their blood drawn. The men of course had neither of these done, so few men chose these responses. Nine men however, did indicate that the needle insertion into their wife's abdomen was their worst part, so it is clear that some men empathize with their wife to a significant extent.

The worst part of the clinic visit appears to be waiting to have the test performed, and the least bothersome is having a blood sample taken.

Spearman's rank correlation test was performed on these data; the results indicate that the most trying aspects of amniocentesis for men and women are correlated ($r = .716$, $p < .05$).

TABLE A7

THE MOST TRYING ASPECT OF THE OVERALL PROCEDURE

	women		men	
	number	percent	number	percent
Finding the right buildings to go to	12	6.0	15	15.5
Having the procedure performed in a different place than the counseling	7	3.5	9	9.3
The stinging sensation caused by the local anesthetic	15	7.5	1	1.0
Having the needle stuck in my abdomen	58	29.0	9	9.3
Waiting to have the test done	69	34.5	25	25.8
The counseling session	4	2.0	2	2.1
Deciding to have it done	13	6.5	6	6.2
Trying to cope with the complexities of a big medical center	3	1.5	1	1.0
Having my blood drawn	3	1.5	0	0.0
Keeping my bladder full	34	17.0	3	3.1
Other	59	29.5	24	24.7
Total	277	138.5	95	98.0

L. Compliance Rates

The acceptance rate in this study was very high, as indicated in Table A8. The majority of women counseled twice who "dropped out later on" decided against amniocentesis after counseling. Most of these women seriously considered not having amniocentesis prior to counseling, but took advantage of the counseling anyway. These people would not have been contacted for the group counseled once, as these latter participants were approached in person on the morning of the amniocentesis. The people in the group counseled twice were contacted by phone about ten days before their appointment. The difference in the acceptance rate is a reflection of the difference in the manner of contact. The greater level of uncertainty involved in dealing with a stranger over the phone is probably responsible for the higher initial refusal rate among those seen twice.

TABLE A8

RATE OF ACCEPTANCE BY WOMEN (COUPLES) APPROACHED FOR THIS STUDY

	Number Contacted	Number Refused Initially	Number Dropped Out Later On	Total Women Completed	Percent Compliance
One Session	105	2	3	100	95
Two Sessions	126	14	12	100	79

$x^2_1 = 12.42, p < .0005$

APPENDIX 10

Path Analyses Within the Instruments

TABLE A9

PATH ANALYSIS RESULTS

AMOUNT OF KNOWLEDGE SCORE VARIATION DETERMINED BY EACH ITEM

		Questionnaire 1					Questionnaire 2					Questionnaire 3				
		Women		Men		Mean	Women		Men		Mean	Women		Men		Mean
Question	Number of Counseling Sessions	1	2	1	2		1	2	1	2		1	2	1	2	
1		.076	.045	.026	.042	.047	.046	.134	.072	.127	.095	.034	.037	.051	.108	.058
2		.096	.095	.106	.135	.108	.028	.064	.086	.082	.065	.089	.103	.096	.077	.091
3		.124	.102	.110	.117	.113	.096	.038	.124	.062	.080	.089	.056	.136	.094	.094
4		.157	.132	.137	.124	.138	.031	.029	.014	.057	.033	.038	.020	.052	.065	.044
5		.105	.125	.123	.094	.112	.000	.044	.051	.086	.045	.026	.024	-.002	.063	.028
6		.061	.061	.064	.071	.064	.032	.034	.038	.062	.042	.030	.045	.024	.080	.045
7		.097	.072	.016	.048	.058	.136	.074	.093	.097	.100	.076	.099	.117	.051	.086
8		.060	.050	.080	.088	.070	-.011	.017	-.004	.012	.004	.048	.041	.008	.027	.031
9		.050	.087	.076	.117	.083	.021	.060	.026	.072	.045	.045	.084	.019	.047	.049
10		-.001	.033	.055	.018	.026	.193	.182	.177	.122	.169	.121	.155	.182	.099	.139
11		.062	.067	.081	.064	.069	.175	.141	.165	.106	.147	.170	.135	.146	.130	.145
12		.054	.056	.063	.059	.058	.196	.129	.104	.099	.132	.182	.147	.169	.107	.151
13		.060	.075	.062	.023	.055	.056	.053	.053	.017	.045	.052	.056	.005	.055	.042

TABLE A10

PATH ANALYSIS RESULTS

KNOWLEDGE INSTRUMENT, ALL FEMALES, ALL MALES, AND ALL SUBJECTS

	Questionnaire One			Questionnaire Two			Questionnaire Three		
Item	Women	Men	Both	Women	Men	Both	Women	Men	Both
1	.059	.035	.053	.079	.101	.087	.034	.082	.050
2	.095	.118	.103	.045	.084	.059	.094	.083	.092
3	.112	.114	.111	.079	.092	.084	.073	.109	.084
4	.143	.130	.139	.030	.038	.033	.029	.059	.037
5	.118	.115	.116	.016	.070	.035	.025	.033	.028
6	.060	.067	.062	.033	.050	.039	.038	.056	.043
7	.082	.032	.065	.103	.091	.099	.087	.084	.087
8	.055	.083	.065	.004	.006	.005	.044	.017	.036
9	.070	.100	.079	.048	.050	.048	.070	.034	.059
10	.018	.035	.023	.183	.147	.170	.138	.138	.137
11	.065	.069	.066	.159	.134	.150	.151	.137	.145
12	.055	.058	.056	.168	.103	.144	.164	.135	.154
13	.069	.044	.062	.054	.034	.047	.054	.033	.049

TABLE A11

PATH ANALYSIS RESULTS

AMOUNT OF STATE ANXIETY SCORE VARIATION DETERMINED BY EACH ITEM

		Questionnaire 1					Questionnaire 2					Questionnaire 3				
		Women		Men		Mean	Women		Men		Mean	Women		Men		Mean
Question	Number of Counseling Sessions	1	2	1	2		1	2	1	2		1	2	1	2	
1		.049	.056	.066	.056	.057	.055	.062	.056	.072	.061	.062	.071	.069	.042	.061
2		.064	.064	.052	.055	.059	.053	.063	.059	.068	.061	.047	.072	.057	.061	.059
3		.050	.053	.056	.059	.055	.065	.054	.056	.063	.060	.055	.028	.050	.050	.046
4		.020	.031	.017	.043	.028	.013	.021	.027	.002	.016	.026	.028	-.004	.028	.020
5		.057	.056	.064	.062	.060	.058	.062	.069	.068	.064	.051	.057	.066	.047	.055
6		.050	.039	.029	.017	.034	.039	.041	.015	.030	.031	.038	.025	.023	.034	.030
7		.038	.047	.040	.040	.041	.036	.048	.045	.061	.048	.034	.051	.042	.068	.049
8		.036	.036	.047	.051	.043	.046	.031	.061	.036	.044	.052	.031	.065	.039	.047
9		.049	.063	.047	.053	.053	.051	.044	.050	.053	.050	.041	.063	.038	.064	.052
10		.066	.067	.066	.055	.064	.064	.066	.077	.072	.070	.070	.055	.066	.060	.063
11		.060	.053	.057	.070	.060	.062	.059	.059	.048	.057	.064	.071	.060	.051	.062
12		.048	.063	.054	.061	.057	.055	.044	.053	.064	.054	.050	.053	.045	.048	.049
13		.060	.038	.051	.051	.050	.050	.055	.032	.047	.046	.048	.033	.053	.040	.044
14		.042	.041	.038	.036	.039	.037	.044	.022	.040	.036	.039	.028	.041	.041	.037
15		.061	.065	.075	.067	.067	.063	.061	.070	.063	.064	.070	.073	.071	.069	.071
16		.069	.063	.062	.062	.064	.066	.064	.055	.062	.062	.061	.067	.068	.071	.067
17		.052	.061	.061	.059	.058	.050	.059	.065	.058	.058	.049	.069	.063	.073	.064
18		.037	.017	.027	.031	.028	.021	.040	.027	.007	.024	.035	.023	.030	.008	.024
19		.034	.036	.040	.021	.033	.051	.033	.046	.027	.039	.047	.048	.040	.043	.045
20		.058	.050	.050	.053	.053	.065	.049	.056	.058	.057	.059	.056	.058	.065	.060

