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Factor Structure and Reliability of the Revised Family Adaptability and Cohesion Scales

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The present study assessed scores from 627 mothers, fathers and children throughout the metropolitan Portland area on the revised Family Adaptability and Cohesion Scales (FACES). Of interest was the revised FACES factor structure, internal consistency and interrater reliabilities.

The results suggested the following: 1) The revised FACES was factorially complex. Only minimal comparability of factors across family roles was evidenced, and the independence of the adaptability and cohesion constructs was not sufficiently demonstrated. 2) The revised

FACES was characterized by poor internal consistency reliability for all family roles. 3) No significant agreement among family members was evidenced.

These results were discussed with regard to the Circumplex Model of Adaptability and Cohesion on which the revised FACES was based. The present study was interpreted as providing no support for the revised FACES as an effective measure of this model.

FACTOR STRUCTURE AND RELIABILITY OF THE REVISED FAMILY ADAPTABILITY AND COHESION SCALES

by

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CHAPTER I

INTRODUCTION

In recent years a variety of approaches have been developed for conceptualizing family functioning based on systems theory. These approaches have been regarded as particularly useful because they encompass a full range of conepts which stress the organization, patterning and wholeness of the family unit (Steinglass, 1978; Holman and Burr, 1980).

One of the more promising systems theory approaches to family adjustment is the Circumplex Model of Adaptability and Cohesion, developed by Olson, Sprenkle and Russell (1979, 1980a). This model, based on an extensive review and synthesis of the marital and family literature, proposes two central dimensions of family adjustment. These are: 1) Cohesion: "the emotional bonding that family members have with one another and the degree of individual autonomy a person experiences within the system" (Olson, et al., 1979, p. 5), and 2) Adaptability: "the ability of a marital or family system to change its power structure, role relationships, and relationship rules in response to situational and developmental stress" (Op. cit., p. 11).

Olson and his colleagues postulate that these two dimensions can be combined in a circumplex model which describes sixteen different types of family systems. These descriptions are based on the level of cohesion and adaptability the family manifests, from low cohesion (dis-

engagement) to high cohesion (enmeshment), and from low adaptability (rigidity) to high adaptability (chaos). Figure 1 illustrates these sixteen family systems. The central area represents moderate levels of

ADAPTABILITY:	COHESION: DISENGAGED (Very Low)	SEPARATED (Mod. Low)	CONNECTED (Mod. High)	ENMESHED (Very High)
CHAOTIC (Very High)	Chaotically Disengaged	Chaotically Separated	Chaotically Connected	Chaotically Enmeshed
FLEXIBLE (Mod. High)	Flexibly Disengaged	Flexibly Separated	Flexibly Connected	Flexibly Enmeshed
STRUCTURED (Mod. Low)	Structurally Disengaged	Structurally Separated	Structurally Connected	Structurally Enmeshed
RIGID (Very Low)	Rigidly Disengaged	Rigidly Separated	Rigidly Connected	Rigidly Enmeshed

Figure 1. Sixteen possible types of family systems derived from the Circumplex Model.

cohesion and adaptability or a balance on both dimensions and is seen as most functional to individual and family adjustment. The outer areas represent extreme levels of adaptability and cohesion and are seen as most dysfunctional to individual and family adjustment. Olson hypothesizes that the majority of normative families will fall within the central area, although it is possible that extreme levels of adaptability and cohesion can be functional at certain times for some families, (e.g., extreme cohesion might be functional for families undergoing crises).

Review of the Research.

The Circumplex Model of Adaptability and Cohesion has been empiri-

cally validated in two separate studies. The first study by Sprenkle and Olson (1978) was a partial test of the model and focused on adaptability and leadership style in couples, measured by observing their behaviors during a laboratory interaction task called the SIMFAM game (Op. cit., p. 65). Moderate adaptability and eqalitarian leadership styles were found to be characteristic of non-clinic couples, while clinic couples had more extreme levels of adaptability and leadership style. A more complete test of the model by Russell (1979) divided 31 families with adolescents into well and poorly functioning groups. The adaptability and cohesion levels of these families were also measured by observing their behaviors during the SIMFAM game. As hypothesized, a comparison of these families showed that the well functioning families had moderate adaptability and cohesions scores, while the poorly functioning families had extreme scores on the two dimensions.

More extensive tests of the Circumplex Model of Adaptability and Cohesion are currently being conducted by Olson, Bell and Portner (1978) at the University of Minnesota. These studies will compare families with run-aways and adolescents in mental health treatment to families without problem adolescents. Olson, Bell and Portner predict that families with problem adolescents will be more extreme on both the cohesion and adaptability dimensions, while families without problem adolescents will have more moderate scores on both dimensions.

To measure adaptability and cohesion, Olson and his colleagues developed the Family Adaptability and Cohesions Scales (FACES), an 111-item, self-report instrument designed to be completed by individual

family members. The 111 items were selected from an original pool of 204 items covering a range of concepts identified in the family literature. The selection of items was based on factor and item analyses of responses from 410 college students and validity ratings from 35 marital and family counselors. The resulting FACES instrument contains 54 cohesion items, 42 adaptability items, and an additional 15 items from the Edwards Social Desirability Scale. The cohesion items are divided into nine subscales with six items per subscale. The subscales cover emotional bonding, independence, family boundaries, coalitions, time, space, friends, decision-making, and interests and recreation. The adaptability items are divided into seven subscales with six items per subscale. These subscales cover assertiveness, control, discipline, negotiation, roles, rules, and system feedback. The six items within each subscale are further divided into groups of two items which measure low, moderate, or high levels of cohesion or adaptability. Respondents are asked to rate each item on a four-point Likert-type scale ranging from "true all of the time" to "true none of the time".

Critique of FACES.

While the FACES represents an important first step toward measuring the Circumplex Model of Adaptability and Cohesion, it contains some serious methodological weaknesses. Specifically, these weaknesses are:

Ambiguous Wording of Item Stems and Alternatives. A number of item stems contain qualifying adverbs, and when these stems are combined with alternatives which also contain qualifying adverbs, the resulting statements are often confusing or ambiguous. In some cases, the combination of stem and alternative leads to double negatives, e.g.,

"We don't have spur of the moment guests at mealtimes, (true) none of the time", or awkward adverbial combinations, e.g., "Family members often answer questions that were addressed to another person (true), none of the time". This confusion seems to be partly due to an attempt by the authors of the FACES to combine what are basically true/false item stems with Likert-type alternatives.

Logically Inconsistent Scoring Procedures. As described previously, the items within each of the subscales are intended to measure one of the endpoints or the midpoint on the cohesion or adaptability continuum. Two items are provided for each point on this continuum. However, in determining scores, the responses to these items are simply added together even though this may amount to adding opposites. Thus, inconsistent responses on items within the FACES subscales add points to the total scores for adaptability and cohesion. For example, adding "It seems as if (family members) agree on everything, (true) all of the time," and "Family members are extremely independent, (true) all of the time", adds more points to the cohesion score than does answering "It seems as if (family members) agree on everything, (true) all of the time" and "Family members are extremely independent, (true) none of the time". Put another way, the maximum score on cohesion is attained not by scoring highest on the enmeshment items and lowest on the disengagement items but by scoring highest on both. Apparently, in an effort to deal with this problem, items were weighted one, two, or three depending upon their point on the continuum. However, this practice did not alter the fact that the highest (and for that matter, lowest) scores represent response inconsistencies, rather than extremes on the continuum, as

would logically be intended.

The problem of inconsistency is further illustrated in a memo by Olson* in which he states that although the total score reliabilities (alpha coefficients) for adaptability and cohesion were .75 and .83, respectively, the reliabilities of the subscales were very low. By calculating backwards, the average correlations among adaptability and cohesion items are found to be .09 and .07, respectively. These low subscale reliabilities and average intercorrelations likely stem from the scaling and scoring procedures used with the FACES.

Ambiguous Factor Structure. In a factor analysis described by Olson, Bell and Portner (1978), separate factors emerged for the disengaged, enmeshed and moderate cohesion items; however, these findings are inconsistent with the logic of the instrument. According to the model, the disengaged and enmeshed items should be highly (albeit negatively) correlated and load on the same factor. This did occur with certain adaptability items, suggesting greater consistency among the items within this dimension. However, even here, the emergence of separate factors for chaos/rigidity and moderation suggest a fragmentation of what should be one continuum. Ideally, the factor structure should reflect subscales, rather than the response strength of items. The ambiguous factor structure may partly stem from the problematic scaling and scoring procedures noted earlier.

Because of these problems, the current version of FACES has severe limitations as a measure of the Circumplex Model of Adaptability and Co-

*Olson, D., 2/79, Addendum to the FACES manual regarding new cutting points for the levels of cohesion and adaptability.

hesion. As noted earlier, the model itself represents a promising approach to the assessment of family systems, particularly in view of the extensive research which led to its development and in view of its demonstrated validity (Russell, 1979). However, a revised version of the FACES is needed to provide a more methodologically sound self-report measure of the model.

Description of the Revised FACES.

As a preliminary step toward the development of a more effective version of the FACES, the family research group at Regional Research Institute, Portland State University has developed a short form of the FACES which is intended to obtain the same general information as the original version yet avoid its methodological problems. Although initial analyses by Olson, Bell and Portner indicated that the FACES subscales for adaptability and cohesion were unreliable, this did not necessarily jeopardize the validity of the model. Since the subscales were developed on the basis of an extensive review of the family literature, an effort was made to retain them in the revised version of FACES. Accordingly, the original FACES was used as a basis for writing new items with a minimum of two to five items for each subscale. A total of 44 items were written, 22 for cohesion and 22 for adaptability. Additionally, because the circumplex model proposes a continuum from extreme to moderate to extreme, the item stems were written so that mid-point responses would be indicative the moderate cohesion or adaptability, and end-point responses would be indicative of extreme cohesion or adaptability. Thus, the revised FACES allows each item to measure the entire continuum, i.e., the continuum is measured within items rather than

between items, as in the original version. A copy of the revised FACES is included (Appendix A).

Issues in the Present Study.

The present study was designed to investigate several important characteristics of the revised FACES. These investigations included a test of the items' factor structure through factor analysis, a statistical procedure which determines the extent to which test items define a particular concept, in this case, the concepts of adaptability and cohesion. Secondly, the tests' reliability was measured through an examination of its internal consistency, specifically, the degree of homogeneity among the adaptability and cohesion items. Finally, agreement among family members was examined to determine if members tended to agree on their views of family cohesion and adaptability. Issues pertaining to each of these analysis are discussed separately below.

Factor Analysis. Factor analysis can be described as a formal mathematical procedure for explicating subsets of items or variables which covary together, as distinguised from other variables, within a particular test space (Guertin and Bailey, 1970). As such, factor analysis is a fundamental method for determining construct validity in the sense of assessing the degree to which items cluster together in measuring a postulated construct or trait. With respect to the revised FACES, an assessment of construct validity involved the degree to which adaptability and cohesion were reflected as independent dimensions within the two-factor structure postulated by the circumplex model.

With regard to factor analysis, there are several issues which must be addressed by the investigator. Specifically, these include

determining the appropriate sample size, method of factor analysis to be used (i.e., principal axis or principal components), treatment of the diagonal of the matrix, method of rotation, and criteria for retention of factors to be rotated.

In the present study, factor analyses were performed using the principal axis method with squared multiple correlations as communality estimates. This method of analysis, treatment of the diagonal, and type of rotation were chosen both for ease of interpretation of the data and because the circumplex model, upon which the instrument is based, postulates that adaptability and cohesion are independent dimensions.

