Psychological Responses of Fathers and Mothers to Amniocentesis

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PSYCHOLOGICAL RESPONSES
OF FATHERS AND MOTHERS TO AMNIOCENTESIS

BY

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THESIS
Submitted in partial fulfillment of the requirements for the Master of Science degree in Clinical Psychology in the Graduate Studies Program of the College of Arts and Sciences University of Central Florida
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1985
ABSTRACT

Amniocentesis is one of the most widely used prenatal diagnostic techniques for congenital disorders. It was hypothesized that the psychological responses of mothers and fathers to amniocentesis during high-risk pregnancies would be positively correlated on scales of Symptomatology (Anxiety, Depression, Anger, and Somatic Complaints) and Well-Being (Relaxed, Contented, Friendliness, and Somatic Well-Being). It was also hypothesized that Symptomatology would be negatively correlated with Well-Being. Nineteen couples, who were referred by their physicians, voluntarily participated in the study. Each partner completed the Symptom Questionnaire (Kellner, 1983), a self-rating scale of Symptomatology and Well-Being, in addition to the Pre-Amniocentesis and Post-Amniocentesis Questionnaires (original questionnaires developed for this study) at intervals prior to and following the procedure, while awaiting results. A Pearson product-moment correlation of the total scores revealed a positive correlation ($p < .05$) between the scores of fathers and mothers on the Symptomatology Scale, both pre- and post-amniocentesis ($r = .47$ and $.47$). In addition, there was a significant negative correlation ($p < .05$) between Symptomatology and Well-Being scores for both mothers ($r = -.55$ and -.60) and fathers ($r = -.48$ and -.74) at the pre- and post-amniocentesis periods, respectively. The hypothesis cannot be completely accepted because the positive
correlation does not exist at the post-amniocentesis level. Mothers appear to experience more Symptomatology and less Well-Being than fathers at the post-amniocentesis level. The results are interpreted to suggest that fathers and mothers may both benefit from pre- and post-amniocentesis supportive intervention.
ACKNOWLEDGEMENTS

In completing this thesis, there are a number of individuals who provided assistance to the author for which she is indebted.

The author is deeply grateful to the Co-Chairmen of her Thesis Committee, Burton Blau, Ph.D. and Anne Diebel, Psy.D., and to Committee member, John McQuire, Ph.D., for their knowledgeable advice and unwavering support throughout the study. Their professional and academic expertise was instrumental in the success of this research. In addition, David Abbott, Ph.D. contributed his time through his assistance with statistical issues.

Robert Kellner, M.D., Ph.D. generously allowed the usage of his Symptom Questionnaire and gave his personal interest in the study as exemplary concern in furthering research methods.

Without the assistance of the numerous Winter Park and Orlando physicians who gave their enthusiasm, as well as their patients, this study could not have been completed. It is hopeful that the implications for the outcome can be useful to them in their own practices.

Finally, the contributions and support of the author's family have been immeasurable. Her parents instilled the importance of higher education into her and her siblings at an early age. Her father, Edward F. Danowitz, Ph.D., has been an example of respectability and academic excellence. In addition, her husband, Al,
and daughter, Andrea, have given their patience and encouragement, as well as many personal sacrifices in order to allow the dream to be fulfilled.
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INTRODUCTION

Amniocentesis is one of the most widely used and best known prenatal diagnostic techniques for congenital disorders. It is becoming an increasingly available option during the pregnancies of women with specific high risk factors. Amniocentesis is a diagnostic procedure that can be performed between the 16th and 18th weeks of pregnancy by a physician under sterile conditions and with simultaneous ultrasonography. A sample of amniotic fluid is obtained by the insertion of a large gauge needle into the amniotic sac within the uterus. This sample is then sent to specialized laboratories for a variety of diagnostic tests (Verp & Gerbie, 1981). The nature of the tests undertaken is dependent upon the individual indications for the procedure (Pritchard & MacDonald, 1980).

The criteria for genetic risk include the following conditions: advanced maternal age (35 years or over at the time of delivery); a family history of a previous child with a chromosomal abnormality (i.e., Down's Syndrome, Turner's Syndrome); history of a previous child with a biochemical disorder (i.e., cystic fibrosis, phenylketonuria, Tay-Sach's disease); family history of an open neural defect (i.e., spina bifida); a parent who is a known carrier of a detrimental x-linked gene (i.e., hemophilia, Duchenne's muscular dystrophy); or a history of three or more spontaneous abortions (Depp, Eschenback, & Sciarra, 1984; Fava, Kellner, Michelacci,
Trombin, Pastrak, Orlandi, & Bouvicelli, 1982; Finley, Varner, Vinson, & Finley, 1977; March of Dimes).

The time interval necessary to receive the complete test results generally varies from two to four weeks, depending upon the specific type of information that is requested. According to Reeder, Mastroianni, and Martin (1983), the procedure itself, the period awaiting results, and the implications from the results may create a stressful situation for the parents.

It is important that the patient receives thorough genetic counseling prior to the decision to schedule amniocentesis, in order to be aware of the available options. The benefits and risks to both the mother and the fetus should be openly discussed. The couple's reproductive history is typically studied in order to determine the degree of risk for occurrence of genetic or chromosomal disorders.

According to Temple (1983), the most crucial aspect of pre-amniocentesis counseling is to enable the couple to make a free and responsible decision based upon both their knowledge and their moral values. They must be aware that, although the procedure is at least 99.4% accurate in terms of diagnosis (Fletcher, 1981), favorable results do not necessarily guarantee a child free of defect. There are currently over 100 tests that are available with amniocentesis, but not all birth defects are responsive to diagnostic measures.