TABLE A12

PATH ANALYSIS RESULTS

STATE ANXIETY INSTRUMENT, ALL FEMALES, ALL MALES, AND ALL SUBJECTS

	Questionnaire One			Questionnaire Two			Questionnaire Three		
Item	Women	Men	Both	Women	Men	Both	Women	Men	Both
1	.056	.064	.060	.059	.064	.062	.066	.057	.063
2	.064	.053	.058	.058	.064	.058	.059	.058	.059
3	.053	.057	.055	.059	.059	.061	.041	.050	.045
4	.023	.026	.023	.018	.016	.017	.027	.011	.020
5	.059	.065	.063	.060	.069	.062	.054	.058	.055
6	.046	.025	.041	.040	.022	.037	.031	.028	.030
7	.039	.039	.039	.042	.052	.043	.042	.054	.046
8	.033	.047	.039	.038	.049	.041	.042	.053	.045
9	.056	.050	.053	.048	.052	.047	.051	.050	.051
10	.067	.063	.065	.064	.075	.066	.063	.064	.063
11	.055	.061	.056	.060	.054	.057	.068	.056	.064
12	.057	.056	.058	.049	.058	.055	.052	.045	.049
13	.051	.051	.051	.054	.039	.051	.041	.046	.043
14	.039	.036	.038	.041	.030	.039	.034	.041	.036
15	.065	.074	.069	.062	.068	.066	.071	.070	.070
16	.063	.061	.062	.064	.058	.062	.064	.070	.067
17	.053	.061	.055	.054	.062	.056	.059	.067	.062
18	.028	.027	.028	.031	.018	.028	.029	.019	.025
19	.037	.033	.035	.042	.037	.039	.047	.042	.047
20	.058	.051	.053	.057	.057	.054	.058	.061	.060

TABLE A13
PATH ANALYSIS RESULTS
AMOUNT OF TRAIT ANXIETY SCORE VARIATION DETERMINED BY EACH ITEM

Question	Number of Counseling Sessions	Questionnaire 1					Questionnaire 2					Questionnaire 3				
		Women		Men		Mean	Women		Men		Mean	Women		Men		Mean
		1	2	1	2		1	2	1	2		1	2	1	2	
21		.051	.063	.060	.043	.054	.044	.060	.071	.068	.061	.046	.045	.062	.037	.048
22		.047	.059	.025	.017	.037	.035	.036	.017	.037	.031	.042	.040	.035	.026	.036
23		.051	.052	.028	.006	.034	.057	.042	.026	.021	.037	.040	.049	.031	.024	.036
24		.041	.039	.040	.055	.044	.051	.049	.039	.049	.047	.052	.046	.030	.068	.049
25		.020	.033	.033	.049	.034	.028	.034	.034	.058	.039	.029	.031	.040	.045	.036
26		.039	.059	.065	.044	.052	.043	.055	.062	.052	.053	.055	.056	.051	.031	.048
27		.058	.053	.069	.061	.060	.062	.062	.065	.055	.061	.054	.063	.062	.042	.055
28		.044	.051	.050	.059	.051	.049	.054	.054	.049	.052	.053	.046	.049	.063	.053
29		.061	.043	.054	.041	.050	.057	.046	.063	.062	.057	.053	.046	.058	.063	.055
30		.060	.056	.053	.067	.059	.051	.060	.059	.065	.059	.048	.060	.065	.054	.057
31		.059	.038	.049	.071	.054	.058	.053	.045	.044	.050	.065	.042	.052	.059	.055
32		.040	.050	.059	.053	.050	.035	.048	.048	.038	.042	.063	.044	.054	.053	.054
33		.066	.064	.073	.071	.069	.056	.063	.065	.058	.061	.060	.068	.071	.066	.066
34		.053	.027	.039	.041	.040	.054	.030	.038	.041	.041	.042	.032	.045	.029	.037
35		.064	.054	.041	.049	.052	.055	.055	.049	.059	.055	.050	.059	.055	.060	.056
36		.054	.065	.067	.070	.064	.060	.066	.069	.065	.065	.053	.069	.058	.057	.059
37		.040	.048	.034	.047	.042	.057	.038	.038	.053	.047	.049	.051	.031	.064	.049
38		.051	.040	.032	.054	.044	.038	.045	.050	.044	.044	.038	.037	.041	.051	.042
39		.051	.059	.061	.050	.055	.059	.051	.052	.038	.050	.052	.063	.052	.038	.051
40		.050	.046	.065	.051	.053	.052	.054	.059	.045	.053	.055	.057	.060	.073	.061

TABLE A14

PATH ANALYSIS RESULTS

TRAIT ANXIETY INSTRUMENT, ALL FEMALES, ALL MALES, AND ALL SUBJECTS

	Questionnaire One			Questionnaire Two			Questionnaire Three		
Item	Women	Men	Both	Women	Men	Both	Women	Men	Both
21	.059	.053	.056	.053	.069	.059	.046	.051	.047
22	.052	.022	.043	.034	.025	.033	.040	.031	.040
23	.052	.020	.042	.049	.024	.041	.044	.028	.039
24	.041	.056	.043	.050	.042	.046	.049	.046	.048
25	.028	.040	.031	.032	.043	.035	.030	.042	.034
26	.051	.057	.053	.050	.058	.054	.055	.042	.051
27	.057	.066	.060	.063	.062	.063	.059	.053	.057
28	.048	.054	.050	.052	.052	.052	.049	.055	.051
29	.051	.049	.050	.052	.063	.056	.050	.060	.053
30	.057	.059	.057	.056	.061	.057	.054	.060	.056
31	.047	.058	.052	.055	.044	.052	.052	.055	.053
32	.046	.056	.050	.042	.044	.043	.054	.053	.054
33	.064	.072	.066	.060	.062	.060	.065	.068	.066
34	.036	.040	.038	.039	.040	.039	.037	.038	.037
35	.059	.044	.054	.055	.052	.054	.055	.057	.056
36	.061	.068	.062	.063	.067	.064	.062	.057	.060
37	.045	.039	.042	.047	.043	.044	.050	.045	.048
38	.043	.041	.042	.041	.048	.043	.036	.045	.039
39	.056	.057	.056	.054	.047	.052	.058	.046	.054
40	.048	.060	.052	.053	.054	.053	.056	.065	.059