Regarding the criteria for retention of factors to be rotated, it has become somewhat of a convention to rotate factors with an eigenvalue of 1.00 or greater. This criterion is particularly relevant for use with principal components analysis which employs unities on the diagonal of the matrix; however, no similar generally-accepted criterion currently exists for use with principal axis analysis (Guertin and Bailey, 1970; Rummel, 1970). For the present study, the 1.00 eigenvalue limitation was used in initial analyses and additional trial rotations were performed at -1 factors below, and +1 and +2 factors above the 1.00 eigenvalue limit in order to determine the best fit for the data.

Finally, with respect to sample size in factor analysis, a broad range of recommendations have been made, from Nunnally (1967) who proposes a 10 to 1 subjects to variables ratio to Cattell (1952) and Rummel (1970) who propose a 4 to 1 subjects to variables ratio. For the

present study, an effort was made to obtain a minimum of 220 subjects from each of the family roles to be analyzed, i.e., mothers, fathers, and children. This sample size in combination with the 44 variables in the revised FACES would provide a 5 to 1 subjects to variables ratio, which falls within the range of recommendations that have been made. In actuality, mothers' sample size exceeded this criterion, i.e., 244 mothers participated in the study, and fathers' and childrens' sample sizes fell somewhat short of this criterion, that is, 187 fathers and 196 children participated in the study.

Reliability. Test reliability essentially refers to estimating what proportion of the total variance of the test is due to "true" differences in the characteristics being measured, and what proportion of the total variance is due to "error" (Anastasi, 1968). The wider the spread between obtained scores and true scores (those that would be obtained if the subject were to be tested an infinite number of times), the more error there is within the test. By the same token, to the extent than obtained scores highly correlate with true scores, the test may be considered highly reliable (Guilford and Fruchter, 1973). Three of the most widely used estimates of test reliability are "alternate forms" which is concerned with measuring error across different tests of the same attribute, "test-retest" which is concerned with measuring error across items in the same test over time, and "internal consistency" which is concerned with measuring error across items purported to measure a particular attribute at a particular time.

Since the present study was primarily concerned with error across items within the revised FACES, internal consistency reliability was measured using the alpha coefficient, a numerical value based on the

number of items within a test and the average correlation among those items. Separate alpha coefficients were obtained on the adaptability and cohesion scores by family role.

Intrafamily Agreement. The intraclass correlation has been identified as a method for determining agreement among raters. It is based on the analysis of variance model and essentially involves a ratio of within-class variance to between-class variance (Guilford and Fruchter, 1973). A high intraclass correlation coefficient reflects little variance within-classes relative to variance between-classes (Bartko, 1976; Haggard, 1958).

For the purposes of the present study, intraclass correlation coefficients were computed to determine agreement within families on the revised FACES items. The individual adaptability and cohesion items were used as the unit of measurement so that the results of this procedure could be used, in conjunction with the results of the factor analyses and internal consistency reliabilities, as a guide for future refinement of the FACES instrument.

CHAPTER II

METHOD

Requests for participation in the present study were mailed to families throughout the Portland metropolitan area. The families were selected through a variety of methods including through social networks, that is, by asking for referrals of families from friends, neighbors, co-workers, and members of local church and social groups. Additional recruitment of families was accomplished through placement of newspaper ads, and through random phone calls to individuals listed in telephone and high school directories. To qualify for the study, families had to have at least one child between 8 and 18 years of age living at home. Both parents and the oldest child in the two-parent families and the single parent and the oldest child in the one-parent families were asked to complete questionnaires. Thus, three copies of the revised FACES were mailed to two-parent families and two copies of the revised FACES were mailed to one-parent families. This resulted in approximately 427 families (including approximately 1,174 individuals) who received questionnaires.

A total of 171 (of the 427) families contacted returned their completed questionnaires. In addition, partial returns were received from other families, resulting in responses from a total of 244 mothers, 187 fathers, and 196 children, or 627 returns (of the 1,174) questionnaires originally mailed. These figures represented a 40% return rate for com-

plete families and a 53% return rate for individuals.

Of the families who participated, 86% were two-parent and 14% were single-parent families. The mean number of children in the participating families was 2.4. The average ages of the fathers, mothers, and children were 44, 41, and 15, respectively. Among the children who participated, 72 were males and 124 were females. Additional descriptive statistics including the participants' education levels, occupations, and length of marriage and/or single parenthood are included (Appendix B).

Procedure.

All families received the same instruction set in the form of a cover letter which accompanied their questionnaires. In the letter, both parents (or the single parent) and the oldest child, between 8 and 18 years of age, living at home, were asked to independently complete the revised FACES questionnaires. As a safeguard against response bias, in this case, the potential that family members might influence each others' responses, separate, self-addressed, stamped envelopes were included in the packet for each family member.

Families who did not return their completed questionnaires within two weeks received follow-up reminders. Although specific statistics were not kept on the number of families who required one or more follow-up reminders before returning their FACES questionnaires, the reminders appeared to positively affect return rates, as is usually the case with mail-out questionnaires and surveys (Berdie and Anderson, 1974).

Data Analysis.

Factor Analysis. As an initial step, item correlations, means,

and standard deviations were computed for mothers, fathers, and children. These are presented in Appendix C. Next, separate factor analyses were performed on the item responses of the 244 mothers, 187 fathers, and 196 children. The analyses used the principal axis method with squared multiple correlations as communality estimates. Three iterations of the initial estimates were performed in order to further refine them. A varimax orthogonal rotation was used for all analyses, and initially all factors with eigenvalues of 1.00 or greater were rotated. Additional trial rotations were performed a -1 factors below and +1 and +2 factors above the eigenvalue cut-off, in order to determine which number of rotated factors would produce the most meaningful structure (Guertin and Bailey, 1970).

Reliability. Using the correlation matrices for each family role, alpha reliability coefficients were computed separately on the adaptability and cohesion scales. The computation formula used to obtain the alpha coefficients is found in Nunnally (1967) as follows:

$$\left(\frac{k}{k-1}\right)\left(\frac{R-k}{R}\right)$$

where: k = the number of items in each score
R = the sum of elements in the square matrix of item correlations

Intraclass Correlation. Intraclass correlation coefficients were computed for each of the 44 revised FACES items. In this analysis only those scores obtained from complete, two-parent families (i.e., where both parents and one child completed questionnaires) were used, (N=147).

The computational formula as given in Guilford and Fruchter (1973) is as follows:

$$\frac{(MS)_r - (MS)_e}{(MS)_r + (K-1)(MS)_e}$$

where: $(MS)_r$ = mean square or variance between families, where each row stands for a family
$(MS)_e$ = mean square for residuals or error, here, variance within families
K = number of family members

Intraclass correlation coefficients were first computed on the scores from the complete three-member families. Additional coefficients were then computed for the parent-parent and parent-child dyads to test for patterns of agreement or disagreement that might be role related.

CHAPTER III

RESULTS

Factor Analyses.

The clearest factor structures were obtained by rotating to seven factors for mothers, fathers, and children. This represented the original number of factors which were rotated according to the 1.00 eigenvalue limitation plus one.

Items with factor loadings of .40 or greater were considered to define a factor. For mothers, 27 items out of the original pool of 44 had loadings of .40 or greater. For fathers, 26 items had loadings of .40 or greater, and for children, 25 items had loadings of .40 or greater. The factor descriptions, item stems, item affiliations (i.e., adaptability or cohesion), and factor loadings are given in Table I, for mothers, Table II, for fathers, and Table III, for children.

TABLE I

FACTOR DESCRIPTIONS, ITEM STEMS, ITEM AFFILIATIONS, AND FACTOR LOADINGS FOR MOTHERS

FACTOR DESCRIPTIONS/ITEM STEMS	COHESION (C) OR ADAPTABILITY (A)	FACTOR LOADING
#1 - MAKING DECISIONS:		
29. When there are family decisions to be made, the children become involved	A	.78
20. Parent(s) make family decisions without consulting the children	A	.67

22.	Family members seem to understand the feelings and thoughts of other family members	A	-.49
27.	When a family member has a problem, the family gets together in a group to discuss it	A	-.47
42.	When our family deals with problems, we follow the children's suggestions for solving them	A	.45
35.	When our family is faced with problems, we try new or different ways of dealing with them	A	.43
10.	When family members have problems or concerns, they are able to confide in each other	C	.40
11.	When family members are dissatisfied with their household responsibilities, they are allowed to change them	A	.40

#2 - AWARENESS OF ROLES AND RULES:

14.	Family members can predict what other members will do in a given situation	A	.58
31.	Family members know how they are expected to behave	A	-.57
3.	When our family discussed issues such as proper conduct and social manners, family members agree	C	.54
18.	When family members are out of the house, other family members know what they are doing	A	-.48
33.	Family members know what their household responsibilities are	A	-.45
10.	When family members have problems or concerns, they are able to confide in each other	C	.45

#3 - SHARING INTERESTS AND ACTIVITIES:

21.	Family members are involved in interests and activities which do not include the rest of the family	C	.64

41.	Family members spend their leisure time away from the family	C	.58
28.	When at home, family members spend their time in separate activities	C	.58
24.	Family members are on their own when planning projects or activities	C	.56
1.	When our family gets together for outdoor activities, hobbies or recreation, most or all family members are present	C	.47
17.	Family members share the same friends	C	.45

#4 - CHANGING ROLES:

25.	In our family, the leadership role changes from person to person	A	.50
7.	Our family changes its way of handling day-to-day routines	A	.49

#5 - DISCIPLINE:

38.	When the children avoid or shirk their household responsibilities, they are punished	A	.82
13.	In our family, children are punished when they misbehave or do wrong	A	.65

#6 - MAINTAINING FAMILY BOUNDARIES:

26.	Family members invite their friends along on family activities	C	.58
5.	Our family has spur of the moment guests for dinner	C	.46

#7 - ASSERTIVENESS:

23.	Our family has lively disagreements or arguments	A	.58
40.	When a family member does something that is annoying or irritating, other family members tell him/her about it	A	.47

Factor Descriptions for Mothers. As illustrated in Table I, the

mothers' Factor #1 with eight loadings of .40 or greater appeared to be related to "Making Decisions". Four of the items defining this factor concerned the extent to which the children are involved in family decision-making, and how frequently the family tries new and different ways of solving problems. The remaining items dealt with how readily family members discuss their personal problems with each other (individually, as well as within the family group), and the extent to which family members seem to understand each others' feelings and thoughts. These latter two items seemed to relate to the family decision making process in that participation in the process is, to varying degrees, dependent upon each family member's sense of acceptance in the family and their willingness to express personal feelings and concerns. Seven of the items within this factor were from the adaptability scale and one item was from the cohesion scale.

Factor #2 for mothers contained six items with loadings above .40 and appeared to be related to family members' "Awareness of Roles and Rules". The items defining this factor concerned the extent to which family members know each other, e.g., the extent to which they know what other family members are doing when away from home; know how they are expected to behave, are able to confide in each other when they have problems; and are able to predict each others' behavior in various situations. Four of the items within this factor were from the adaptability scale and two were from the cohesion scale.

Factor #3 for mothers contained six items with loadings of .40 and above and appeared to be concerned with "Sharing Interests and Activities". The items defining this factor were concerned with whether family members spend their leisure time with each other or with friends;

whether they share the planning of projects and activies; and whether they share friendships. All of the items within this factor were from the cohesion scale.

Mothers' Factor #4 appeared to be related to "Changing Roles" and contained two items with loadings above .40. The items defining this factor dealt with changing family leadership and day-to-day routines. Both items were from the adaptability scale.