The couple must realize that they have a decision to make: whether or not to undergo the procedure, as well as choice in terms of the pregnancy outcome, pending the results. An abnormal diagnosis may
be handled by abortion or by working through and accepting the idea of an abnormal child. The limits and strengths of either decision should be discussed openly, with the final decision being left to the parents (Temple, 1983).

Because amniocentesis has become more common, its psychological importance has become a new area of research. Studies have looked at aspects of amniocentesis including maternal anxiety, factors in the decision to undergo the procedure, and concerns regarding the procedure. Of 196 patients who responded to a study conducted by Finley et al. (1977), 11 amniocentesis patients received abnormal results. Of the 11, 8 elected to terminate the pregnancy and 3, to deliver abnormal infants at term.

In a study by Davies and Doran (1981), 74 women sought pre-amniocentesis counseling. Of the 74, 66 underwent the procedure and 8 decided to forego it. Ninety-six percent of those women claimed that the main benefit of the amniocentesis was the reassurance that their children did not have Down's Syndrome. Two women had previously undergone amniocentesis with earlier pregnancies and emphasized the importance of the reassurance provided by the test results. In addition, eight of the women identified the added benefit of sex-typing. Of the eight women who decided against the procedure, three believed that the possibility of a false sense of everything being normal when an abnormality could actually be present but not detected, created no advantage for the procedure. Four women
verbalized a moral stand against abortion if abnormal results were detected and elected not to undergo the amniocentesis for this reason.

A study of maternal anxiety by Chervin, Farnsworth, Freedman, Duncan, and Shapiro (1977), which used mailed questionnaires, revealed that 61% of the women undergoing amniocentesis reported their estimations of a moderate degree of anxiety related to the possibility of an abnormal baby. In addition, 23% of the women reported a high degree of anxiety prior to the amniocentesis in relation to the procedure itself, and an additional 42% reported a moderate degree of anxiety, in this respect. Beeson and Golbus (1979) used the State-Trait Anxiety Inventory to study amniocentesis-related anxiety and found that a higher degree of anxiety was experienced by women who had previously given birth to a chromosomally defective child than by women whose indication for the procedure was advanced maternal age.

According to Silvestre and Fresco (1980), in a study of reactions to amniocentesis by personal interviews, mothers were concerned about the pregnancy and the possibility of terminating it in the first four months of pregnancy, prior to the actual procedure. It was learned that it was common for a woman to accept and look forward to the child only after the amniocentesis results were available. Several women did not announce their pregnancies until the positive results were known. During the interval awaiting the test results, additional physiological changes within the mother, such as the increased size of the uterus and feeling fetal movement for the first time, may have
accentuated the psychological stresses which were already experienced (Reeder et al., 1983).

Further studies have dealt with the psychological impact of a high-risk pregnancy upon the expectant parents. High-risk pregnancy is defined as one in which the mother, fetus, or newborn infant is or is likely to be in a state of danger. According to Penticuff (1982), both the mother and father of the unborn child underwent stress during a high-risk pregnancy. They reportedly found it difficult to bond with a possibly damaged fetus due to their fear of disappointment. Initially, the couple may have experienced ambivalent feelings about the pregnancy. The lack of confirmation of a healthy baby and fear of its health inhibited the psychological adaptations of both parents and strained family relationships, according to self-reports. Antle (1975) believes issues of fear, incompetency, and guilt created unmet psychological needs in the expectant father, who was relied upon as a source of emotional support by the wife. Cohen (1979) described a number of factors which he found exacerbated the difficulties of a woman in a high-risk pregnancy. Among those factors were adverse experiences during previous pregnancies, conflicts and/or defects in support systems, and health concerns.

Paternal attachment in pregnancy, which can be defined as bonding behaviors by expectant fathers to their unborn babies, has been another related area of research. According to Antle-May (1978), the expectant father's active involvement in the pregnancy and delivery was dependent upon the extent to which he was able to work
through, and deal with, his emotional stress. Although psychological responses were commonly expressed by expectant fathers, up to 65% of these fathers reported additional physical symptoms related to the pregnancy in a grouping of symptoms known as the "Couvade Syndrome" (Antle-May 1978). Research by Munroe and Munroe (1971) reported that American men who experienced mild, pregnancy-like symptoms, tended to be rated as more involved with the newborn care than nonsymptomatic men. Thus, men who experienced pregnancy openly were more emotionally involved, were physically in attendance, and were more actively involved with their infants after birth, according to observations by the prenatal clinic staff.

Early in pregnancy, men may experience feelings of apprehension and ambivalence which are resolved and replaced by more positive feelings with the progression of pregnancy (Antle-May 1978). A study of interviews by Antle also suggests that the fathers who were actively involved with the preparations for parenthood were generally more aware of, and able to discuss, nurturant feelings elicited by the pregnancy. In addition, Weaver and Cranley (1983) reported that many expectant fathers envisioned themselves as having had a supportive role during pregnancy in terms of nurturance and communication. This study also demonstrated a positive correlation between the father's perceived strength of the marital relationship and paternal-fetal attachment, as measured by the Marital Relationship and the Paternal and Fetal Attachment Scales. Wandersman (1980) discussed the
positive correlation between the father's sense of competency and well-being with the quality of the marital relationship.

In summary, the research findings previously discussed reveal the significance of both physical and emotional states during pregnancy and their perceptions by the expectant parents. Recent years have brought an awareness to researchers of the importance that maternal and paternal involvements in pregnancy have on the total outcome for the family. It is necessary to look at the pregnancy in terms of the effects on the family unit, rather than simply in relation to the maternal-fetal relationship. New diagnostic procedures have allowed prenatal diagnosis and the subsequent decisions of completing or terminating a pregnancy. They have also brought with them highly charged emotional issues and experiences for the expectant parents, such as the termination of a pregnancy. Anxiety and ambivalence are common in both high-risk and uncomplicated pregnancies. However, the need for amniocentesis may intensify psychological responses and strain at marital relationships. Experiences during pregnancy have been shown to affect the bonding process within the family.