TABLE A15
PATH ANALYSIS RESULTS
AMOUNT OF SPECIFIC ANXIETY SCORE VARIATION DETERMINED BY EACH ITEM

Question	Number of Counseling Sessions	Questionnaire 1					Questionnaire 2					Questionnaire 3				
		Women		Men		Mean	Women		Men		Mean	Women		Men		Mean
		1	2	1	2		1	2	1	2		1	2	1	2	
1		.067	.047	.062	.068	.061	.063	.049	.063	.066	.060	.050	.051	.053	.031	.046
2		.048	.039	.058	.037	.046	.058	.034	.052	.026	.043	.080	.081	.067	.050	.070
3		.038	.039	.050	.038	.041	.047	.052	.050	.045	.049	.051	.044	.061	.041	.049
4		.044	.041	.065	.069	.055	.041	.047	.064	.075	.057	.045	.033	.061	.058	.049
5		.069	.062	.068	.079	.070	.070	.065	.071	.080	.072	.071	.068	.077	.052	.067
6		.066	.062	.052	.078	.065	.067	.068	.057	.071	.066	.059	.069	.048	.061	.059
7		.043	.059	.059	.057	.055	.050	.055	.051	.023	.045	.049	.045	.057	.048	.050
8		.049	.064	.048	.056	.054	.042	.060	.054	.057	.053	.049	.075	.029	.051	.051
9		.062	.062	.052	.019	.049	.061	.061	.041	.041	.051	.069	.067	.053	.062	.063
10		.047	.044	.030	.040	.040	050	.049	.033	.052	.046	.063	.049	.021	.052	.046
11		.039	.057	.061	.066	.056	.046	.055	.048	.054	.051	.047	.035	.044	.044	.043
12		.055	.059	.052	.086	.063	.051	.055	.057	.061	.056	.054	.061	.054	.064	.058
13		.054	.075	.059	.077	.066	.056	.061	.057	.062	.059	.043	.066	.033	.064	.052
14		.066	.062	.066	.062	.064	.057	.057	.071	.063	.062	.061	.053	.075	.068	.064
15		.073	.063	.070	.064	.068	.058	.056	.068	.062	.061	.056	.056	.066	.066	.061
16		.063	.049	.051	.052	.054	.061	.050	.061	.050	.056	.049	.034	.070	.058	.053
17		.068	.067	.057	.043	.059	.065	.067	.060	.059	.063	.054	.054	.066	.063	.059
18		.051	.048	.042	.010	.038	.059	.057	.042	.053	.053	.051	.059	.063	.068	.060

TABLE A16

PATH ANALYSIS RESULTS

SPECIFIC ANXIETY INSTRUMENT, ALL FEMALES, ALL MALES, AND ALL SUBJECTS

	Questionnaire One			Questionnaire Two			Questionnaire Three		
Item	Women	Men	Both	Women	Men	Both	Women	Men	Both
1	.057	.065	.053	.057	.063	.056	.051	.044	.047
2	.044	.048	.041	.047	.043	.044	.081	.060	.071
3	.038	.045	.043	.050	.049	.049	.048	.053	.050
4	.043	.066	.062	.044	.067	.056	.041	.060	.050
5	.066	.074	.064	.067	.074	.067	.070	.066	.068
6	.064	.064	.057	.067	.061	.061	.063	.054	.058
7	.051	.059	.055	.053	.043	.049	.047	.053	.050
8	.056	.051	.054	.050	.055	.052	.058	.039	.050
9	.062	.037	.049	.061	.042	.052	.069	.057	.063
10	.045	.033	.032	.049	.040	.042	.059	.035	.047
11	.048	.063	.047	.050	.050	.048	.041	.044	.041
12	.057	.068	.057	.052	.059	.054	.056	.059	.057
13	.064	.067	.062	.059	.059	.058	.050	.047	.049
14	.064	.064	.071	.056	.067	.064	.058	.072	.064
15	.068	.067	.073	.057	.065	.063	.056	.066	.061
16	.056	.052	.065	.056	.058	.062	.044	.065	.055
17	.068	.051	.067	.066	.059	.066	.054	.065	.059
18	.050	.027	.050	.058	.046	.058	.054	.065	.060

TABLE A17

PATH ANALYSIS RESULTS

AMOUNT OF SPECIFIC CONCERNS VARIATION DETERMINED BY EACH ITEM

		Group				
		Women		Men		Mean
Question	Number of Counseling Sessions	1	2	1	2	
1		.100	.122	.114	.088	.106
2		.120	.121	.097	.121	.115
3		.149	.140	.133	.111	.133
4		.122	.128	.142	.141	.133
5		.125	.126	.130	.125	.127
6		.103	.103	.103	.080	.097
7		.098	.077	.103	.090	.092
8		.088	.084	.092	.126	.098
9		.076	.083	.073	.101	.083
10		.019	.018	.014	.017	.017

TABLE A18

PATH ANALYSIS RESULTS

SPECIFIC CONCERNS INSTRUMENT, ALL FEMALES, ALL MALES, AND ALL SUBJECTS

Item	Women	Men	Both
1	.110	.102	.107
2	.122	.109	.116
3	.144	.123	.136
4	.125	.142	.133
5	.127	.128	.127
6	.102	.092	.098
7	.098	.097	.090
8	.085	.107	.095
9	.078	.085	.081
10	.019	.016	.017

APPENDIX 11

Stepwise Multiple Linear Regression Analyses

TABLE A19

STEPWISE MULTIPLE LINEAR REGRESSION ANALYSIS

Knowledge Instrument, Males and Females in Each Research Group Considered Separately

		Females						Males					
		One session			Two sessions			One session			Two sessions		
Step	Quest-ionnaire	1	2	3	1	2	3	1	2	3	1	2	3
1		4	12	12	4	11	12	11	10	12	2	5	6
2		3	10	3	11	10	9	4	3	10	12	1	4
3		6	7	13	6	1	10	6	5	3	7	2	3
4		2	9	7	5	7	7	5	11	.2	9	7	11
5		7	3	9	9	2	2	3	1	8	3	10	10
6		9	1	10	7	9	3	7	2	7	5	9	7
7		12	2	2	2	5	1	9	7	11	1	11	2
8		13	11	1	13	3	13	13	9	9	8	6	9
9		5	8	4	3	8	6	2	12	1	13	13	1
10		1	13	8	8	13	8	8	13	13	4	3	13
11		8	6	6	1	12	11	1	8	4	6	8	12
12		11	4	11	10	6	5	12	6	5	11	12	5
13		10(5)*		5	12	4	4	10	4	6	10	4	8

Note: Items above the underlined numbers determined the dependent variable level with 95% accuracy.

* This item was answered correctly by all participants in this research group, and therefore is a constant. It was automatically ommitted from the analysis by the computer because it would have caused the correlation matrix to be singular.