Factor #5 with two items loading above .40 appeared to be related to "Discipline". Both items were from the adaptability scale and concerned whether or not children were punished when they misbehave or shirk their responsibilities.

Factor #6 for mothers contained two items with loadings above .40 and appeared to be concerned with "Maintaining Family Boundaries". These items concerned whether or not friends can be included in family activities, and the extent to which the family dinner hour is open to "spur of the moment" guests. Both items were from the cohesion scale.

Factor #7 for mothers contained two items with loadings above .40 and appeared to relate to "Assertiveness". The items concerned the extent to which the family has lively disagreements or arguments, and whether or not family members are told when they do something annoying or irritating. Both items were from the adaptability scale.

In summary, all of the factors which emerged for mothers appeared to be interpretable. Moreover, five of the seven factors contained items which were exclusively related to the dimension of either family adaptability or cohesion. The exceptions were Factor #1 which contained seven adaptability items and one cohesion item, and Factor #2 which

contained four adaptability items and two cohesion items.

TABLE II

FACTOR DESCRIPTIONS, ITEM STEMS, ITEM AFFILIATIONS, AND FACTOR LOADINGS FOR FATHERS

FACTOR DESCRIPTIONS/ITEM STEMS	COHESION (C) OR ADAPTABILITY (A)	FACTOR LOADING
#1 - SHARING FRIENDS AND FEELINGS:		
6. Family members know each others' friends	A	.66
17. Family members share the same friends	A	.55
22. Family members seem to understand the feelings and thoughts of other family members	A	-.54
26. Family members invite their friends along on family activities	C	-.48
3. When our family discusses issues such as proper conduct and social manners, family members agree	C	.43
#2 - SHARING INTERESTS AND ACTIVITIES:		
41. Family members spend their leisure time away from the family	C	.72
24. Family members are on their own when planning projects or activities	C	.59
21. Family members are involved in interests and activities which do not include the rest of the family	C	.47
1. When our family gets together for outdoor activities, hobbies or recreation, most or all family members are present	C	.44
28. When at home, family members spend their leisure time in separate activities	C	.44
#3 - DISCIPLINE:		
13. In our family, children are punished when they misbehave or do wrong	A	.73

38.	When the children avoid or shirk their household responsibilities, they are punished	A	.62

#4 - MAKING DECISIONS:

25.	In our family, the leadership role changes from person to person	A	.56
42.	When our family deals with problems, we follow the children's suggestions for solving them	A	.56
29.	When there are family decisions to be made, the children become involved	A	.49
20.	Parent(s) make family decisions without consulting the children	A	.43

#5 - CHANGING ROLES:

7.	Our family changes its way of handling day-to-day routines	A	.57
9.	In our family, we shift household responsibilities from person to person	A	.44
11.	When family members are dissatisfied with their household responsibilities, they are allowed to change them	A	.44

#6 - COMMUNICATING FEELINGS AND EXPECTATIONS:

16.	When family members have an argument, they say whatever is on their minds	A	.55
10.	When family members have problems or concerns, they are able to confide in each other	C	.51
40.	When a family member does something that is annoying or irritating, other family members tell him/her about it	A	.46
31.	Family members know how they are expected to behave	A	-.45
33.	Family members know what their household responsibilities are	A	-.44
30.	Family members try to protect one another from experiencing set-backs or failures	C	.41

#7 - UNINTERPRETED:

15. Family members enter each other's private areas or activities	C	-.53

Factor Descriptions for Fathers. As illustrated in Table II, fathers' Factor #1 contained five items with loadings above .40. Three of the four highest loading items concerned the extent to which family members know and share each others' friends. The remaining two items concerned the extent to which family members seem to understand each others' feelings, and tend to agree on issues such as proper conduct and social manners. This factor appeared to be related to "Sharing Friends and Feelings", although the interpretation was somewhat tentative. Four of the items were from the cohesion scale and one item was from the adaptability scale.

Factor #2 for fathers contained five items with loadings above .40 and appeared to be concerned with "Sharing Interests and Activities", as did mothers' Factor #3. The items defining this factor were concerned with whether family members spend their leisure time with each other or with friends; whether they plan projects together or independently; and, whether they are involved in shared or separate activities and interests. All of the items within this factor were from the cohesion scale.

Fathers' Factor #3 included two items with loadings above .40 and appeared to concern "Discipline", as did mothers' Factor #5. The items within this factor dealt with whether or not children were punished when they misbehave or shirk their responsibilities. Both items were from the adaptability scale.

Factor #4 contained four items with loadings above .40 and seemed

to relate to "Making Decisions", as did mothers' Factor #1. The items were related to the extent to which children are involved in family decision-making and the flexibility of leadership roles. The items were from the adaptability scale.

Fathers' Factor #5 included three items with loadings of .40 or greater and, like mothers' Factor #4, appeared to concern "Changing Roles". The items defining this factor related to the extent to which the family changes its way of handling day-to-day routines, the extent to which household responsibilities are shifted from person to person, and whether or not family members can change household responsibilities when they are disatisfied with them. The items within this factor were from the adaptability scale.

Factor #6 for fathers contained six items with loadings above .40. Four of the items seemed to concern "Communicating Feelings", in that they dealt with issues such as whether family members say what is on their minds during arguments or discussions, whether family members are able to confide in each other when they have problems, whether they are told when they do something annoying or irritating, and the extent to which family members try to protect each other from set-backs or failures. The remaining items appeared to concern "Communicating Expectations" since they dealt with the extent to which family members know what is expected of them with respect to both behaviors and household responsibilities. Somewhat tentatively, this factor was interpreted as concerning "Communicating Feelings and Expectations". Four of the items were from the adaptability scale and two were from the cohesion scale.

Fathers' Factor #7 contained one item and was uninterpretable.

In summary, six of the seven factors which emerged for fathers were interpretable, although two of the interpretations were somewhat tentative. Four of the factors contained items which were exclusively related to either adaptability or cohesion, while two of the factors contained a mixture of items from these two dimensions.

TABLE III

FACTOR DESCRIPTIONS, ITEM STEMS, ITEM AFFILIATIONS AND FACTOR LOADINGS FOR CHILDREN

FACTOR DESCRIPTIONS/ITEM STEMS	COHESION (C) OR ADAPTABILITY (A)	FACTOR LOADING
#1 - MAKING DECISIONS:		
29. When there are family decisions to be made, the children become involved	A	.65
42. When our family deals with problems, we follow the children's suggestions for solving them	A	.57
16. When family members have an argument, they say whatever is on their minds	A	.43
35. When our family is faced with problems, we try new or different ways of dealing with them	A	.42
27. When a family member has a problem, the family gets together in a group to discuss it	A	-.41
11. When family members are dissatisfied with their household responsibilities, they are allowed to change them	A	.42
20. Parent(s) make family decisions without consulting the children	A	.40
#2 - PRIVACY:		
34. Family members feel pressured to spend time with the family	C	.53

8.	When our family has discussions or arguments, family members "team up" against other family members	C	.51
22.	Family members seem to understand the feelings and thoughts of other family members	C	.50
12.	Family members are able to find a place to be alone in the house	C	.44
15.	Family members enter each other's private areas or activities	C	.43
23.	Our family has lively disagreements or arguments	A	.43

#3 - DISCIPLINE:

38.	When the children avoid or shirk their household responsibilities, they are punished	A	.69
13.	In our family, children are punished when they misbehave or do wrong	A	.59
36.	One family member acts as the leader in our family	A	.47

#4 - EXPRESSING INDIVIDUALITY:

2.	Family members are free to try different ways of doing things whenever they choose	A	.48
19.	Family members are free to make personal decisions without discussion with the family	A	.47
11.	When family members are dissatisfied with their household responsibilities, they are allowed to change them	A	.46

#5 - SHARING PLANS:

18.	When family members are out of the house, other family members know what they are doing	A	-.62
1.	When our family gets together for outdoor activities, hobbies or recreation, most or all family members are present	C	.54

#6 - SHARING INTERESTS AND ACTIVITIES:

28.	When at home, family members spend their time in separate activities	C	.60
41.	Family members spend their leisure time away from the family	A	.56

#7 - FRIENDS:

26.	Family members invite their friends along on family activities	C	-.58
17.	Family members share the same friends	C	.46

Factor Descriptions for Children. As illustrated in Table III, childrens' Factor #1 contained seven items with loadings of .40 or greater. This factor appeared to be concerned with "Making Decisions" as did mothers' Factor #1 and fathers' Factor #4. The items defining this factor dealt with the extent to which children are involved in family decision-making; how frequently family members say whatever is on their minds during disagreements; whether or not they can change household responsibilities when they are dissatisfied with them; and, the extent to which the family tries to solve problems as a group and/or by trying new and different strategies. All of the items within this factor were from the adaptability scale.

Childrens' Factor #2 included six items with loadings above .40. The items within this factor dealt with the extent to which family members feel pressured to be with the family, the extent to which they "team-up" against each other during arguments, whether they seem to understand each others feelings and thoughts, whether they are able to find a place to be alone in the house and tend to honor each others' privacy, and lastly, the extent to which the family engages in lively disagreements or

arguments. These items appeared to relate to family member's willingness to respect each others' needs for privacy and individuality, thus the factor was somewhat tentatively interpreted as concerning "Privacy". Four of the items were related to cohesion while two were related to adaptability.

Factor #3 for children included three items with loadings above .40 and appeared to concern "Discipline", as did mothers' Factor #5 and fathers' Factor #3. The items within this factor related to whether or not children are punished when they misbehave or shirk their responsibilities and the extent to which one family member holds the leadership position in the family. These items were from the adaptability scale.

Factor #4 for children contained three items with loadings above .40 and appeared to concern "Expressing Individuality". The items related to the extent to which family members are free to try different ways of doing things, can make personal decisions without consulting other family members, and can change household responsibilities when they are dissatisfied with them. Two of the items were from the adaptability scale and one was from the cohesion scale.

Factor #5 for children contained two items with loadings above .40 and appeared to be concerned with "Sharing Plans". The items within this factor measured the extent to which family members' share outdoor activities and recreation and are aware of each others' activities when away from home. One of the items was from the adaptability scale while the other was from the cohesion scale.

Factor #6 for children contained two items with loadings above .40

and, similar to mothers' Factor #3 and fathers' Factor #2, was concerned with "Sharing Interests and Activities". These items, which were from the cohesion scale, measured the extent to which family members spend their leisure time together.

Childrens' Factor #7 contained two items with loadings above .40 and appeared to concern "Friends". These items measured the extent to which family members share the same friends and are able to include their friends in family activities. Both items were from the cohesion scale.

In summary, all of the factors which emerged for children were interpretable, although one factor interpretation, "Privacy" was more tentative in nature than the others. Four of the seven factors contained items which were either exclusively related to adaptability or cohesion, and three factors contained a mixture of items from both dimensions.

Summary. Overall, the factor analyses produced twenty interpretable factors, seven for mothers, six for fathers, and seven for children.

The factor structure which emerged for mothers appeared to be the clearest and most easily interpreted as compared to the structures which emerged for fathers or children. Mothers' factors were also somewhat purer since five of the factors contained exclusively adaptability or cohesion items, and the remaining two factors were predominated by adaptability items.

A moderately clear factor structure emerged for fathers. Although six factors were interpretable, two of the interpretations were relatively speculative. One factor was considered uninterpretable since it con-

tained only one item. Four of fathers' six interpretable factors were exclusively related to adaptability and cohesion and two contained a combination of items from both dimensions.