The majority of studies dealing with amniocentesis, to date, have looked into the maternal stresses, particularly anxiety, and neglected the father's role. For example, according to Finley et al. (1977), a questionnaire was developed and administered to couples in regard to their attitudes, concerns, and suggestions for improvement of the amniocentesis experience. However, only 1 out of 13 questions was directly related to the father's attitude and that was in relation
to the procedure itself. It seems advisable to examine more closely
the father's perspective of the experience, as well as that of his partner.

The purpose of the present research was to study the
psychological responses of both fathers and mothers toward
amniocentesis in high-risk pregnancies. This was examined both prior
to and following the procedure. Two separate aspects were studied:
symptomatology and well-being. Symptomatology was defined as anxiety,
depression, anger, and somatic complaints. Well-being was defined as
relaxed, contented, friendliness, and somatic well-being. It was
hypothesized that the psychological responses of mothers to the
amniocentesis procedure would be positively correlated with the
responses of fathers on both the Symptomatology and Well-Being Scales.
In addition, it was hypothesized that the scales of Symptomatology
would be negatively correlated with the scales of Well-Being for both
the mothers and fathers. One-way analyses of variance were conducted
to determine whether significant differences occurred between the
scores of fathers and mothers at both the pre- and post-amniocentesis
levels, although they were not expected.
METHOD

Subjects

Twenty-four couples initially agreed to voluntarily participate in the study. Of the 24 couples, 2 chose to withdraw, 2 cancelled the amniocentesis procedure after hearing fetal heart tones for the first time, and 1 couple suffered a spontaneous miscarriage prior to the scheduled amniocentesis. The total number of couples who completed the research was 19. Couples were referred from the High Risk Clinic at Orlando Regional Medical Center and from private physicians in Orlando and Winter Park, Florida. There was no prior screening in regard to previous marriages, ages of the couple, number of previous pregnancies, religious beliefs, ethnic background, or social status. A restriction upon participation in the study was that each couple either be married or have lived together for at least six months prior to the pregnancy. The purpose of this restriction was to limit the sample to couples involved in a consistent and familiar relationship. All of the pregnancies were considered high risk according to one of the following criteria: maternal age of 35 years or over at the time of delivery; a family history of a previous child with a chromosomal abnormality; history of a previous child with a biochemical disorder; family history of an open neural defect; a parent who is a known carrier of a detrimental x-linked gene;
and a history of three or more spontaneous abortions (Depp et al., 1984; Fava et al., 1982; Finley et al., 1977).

**Materials**

**Symptom Questionnaire (SQ)**

The Symptom Questionnaire (Kellner, 1983) is a 92 item self-report inventory of psychological distress and consists of items which indicate either well-being or physical symptomatology (See Appendix E). The items are divided into four Symptom scales (Anxiety, Depression, Anger-Hostility, and Somatic Complaints) and four Well-Being scales (Relaxed, Contended, Friendliness, and Somatic Well-Being). One point is earned for each item that is endorsed. The range of scores for Symptomatology is zero to 68. The range of scores for Well-Being is zero to 24.

This questionnaire was designed to measure changes in levels of distress in studies involving drug trials and placebos, as well as for comparisons of distress levels in psychiatric and nonpsychiatric populations. The items of the SQ were derived from an original list of symptoms from which the Symptom Rating Test was constructed (Kellner, 1983). The conventional split-half reliability coefficients of the SQ, in various studies, ranged from medians of 0.78 to 0.91. The split-half reliability demonstrates that the changes in one-half of each scale are highly correlated with the changes in the other half. The conventional test-retest coefficients have been demonstrated to range from 0.71 to 0.95. Validation studies performed
with this test, as well as the Symptom Rating Test, both in the United States and in Italy, suggest that it is a valid and reliable measure of distress. There has been a great deal of evidence of validation against an external chemical criterion in numerous double-blind drug studies which resulted in unusually sensitive discrimination between drugs and placebos (Kellner, 1983).

Pre-Amniocentesis Questionnaire (Pre-Q)

The Pre-Amniocentesis Questionnaire is an original questionnaire developed for use in this study (See Appendix C). Therefore, no reliability or validity data for this instrument are available. It was completed by subjects two to four weeks prior to the amniocentesis procedure. This instrument assesses background information, fears, current level of anxiety, and rating of satisfaction with the current relationship.

Post-Amniocentesis Questionnaire (Post-Q)

The Post-Amniocentesis Questionnaire is an original questionnaire developed for use in this study (See Appendix D). Therefore, no reliability or validity data are available for this instrument. It was completed by subjects one to two weeks after the amniocentesis procedure, while the results were awaited. The areas assessed include information about the amniocentesis procedure, decisions regarding the possible outcome of the pregnancy, and a section for additional comments.
Procedure

At the time when amniocentesis was scheduled, couples were informed of this research project by the obstetrician and a designated nurse in the High Risk Clinic or the private physician's office. If interest was demonstrated, they were given separate packets of the materials. Each packet consisted of the release form (See Appendix A), the introductory letter (See Appendix B), the Pre-Amniocentesis Questionnaire (See Appendix C), the Post-Amniocentesis Questionnaire (See Appendix D), two copies of the Symptom Questionnaire (See Appendix E), and two addressed and stamped envelopes. A log was maintained by the researcher of all couples who received the packets. After the physician had notified the researcher of the couple's interest, an initial telephone call was made to thank the couple for their interest in the study and to answer any questions.