TABLE A20

STEPWISE MULITPLE LINEAR REGRESSION ANALYSIS RESULTS

KNOWLEDGE INSTRUMENT ALL FEMALES, ALL MALES, AND ALL SUBJECTS

	Group	Females			Males			All Participants		
Step	Quest-ionnaire	1	2	3	1	2	3	1	2	3
1		4	12	12	4	11	11	4	11	12
2		6	10	10	6	5	3	6	10	10
3		11	1	9	11	2	10	11	1	3
4		3	7	7	2	1	2	2	2	2
5		8	9	2	8	7	6	3	7	7
6		13	3	3	7	10	7	8	9	9
7		2	2	13	5	9	8	5	3	1
8		7	11	1	3	3	4	7	5	13
9		9	13	4	9	13	13	9	13	5
10		5	8	8	13	12	1	13	12	11
11		1	6	6	1	6	9	1	8	8
12		10	4	11	10	8	12	10	6	6
13		12	5	5	12	4	5	12	4	4

TABLE A21

STEPWISE MULTIPLE LINEAR REGRESSION ANALYSIS

State Anxiety Instrument, Males and Females in Each Research Group Considered Separately

		Females						Males					
		One session			Two sessions			One session			Two sessions		
Step	Quest-ionnaire	1	2	3	1	2	3	1	2	3	1	2	3
1		10	16	13	2	15	1	15	10	13	5	1	16
2		13	3	11	12	17	16	10	12	1	13	6	17
3		6	17	15	20	11	9	17	17	11	20	2	20
4		5	10	17	9	13	12	5	8	17	4	12	9
5		7	14	19	14	16	10	6	20	15	3	11	13
6		20	20	8	6	1	20	20	2	19	6	16	15
7		15	5	9	8	20	17	3	3	5	16	5	3
8		9	9	2	11	7	14	8	14	9	18	8	19
9		18	2	18	17	8	11	2	9	10	10	17	5
10		12	19	4	5	12	15	19	19	8	7	9	12
11		2	6	5	19	18	6	13	15	16	17	19	6
12		4	15	3	10	5	13	7	11	2	14	7	8
13		19	7	6	18	3	4	16	6	4	8	13	14
14		8	18	10	1	19	7	14	5	3	9	3	11
15		11	1	7	4	4	8	9	16	7	12	20	7
16		3	8	16	7	2	2	12	7	20	2	18	10
17		17	12	12	3	9	3	11	1	14	19	10	18
18		16	4	1	15	14	5	4	13	18	11	14	1
19		1	11	20	16	10	19	1	18	12	1	15	2
20		14	13	14	13	6	18	18	4	6	15	4	4

Note: Items above the underlined numbers determined the dependent variable level with 95% accuracy.

TABLE A22

STEPWISE MULITPLE LINEAR REGRESSION ANALYSIS RESULTS

STATE ANXIETY INSTRUMENT, ALL FEMALES, ALL MALES, AND ALL SUBJECTS

	Group	Females			Males			All Participants		
Step	Quest-ionnaire	1	2	3	1	2	3	1	2	3
1		2	15	15	15	10	15	15	15	15
2		15	17	17	17	12	13	13	17	13
3		13	10	13	10	2	11	2	10	11
4		17	14	11	20	17	3	5	13	17
5		5	19	4	4	8	7	17	20	19
6		16	1	19	2	6	1	16	2	4
7		6	12	3	18	15	10	20	9	5
8		20	11	8	13	19	20	6	19	9
9		3	16	5	1	9	9	3	6	8
10		7	6	9	19	11	8	7	12	3
11		14	9	2	7	3	17	10	18	2
12		9	18	18	5	14	19	4	8	6
13		11	3	6	14	20	5	14	5	18
14		8	2	7	16	4	16	19	3	7
15		19	8	10	3	7	14	8	16	10
16		18	5	16	8	5	4	12	7	16
17		1	7	12	12	16	18	18	11	12
18		12	20	1	9	18	2	9	1	1
19		4	4	14	11	1	12	11	4	20
20		10	13	20	16	13	6	1	14	14

TABLE A23

STEPWISE MULTIPLE LINEAR REGRESSION ANALYSIS

Trait Anxiety Instrument, Males and Females in Each Research Group Considered Separately

		Females						Males					
		One session			Two sessions			One session			Two sessions		
Step	Quest-ionnaire	1	2	3	1	2	3	1	2	3	1	2	3
1		33	39	33	33	33	36	33	36	33	33	21	40
2		29	31	32	37	27	37	27	38	29	31	28	24
3		23	36	40	23	28	40	26	21	30	30	37	33
4		22	34	26	39	31	23	34	32	40	25	27	30
5		40	24	31	36	36	26	38	37	39	38	22	35
6		35	29	25	28	26	32	31	28	28	32	30	39
7		34	26	23	24	29	38	35	27	21	26	38	29
8		39	40	34	31	32	27	24	24	37	24	32	26
9		30	35	39	27	34	34	23	40	36	36	40	23
10		37	30	35	22	21	35	21	25	26	22	25	38
11		27	32	38	34	23	21	37	26	24	34	39	37
12		24	22	37	38	24	31	39	29	34	21	31	25
13		38	23	22	21	40	28	29	35	35	29	29	34
14		26	25	21	29	22	39	25	33	32	37	24	27
15		25	38	24	35	38	22	28	22	31	28	26	22
16		21	27	27	32	39	24	36	31	22	39	34	21
17		31	33	29	40	37	25	32	34	27	23	23	31
18		32	37	30	26	30	30	30	30	25	27	35	32
19		28	21	28	25	25	29	22	23	38	40	33	36
20		36	28	36	30	35	33	40	39	23	35	36	28

Note: Items above the underlined numbers determined the dependent variable level with 95% accuracy.

TABLE A24

STEPWISE MULITPLE LINEAR REGRESSION ANALYSIS RESULTS

TRAIT ANXIETY INSTRUMENT, ALL FEMALES, ALL MALES, AND ALL SUBJECTS

	Group	Females			Males			All Participants		
Step	Quest-ionnaire	1	2	3	1	2	3	1	2	3
1		33	36	33	33	36	33	33	36	33
2		29	31	40	31	38	29	29	31	40
3		23	39	29	26	21	40	22	39	29
4		39	28	39	24	29	39	35	29	39
5		22	26	25	27	33	35	27	33	34
6		40	29	26	35	22	30	24	24	25
7		24	32	31	29	32	34	28	22	26
8		37	34	34	39	31	26	36	38	31
9		21	30	35	34	37	24	34	28	24
10		35	23	22	23	35	37	38	27	27
11		34	38	24	40	26	25	26	32	25
12		36	27	27	25	27	27	37	37	22
13		27	35	21	21	28	31	32	21	30
14		28	25	38	38	24	23	30	34	38
15		31	40	32	37	40	38	31	40	32
16		26	22	23	30	35	32	39	26	23
17		38	33	37	22	34	22	23	23	37
18		32	24	30	28	23	21	40	35	21
19		25	37	28	32	30	36	25	25	28
20		30	21	36	36	39	28	21	30	36

TABLE A25

STEPWISE MULTIPLE LINEAR REGRESSION ANALYSIS

Specific Anxiety Instrument, Males and Females in Each Research Group Considered Separately

		Females						Males					
		One session			Two sessions			One session			Two sessions		
Step	Quest-ionnaire	1	2	3	1	2	3	1	2	3	1	2	3
1		15	17	14	9	5	6	5	15	5	12	5	14
2		9	1	2	5	9	2	11	2	18	5	18	9
3		13	2	4	13	18	1	3	1	15	16	11	4
4		5	3	18	7	8	8	17	18	11	18	16	8
5		18	9	8	17	11	9	8	11	2	14	12	18
6		12	15	5	11	17	15	12	10	8	11	8	7
7		11	7	3	10	3	11	18	16	7	2	7	16
8		7	11	11	14	10	10	14	14	12	10	9	12
9		14	8	16	2	2	3	10	6	6	7	15	1
10		8	10	9	3	7	18	1	4	9	4	14	2
11		10	12	6	8	14	13	4	12	1	6	10	11
12		2	5	1	12	13	12	2	8	4	13	6	6
13		4	18	17	15	12	17	13	9	3	9	17	15
14		17	6	10	6	6	5	16	13	13	17	3	17
15		3	13	12	18	16	16	9	7	14	3	2	10
16		6	4	13	1	1	14	6	3	17	15	1	13
17		16	16	7	16	4	7	7	17	10	18	13	3
18		1	14	15	4	15	4	15	5	15	1	4	5

Note: Items above the underlined numbers determined the dependent variable level with 95% accuracy.