Childrens' factors were similar to fathers' in that while all seven of the childrens' factors were interpretable, one of the factors contained a mixture of items which only tentatively related to the interpretation it was given, i.e., "Privacy". Four of the factors contained only adaptability or cohesion items and three contained a mixture of items from both scales.

A summary of the factor descriptions, item affiliations with either adaptability or cohesion, and comparability of factors across family roles is provided in Table IV.

TABLE IV

FACTOR DESCRIPTION AND AFFILIATION WITH ADAPTABILITY AND COHESION BY FAMILY ROLE

ROLE	ADAPTABILITY (A)	COHESION (C)	BOTH (A) (C)
MOTHERS:	* CHANGING ROLES (2A)	* SHARING INTERESTS AND ACTIVITIES (6C)	* MAKING DECISIONS (7A, 1C)
	* DISCIPLINE (2A)	MAINTAINING FAMILY BOUNDARIES (2C)	AWARENESS OF ROLES AND RULES (4A, 2C)
	ASSERTIVENESS (2A)		
FATHERS:	* DISCIPLINE (2A)	SHARING INTERESTS AND ACTIVITIES (5C)	SHARING FRIENDS AND FEELINGS (4C, 1A)
	* MAKING DECISIONS (4A)		

	* CHANGING ROLES (3A)	UNINTERPRETED (1C)	COMMUNICATING FEELINGS AND EXPECTATIONS (4A, 2C)
CHILDREN:	* MAKING DECISIONS (7A)	FRIENDS (2C)	PRIVACY (1A, 5C)
	* DISCIPLINE (3A)		SHARING PLANS (1A, 1C)
	EXPRESSING INDIVIDUALITY (3A)		* SHARING INTERESTS AND ACTIVITIES (1A, 1C)

*Factors comparable for family roles

As illustrated in Table IV, in total for all family roles, eight factors were exclusively related to adaptability, and five factors were exclusively related to cohesion. The remaining factors contained a combination of items from both dimensions.

Nine of the twenty interpretable factors contained item content similar enough to warrant comparable factor descriptions for the various family roles. These descriptions were"Making Decisions", "Discipline", and "Sharing Interests and Activities", comparable for mothers, fathers, and children. An additional factor, "Changing Roles" was comparable for mothers and fathers but not for children.

Reliability.

The alpha coefficients and average intercorrelations for the adaptability and cohesion scores are provided, by family role, in Table V.

As Table V illustrates, the scores for both adaptability and cohesion produced moderately low alpha coefficients for all family roles.

TABLE V

AVERAGE INTERCORRELATIONS AND ALPHA RELIABILITIES FOR ADAPTABILITY AND COHESION BY FAMILY ROLE

	AVERAGE INTERCORRELATIONS	ALPHA COEFFICIENTS
MOTHERS:		
COHESION:	.055	.56148 *
ADAPTABILITY:	.055	.56148 *
FATHERS:		
COHESION:	.06	.58407
ADAPTABILITY:	.035	.44380
CHILDREN:		
COHESION:	.03	.40491
ADAPTABILITY:	.04	.50900

*Coefficients were the same after rounding

ranging from .40 to .58. The alpha reliabilities were generally consistent with the results of the factor analyses in suggesting considerable error across items in the revised FACES.

Intraclass Correlation.

The item stems, intraclass correlation coefficients (Rs) and significance levels for the adaptability and cohesion scales are included (Appendix D). Intraclass Rs were computed on full-family scores (i.e., families of three members), and the parent-parent and parent-child dyads.

None of the Rs computed for the various family roles were significant at the .01 level, and only two of the Rs for the full-family group were significant at the .05 level. The two items which produced significant agreement among family members were from the cohesion scale,

"When our family engages in outdoor activities, hobbies or recreation, most or all family members are present", and "Our family has spur of the moment guests for dinner". Although these items were both from the cohesion scale, they related to different subscales (i.e., interests and recreation and family boundaries, respectively) and appeared to have little noteworthy in common.

With regard to disagreements, visual inspection of the Rs suggested only one, very tentative pattern. The fathers-children and mothers-children dyads produced somewhat higher levels of disagreement (i.e., 27 Rs of .20 or less) than did the full-family group (i.e., 23 Rs of .20 or less) or the mother-father dyads (i.e., 17 Rs of .20 or less).

CHAPTER IV

DISCUSSION

In an effort to conceptualize the family as a system which needs to balance both flexibility and closeness, Olson and his colleagues developed the Circumplex Model of Adaptability and Cohesion, and FACES, a self-report measure of the model. Because of ambiguous wording and logically inconsistent scoring and scaling procedures, FACES required substantial revision. After revisions were made in the instrument, the present study was undertaken to test the revised FACES effectiveness as a measure of Olson et. al's circumplex model. At issue here were the factor structure, internal consistency and interrater reliabilities of the revised FACES.

Factor Structure.

Factor analyses of the revised FACES scores were predicted to produce a two-factor structure of adaptability and cohesion, as postulated by the circumplex model. Moreover, since analyses were performed separately on mothers', fathers', and childrens' scores, each of their adaptability and cohesion factors were expected to be comparable. It was further anticipated that the results of the present study would be consistent with Russell's (1979) study which demonstrated the independence of adaptability and cohesion through behavioral measures.

The factor structures which emerged in the present study were con-

siderably more complex than predicted, indicating that seven adaptability and cohesion factors provided the best fit for mothers', fathers', and childrens' scores. Moreover, although two-thirds of the factors obtained for the family roles were exclusively defined by either adaptability or cohesion items, the remaining factors contained a mixture of items from both scales. Some comparability of factors across family roles was also evidenced (i.e., approximately half of mothers', fathers', and childrens' factors were similar in item content), however, the remaining factors were quite dissimilar.

The sample sizes obtained in the present study may have contributed to the overall complexity of the factor results, particularly for fathers and children, whose sample sizes fell considerably short of the anticipated five to one subjects to variables ratio. Mothers' sample size, on the other hand, met the criteria and exceeded fathers' and childrens' samples by approximately fifty participants. Since mothers' factors were somewhat clearer and purer (with respect to the independence of adaptability and cohesion), it was tempting to speculate that the somewhat greater sample size obtained for mothers positively affected their factor structure. However, the relative differences in the family roles' samples sizes seemed too slight to warrant this speculation. The greater purity and interpretability of mothers' factors was more likely a function of mothers' greater awareness of family behavior. Since even in today's more liberated society women continue to be the primary caretakers of the family (Gluck, Dannefer and Milea, 1980), it was not unlikely that mothers in the current sample were simply more tuned-in to family dynamics and consequently more consistent in their

answers on the revised FACES.

While mothers' factors were somewhat clearer, the factor structures, overall, suggested neither substantial comparability of factors across family roles, nor the two-factor structure of adaptability and cohesion predicted by the circumplex model. Moreover, sufficient evidence to support Russell's (1979) findings about the independence of adaptability and cohesion was not obtained in the present study. As noted, the Russell study used behavioral measures and obtained fairly clear results about the independence of the two constructs. Apart from the present study, the only other analysis of self-report data on adaptability and cohesion was Olson, Bell and Portner's (1978) study of the original FACES. Unfortunately, since they performed separate analyses on the adaptability and cohesion scores, their efforts did not really include a test for independence. Based on the results of the present study, therefore, a self-report measure of adaptability and cohesion comparable to Russell's behavioral measure has yet to be validated.

Internal Consistency.

In the present study, analyses for internal consistency reliability were related to factor analyses in the sense that both considered relationships among items in the revised FACES. However, to the extent that factor analyses viewed relationships among all of the adaptability and cohesion items, and internal consistency analyses viewed only those relationships among items within the predefined scales for adaptability and cohesion, the two analyses took on somewhat different perspectives. The view of the revised FACES from either perspective was nonetheless quite comparable. Factor analyses suggested insufficient evidence for

validity, and analyses for internal consistency suggested relatively poor reliability.

On the surface, the reliability coefficients obtained for mothers, fathers, and children (ranging from .40 to .58 for cohesion, and from .44 to .56 for adaptability) appeared to reflect moderately low, but sufficient, levels of internal consistency reliability, particularly since Nunnally (1967) states that reliability coefficients as low as .50 and .60 can suffice for preliminary studies of a particular measurement instrument. However, since the reliability coefficient is, in part, a function of the number of items in the scale (and the revised FACES contained a relatively high number of items, i.e., 22 for each of the adaptability and cohesion scales), considerably higher reliability coefficients should have been obtained to demonstrate sufficient internal consistency reliability. This would be true even in the present, preliminary test of the instrument, particularly since the average correlations, which contribute to the reliability coefficient formula, were quite low (ranging from .03 to .06) and suggested considerable error across items.

Several sources of error can contribute to low internal consistency reliability. They include error generated by the testing situation including various environmental stresses and state characteristics which can affect subjects' responses, error caused by incomplete or ambiguous instructions, and error produced by items that are ambiguously worded and/or call for too high a reading level. Additional sources of error specific to the revised FACES included the incorporation of items which measured both social traits and motives and the requirement

that respondents generalize across all family members when selecting their item responses.

Since the revised FACES was mailed to participants there were no controls for various stresses and state characteristics which possibly affected responses. Some respondents, for example, noted that they had to convince their child or spouse to complete the questionnaire, while others noted that the revised FACES had to be read to certain family members in order to obtain their responses. Along similar lines, the brief instructions which accompanied the revised FACES provided only minimal structure and no indication about the length of time respondents could take to answer the items. Some respondents noted that they took several days, completing the revised FACES in parts each day. In addition, although a pre-test of the questionnaire was given to a small sample of persons before the instrument was finalized and mailed to the larger sample, the pre-test may not have been sufficient to prevent substantial error due to ambiguous phrasing and higher reading levels of certain items.

With respect to reading level, some of the younger respondents reportedly had difficulty with certain words and phrases such as "confide, shirk, predict, team-up, and proper conduct". Since these and other words at similar reading levels, as well as some fairly complex sentence structures, were used liberally throughout the revised FACES, the potential for error across items, particularly for young children, was likely enhanced.

Upon closer inspection, certain items intended to relate to the same subscale also appeared particularly ambiguous. For example, item #25, "In our family the leadership role changes from person to person",

and #36, "One family member acts as the leader in our family" were intended to be similar but were likely interpreted as meaning different things. As some respondents noted, it was possible for the leadership role to change from person to person within the family, while at any one time, only one family member was actually the leader. Some ambiguity across these items was suggested by their average correlation which was less than .30. Another example of this problem was item #12, "Family members are able to find a place to be alone in the house", and #15, "Family members enter each others' private areas and activities". Although both items were intended to measure privacy and personal space within the family, item #12 was more likely interpreted as measuring the size of the family's house. The average correlation among these items was .12.

With respect to overall design, Nunnally (1967) notes that most self-report personality instruments are designed to measure either "motives" or "social traits". Motives concern traits which cannot be observed directly but must be inferred by the respondent, while social traits concern behaviors which can be observed directly by the respondent. Since the revised FACES measured both of these phenomena to varying degrees the overall ambiguity of the instrument was possibly increased.

Some of the revised FACES items, for example, concerned "motives", e.g., "Family members seem to understand the feelings and thoughts of other family members", and "Family members feel pressured to spend time with the family". These items generally required more inference or subjectivity from the respondents than did items which dealt with more observable "social traits", such as, "Our family has lively disagreements

and arguments", and "Family members invite their friends along on family activities". Visual inspection of the factor structures, in particular the childrens', confirmed that items which required less subjectivity tended to produce the highest communalities, and similarly, items which required greater subjectivity tended to produce the lowest communalities. Additional items which appeared to require both greater subjectivity and higher reading levels included, "When our family discusses issues such as proper conduct and social manners, family members agree", and "Family members try to protect each other from experiencing set-backs and failures". Like the other more subjective items, these items tended to produce lower communalities, thus adding to the low internal consistency reliabilities, particularly those obtained for children.