Two to four weeks prior to the amniocentesis, the Pre-Amniocentesis Questionnaire and one copy of the SQ was completed by each partner and mailed to the researcher in one of the envelopes provided for this purpose. A telephone call was made by the researcher upon receipt of the completed questionnaires to thank them for their participation in the first part of the study and to encourage their continued participation. If the completed questionnaires were not received 10 days prior to the scheduled procedure, a telephone call was made by the researcher to see if there were any problems with the completion. There was no pressure made on the couple if they chose to abstain.
One to two weeks following the amniocentesis procedure, the Post-Amniocentesis and the second SQ were completed and returned to the researcher. Again, the couple was contacted by telephone to thank them for their participation and to reaffirm that the results of the study would be available to them following the completion of the research, if they so desired.

Scoring of Materials

The results of the Pre-Amniocentesis and Post-Amniocentesis Questionnaires have been summarized in a separate part of the discussion section.

The SQ was scored and separated into the two main scales of Symptomatology and Well-Being, each of which is comprised of four subscales. The subscales of Symptomatology are Depression, Anxiety, Anger, and Somatic Complaints. The subscales of Well-Being are Relaxed, Contented, Friendliness, and Somatic Well-Being. A total score, made up of the four subscales, was assigned to the main scales of Symptomatology and Well-Being. In addition, a separate score was assigned to each of the eight subscales. There were four main sets of scores from the SQ (each set containing a total score for Symptomatology and Well-Being), as well as the four subscale scores which comprise both of the main scales: (1) the father prior to the amniocentesis procedure, (2) the father following the amniocentesis procedure, while awaiting results, (3) the mother prior to the
amniocentesis procedure, and (4) the mother following the amniocentesis procedure, while awaiting results.
RESULTS

It was hypothesized that the psychological responses of mothers to the amniocentesis procedure would be positively correlated with the responses of fathers on both the Symptomatology and Well-Being Scales. In addition, it was hypothesized that the scales of Symptomatology would be negatively correlated with the scales of Well-Being for both the father and mothers.

A Pearson product-moment correlation (Minnema, 1983) of the total SQ scores revealed significant positive correlation ($p < .05$) between the scores of fathers and mothers on the Symptomatology Scale, for both the pre- and post-amniocentesis ($r = .47$ and $.47$). The correlations ($p < .05$) for the Well-Being scales at both the pre- and post-amniocentesis periods are nonsignificant ($r = .10$ and $.07$). In addition, there were significant negative correlations ($p < .05$) between Symptomatology and Well-Being scores for both mothers ($r = -.55$ and -.60) and fathers ($r = -.48$ and -.74) at the pre- and post-amniocentesis levels, respectively. The correlation coefficients are presented in Table I.

One-way analyses of variance (ANOVA) revealed no significant differences between pre-amniocentesis scores of fathers or of mothers on either the total Well-Being or total Symptomatology Scales: $F(1, 35) = .0002$. An ANCOVA procedure (Minnema, 1983), with post-amniocentesis scores representing the dependent variate and
pre-amniocentesis scores representing the covariate, revealed that there was, however, a significant parent difference between pre- and post-amniocentesis scores for the total Well-Being Scale: $F(1, 35) = 9.90, p < .01$. In addition, the ANCOVA revealed a significant parent difference between pre- and post-amniocentesis scores for the total Symptomatology Scale: $F(1, 35) = 6.48, p < .05$.

Examination of the group means reveals that fathers obtained significantly higher post-amniocentesis scores for the total Well-Being Scale. Mothers' post-amniocentesis scores for the total Symptomatology Scale were significantly higher than those of the fathers. See Tables II and III for means and $F$ ratios.

ANCOVA of the four subscales of Well-Being (Relaxed, Contented, Friendliness, and Somatic Well-Being), with post-amniocentesis scores representing the dependent variate and pre-amniocentesis scores representing the covariate, revealed significance only in the subscale of Somatic Well-Being. Fathers obtained significantly higher post-amniocentesis scores than mothers: $F(1, 35) = 11.91, p < .01$. Mean pre- and post-amniocentesis scores on subscales of Well-Being have been presented in Table II.

ANCOVA of the four subscales of Symptomatology (Anxiety, Depression, Anger, and Somatic Complaints) revealed significance only in the subscale of Depression. Mothers obtained significantly higher post-amniocentesis Depression scores than fathers: $F(1, 35) = 4.59, p < .05$. Mean pre- and post-amniocentesis subscale scores of Symptomatology are presented in Table III.
TABLE I
CORRELATION COEFFICIENTS
OF PRE-AMNIOCENTESIS AND POST-AMNIOCENTESIS SCORES
OF WELL-BEING AND SYMPTOMATOLOGY

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>COEFFICIENTS</th>
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<tr>
<td>Pre Symptoms: Fathers &amp; Mothers</td>
<td>.47*</td>
</tr>
<tr>
<td>Pre Well-Being: Fathers &amp; Mothers</td>
<td>.10</td>
</tr>
<tr>
<td>Post Symptoms: Fathers &amp; Mothers</td>
<td>.47*</td>
</tr>
<tr>
<td>Post Well-Being: Fathers &amp; Mothers</td>
<td>-.07</td>
</tr>
<tr>
<td>Pre Symptoms &amp; Well-Being: Fathers</td>
<td>-.49*</td>
</tr>
<tr>
<td>Pre Symptoms &amp; Well-Being: Mothers</td>
<td>-.55*</td>
</tr>
<tr>
<td>Post Symptoms &amp; Well-Being: Fathers</td>
<td>-.74*</td>
</tr>
<tr>
<td>Post Symptoms &amp; Well-Being: Mothers</td>
<td>-.60*</td>
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*p < .05