TABLE A26

STEPWISE MULITPLE LINEAR REGRESSION ANALYSIS RESULTS

SPECIFIC ANXIETY INSTRUMENT, ALL FEMALES, ALL MALES, AND ALL SUBJECTS

	Group	Females			Males			All Participants		
Step	Quest-ionnaire	1	2	3	1	2	3	1	2	3
1		9	5	2	5	5	14	15	5	14
2		5	9	6	12	17	19	5	18	9
3		13	16	4	18	12	7	18	12	7
4		16	13	18	15	8	5	13	8	8
5		18	18	1	3	16	8	2	16	12
6		7	3	8	8	10	12	7	10	18
7		11	2	16	17	6	17	9	7	5
8		14	17	9	10	7	18	11	17	17
9		2	10	11	1	15	6	14	3	2
10		6	7	10	9	18	15	6	9	11
11		18	12	15	13	11	11	4	13	3
12		10	8	3	16	2	2	8	15	10
13		3	11	13	2	3	3	10	2	13
14		12	15	12	7	13	13	3	11	15
15		17	6	5	11	9	10	12	1	1
16		15	1	7	6	14	1	17	6	6
17		1	4	7	4	1	4	1	4	16
18		4	14	14	14	4	16	16	14	4

TABLE A27

STEPWISE MULTIPLE LINEAR REGRESSION ANALYSIS

Specific Concerns Instrument, Males and Females in Each Research Group Considered Separately

	Females		Males	
Step	One session	Two sessions	One session	Two sessions
1	3	3	4	4
2	6	8	7	7
3	2	2	9	8
4	7	6	2	5
5	8	7	6	6
6	10	10	3	1
7	9	1	10	3
8	5	5	1	2
9	1	4	5	10
10	4	9	8	9

Note: Items above the underlined numbers determined the dependent variable level with 95% accuracy.

TABLE A28

STEPWISE MULITPLE LINEAR REGRESSION ANALYSIS RESULTS

SPECIFIC CONCERNS INSTRUMENT, ALL FEMALES, ALL MALES, AND ALL SUBJECTS

Step	Females	Males	All Participants
1	3	4	3
2	6	7	8
3	2	9	7
4	7	2	2
5	8	5	6
6	10	6	1
7	9	10	10
8	1	1	5
9	5	3	4
10	4	8	9

APPENDIX 12

Explanation of the Ranking Method Employed for the Regression Analyses

Item Effectiveness Calculations

x_{ij} = rank of the ith item in the jth analysis

f_{ij} = the frequency of appearance of the ith item in the jth analysis

$i = 1, 2, \ldots n, \quad j = 1, 2, \ldots m$

$$\overline{X}_i = \frac{\sum_{j=1}^{m} x_{ij}}{\sum_{j=1}^{m} f_{ij}}$$

$F_i = \sum_{j=1}^{m} f_{ij}$ = frequency of all appearances of the ith item in all m analyses