A final source of error across items in the revised FACES concerned the requirement that respondents generalize across all family members when selecting their answers. The level of observation and abstraction required by this procedure may have been too difficult for some respondents to handle and remain consistent in their answers, particularly respondents who were very young and/or who were representatives of families with very large and diverse membership.

In summary to this point, several sources of error were possibly generated by the revised FACES. They included various environmental stresses and state characteristics which possibly affected subjects' responses, items which were ambiguously worded or called for too high a reading level, and instructions accompanying the questionnaire which were incomplete or ambiguous. The overall ambiguity across items was also possibly increased by the inclusion of items which measured both motives and social traits, and the requirement that respondents generalize

across all family members when selecting their answers. Each of these sources of error possibly contributed to the poor internal consistency reliabilities obtained for all family roles.

Interrater Reliability.

While internal consistency analysis is concerned with error across items within an instrument (in this case, the adaptability and cohesion scales), interrater reliability is concerned with error across raters (in this case, family members). The low interrater reliabilities obtained in the present study were likely a function of error generated by response bias due to social desirability. In addition, many of the same sources of error which contributed to the poor internal consistency reliabilities also likely contributed to the substantial disagreement among family members on the revised FACES items.

According to Nunnally (1967) and Anastasi (1968) social desirability is a general factor within most self-report instruments, particularly those which measure personality traits. It frequently combines several elements: the respondent's level of adjustment with regard to the trait being measured (in this case, how adjusted the respondent considered his/her family to be), the respondent's knowledge about the questions being asked (or, how well the respondent knew his/her family), and the respondent's frankness about the information being requested (Anastasi, op. cit.). Response bias due to social desirability is considered one of the major weaknesses of self-report questionnaires to the extent than people are often characterized by conformity or the tendancy to score in the neutral areas of a scale; consequently, it has become somewhat of a tradition to "hide" the more sensitive (or less socially

desirable) items among the neutral items in a test (Guertin and Bailey, 1970). In the case of the revised FACES, although none of the items were considered particularly personal or sensitive by the authors, the alternatives provided (indicating moderate to extreme levels of adaptability and cohesion) may have made some or all of the items sensitive for some respondents. Young children, for example, are notoriously sensitive about saying anything "bad" about their parents, and as a consequence, are particularly prone to this form of response bias (Guertin and Bailey, op. cit.). The somewhat lower internal consistency reliabilities obtained for children on the family cohesion (or closeness) scale, and the tendancy toward somewhat lower interrater reliabilities between parents and children than between parents, both indicated that response bias due to social desirability possibly contributed to the lower interrater reliabilities.

Two of the major ways to prevent response bias due to social desirability are to maximize hetereogeneity in the sample and assure anonymity to the respondents (Guertin and Bailey, op. cit.). Although anonymity was assured in the cover letter which accompanied the revised FACES, it was unlikely that many children actually read the letter. Moreover, even though self-addressed, pre-stamped envelopes were included for all participants, parents likely played a role in making sure their childrens' questionnaires were returned. Thus, children who were particularly sensitive to issues of social desirability may not have felt sufficiently anonymous. With respect to the range of individuals in the sample, the majority of respondents were from middle to upper-middle-class homes, reported to be generally satisfied with their family

situations, and had not sought counseling for personal or family problems. Thus, the sample of families may not have been sufficiently hetereogeneous to ensure a range of responses broad enough to limit all of the impact of response bias due to social desirability.

In summary to this point, the potential for error across family members was likely enhanced by response bias due to social desirability as well as several other sources of error. The latter were likely the same sources of error which contributed to the poor internal consistency reliabilities, including various environmental stresses and state characteristics which possibly affected subjects' responses, ambiguous items, incomplete instructions, requirements for generalization across all family members, and the inclusion of items designed to measure both motives and social traits.

Summary.

Many of the analyses performed in the present study of the revised FACES were not comparable to those performed by Olson and his colleagues on the original version. In particular, Olson's study involved sampling only the offspring of families, notably students, and thus provided self-report information about the factor structure of adaptability and cohesion from only one family role perspective. Moreover, since Olson's factor analyses were performed by separating the student's adaptability and cohesion scores, information about the independence of adaptability and cohesion as measured by the FACES was also not obtained. Thus, the present study constituted more of a first, than a second, test of FACES than was originally, albeit ideally, intended.

The only major analyses in the present study which provided infor-

mation for comparison of the original and revised versions of FACES were the analyses for internal consistency reliability. Initially, the reliabilities obtained by Olson and his colleagues on the adaptability and cohesion scales appeared relatively high (i.e., .75 and .83, respectively), and were expected to increase with revisions to the FACES item wording and scaling and scoring procedures. Based on the results of the present study, however, it appeared that confusing item wording and inconsistent scoring and scaling procedures were only a part of the reliability problems inherent in the FACES. The reliability coefficients obtained by Olson, just as those obtained in the current study, were apparently largely a function of the high number of items in each of the original scales (i.e., 54 for adaptability and 43 for cohesion), rather than an indication of reasonably good internal consistency. Thus, as a self-report measure of adaptability and cohesion, both the original and revised versions of FACES appeared to be basically unreliable, at least with respect to their internal consistency. Tests for intrafamily agreement suggested a similar lack of reliability across raters on the revised FACES. By the same token, tests for construct validity performed in the present study suggested that revised FACES provided neither an effective measure of the independence of adaptability and cohesion, nor produced the two-factor structure postulated by the circumplex model.

At the current time, the FACES appears to require considerable rethinking before it can be used to accurately conceptualize family adjustment based on levels of adaptability and cohesion, particularly as Olson et. al. (1980a) describe the use of the model: "no matter what type of system within the circumplex model best describes the couple or family

if one person has highly discrepant expectations or behaviors from others in the system, there is a strong likelihood that problems will develop". Since individual scores on the FACES are unreliable and overall levels of family adaptability and cohesion are currently determined by summing the individual scores, any clinical decisions made on the basis of discrepancies between individual and overall family scores on the FACES would currently be misleading, at best.

CHAPTER V

SUMMARY AND CONCLUSIONS

The present study involved an assessment of the revised FACES as a measure of the Circumplex Model of Adaptability and Cohesion, as developed by Olson and his colleagues (1979, 1980a). Issues of concern included the revised FACES factor structure, internal consistency and interrater reliabilities.

Although the discussion of specific findings was provided in previous sections, the following general conclusions were suggested in the present study:

1) The revised FACES was more factorially complex than anticipated, with seven factors providing the clearest structure for mothers', fathers', and childrens' adaptability and cohesion scores. Only minimal comparability of factors across family roles was evidenced. Moreover, the revised FACES as a self-report measure of adaptability and cohesion compared relatively unfavorably to the behavioral measure used by Russell (1979) to demonstrate the independence of the two constructs. Overall, factor analyses indicated that, at the current time, the revised FACES provided neither an effective measure of the independence of adaptability and cohesion, nor produced the two-factor structure postulated by the circumplex model.

2) The revised FACES scores for mothers, fathers, and children were characterized by poor internal consistency, as indexed by alpha

reliability coefficients, and suggested considerable error across items. The sources of error included ambiguous and confusing item wording, in part due to the inclusion of items which measured both motives and social traits; incomplete or ambiguous instructions, including the requirement that respondents generalize across all family members when selecting their answers; and, a variety of environmental stresses and state characteristics which possibly affected subjects' responses.

The internal consistency reliabilities obtained in the present study were comparable to those obtained by Olson, Bell and Portner (1978) in their study of the original FACES. The reliabilities obtained on both versions of FACES appeared to be largely due to the high number of items included in the adaptability and cohesion scales, particularly since both of the FACES evidenced particularly low average intercorrelations.

3) Like the analyses for internal consistency reliability which suggested considerable error across items, the analyses for interrater reliability suggested substantial error across raters in the revised FACES. The same sources of error which likely contributed to the poor internal consistency reliabilities also likely contributed to the substantial disagreement among family members. That is, a broad range of errors, rather than any particular role characteristic, appeared to contribute to the low interrater reliabilities obtained on the revised FACES. Response bias due to social desirability also likely contributed to the low interrater reliabilities obtained.

Overall, the present study was interpreted as providing no support for the revised FACES as an effective self-report measure of adaptability and cohesion within the circumplex model developed by Olson and

his colleagues. Both the revised FACES and the model on which it was based appeared to require considerably rethinking and revision before additional testing is performed.

At the very least, future refinement and research on the revised FACES should:

1) Reevaluate the circumplex model, possibly including other related concepts. For example, the concepts of adaptability and cohesion might better fit a multiplex model with family communication as a third major component (Satir, 1971; Olson, 1980b).

2) Revise and refine certain revised FACES items, particularly those which are very subjective and ambiguous. An evaluation of and reduction in the reading level of the instrument was also indicated, as well as item revisions which would enable the instrument to measure either motives or social traits rather than both.

3) Revise the instructions which accompany the instrument to clearly specify a time framework within which the FACES is to be completed. Additionally, a limit might be placed on the number or ages of persons to be included in generalizations about the family, i.e., the questions could be answered only with respect to family members aged ten to adult to reduce the complexity of that procedure.

4) Increase the hetereogeneity of the sample of families and include a larger number of individuals from each of the family roles. Changes in sample might also include obtaining enough children to enable a division to be made between children in early-to-middle adolescence and those in the older age group, or include only older children, in order to reduce the effects of response bias due to social desirability.

5) Lastly, different methods might be employed for testing the revised FACES with families. Families in the present study who noted that they particularly enjoyed participating were quick to point out that their enjoyment came not in filling out the questionnaire per se, but rather in discussing their answers with each other afterwards. Thus, a short questionnaire like the revised FACES might be tested with an eye towards its usefulness in a clinical setting, as a dual measure of both adaptability and cohesion, and family communication. The questionnaire might be filled out by family members individually, for example, followed later by a group discussion among family members during which an overall compromise version of the FACES could be completed. This might enable a far more valid measure of discrepancies between individual and family perceptions of adaptability and cohesion. The family's group discussion of the instrument might also serve as an interaction task which, when observed by the clinician, might provide useful information about the family's level of adaptability and cohesion, as well as insight into their communication and problem-solving patterns.

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APPENDIX A

REVISED FACES

Family Communication Study

In your family, are you a (circle one): Mother Father Son Daughter

Are you also a: Stepmother Stepfather Foster Mother Foster Father

Your age:_____ Occupation:_____ Full-time: Yes No Highest Grade Completed:____

Your family is a (circle one): 2-parent family 1-parent family # of Children at Home:_____

If married, length of marriage:___yrs. If single, parent, how long:___yrs.

Listed below are a series of statements related to various family situations. For each statement, please circle one answer which best describes your family.