df = 17
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<tr>
<th>SCALE</th>
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<th>POST-AMNIOCENTESIS MEAN</th>
<th>F</th>
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<td>Total Well-Being:</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Fathers</td>
<td>18.74</td>
<td>19.47</td>
<td>9.90**</td>
</tr>
<tr>
<td>Mothers</td>
<td>18.68</td>
<td>15.68</td>
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</tr>
<tr>
<td>Relaxed:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fathers</td>
<td>4.58</td>
<td>4.58</td>
<td></td>
</tr>
<tr>
<td>Mothers</td>
<td>4.42</td>
<td>3.84</td>
<td>1.79</td>
</tr>
<tr>
<td>Contented:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fathers</td>
<td>4.58</td>
<td>4.84</td>
<td></td>
</tr>
<tr>
<td>Mothers</td>
<td>5.42</td>
<td>4.74</td>
<td>0.38</td>
</tr>
<tr>
<td>Friendly:</td>
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</tr>
<tr>
<td>Fathers</td>
<td>5.05</td>
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<tr>
<td>Mothers</td>
<td>5.05</td>
<td>4.26</td>
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<td>Somatic Well-Being:</td>
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<tr>
<td>Fathers</td>
<td>4.74</td>
<td>4.63</td>
<td></td>
</tr>
<tr>
<td>Mothers</td>
<td>3.47</td>
<td>2.90</td>
<td>11.91**</td>
</tr>
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**p < .01  *p < .05
df = 1, 35
### TABLE III
MEANS AND F RATIOS OF SYMPTOMATOLOGY SUBSCALES

<table>
<thead>
<tr>
<th>SCALE</th>
<th>Pre-Amniocentesis Mean</th>
<th>Post-Amniocentesis Mean</th>
<th>F</th>
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<td>Total Symptomatology:</td>
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<td></td>
<td></td>
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<tr>
<td>Fathers</td>
<td>11.0</td>
<td>8.32</td>
<td>6.48*</td>
</tr>
<tr>
<td>Mothers</td>
<td>12.37</td>
<td>12.37</td>
<td></td>
</tr>
<tr>
<td>Anxiety:</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Fathers</td>
<td>3.32</td>
<td>3.11</td>
<td></td>
</tr>
<tr>
<td>Mothers</td>
<td>4.74</td>
<td>5.68</td>
<td>2.39</td>
</tr>
<tr>
<td>Depression:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fathers</td>
<td>2.57</td>
<td>1.90</td>
<td>4.59*</td>
</tr>
<tr>
<td>Mothers</td>
<td>2.0</td>
<td>2.47</td>
<td></td>
</tr>
<tr>
<td>Anger:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fathers</td>
<td>3.79</td>
<td>2.42</td>
<td>1.28</td>
</tr>
<tr>
<td>Mothers</td>
<td>2.84</td>
<td>2.79</td>
<td></td>
</tr>
<tr>
<td>Somatic Complaints:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fathers</td>
<td>1.42</td>
<td>1.21</td>
<td></td>
</tr>
<tr>
<td>Mothers</td>
<td>2.79</td>
<td>2.79</td>
<td>2.37</td>
</tr>
</tbody>
</table>

**p < .01     *p < .05**

df = 1, 35
DISCUSSION

The first hypothesis stated that the psychological responses of fathers and mothers to the amniocentesis procedure would be positively correlated on both the Symptomatology and Well-Being Scales. The data revealed positive relationships between pre- and post-amniocentesis scores for fathers and mothers on the total Symptomatology Scale. Although the means were uncorrelated for the Well-Being Scale, they were almost identical at the pre-amniocentesis period, but they differed significantly at the post-amniocentesis period.

The second hypothesis stated that the scales of Symptomatology would be negatively correlated with the scales of Well-Being for both the mothers and fathers. This significant negative correlation has been revealed in the data for Symptomatology and Well-Being at both the pre- and post-amniocentesis levels.

In addition, analysis of the total scale scores revealed no significant differences between fathers and mothers at the pre-amniocentesis level for either Symptomatology or Well-Being. However, at the post-amniocentesis level, fathers demonstrated significantly higher Well-Being Scale scores than did mothers. Mothers also revealed significantly higher Symptomatology scores at the post-amniocentesis level. Therefore, it has been demonstrated that prior to the amniocentesis procedure, there are no significant
differences shown by fathers or mothers on either Well-Being or Symptomatology. However, following the procedure, fathers reveal higher levels of Well-Being and mothers reveal higher levels of Symptomatology.

The ANCOVA of the subscales reveals that the difference between fathers and mothers for Symptomatology at the post-amniocentesis level is within the Depression subscale scores. It must be noted, however, that although significantly higher scores were obtained by the mothers, they were still within the range of the nonpsychiatric population. In addition, the ANCOVA of the subscales of Well-Being reveals that the significantly higher scores obtained by the fathers were within the Somatic Well-Being subscale scores.

The hypothesis can therefore be partially accepted although the positive correlation does not exist at the post-amniocentesis level. Mothers appear to experience more symptomatology and less well-being than fathers' post-amniocentesis. This fact can be explained in part by the increased physiological changes of pregnancy occurring within the mothers. The study by Reeder et al. (1983) discussed the increased psychological stresses which coincide with the increased physiological changes in pregnant women. In addition, it is possible that fathers have a concern regarding their partners' risk to the procedure, which decreases after the amniocentesis has been successfully and safely performed, resulting in higher levels of Well-Being at the post-amniocentesis level. Antle-May (1978) has also discussed fathers' feelings of apprehension and ambivalence which are
replaced with positive feelings as the pregnancy progresses. This combination of factors is important in discussing the reasons for the non-significant correlation between the Well-Being scores for fathers and mothers at the post-amniocentesis level.