D_i = the observed effectiveness of the ith item

$$= \sqrt{\overline{X}_i^2 + F_i^2}, \qquad F_i \leq m$$

Similarly, we define

y = effectiveness of a perfect item in m analyses

$$\overline{Y} = \frac{\sum_{j=1}^{m} y_{ij}}{\sum_{j=1}^{m} f_{ij}},$$

but all Y_{ij} = maximum rank = R_k max,

and $\sum_{j=1}^{m} f_{ij} = m$

therefore, $\overline{Y} = R_{max}$

K = effectiveness of a perfect item

$$= \sqrt{R_{max}^2 + m^2}$$

D_i = coefficient of effectiveness of the ith item

$$= \frac{\text{observed effectiveness}}{\text{perfect item effectiveness}}$$

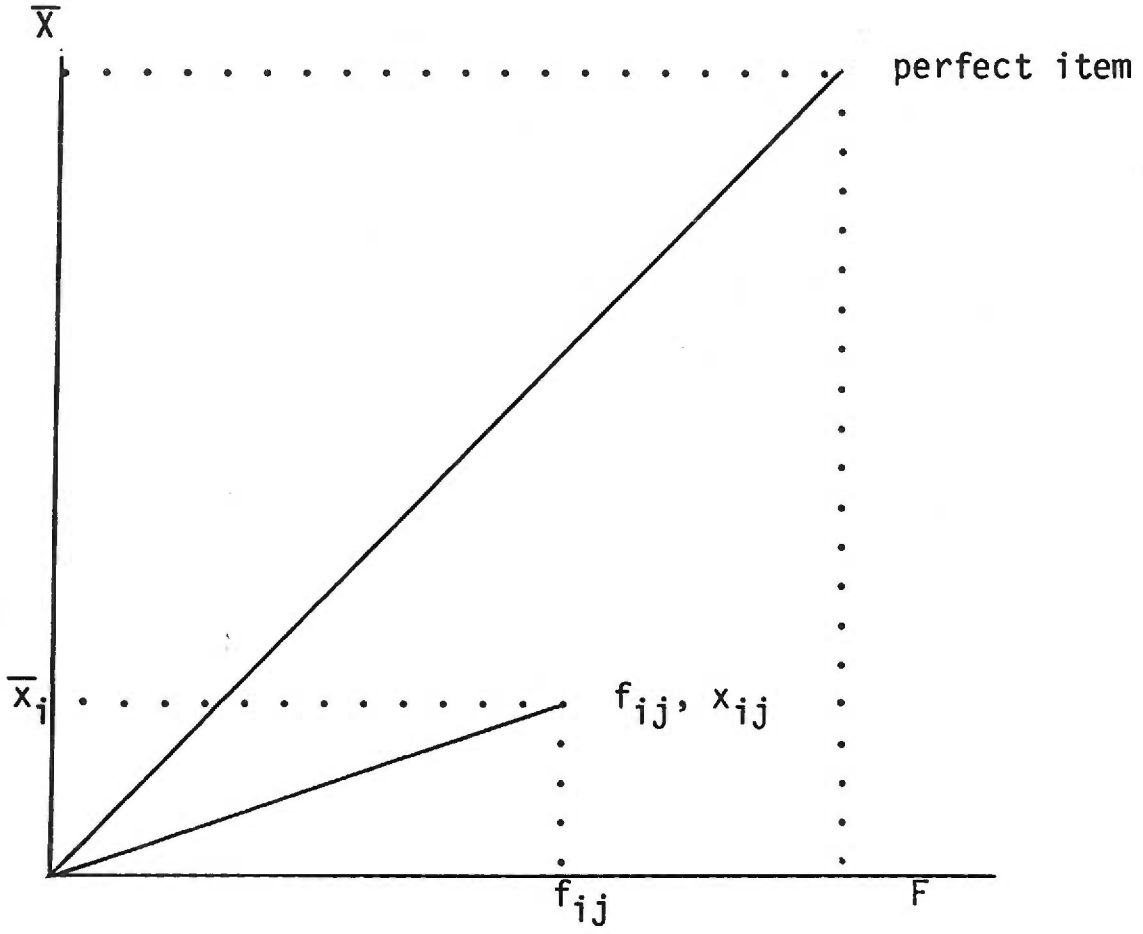
$$= D_i/K$$

EXAMPLE

Order of Appearance Matrix

R_k, Rank of Descending Order Item	10	9	8	7	6	5	4	3	2	1	row totals	weighted totals	D	E
21	1	0	1	0	0	0	1	0	0	2	5	24	6.93	.44
22	0	0	0	1	1	0	0	0	0	2	4	15	5.48	.35
23	0	0	2	1	0	0	1	0	2	0	6	31	7.92	.51
24	0	1	0	0	1	0	1	3	0	0	6	28	7.60	.49
25	0	0	0	1	0	1	0	0	0	2	4	14	5.32	.34
26	0	0	1	1	1	1	2	1	0	1	8	38	9.30	.60
27	0	2	0	1	0	0	1	1	1	0	6	34	8.49	.53
28	0	1	1	0	0	3	0	0	0	0	5	32	8.12	.52
29	0	2	0	0	0	1	2	0	0	0	5	31	7.96	.51
30	0	0	2	1	0	1	0	0	1	1	6	31	7.92	.51
31	0	2	0	1	1	1	0	1	0	0	6	39	8.84	.57
32	0	1	0	1	0	2	0	2	0	0	6	32	8.03	.51
33	7	0	1	0	0	0	0	0	0	0	8	78	12.61	.81
34	0	0	0	2	0	0	1	1	2	0	6	25	7.30	.47
35	0	0	0	0	1	1	1	0	1	2	6	19	6.78	.43
36	2	0	1	0	2	0	0	0	2	0	7	44	9.41	.60
37	0	2	1	0	1	0	0	1	0	1	6	36	8.49	.54
38	0	1	0	0	2	0	2	0	0	1	6	30	7.81	.50
39	1	0	0	1	1	1	0	1	1	0	6	33	8.14	.52
40	1	0	2	1	1	0	0	1	2	0	8	46	9.85	.63

FIGURE



The item effectiveness calculations are illustrated by using the data in Table A23, Appendix 11, as an example. The maximum number of items needed to obtain the 95% accuracy level was 10, i.e. $R_{max} = 10$, so the first 10 items in each column of Table A23 were used to obtain the measure of effectiveness.

The number and order of appearances of each item, as shown in the Example, were considered as the two dimensions of the sample space. These values are taken as the coordinates of effectiveness, as shown in the Figure. The distance, D, between each point and the origin is the item effectiveness. The coefficient of item effectiveness is D/K, where K is the effectiveness of the ideal item, which would be obtained if an item appeared first in every analysis, and D is the effectiveness of the ith item.

APPENDIX 13

Factor Analyses

TABLE A29

KNOWLEDGE FACTOR ANALYSIS, QUESTIONNAIRE ONE

Factor	Women, 1 session	Women, 2 sessions	Men, 1 session	Men, 2 sessions
1	1, 2, 4, 6, 8, 13	2, 3, 4, 5	1, 10, 11, 12	2, 3, 4, 9
2	(11), (12)	(10), (11), (12)	6, (12), (13)	7, (10), (11) (12)
3	10	6, 8, 9, 13	2, (4), (5), (6)	2, 6, 8, 13
4	(3), (5), (7)	1, 7	(8), (9)	5, 7
5	3, 9	-------	3, 6	1, 3, 6
6	-------	-------	6, 7	--------

Note: Items in parentheses have negative loadings.

TABLE A30

KNOWLEDGE FACTOR ANALYSIS, QUESTIONNAIRE ONE

Factor	All Women	All Men	All Participants
1	3, 4, 5, 6, 7 13	2, 3, 4, 5	2, 3, 4, 5, 13
2	(10), (11), (12)	7, (10), (11), (12), (13)	(10), (11), (12)
3	8, 9	1, 6	8, 9
4	1, 2	(8), (9)	1, 6, 7

TABLE A31

KNOWLEDGE FACTOR ANALYSIS, QUESTIONNAIRE TWO

Factor	Women, 1 session	Women, 2 sessions	Men, 1 session	Men, 2 sessions
1	10, 11, 12	11, 12	3, 10, 11, 12	1, 4, 5, 7, 10, 11, 12
2	4, 6	4, 5	2, 4, 5	2, 3, 4, 6
3	7, (9), 10 13	1, 6, 10, 13	2, (7), 9	8, 9
4	(1), 2	2, 3, (7), 10	(11), (12), 13	2, 13
5	3, 8	8, 9	(1), (6), 8	------

Note: Items in parentheses have negative loadings.

TABLE A32

KNOWLEDGE FACTOR ANALYSIS, QUESTIONNAIRE TWO

Factor	All Women	All Men	All Participants
1	11, 12	3, 10, 11, 12	10, 11, 12
2	2, 4, 5	2, 3, 4, 5, 6	2, 4, 5
3	1	2, (7), 9	7, (9)
4	(10), (13)	10, 13	10, 13
5	3, 6, (8)	8	1
6	(7), 9	1	(3), (6), 8

TABLE A33

KNOWLEDGE FACTOR ANALYSIS, QUESTIONNAIRE THREE

Factor	Women, 1 session	Women, 2 sessions	Men, 1 session	Men, 2 sessions
1	2, 10, 11, 12	10, 11, 12	3, 11, 12	6, 11, 12
2	(7), 8, 9	3, 4, 5, 6	6, 8, 9	2, 3, 8
3	4, 5	2, 8, 9, 13	1, 2, 13	4, 5, 7, 10
4	6, 13	1, (3), 7, (13)	(4), (5)	8, 9, (13)
5	(1), 3, (5)	-------	7, 10, (13)	1 ,6

Note: Items in parentheses have negative loadings.

TABLE A34

KNOWLEDGE FACTOR ANALYSIS, QUESTIONNAIRE THREE

Factor	All Women	All Men	All Participants
1	10, 11, 12	11, 12	11, 12
2	3, 4, 5	(7), 8, 9	3, 4, 5
3	2, 8, 9	4, 5	8, 9
4	6, 13	(10), 13	6
5	2, 7, 10	1, 6	2, 13
6	(1), 3, (5)	2, 3	1, 7, 10

TABLE A35

STATE ANXIETY FACTOR ANALYSIS, QUESTIONNAIRE ONE

Factor	Women, 1 session	Women, 2 sessions	Men, 1 session	Men, 2 sessions
1	1, 2, 3, 5, 6, 10, 11, 15, 16	1, 2, 5, 8, 10, 11, 15, 16	1, 3, 12, 13, 14, 15	1, 2, 5, 6, 8, 10, 16
2	13, 14, 18	3, 6, 9, 12 13, 14, 17, 18	(2), (7), (9), (17)	13, 14, 18
3	4, 6, 7, 17	4, 19, 20	4, 6, 19	(3), 7, (12), (15)
4	3, (4), (9), (12), (17)	(7), (17)	5	4, 11, 16, 19 20
5	8, 19, 20	-------	5, 8, 10, (11), (16),	(4), (7), (9) (13), (17) 18, 19, 20

Note: In this and the following five tables, the underlined numbers are items with positive connotations, as described in the text, and numbers in parentheses had negative values.