1. WHEN OUR FAMILY GETS TOGETHER FOR OUTDOOR ACTIVITIES, HOBBIES OR RECREATION, MOST OR ALL FAMILY MEMBERS ARE PRESENT

   never rarely sometimes often nearly always always

2. FAMILY MEMBERS ARE FREE TO TRY DIFFERENT WAYS OF DOING THINGS WHENEVER THEY CHOOSE

   never rarely sometimes often nearly always always

3. WHEN OUR FAMILY DISCUSSES ISSUES SUCH AS PROPER CONDUCT AND SOCIAL MANNERS, FAMILY MEMBERS AGREE

   never rarely sometimes often nearly always always

4. OUR FAMILY CHANGES ACTIVITIES THAT HAVE ALREADY BEEN PLANNED

   never rarely sometimes often nearly always always

5. OUR FAMILY HAS SPUR OF THE MOMENT GUESTS FOR DINNER

   never very often often sometimes rarely always

6. FAMILY MEMBERS KNOW EACH OTHERS' FRIENDS

   never rarely sometimes often very often always

7. OUR FAMILY CHANGES ITS WAY OF HANDLING DAY-TO-DAY ROUTINES

never rarely sometimes often very often always

8. WHEN OUR FAMILY HAS DISCUSSIONS OR ARGUMENTS, FAMILY MEMBERS "TEAM UP" AGAINST OTHER FAMILY MEMBERS

never rarely sometimes often nearly always always

9. IN OUR FAMILY, WE SHIFT HOUSEHOLD RESPONSIBILITIES FROM PERSON TO PERSON

never rarely sometimes often nearly always always

10. WHEN FAMILY MEMBERS HAVE PROBLEMS OR CONCERNS, THEY ARE ABLE TO CONFIDE IN EACH OTHER

never rarely sometimes often nearly always always

11. WHEN FAMILY MEMBERS ARE DISSATISFIED WITH THEIR HOUSEHOLD RESPONSIBILITIES, THEY ARE ALLOWED TO CHANGE THEM

never rarely sometimes often nearly always always

12. FAMILY MEMBERS ARE ABLE TO FIND A PLACE TO BE ALONE IN THE HOUSE

always very often often sometimes rarely never

13. IN OUR FAMILY, CHILDREN ARE PUNISHED WHEN THEY MISBEHAVE OR DO WRONG

always nearly always often sometimes rarely never

14. FAMILY MEMBERS CAN PREDICT WHAT OTHER MEMBERS WILL DO IN A GIVEN SITUATION

always very often often sometimes rarely never

15. FAMILY MEMBERS ENTER EACH OTHER'S PRIVATE AREAS OR ACTIVITIES

never rarely sometimes often very often always

16. WHEN FAMILY MEMBERS HAVE AN ARGUMENT, THEY SAY WHATEVER IS ON THEIR MINDS

never rarely sometimes often nearly always always

17. FAMILY MEMBERS SHARE THE SAME FRIENDS

never rarely sometimes often very often always

18. WHEN FAMILY MEMBERS ARE OUT OF THE HOUSE, OTHER FAMILY MEMBERS KNOW WHAT THEY ARE DOING

always nearly always often sometimes rarely never

19. FAMILY MEMBERS ARE FREE TO MAKE PERSONAL DECISIONS WITHOUT DISCUSSION WITH THE FAMILY

always very often often sometimes rarely never

20. PARENT(S) MAKE FAMILY DECISIONS WITHOUT CONSULTING THE CHILDREN

always very often often sometimes rarely never

21. FAMILY MEMBERS ARE INVOLVED IN INTERESTS AND ACTIVITIES WHICH DO NOT INCLUDE THE REST OF THE FAMILY

always very often often sometimes rarely never

22. FAMILY MEMBERS SEEM TO UNDERSTAND THE FEELINGS AND THOUGHTS OF OTHER FAMILY MEMBERS

always very often often sometimes rarely never

23. OUR FAMILY HAS LIVELY DISAGREEMENTS OR ARGUMENTS

never rarely sometimes often very often always

24. FAMILY MEMBERS ARE ON THEIR OWN WHEN PLANNING PROJECTS OR ACTIVITIES

always nearly always often sometimes rarely never

25. IN OUR FAMILY, THE LEADERSHIP ROLE CHANGES FROM PERSON TO PERSON

never rarely sometimes often very often always

26. FAMILY MEMBERS INVITE THEIR FRIENDS ALONG ON FAMILY ACTIVITIES

always very often often sometimes rarely never

27. WHEN A FAMILY MEMBER HAS A PROBLEM, THE FAMILY GETS TOGETHER IN A GROUP TO DISCUSS IT

always nearly always often sometimes rarely never

28. WHEN AT HOME, FAMILY MEMBERS SPEND THEIR TIME IN SEPARATE ACTIVITIES

always nearly always often sometimes rarely never

29. WHEN THERE ARE FAMILY DECISIONS TO BE MADE, THE CHILDREN BECOME INVOLVED

never rarely sometimes often nearly always always

30. FAMILY MEMBERS TRY TO PROTECT ONE ANOTHER FROM EXPERIENCING FAILURES OR SET-BACKS

never rarely sometimes often very often always

31. FAMILY MEMBERS KNOW HOW THEY ARE EXPECTED TO BEHAVE

always very often often sometimes rarely never

32. WHEN FAMILY MEMBERS DISCUSS SOCIAL AND POLITICAL ISSUES, THEY AGREE

never rarely sometimes often nearly always always

33. FAMILY MEMBERS KNOW WHAT THEIR HOUSEHOLD RESPONSIBILITIES ARE

always very often often sometimes rarely never

34. FAMILY MEMBERS FEEL PRESSURED TO SPEND TIME WITH THE FAMILY

never rarely sometimes often very often always

35. WHEN OUR FAMILY IS FACED WITH PROBLEMS, WE TRY NEW OR DIFFERENT WAYS OF DEALING WITH THEM

never rarely sometimes often nearly always always

36. ONE FAMILY MEMBER ACTS AS THE LEADER IN OUR FAMILY

always very often often sometimes rarely never

37. FAMILY MEMBERS DISCUSS THEIR PROBLEMS WITH PERSONS OUTSIDE THE FAMILY

always very often often sometimes rarely never

38. WHEN THE CHILDREN AVOID OR SHIRK THEIR HOUSEHOLD RESPONSIBILITIES, THEY ARE PUNISHED

always nearly always often sometimes rarely never

39. FAMILY MEMBERS KNOW WHO WILL AGREE AND WHO WILL DISAGREE WITH THEM WHEN THEY EXPRESS OPINIONS

never rarely sometimes often nearly always always

40. WHEN A FAMILY MEMBER DOES SOMETHING THAT IS ANNOYING OR IRRITATING, OTHER FAMILY MEMBERS TELL HIM/HER ABOUT IT

never rarely sometimes often nearly always always

41. FAMILY MEMBERS SPEND THEIR LEISURE TIME AWAY FROM THE FAMILY

always very often often sometimes rarely never

42. WHEN OUR FAMILY DEALS WITH PROBLEMS, WE FOLLOW THE CHILDREN'S SUGGESTIONS FOR SOLVING THEM

never rarely sometimes often nearly always always

43. FAMILY MEMBERS "TEAM UP" FOR RECREATIONAL ACTIVITIES OR INTERESTS WHICH DO NOT INCLUDE THE WHOLE FAMILY.

never rarely sometimes often nearly always always

44. IN OUR FAMILY, THE PARENTS AGREE ON HOW TO HANDLE THE CHILDREN

never rarely sometimes often nearly always always

45. OVERALL, HOW HAPPY ARE YOU TO BE A MEMBER OF YOUR FAMILY?

totally happy very happy somewhat happy somewhat unhappy very unhappy totally unhappy

46. OVERALL, HOW SATISIFED ARE YOU WITH YOUR HOME AS A GOOD ENVIRONMENT FOR BRINGING UP CHILDREN

totally satisfied very satisfied somewhat satisfied somewhat dissatisfied very dissatisfied totally dissatisfied

47. OVERALL, HOW SATISIFED ARE YOU WITH THE WAY YOUR FAMILY MEMBERS GET ALONG WITH ONE ANOTHER?

totally satisfied very satisfied somewhat satisfied somewhat dissatisfied very dissatisfied totally dissatisfied

48. A FAMILY'S NEED FOR CLOSENESS AND UNITY OFTEN CONFLICTS WITH THE NEEDS OF INDIVIDUAL MEMBERS FOR INDEPENDENCE AND PERSONAL FREEDOM. WHICH OF THE FOLLOWING STATEMENTS BEST DESCRIBES YOUR FAMILY'S CURRENT ATTITUDE TOWARD THIS ISSUE?

we stress family closeness above all else	we stress family closeness first, but we also value individual independence	we stress individual independence first, but we also value family closeness	we stress individual independence above all else

49. SOME FAMILIES FEEL THAT IT'S IMPORTANT TO HAVE CONSISTENT ATTITUDES, RULES AND ROUTINES: OTHERS FEEL THAT IT'S IMPORTANT TO HAVE FLEXIBLE ATTITUDES, RULES AND ROUTINES. WHICH OF THE FOLLOWING STATEMENTS BEST DESCRIBES YOUR FAMILY'S CURRENT ATTITUDE TOWARD THIS ISSUE?

we stress consistency above all else	we stress consistency first, but we also value flexibility	we stress flexibility first, but we also value consistency	we stress flexibility above all else

50. ARE YOU OR OTHER FAMILY MEMBERS CURRENTLY RECEIVING PROFESSIONAL COUNSELING FOR INDIVIDUAL OR FAMILY PROBLEMS? (circle one) Yes No

WE WOULD APPRECIATE ANY COMMENTS OR SUGGESTIONS CONCERNING THIS QUESTIONNAIRE (FOR EXAMPLE, WERE ANY OF THE QUESTIONS PARTICULARLY CONFUSING OR UNCLEAR). PLEASE FEEL FREE TO ENCLOSE A SEPARATE SHEET OF PAPER WITH YOUR COMMENTS.

APPENDIX B

DESCRIPTIVE STATISTICS

Fathers (n=187):	#	Mean (yrs)	S.D.
Single-parent families:	2		
Two-parent families:	185		
Age:		43.5	9.0
Education:		14.2	4.3
Number of Children in family:		2.5	1.8
Length of marriage:		17.6	8.2
Length of single-parenthood:		.01	.1
Mothers (n=244):			
Single-parent families:	34		
Two-parent families:	210		
Age:		40.7	7.4
Education:		13.7	3.4
Number of Children in family:		2.4	1.7
Length of marriage:		14.9	9.5
Length of single-parenthood:		.9	3.0
Children (n=196):			
Single-parent families:	31		
Two-parent families:	165		
Age:		14.6	2.6
Education:		8.3	3.1
Number of Children in family:		2.4	1.4

Occupations:	None Given	Professional/ White Collar	Blue Collar/ Clerical	Home Maker	Student	Retired, Self-Employed
Fathers	4	109	54		5	15
Mothers	8	133	25	68	4	6
Children	22	4	12	1	155	2

APPENDIX C

INTERCORRELATIONS, MEANS, AND STANDARD DEVIATIONS FOR REVISED FACES ITEMS

The correlation matrices, means, and standard deviations for mothers', fathers', and childrens' scores on the revised FACES appear on the following pages. Note that the decimals have been omitted in the correlation matrices.