The Pre-Amniocentesis and Post-Amniocentesis Questionnaires have also revealed information for discussion. All of the 19 participating mothers (100%) completed the entire set of questionnaires. However, two (11%) of the fathers were unwilling to complete the Pre-Q and Post-Q and limited their participation to completion of the Symptom Questionnaires only. According to the Pre-Q, the reasons for the amniocentesis were as follows: advanced maternal age (74%); family history of chromosomal abnormalities (16%); three or more previous miscarriages (5%); and advanced maternal age with history of a genetic defect (5%). The greatest concerns of the mothers prior to the amniocentesis were as follows: miscarriage (37%); abnormal results (21%); deciding whether to have an abortion (21%); not knowing what to expect (16%); physical pain (5%). The greatest concerns of the fathers' pre-amniocentesis were as follows: abnormal results (41%); deciding about an abortion (29%); miscarriage (12%); none (12%); not knowing what to expect (6%).

All of the fathers and mothers who were present with their partners during the procedure stated that his or her presence helped. As compared to their expectations, following the amniocentesis, 21% of both fathers and mothers believed that it was better than anticipated; 42% of the mothers and 21% of the fathers believed that
it was worse than anticipated; and 37% of the mothers and 58% of the fathers believed that it was as expected. Of the mothers, 74% stated that they had been adequately prepared by their physicians, as did 82% of the fathers.

The results of this study have important implications for the clinician. Mothers and fathers experience similar psychological responses prior to the amniocentesis. Previous studies by Antle-May (1978), Penticuff (1982), and Cohen (1979) have addressed the issues of early psychological stresses to expectant parents in high risk pregnancies, as well as the need for a strong support system to encourage nurturance and communication. Therefore, it would be helpful for couples undergoing amniocentesis in high-risk pregnancies to be adequately prepared prior to the procedure, in terms of a description of the physical aspects and the emotional issues which coincide with the amniocentesis. These preparations could be made by the usage of films or videotapes of an actual amniocentesis procedure and a thorough discussion of potential risks and outcomes for both the mother and the baby. In addition, emotional issues which may be commonly experienced by the expectant parents, such as anxiety, guilt, and depression should be addressed. By making counseling available to all couples undergoing amniocentesis, fathers and mothers would have an opportunity for an open expression of their concerns and, perhaps, be more honestly able to share the experience with each other. It would also encourage active involvement by both partners in decisions regarding abnormal results, should they occur. It is
important that the couples receive adequate time in which to deal with emotional issues with the physician, nurse, counselor, or designated person, instead of attempting to work those issues into regular, time-limited office visits. In addition, because mothers reveal higher levels of Symptomatology than fathers after the amniocentesis, there should be an opportunity for the mothers to express those concerns while they are awaiting results. A follow-up telephone call by the physician or nurse, as part of the office procedure, might be helpful to the parents, especially the mothers. The psychologist could provide a supportive environment in which the couple could appropriately deal with ongoing emotional concerns.

Further research could be done to assess the value of a structured pre- and post-amniocentesis counseling program for expectant parents undergoing the procedure in high-risk pregnancies. The research design could be structured to include two groups: a control group, consisting of couples who would receive the currently used pre-amniocentesis preparations by their physicians, and a treatment group of couples who would receive additional, structured classes and counseling. The treatment program would include educational presentations of specific materials related to the amniocentesis procedure, as well as counseling sessions focusing on the exploration and communication of emotional concerns of the expectant parents. It might be helpful to extend the program to include the period following notification of the results, when
decision-making is required due to abnormalities. The expectant parents have emotional needs that warrant attention.
APPENDICES
APPENDIX A

RELEASE FORM
Release Form

I am willing to participate in the Research Project on Amniocentesis which is being conducted by Nancy D. Williamson, R.N. as a requirement for graduate studies in Clinical Psychology at the University of Central Florida under the supervision of Burton Blau, Ph.D., and Anne Diebel, Psy.D.

I am aware that I will be asked to complete two brief questionnaires prior to the amniocentesis procedure and two additional questionnaires following the procedure, while awaiting the results. I have read the introduction to the research project as well as the questionnaires which I will be completing. I understand that strict confidentiality will be maintained and that I will not be named in any publication of the results. I am free to discontinue at any time that I choose to no longer participate. I also understand that I will be debriefed following the completion of the research project, if I so desire.

Name: ___________________________ Date: _______________________
APPENDIX B

INTRODUCTION TO AMNIOCENTESIS RESEARCH
As a Registered Nurse who has worked in the areas of Obstetrics, Neonatal Care, and Pediatrics for the past twelve years, I am very much aware of the important role that emotional concerns and feelings play in the medical field. I believe that it is necessary to consider the patient as a member of a family unit rather than a single entity. Because of my awareness and concern, I am currently completing my graduate studies at the University of Central Florida in the Clinical Psychology Program. I believe that in this way, I can more accurately integrate my nursing and psychology expertise to make an effective intervention.

As the topic of my thesis research, I have chosen to study the psychological aspects of amniocentesis as they are experienced by both the expectant mother and father. For many couples, this may be a stressful time. Both your physician and I are aware, and can appreciate, some of the concerns and feelings that may occur during the weeks spent anticipating the procedure and during the interval awaiting the test results. In this study, we hope to increase our awareness of the kinds of feelings and their intensities that are experienced by both expectant parents. It is hoped that this information will be helpful to health professionals in facilitating the procedure for other couples like yourself.

You should be aware of some facts related to the research. Your
written permission is required for your participation. Your identity and personal comments will be completely confidential. You will not be named in any way in any usage of the data. Upon completion of the study, a summary of the results of the research project will be shared with you, if you desire.