TABLE A36

STATE ANXIETY FACTOR ANALYSIS, QUESTIONNAIRE ONE

Factor	All Women	All Men	All Participants
1	2, 4, 5, 8, 10, 11, 15, 16, 19, 20	1, 2, 5, 8 10, 11, 16, 19, 20	1, 3, 5, 9, 10, 12, 15
2	13, 14, 18	2, 7, 9, 17, 19	(2), (5), (8), (10), (11), (16) (19), (20)
3	4, 6, 7, 9 12, 17	(1), (3), (12), (15)	4, 6, 7, 9, 17
4	(1), (3), (5), (9), (10), (12), (15)	(13), (14), (18)	13, 14, 18
5	-----	4, 6, 19	-----

TABLE A37

STATE ANXIETY FACTOR ANALYSIS, QUESTIONNAIRE TWO

Factor	Women, 1 session	Women, 2 sessions	Men, 1 session	Men, 2 sessions
1	1, 2, 5, 10 11, 15, 16	1, 3, 5, 9, 12, 15	1, 2, 5, 10 11, (14), 15	1, 2, 3, 7, 9, 10, 12 13, 15, 17, 20
2	4, 13, 14, 18	13, 14, 18	3, 4, 6, 13 18	6, 18
3	6, 7, 9, 12, 17	2, 8, 10, 11, 16, 19, 20	8, 9, 12, 14, 15, 16	4, 14, 16
4	3, (4), 8, 12	4, 6, 7, 17	7, 17	(9), 14, 19
5	19,20	-----	11, 16, 19, 20	(2), (8), (11), (14)

TABLE A38

STATE ANXIETY FACTOR ANALYSIS, QUESTIONNAIRE TWO

Factor	All Women	All Men	All Participants
1	1, 2, 5, 8, 10, 11, 15, 16, 19, 20	1, 2, 3, 5, 10, 12, 15	2, 5, 8, 10, 11, 15, 16, 19, 20
2	4, 13, 14, 18	4, 6, 18	4, 6, 13, 14, 18
3	(1), (3), (5), (9), (12), (15)	8, 10, 11, 16 19, 20	(1), (3), (5), (9), (12), (16)
4	4, 6, 7, 10 17	7, 9, 17	7, 9, 17
5	-----	(8), (9), (12), (13), (14)	-----

TABLE A39

STATE ANXIETY FACTOR ANALYSIS, QUESTIONNAIRE THREE

Factor	Women, 1 session	Women, 2 sessions	Men, 1 session	Men, 2 sessions
1	1, 2, 3, 5, 8, 10, 11, 15	1, 2, 5, 14, 15	1, 2, 3, 5 8, 10, 15	2, 7, 14, 15, 16, 17
2	6, 9, 12, 13 14, 18	(16), (19), (20)	3, 9, 12, 13, 14, 17	3, 12, 17, 18
3	7, 17	(8), (10), (11)	(6), (14), (18)	4, 6, 13, 14
4	2, 4, 16, 19 20	(4), (6)	(9), 19, 20	(1), 8, (9), (11), (12)
5	-----	12, 13, 14, 18	7	19, 20
6	-----	3, 7, 9, 12, 17	(2), 4, (5), (10), (11), (16)	5, 10, 11

TABLE A40

STATE ANXIETY FACTOR ANALYSIS, QUESTIONNAIRE THREE

Factor	All Women	All Men	All Participants
1	1, 2, 5, 8, 10, 11, 15, 16	1, 2, 5, 8, 10, 11, 15, 16, 20	1, 2, 5, 8, 10, 11, 15, 16
2	3, 6, 9, 12, 13, 14, 18	3, 7, 9, 12, 13, 14, 17	3, 4, 6, 12, 13, 14, 18
3	4, 16, 19, 20	3, 4, 6, 13, 18	4, 17, 19, 20
4	(7), (9), (17)	14, 19, 20	7, 9, 12, 17

TABLE A41

TRAIT ANXIETY FACTOR ANALYSIS, QUESTIONNAIRE ONE

Factor	Women, 1 session	Women, 2 sessions	Men, 1 session	Men, 2 sessions
1	21, 30, 33, 36	21, 24, 30, 33, 36	21, 26, 30, 36, 39	28, 31, 33, 35, 36, 38, 39, 40
2	22, 23, 28, 31, 38, 40	(24), 29, 31, 37, 38, 40	22, 29, 31, 37	24, 29, 30, 37, 40
3	(24), (25), (28), (32), (35)	22, 26, 27, 37, 39	23, 25, 27, 32, 33	(25), (27), (32), (34), (40)
4	(29), (34), (37)	25, 34	24, 34, 35	22, 26
5	27, 33, 39	(22), (23) (28), (31), (32), (35)	(24), (27), (28), (29), (38), (39), (40)	21, 26, 30
6	27, 22, 26	-------	-------	23, 32, (36)

TABLE A42

TRAIT ANXIETY FACTOR ANALYSIS, QUESTIONNAIRE ONE

Factor	All Women	All Men	All Participants
1	21, 30, 33, 36	27, 28, 33, 36, 38, 39, 40	21, 24, 30, 33, 35, 36
2	29, 31, 34, 37, 38, 40	22, 29, 31, 37	28, 29, 31, 34, 37, 38, 40
3	21, 22, 26, 27, 39	23, 25, 27, 32, 33, 34	(25), (32), (33)
4	(22), (23), (28), (31), (35)	22, (24), (30), (34), (35)	22, 23, 31, 35
5	24, 25, 32, 34	21, 26, 30, 33, 35, 36	26, 27, 39

TABLE A43

TRAIT ANXIETY FACTOR ANALYSIS, QUESTIONNAIRE TWO

Factor	Women, 1 session	Women, 2 sessions	Men, 1 session	Men, 2 sessions
1	23, 31, 34, 37	21, 24, 30, 33, 35, 36	21, 24, 26, 28, 29, 30, 33, 35, 36, 40	21, 24, 25, 26, 29, 33, 37
2	(21), (26), (27), (30), (32), (33), (36) ,(39)	29, 31, 37, 38, 40	22, 23, 27, 31, 37, 38 40	(22), (31), (35), (38)
3	24, 25, 28 34, 38, 40	22, 23, 28 31, 32, 35	27, 29, 31, 34	(26), (30), (36), (39)
4	(35)	25, 28, 32 34	25, 32, 39	27, 32
5	22, 26, 29 37, 38, 40	26, 27, 39	------	(22), 29, 40
6	-----	-----	-----	14
7	-----	-----	-----	23, 28

TABLE A44

TRAIT ANXIETY FACTOR ANALYSIS, QUESTIONNAIRE TWO

Factor	All Women	All Men	All Participants
1	21, 24, 26, 27, 30, 32, 33, 36, 39	21, 26, 27, 28, 30, 33, 36, 39, 40	21, 24, 26, 30, 33, 36
2	29, 37, 38, 40	22, 26, 29, 31, 35, 38	29, 31, 37, 38, 40
3	24, 25, 28, 34	27, 32, 33, 34, 39	24, 25, 28, 34
4	(22), (23), (28), (31), (35)	(23), (37), 39, (40)	22, 23, 28 31, 35
5	-----	21, 24, 25, 29, 32, 35	27, 32, 33, 39