MOTHERS:

Item #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	100																
2	0	100															
3	26	4	100														
4	10	12	0	100													
5	5	5	0	9	100												
6	31	12	17	13	16	100											
7	11	14	5	28	14	10	100										
8	12	0	29	5	4	7	2	100									
9	21	8	15	1	11	14	29	10	100								
10	26	13	33	8	12	30	7	20	16	100							
11	5	31	13	0	7	19	14	16	34	23	100						
12	2	0	11	3	6	0	0	13	8	6	13	100					
13	13	16	15	12	3	10	1	13	3	8	4	9	100				
14	8	6	31	0	4	23	4	0	16	15	2	17	8	100			
15	2	2	6	20	0	8	20	23	9	2	7	2	1	7	100		
16	6	23	12	2	20	19	3	4	7	3	16	7	5	14	3	100	
17	31	2	12	11	11	38	5	9	10	28	10	6	11	12	6	17	100
18	42	3	28	8	5	42	8	15	17	39	10	6	16	24	0	18	24
19	4	23	2	7	3	5	3	10	8	7	24	15	15	4	1	2	2
20	6	17	10	20	2	13	3	11	12	18	23	1	13	10	6	3	24
21	26	9	3	13	0	23	6	9	0	5	9	10	7	4	1	4	28
22	27	15	27	11	6	20	14	20	14	45	23	9	6	23	1	27	25
23	7	6	21	12	5	9	1	26	3	7	2	1	7	11	14	29	3
24	19	12	20	3	7	17	3	19	6	17	3	7	17	4	6	1	32
25	9	13	5	12	6	2	26	4	20	1	9	2	5	0	12	1	0
26	9	10	1	16	38	30	7	1	5	12	15	3	4	1	0	14	15
27	17	22	23	1	2	18	10	13	10	28	10	0	0	4	6	25	24
28	30	2	10	17	1	21	5	12	11	11	4	1	4	1	2	4	25
29	21	24	21	1	6	16	12	9	22	38	26	3	8	7	5	16	19
30	7	10	4	6	5	14	1	2	5	24	12	6	2	24	3	9	15
31	16	8	31	17	3	18	5	19	16	24	9	19	21	28	10	13	16
32	23	2	41	7	14	14	1	11	8	17	4	3	5	23	4	1	10
33	12	4	17	20	3	23	12	13	5	23	0	20	20	25	13	7	16
34	13	10	2	7	7	1	0	12	9	5	7	8	5	11	8	7	8
35	21	20	5	3	0	13	15	7	21	27	23	0	6	1	2	14	10
36	0	14	1	4	3	5	4	6	7	3	8	7	10	1	2	8	7
37	21	12	16	18	14	5	13	11	1	19	13	3	11	10	12	1	20
38	14	14	7	23	5	2	7	0	4	8	9	12	61	1	3	1	7
39	10	8	6	8	1	2	0	12	15	5	9	1	16	23	8	3	4
40	13	4	12	2	11	2	4	7	6	13	3	1	2	13	9	27	3
41	40	16	13	17	0	25	4	17	14	12	8	3	14	7	5	1	30
42	20	14	12	7	0	8	8	7	13	15	22	11	8	0	2	9	11
43	13	5	2	7	5	4	0	18	6	12	3	0	3	12	7	3	10
44	33	3	26	12	1	25	12	16	6	34	18	6	16	12	0	7	25

Item #	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
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15																	
16																	
17																	
18	100																
19	8	100															
20	5	1	100														
21	16	18	5	100													
22	29	4	25	15	100												
23	11	16	0	5	2	100											
24	25	28	15	34	12	4	100										
25	5	18	13	12	2	2	5	100									
26	14	2	15	1	6	7	0	12	100								
27	19	1	33	13	27	6	16	5	7	100							
28	22	12	17	43	15	4	34	8	9	19	100						
29	14	7	58	3	42	9	12	11	19	40	10	100					
30	8	11	14	2	23	3	3	5	14	21	5	30	100				
31	35	3	8	4	33	10	4	17	13	16	1	14	19	100			
32	15	7	3	1	13	9	18	5	11	11	14	6	7	9	100		
33	19	5	0	3	24	2	7	10	0	5	5	5	13	4	9	100	
34	6	5	1	10	7	6	1	21	4	6	7	1	2	15	4	9	100
35	21	2	24	2	24	14	0	14	9	27	6	34	15	11	9	18	22
36	5	5	22	4	6	4	3	44	7	4	4	9	10	12	0	10	4
37	12	2	7	28	13	18	15	5	15	2	16	7	0	8	18	12	14
38	6	7	15	1	10	3	9	9	5	4	2	11	3	20	2	25	6
39	2	3	11	4	6	0	6	7	2	2	11	9	11	2	8	6	4
40	12	2	4	4	12	28	10	10	1	4	1	12	12	16	13	5	3
41	32	12	7	36	7	18	31	4	4	7	31	0	5	18	12	16	15
42	2	7	23	5	24	11	10	9	17	19	3	40	5	6	19	1	5
43	0	14	3	18	6	13	11	6	9	0	11	9	1	3	4	2	13
44	29	4	22	6	36	15	24	3	12	15	12	31	6	29	15	23	11

Item #	35	36	37	38	39	40	41	42	43	44
1										
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34										
35	100									
36	5	100								
37	3	7	100							
38	0	19	5	100						
39	0	10	11	16	100					
40	12	2	4	8	9	100				
41	1	3	29	8	10	1	100			
42	18	12	6	3	8	9	9	100		
43	7	3	3	1	5	9	19	21	100	
44	21	0	22	3	6	4	18	13	3	100

item #	MEAN	S.D.
1	4.31	1.11
2	4.12	.98
3	4.11	.93
4	2.94	.77
5	4.09	1.09
6	4.61	.93
7	2.92	.94
8	2.57	.94
9	3.16	1.13
10	4.35	1.08
11	3.27	.98
12	1.81	1.16
13	2.96	1.20
14	2.70	.84
15	2.89	.89
16	4.23	1.01
17	3.44	1.06
18	2.02	.73
19	3.24	1.13
20	3.61	1.06
21	3.25	.95
22	2.88	.95
23	3.26	.96
24	3.87	.90
25	2.55	.93
26	3.51	1.02
27	4.03	1.08
28	3.30	.79
29	3.80	1.08
30	4.04	1.05
31	1.93	.82
32	3.62	.96
33	2.19	1.03
34	2.47	.86
35	3.38	.89
36	2.65	1.28
37	3.77	1.02
38	3.74	1.17
39	4.05	.98
40	4.51	.90
41	4.00	.88
42	2.94	.58
43	2.80	.86
44	4.37	1.05

FATHERS:

Item #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	100																
2	5	100															
3	37	7	100														
4	0	1	3	100													
5	0	17	5	21	100												
6	28	8	35	5	14	100											
7	6	5	15	30	17	1	100										
8	11	7	29	9	6	13	12	100									
9	22	2	15	1	5	10	23	9	100								
10	33	6	34	0	16	26	14	16	16	100							
11	4	18	13	9	7	4	19	11	26	19	100						
12	3	14	10	1	7	1	8	10	6	21	19	100					
13	23	12	12	8	3	14	4	3	8	0	11	0	100				
14	14	5	0	11	9	25	8	6	0	20	3	4	3	100			
15	18	15	2	9	0	16	11	2	10	0	2	6	8	10	100		
16	16	12	6	7	7	11	7	5	5	29	5	11	11	6	6	100	
17	23	8	25	2	24	45	6	24	8	28	4	3	6	21	13	29	100
18	28	5	31	1	4	30	1	12	11	29	3	16	17	25	4	15	24
19	6	38	4	3	22	6	1	3	0	11	10	14	18	6	4	9	4
20	8	13	1	6	2	3	2	17	16	16	19	15	15	18	9	1	5
21	26	6	9	1	0	22	6	15	5	13	3	7	2	7	5	4	19
22	20	21	34	4	17	34	13	20	17	47	19	8	4	24	7	12	45
23	0	7	24	3	7	12	11	32	0	6	6	7	10	13	1	21	13
24	26	19	17	10	15	13	9	18	16	11	1	3	15	2	10	2	4
25	3	17	0	10	10	0	14	2	16	9	13	5	14	4	2	8	4
26	10	0	19	11	27	41	14	7	2	11	7	7	10	16	4	2	19
27	30	10	30	16	1	19	11	24	2	30	7	9	8	17	3	27	29
28	21	10	10	7	8	25	0	11	21	12	1	0	6	5	5	6	21
29	33	8	16	2	17	8	8	5	23	25	15	18	8	14	2	7	8
30	24	6	22	19	8	12	13	6	7	26	6	6	17	16	0	19	18
31	21	10	27	7	2	22	0	13	11	38	4	23	22	27	1	21	17
32	18	0	32	10	15	33	4	10	13	15	4	2	9	12	12	3	18
33	26	0	23	2	3	20	6	6	23	23	12	16	28	12	8	19	21
34	4	14	4	1	9	1	3	5	9	10	2	7	7	2	19	7	8
35	16	13	21	2	23	16	12	12	20	15	4	9	6	1	0	5	15
36	0	14	4	12	4	2	1	9	2	9	3	14	28	3	1	4	0
37	12	1	22	17	0	1	6	2	6	15	20	5	3	5	26	4	14
38	26	14	18	4	1	15	4	4	14	3	11	1	69	6	6	13	12
39	8	13	1	3	8	12	7	4	15	1	9	3	9	15	12	7	10
40	16	10	11	5	1	7	15	5	9	13	4	15	22	11	12	39	5
41	41	21	22	9	8	22	1	18	19	13	6	10	16	2	7	5	21
42	6	14	11	2	19	2	2	3	12	3	19	11	11	16	1	1	7
43	18	4	12	1	3	7	5	20	5	9	10	2	17	6	17	3	3
44	30	0	34	3	9	23	8	15	6	29	3	3	20	13	3	23	25

Item #	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
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18	100																
19	0	100															
20	16	6	100														
21	3	19	25	100													
22	34	11	18	18	100												
23	21	3	6	14	14	100											
24	4	25	5	22	5	8	100										
25	5	31	13	1	14	13	12	100									
26	14	4	2	9	21	15	3	3	100								
27	23	6	29	25	31	1	19	2	5	100							
28	12	3	12	29	11	19	26	2	5	21	100						
29	15	10	39	6	14	4	3	13	8	24	2	100					
30	14	4	2	17	19	14	7	8	2	27	8	15	100				
31	41	3	15	5	31	3	3	6	23	18	2	12	26	100			
32	31	0	7	13	27	8	4	12	10	16	2	16	22	7	100		
33	20	6	0	3	20	7	0	8	13	15	1	15	25	41	16	100	
34	4	3	9	20	3	10	6	7	4	0	15	5	11	7	1	14	100
35	0	14	13	18	24	2	0	14	9	22	14	25	20	11	9	14	5
36	1	21	14	7	3	10	2	43	1	4	4	4	8	13	5	25	3
37	7	5	5	3	12	9	15	6	11	5	11	4	6	2	13	2	10
38	20	27	11	6	2	7	11	8	14	7	3	4	14	23	16	31	2
39	1	15	9	1	1	11	0	10	4	8	11	0	14	4	5	13	7
40	20	6	9	2	1	15	4	6	4	1	1	19	21	15	15	27	6
41	20	23	10	37	16	8	43	4	0	27	32	8	13	4	5	11	6
42	10	21	26	4	15	0	13	28	11	25	4	36	5	5	14	8	4
43	9	1	0	26	6	6	12	10	10	12	2	0	15	15	5	4	9
44	16	2	1	4	27	0	20	12	8	17	10	11	23	29	12	22	3

Item #	35	36	37	38	39	40	41	42	43	44
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35	100									
36	0	100								
37	2	12	100							
38	5	23	2	100						
39	6	5	6	12	100					
40	4	21	0	23	18	100				
41	8	9	16	17	5	13	100			
42	21	21	0	0	1	1	8	100		
43	9	0	3	8	0	6	13	0	100	
44	11	13	4	12	1	16	28	5	12	100

item #	MEAN	S.D.
1	4.19	1.11
2	4.22	.98
3	3.98	.99
4	2.73	.66
5	4.24	.99
6	4.34	.96
7	2.83	.82
8	2.59	.96
9	3.03	1.08
10	4.34	1.07
11	3.08	.94
12	2.12	1.20
13	3.20	1.24
14	2.73	.86
15	2.89	.98
16	4.13	1.03
17	3.40	1.02
18	2.35	.91
19	3.38	1.15
20	3.54	1.02
21	3.43	.94
22	2.91	.93
23	3.09	.96
24	3.81	.93
25	2.59	.95
26	3.41	.96
27	4.15	.99
28	3.30	.73
29	3.60	.96
30	4.10	1.03
31	1.96	.86
32	3.52	.86
33	2.26	.97
34	2.53	.77
35	3.19	.72
36	2.79	1.18
37	4.14	.87
38	3.63	1.15
39	3.68	.96
40	4.33	.90
41	4.03	.90
42	2.88	.56
43	2.83	.86
44	4.39	.96