It is not necessary that you and your partner be married. If you have lived together for a period of six months or more, prior to the pregnancy, you are asked to participate. It is extremely important that both you and your partner participate and that the forms be completed without consulting each other. This is vital in order that we may be sure that you feel free to answer honestly and that you are expressing only your own opinion.

I will be available to you if you feel the need to contact me at any time during the study. Your participation will require the completion of two brief questionnaires two to four weeks prior to the amniocentesis procedure, and two additional questionnaires one to two weeks following the procedure, while you are awaiting results. I will supply all necessary forms, as well as separate, addressed, and stamped envelopes, so that complete privacy can be maintained.

It is only with the cooperation of people such as yourself, that it is possible to become more aware and sensitive to the feelings and concerns that you share. I appreciate your interest and participation and look forward to talking with you and your partner in the near future.

Sincerely,

Nancy D. Williamson, R.N.
APPENDIX C

PRE-AMNIOCENTESIS QUESTIONNAIRE
Pre-Amniocentesis Questionnaire

Your name: ___________________________________________ Age: __________

Physician: ___________________________________________

1. Length of your marriage or live-in relationship? __________

2. Please rate the quality of your relationship on a scale of 1-5, where: 1 = very poor; 2 = fair; 3 = moderately good; 4 = good; and 5 = outstanding: __________

3. Please state the reason for this amniocentesis: __________

4. Have you ever undergone amniocentesis before? If so, please state when and why: __________

5. Was this a planned pregnancy? __________ If so, did the availability of amniocentesis affect your decision to become pregnant? __________

6. What was your partner's first reaction to the idea of amniocentesis? (Please choose one)
   A. Strongly in favor
   B. Hesitant
   C. Disapproving
   D. Left the decision up to you
   E. Other __________

7. What is your greatest fear of amniocentesis? (Please choose one)
   A. Not knowing what to expect
   B. Miscarriage
   C. Physical pain
   D. Abnormal results
   E. Deciding whether or not to have an abortion
   F. None
   G. Other __________

8. Have you told others about the pregnancy at this time? __________

9. Have you considered an abortion if the results of the amniocentesis indicate an abnormal fetus? __________ Have you discussed this possibility with your partner? __________

10. Please rate your PRESENT level of anxiety on a scale of 1-5, where: 1 = no anxiety at all; 2 = occasional episodes of anxiety; 3 = moderate levels of anxiety; 4 = high levels of anxiety; and 5 = extremely high anxiety. Have you shared this with your partner? __________
APPENDIX D

POST-AMNIOCENTESIS QUESTIONNAIRE
Post-Amniocentesis Questionnaire

Name: ___________________________________________ Age: __________

Physician: ___________________________________________

1. Did you feel adequately prepared for the amniocentesis? ______

2. Was your partner with you during the amniocentesis? ______
   If yes, do you feel that (Please choose one)
   A. His/her presence helped
   B. His/her presence made it more difficult
   C. His/her presence made no difference

3. Would you undergo amniocentesis again, if this was indicated?____

4. As compared to your expectations, was the experience (Please choose one)
   A. Better
   B. Worse
   C. As expected

5. Have you made a decision to have or not to have an abortion should the amniocentesis results reveal an abnormal fetus? ______
   If so:
   A. Was this decision reached alone or with your partner?________
   B. If the decision was reached alone, have you shared this with your partner? __________

6. Please rate your PRESENT level of anxiety on a scale from 1-5, where 1 = no anxiety at all; 2 = occasional episodes of anxiety; 3 = moderate levels of anxiety; 4 = high levels of anxiety; and 5 = extremely high levels of anxiety: __________
   Have you shared this with your partner? __________

7. Do you have any suggestions that you feel would improve the amniocentesis experience? (Please feel free to use the space below and the other side of this page for any additional comments.)
APPENDIX E

SYMPTOM QUESTIONNAIRE
Please describe how you have felt DURING THE PAST WEEK/TODAY and make a small check mark like this ✓.
For example, the word NERVOUS is on the first line: if you have felt nervous check YES like this: YES NO.
If you have not felt nervous, check NO like this: YES NO.
A few times you have the choice of checking either TRUE or FALSE.
Do not think long before answering. Work quickly!