TABLE A45

TRAIT ANXIETY FACTOR ANALYSIS, QUESTIONNAIRE THREE

Factor	Women, 1 session	Women, 2 sessions	Men, 1 session	Men, 2 sessions
1	24, 28, 33 35, 36	21, 22, 24 26, 27, 30, 33, 36, 39	21, 24, 30, 33, 35, 36, 39	24, 25, 28, 29, 30, 31, 33, 35, 36, 38, 40
2	22, 33, 28, 29, 31, 34, 37, 38, 40	23, 28, 32, 35, 40	26, 27, 29, 31, 35, 38	(22), (35), (37), (40)
3	21, 26, 27, 30, 32, 33, 39	22, (24), 26	25, 32, 33, 34, 37	(23), (24), (25), (32), (34)
4	(24), (25), (32)	25, 31, 38	23	39
5	-----	25, 29, 34 37	22, 26, 28, 40	21, 24, 26, 27, 33, 36, 37

TABLE A46

TRAIT ANXIETY FACTOR ANALYSIS, QUESTIONNAIRE THREE

Factor	All Women	All Men	All Participants
1	21, 26, 27, 30, 33, 36, 39	21, 26, 27, 30, 33, 36, 39	23, 24, 28, 33, 35, 36
2	23, 25, 29, 31, 32, 34, 37, 38	24, 28, 29, 31, 35, 38, 40	25, 28, 29, 31, 32, 34, 37, 38, 40
3	22, (24), 26	(22), (26), (40)	21, 26, 27, 30, 33, 36, 39
4	(24), (28), (32), (33), (35), (40)	23, 25, 32	(22), (26)
5	-----	32, 34, 37	

TABLE A47

SPECIFIC ANXIETY FACTOR ANALYSIS, QUESTIONNAIRE ONE

Factor	Women, 1 session	Women, 2 sessions	Men, 1 session	Men, 2 sessions
1	1, 5, 6	2, 8, 9, 11, 12, 13	4, 5, 8, 11, 13, 14, 15, 16	1, 4, 5, 6
2	9, 10, 17, 18	(1), (5), (6), (13)	2, 8, 9, 10, 17, 18	9, 10, 18
3	2, 8, 11, 12, 13	(14), (15), (16), (17)	2, 12, 13, (14), (15), (16), (17), (18)	3, 16
4	(14), (15) (16), (17)	3, 4, 7	1, 5, 6, 13, 14, 17	7, 12, 14 15, 17
5	3, 4, 7, 16	9, 10, 17 18	3, 7, 12, 14, 16	(2), (8), (11), (13)

Note: Items in parentheses have negative loadings.

TABLE A48

SPECIFIC ANXIETY FACTOR ANALYSIS, QUESTIONNAIRE ONE

Factor	All Women	All Men	All Participants
1	14, 15, 16, 17	1, 4, 5, 6	14, 15, 16, 17, 18
2	2, 9, 10, 17, 18	2, 9, 10, 18	2, 9, 10, 18
3	2, 8, 11, 12, 13	14, 15, 16, 17	1, 5, 6
4	3, 4, 7	3, 4, 7, 10	2, 8, 11, 12, 13
5	1, 5, 6	2, 8, 11, 12, 13, 15	3, 4, 7, 16

TABLE A49

SPECIFIC ANXIETY FACTOR ANALYSIS, QUESTIONNAIRE TWO

Factor	Women, 1 session	Women, 2 sessions	Men, 1 session	Men, 2 sessions
1	2, 8, 11, 12 13	14, 15, 16 17, 18	3, 4, 5, 7 15, 16	4, 5, 14, 15 16, 17, 18
2	3, 4, 7	2, 8, 9, 10 11, 12, 13	2, 5, 6, 9, 10, 12, 18	1, 9, 10, 17 18
3	(14), (15) (16), (17)	(1), (5), (13)	1, 6, 8, 11, 12, 13, 14, 15, 17	(4), (5), (6), (8), (11), (12), (13)
4	(1), (5), (6)	3, 4, 6, 7, 11	(14), (15), (16), (17), (18)	2, 12, 16
5	9, 10, 18	-----	-----	1, 3, 6, 7 10

Note: Items in parentheses have negative loadings.

TABLE A50

SPECIFIC ANXIETY FACTOR ANALYSIS, QUESTIONNAIRE TWO

Factor	All Women	All Men	All Participants
1	14, 15, 16, 17, 18	3, 4, 5, 7, 15, 16	1, 5, 6
2	2, 8, 11, 12, 13	2, 9, 10, 12, 18	(14), (15), (16), (17), (18)
3	1, 5, 6	(1), (5), (6), (8), (11), (12), (13)	2, 9, 10, 18
4	(2), (9), (10), (18)	(14), (15), (16), (17), (18)	2, 8, 11, 12, 13
5	3, 4, 6, 7	-----	3, 4, 7, 16

TABLE A51

SPECIFIC ANXIETY FACTOR ANALYSIS, QUESTIONNAIRE THREE

Factor	Women, 1 session	Women, 2 sessions	Men, 1 session	Men, 2 sessions
1	3, 4, 6, 7, 14, 15, 16, 17	2, 9, 10, 12, 18	1, 2, 3, 4, 5, 6, 7, 12, 14, 15, 16 17	2, 3, 4, 6 7, 9, 10, 12, 13, 14, 15, 16, 17 18
2	2, 8, 11, 13	(14), (15) (16), (17)	9, 10, 18	8, 10, 11, 12, 13
3	(2), (3), (4), (9), (10), (12) (18)	(3), (7) (16)	1, 5, 8, 11 13	(1), (4), (5), (8), (14)
4	(1), (5), (6), (14)	1, 4, 5, 6, 14, 15	-----	-----
5	-----	8, 11, 13	-----	-----

Note: Items in parentheses have negative loadings.

TABLE A52

SPECIFIC ANXIETY FACTOR ANALYSIS, QUESTIONNAIRE THREE

Factor	All Women	All Men	All Participants
1	14, 15, 16 17	1, 2, 3, 4, 5, 6, 7, 9, 12, 14, 15, 16, 17, 18	1, 3, 4, 5, 6, 7, 12, 14, 15, 16, 17
2	8, 11, 13	1, 5, 8, 11, 13	1, 5, 8, 11, 13
3	(2), (9), (10), (12), (18)	9, 10, 18	(2), (9), (10), (12), (18)
4	(1), (5), (6), (14)	-----	-----
5	3, 4, 7, 12	-----	-----

TABLE A53

SPECIFIC CONCERNS FACTOR ANALYSIS

Factor	Women, 1 session	Women, 2 sessions	Men, 1 session	Men, 2 sessions
1	3, 4, 5	1, 4, 8, 9	1, 2, 3, 4, 5	1, 4, 5, 8, 9, 10
2	1, 2, 8, 9 10	3, 4, 5	(3), (5), (6), (7), 10	(2), (3), (4), (5)
3	6, 7	(1), (2), (10)	(8), (9)	2, 6, 7, 8
4	-----	6, 7	-----	-----

TABLE A54

SPECIFIC ANXIETY FACTOR ANALYSIS

Factor	All Women	All Men	All Participants
1	3, 4, 5	2, 3, 4, 5, 6, 7	3, 4, 5
2	1, 8, 9	1, 2, 8, 9, 10	1, 8, 9
3	6, 7	-----	6, 7
4	1, 2, 10	-----	1, 2, 10