CHILDREN:

Item #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	100																
2	6	100															
3	39	25	100														
4	19	13	11	100													
5	6	3	5	13	100												
6	16	11	19	7	14	100											
7	7	1	10	15	12	4	100										
8	15	0	28	5	5	14	1	100									
9	10	15	9	6	7	26	16	4	100								
10	23	22	34	7	8	26	11	21	23	100							
11	6	30	11	13	5	13	21	0	38	28	100						
12	6	19	13	4	6	14	3	26	3	23	14	100					
13	18	5	24	2	6	0	5	14	10	3	5	12	100				
14	3	18	5	15	5	1	4	0	13	1	26	11	4	100			
15	11	11	11	10	0	1	1	29	0	14	10	18	4	3	100		
16	13	16	11	1	0	18	17	2	10	16	30	15	7	1	7	100	
17	28	5	30	1	23	36	6	16	17	32	6	9	17	10	1	9	100
18	42	1	18	18	1	28	9	13	14	23	14	17	21	15	1	9	23
19	6	29	4	12	10	8	18	1	13	2	28	10	11	8	6	12	3
20	11	9	13	15	7	12	0	15	20	15	22	6	4	6	14	17	18
21	16	17	14	10	0	7	3	21	5	15	16	0	11	16	16	7	21
22	18	13	39	12	10	29	0	24	25	48	20	27	9	1	26	21	27
23	16	0	28	17	13	16	7	27	6	19	4	12	3	3	15	6	17
24	20	15	7	3	4	0	5	18	0	10	8	2	10	12	12	0	9
25	4	11	9	8	11	6	6	5	10	3	17	0	9	16	9	8	3
26	26	17	12	3	23	29	20	5	25	23	15	23	9	2	7	15	34
27	19	2	32	2	5	18	8	25	2	31	5	32	17	14	12	8	33
28	22	1	30	7	3	19	13	16	3	26	2	3	15	15	5	2	18
29	27	15	20	3	7	13	15	15	21	28	31	10	2	6	11	34	18
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31	20	11	27	0	1	20	12	9	18	18	8	21	25	7	4	5	15
32	37	4	22	2	7	7	3	11	10	7	7	4	9	0	4	4	7
33	21	2	28	11	2	23	9	18	7	26	6	18	23	0	9	11	20
34	13	14	23	20	7	25	3	29	0	25	5	20	3	1	19	12	20
35	9	0	19	4	2	14	15	30	7	35	8	11	13	10	11	13	26
36	7	5	11	2	5	1	5	13	1	3	10	14	20	2	2	8	5
37	19	3	20	6	5	2	5	29	7	24	9	2	11	1	10	3	9
38	17	12	14	11	4	1	5	2	10	2	10	5	49	10	4	1	10
39	18	11	21	8	0	14	9	28	5	25	6	7	2	21	27	3	13
40	12	4	11	4	8	1	4	5	3	8	9	3	3	17	1	23	2
41	31	11	25	3	0	8	2	19	3	24	2	2	5	21	9	4	15
42	5	17	24	8	7	17	2	7	23	27	23	0	5	3	16	21	24
43	15	12	0	9	7	0	3	11	17	7	1	2	4	1	14	11	4
44	18	12	24	7	1	10	1	15	7	22	9	16	14	4	1	11	17

Item #	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
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19	7	100															
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22	15	1	17	16	100												
23	12	10	2	23	22	100											
24	3	21	7	15	1	5	100										
25	0	10	13	13	2	8	20	100									
26	28	12	11	6	26	12	0	8	100								
27	5	17	5	17	28	10	16	1	15	100							
28	13	6	10	26	12	22	15	0	4	21	100						
29	18	13	45	9	32	2	8	2	22	23	2	100					
30	10	15	8	15	9	6	17	7	18	37	10	21	100				
31	29	2	13	9	32	14	5	7	14	18	4	21	13	100			
32	18	4	9	19	13	9	11	8	6	14	9	20	20	12	100		
33	27	15	8	19	29	19	3	6	4	25	7	19	16	36	10	100	
34	0	7	14	15	30	21	3	2	3	18	18	11	6	20	2	19	100
35	1	8	14	21	24	15	7	1	13	42	11	29	31	7	16	27	21
36	9	9	4	6	6	1	17	37	1	3	5	0	3	12	19	21	12
37	2	13	5	16	19	11	15	4	9	29	20	4	10	11	15	22	28
38	10	17	4	16	11	1	0	4	0	10	7	3	1	16	7	23	12
39	11	8	4	30	16	20	9	9	12	20	23	5	6	7	10	5	22
40	24	10	7	5	10	23	6	2	0	0	7	10	1	17	9	10	10
41	8	15	2	27	10	6	33	8	14	28	35	3	12	12	17	10	19
42	6	4	24	2	23	3	2	13	20	34	14	38	17	16	14	12	10
43	0	17	4	16	14	15	2	3	2	11	1	10	14	0	1	13	8
44	19	5	2	9	20	14	5	6	20	9	2	12	19	15	13	19	2

Item #	35	36	37	38	39	40	41	42	43	44
1	100									
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35	100									
36	5	100								
37	20	5	100							
38	18	30	5	100						
39	25	6	12	1	100					
40	15	4	0	4	6	100				
41	13	2	31	1	22	2	100			
42	36	5	2	1	5	4	6	100		
43	0	7	11	10	4	5	5	8	100	
44	19	17	3	5	2	9	2	10	10	100

item #	MEAN	S.D.
1	4.26	1.30
2	4.13	1.24
3	3.92	1.17
4	2.71	.83
5	4.34	1.21
6	4.38	1.03
7	2.87	1.05
8	2.80	1.42
9	3.14	1.46
10	3.90	1.40
11	3.10	1.34
12	2.49	1.50
13	2.97	1.48
14	3.22	1.15
15	2.86	1.15
16	3.95	1.32
17	3.17	1.28
18	2.78	1.25
19	3.20	1.39
20	4.08	1.21
21	3.15	1.18
22	3.20	1.17
23	3.16	1.17
24	3.77	1.11
25	2.19	1.17
26	3.50	1.21
27	4.70	1.24
28	3.29	1.09
29	4.04	1.31
30	4.14	1.35
31	1.91	.96
32	3.51	1.01
33	2.21	1.23
34	2.50	1.17
35	3.20	1.14
36	3.05	1.60
37	3.48	1.34
38	3.81	1.31
39	3.64	1.19
40	4.68	1.20
41	3.44	1.09
42	2.70	.95
43	2.71	1.03
44	4.34	1.31

APPENDIX D

INTRACLASS CORRELATIONS (Rs) AND F VALUES ON FULL-FAMILY, PARENT-PARENT AND PARENT-CHILD DYADS

	FULL-FAMILIES		PARENTS	
VARIABLE	R VALUE	F VALUE	R VALUE	F VALUE
1	0.52 *	4.19	0.52	3.12
2	0.28	2.17	0.39	2.27
3	0.31	2.32	0.27	1.74
4	0.23	1.90	0.13	1.31
5	0.49 *	3.89	0.59	3.89
6	0.33	2.49	0.38	2.21
7	0.12	1.40	0.04	1.09
8	0.31	2.33	0.25	1.67
9	0.31	2.34	0.36	2.13
10	0.29	2.25	0.30	1.86
11	0.22	1.86	0.28	1.77
12	0.11	1.39	0.15	1.34
13	0.37	2.74	0.33	1.98
14	0.14	1.49	0.09	1.20
15	0.10	1.32	0.06	1.12
16	0.21	1.80	0.26	1.69
17	0.26	2.06	0.41	2.38
18	0.27	2.10	0.25	1.68
19	0.24	1.93	0.21	1.52
20	0.18	1.68	0.22	1.56
21	0.16	1.57	0.20	1.51
22	0.10	1.32	0.18	1.43
23	0.27	2.13	0.37	2.20
24	0.20	1.74	0.27	1.75
25	0.22	1.82	0.29	1.80
26	0.38	2.80	0.44	2.55
27	0.28	2.17	0.35	2.09
28	0.15	1.52	0.21	1.55
29	0.37	2.75	0.37	2.19
30	0.16	1.55	0.40	2.31
31	0.07	1.22	0.12	1.29
32	0.28	2.19	0.35	2.10
33	0.30	2.30	0.31	1.90
34	0.17	1.60	0.18	1.45
35	0.14	1.47	0.18	1.44
36	0.29	2.24	0.32	1.95
37	0.17	1.62	0.31	1.88
38	0.32	2.44	0.35	2.06
39	0.10	1.33	0.14	1.33
40	0.19	1.73	0.24	1.64
41	0.30	2.30	0.48	2.85
42	0.18	1.65	0.35	2.07
43	0.15	1.53	0.13	1.29
44	0.34	2.51	0.41	2.39

VARIABLE	FATHERS-CHILDREN R VALUE	FATHERS-CHILDREN F VALUE	MOTHERS-CHILDREN R VALUE	MOTHERS-CHILDREN F VALUE
1	0.50	3.03	0.51	3.08
2	0.29	1.83	0.20	1.51
3	0.41	2.40	0.25	1.69
4	0.06	1.12	0.46	2.69
5	0.44	2.54	0.46	2.69
6	0.27	1.75	0.33	2.00
7	0.08	1.18	0.18	1.43
8	0.32	1.94	0.33	2.00
9	0.16	1.39	0.39	2.26
10	0.36	2.14	0.20	1.49
11	0.14	1.31	0.30	1.84
12	0.12	1.27	0.07	1.16
13	0.42	2.44	0.33	1.98
14	0.11	1.24	0.22	1.56
15	0.19	1.46	0.06	1.13
16	0.18	1.43	0.19	1.48
17	0.18	1.43	0.17	1.42
18	0.33	1.99	0.21	1.54
19	0.18	1.45	0.31	1.89
20	0.22	1.56	0.15	1.36
21	0.18	1.44	0.11	1.24
22	0.09	1.20	0.05	1.10
23	0.28	1.78	0.20	1.51
24	0.08	1.18	0.21	1.54
25	0.20	1.48	0.19	1.48
26	0.35	2.09	0.37	2.15
27	0.33	1.97	0.19	1.48
28	0.02	1.05	0.20	1.50
29	0.37	2.16	0.40	2.33
30	0.14	1.32	0.00	0.99
31	0.07	1.14	0.02	1.05
32	0.26	1.72	0.23	1.60
33	0.20	1.49	0.40	2.35
34	0.19	1.46	0.13	1.29
35	0.21	1.53	0.05	1.11
36	0.28	1.79	0.30	1.87
37	0.07	1.15	0.18	1.45
38	0.32	1.98	0.33	2.00
39	0.02	0.97	0.16	1.37
40	0.11	1.25	0.26	1.69
41	0.25	1.66	0.21	1.54
42	0.07	1.16	0.19	1.48
43	0.07	1.16	0.22	1.56
44	0.31	1.92	0.31	1.91

*significant at the .05 level