<p>| | | | | | | | | | | |</p>
<table>
<thead>
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<tbody>
<tr>
<td>1.</td>
<td>Nervous</td>
<td>YES</td>
<td>NO</td>
<td>24.</td>
<td>Feeling unworthy</td>
<td>YES</td>
<td>NO</td>
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<tr>
<td>2.</td>
<td>Weary</td>
<td>YES</td>
<td>NO</td>
<td>25.</td>
<td>Annoyed</td>
<td>YES</td>
<td>NO</td>
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<tr>
<td>3.</td>
<td>Irritable</td>
<td>YES</td>
<td>NO</td>
<td>26.</td>
<td>Feeling of rage</td>
<td>YES</td>
<td>NO</td>
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<tr>
<td>4.</td>
<td>Cheerful</td>
<td>YES</td>
<td>NO</td>
<td>27.</td>
<td>Cannot enjoy yourself</td>
<td>TRUE</td>
<td>FALSE</td>
<td></td>
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<tr>
<td>5.</td>
<td>Tense, tensed up</td>
<td>YES</td>
<td>NO</td>
<td>28.</td>
<td>Tight head or neck</td>
<td>YES</td>
<td>NO</td>
<td></td>
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</tr>
<tr>
<td>6.</td>
<td>Sad, blue</td>
<td>YES</td>
<td>NO</td>
<td>29.</td>
<td>Relaxed</td>
<td>YES</td>
<td>NO</td>
<td></td>
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<tr>
<td>7.</td>
<td>Happy</td>
<td>YES</td>
<td>NO</td>
<td>30.</td>
<td>Restless</td>
<td>YES</td>
<td>NO</td>
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<tr>
<td>8.</td>
<td>Frightened</td>
<td>YES</td>
<td>NO</td>
<td>31.</td>
<td>Feeling friendly</td>
<td>YES</td>
<td>NO</td>
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<tr>
<td>10.</td>
<td>Feeling healthy</td>
<td>YES</td>
<td>NO</td>
<td>33.</td>
<td>Choking feeling</td>
<td>YES</td>
<td>NO</td>
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<tr>
<td>11.</td>
<td>Losing temper easily</td>
<td>YES</td>
<td>NO</td>
<td>34.</td>
<td>Afraid</td>
<td>YES</td>
<td>NO</td>
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<tr>
<td>12.</td>
<td>Feeling of not enough air</td>
<td>TRUE</td>
<td>FALSE</td>
<td>35.</td>
<td>Patient</td>
<td>YES</td>
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<tr>
<td>13.</td>
<td>Feeling kind to people</td>
<td>YES</td>
<td>NO</td>
<td>36.</td>
<td>Scared</td>
<td>YES</td>
<td>NO</td>
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<tr>
<td>14.</td>
<td>Feeling ′t</td>
<td>YES</td>
<td>NO</td>
<td>37.</td>
<td>Furious</td>
<td>YES</td>
<td>NO</td>
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<tr>
<td>15.</td>
<td>Heavy arms or legs</td>
<td>YES</td>
<td>NO</td>
<td>38.</td>
<td>Feeling charitable, forgiving</td>
<td>YES</td>
<td>NO</td>
<td></td>
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<tr>
<td>17.</td>
<td>Feeling warm to people</td>
<td>YES</td>
<td>NO</td>
<td>40.</td>
<td>Feeling well</td>
<td>YES</td>
<td>NO</td>
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<tr>
<td>18.</td>
<td>Shaky</td>
<td>YES</td>
<td>NO</td>
<td>41.</td>
<td>Feeling of pressure in head or body</td>
<td>YES</td>
<td>NO</td>
<td></td>
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<tr>
<td>19.</td>
<td>No pains anywhere</td>
<td>TRUE</td>
<td>FALSE</td>
<td>42.</td>
<td>Worried</td>
<td>YES</td>
<td>NO</td>
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<tr>
<td>20.</td>
<td>Angry</td>
<td>YES</td>
<td>NO</td>
<td>43.</td>
<td>Contented</td>
<td>YES</td>
<td>NO</td>
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<tr>
<td>21.</td>
<td>Arms and legs feel strong</td>
<td>YES</td>
<td>NO</td>
<td>44.</td>
<td>Weak arms or legs</td>
<td>YES</td>
<td>NO</td>
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<td>22.</td>
<td>Appetite poor</td>
<td>YES</td>
<td>NO</td>
<td>45.</td>
<td>Feeling desperate, terrible</td>
<td>YES</td>
<td>NO</td>
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<tr>
<td>23.</td>
<td>Feeling peaceful</td>
<td>YES</td>
<td>NO</td>
<td>46.</td>
<td>No aches anywhere</td>
<td>TRUE</td>
<td>FALSE</td>
<td></td>
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</table>

(over)
47. Thinking of death or dying
   YES NO

48. Hot tempered
   YES NO

49. Terrified
   YES NO

50. Feeling of courage
   YES NO

51. Enjoying yourself
   YES NO

52. Breathing difficult
   YES NO

53. Parts of the body feel numb or tingling
   YES NO

54. Takes a long time to fall asleep
   YES NO

55. Feeling hostile
   YES NO

56. Infuriated
   YES NO

57. Heart beating fast or pounding
   YES NO

58. Depressed
   YES NO

59. Jumpy
   YES NO

60. Feeling a failure
   YES NO

61. Not interested in things
   TRUE FALSE

62. Highly strung
   YES NO

63. Cannot relax
   TRUE FALSE

64. Panicky
   YES NO

65. Pressure on head
   YES NO

66. Blaming yourself
   YES NO

67. Thoughts of ending your life
   YES NO

68. Frightening thoughts
   YES NO

69. Enraged
   YES NO

70. Irritated by other people
   YES NO

71. Looking forward to the future
   YES NO

72. Nauseated, sick to stomach
   YES NO

73. Feeling that life is bad
   YES NO

74. Upset bowels or stomach
   YES NO

75. Feeling inferior to others
   YES NO

76. Feeling useless
   YES NO

77. Muscle pains
   YES NO

78. No unpleasant feelings in head or body
   TRUE FALSE

79. Headaches
   YES NO

80. Feel like attacking people
   YES NO

81. Shaking with anger
   YES NO

82. Mad
   YES NO

83. Feeling of goodwill
   YES NO

84. Feel like crying
   YES NO

85. Cramps
   YES NO

86. Feeling that something bad will happen
   YES NO

87. Wound up, uptight
   YES NO

88. Get angry quickly
   YES NO

89. Self confident
   YES NO

90. Resentful
   YES NO

91. Feeling of hopelessness
   YES NO

92. Head pains
   YES NO

DO NOT WRITE BELOW THE LINE
APPENDIX F

PERMISSION FOR USE OF SYMPTOM QUESTIONNAIRE
Date May 24, 1984

This is to certify that Ms. Nancy Williamson, RN, has my permission to reproduce and use the Symptom Questionnaire for study, research, teaching and non-profit clinical work. This permission extends for the same purposes also to assistants or employees under his/her supervision.

Robert Kelner, M.D., Ph.D.
REFERENCES


