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Assessment of Family Relationship Characteristics: A Measure to Explain Risk for Antisocial Behavior and Depression Among Urban Youth

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Two large samples of urban families were used to develop and cross-validate an assessment model and a measure to tap basic family processes and risk among diverse ethnic groups. Six scales (Cohesion, Beliefs About Family, Deviant Beliefs, Organization, Support, and Communication) produced a 3-dimension higher order factor model (Cohesion, Structure, and Beliefs). Tests support reliance on composite family scoring. Most scales and each higher order factor relate to depression, and aggression. Relations vary little by age, ethnicity, marital status of parent, or family income. Implications for family assessment methodology and risk models are discussed.

Theoretical formulations and empirical evidence show that family processes are important contributors to risk for antisocial behavior and other disorders among urban youth (Patterson, DeBaryshe, & Ramsey, 1989; Sameroff, Seifer, & Zax, 1982). However, other than parenting practices and specific examples, such as Patterson's coercive interaction, family relationship characteristics, such as level of cohesion, are rarely incorporated into developmental and risk models (Tolan & Loeber, 1993).[1]

Four basic limitations can be identified as the reason for this limited inclusion. It may be due to the limited psychometric sophistication of most family relationship characteristic measures, particularly self-report measures (Cowan, 1987). It also may be due to the disparity between population samples used to develop measures and the population of most interest in risk studies (Cauce, Ryan-Finn, & Grove, in press). In particular, most standardization studies have underrepresented or not included poorer, urban, and minority families. Third, and perhaps the major impediment, has been the formidable conceptual and analytic issues faced in attempting to determine what constructs should represent family relations. Fourth, there are theoretical implications of how family members' scores are related (Dakof, 1996; Fisher, Kokes, Ransom, Phillips, & Rudd, 1985). This article describes the development of a theoretical model and a related self-report measure that attempts to adequately incorporate reasonable consideration of each of these issues to produce a new self-report measure of family relations.

Limited Psychometric Development

Integration of family constructs into risk models has been hindered by the limited sophistication of psychometric and validity data for many disseminated scales (Grotevant & Carlson, 1989). Most scales have been rationally developed but have not been verified empirically. Furthermore the correlation among family measures meant to assess the same or related constructs is frequently low (Prange et al., 1992; Sigafoos, Reiss, Rich, & Douglas, 1985). Similarly, when factor structures are empirically tested for most scales, they are unstable across studies (Bloom, 1985).

Several of these limitations were overcome in a more recent factor analysis by Gondoli and Jacob (1993) of the Family Environment Scale (FES; Moos & Moos, 1981), the Family Adaptability and Cohesion Evaluation Scales (FACES III; Olson, Portner, & Lavee, 1985), and the Family Assessment Measure (FAM; Skinner, Steinhauer, & Santa-Barbara, 1983) using data from 138 volunteer family triads with children ages 12 to 18 years. They found limited correspondence to previous factor analyses but some agreement in factor structure across sources. One dimension of family interaction comprised cohe-

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[1] We distinguish parenting practices such as monitoring and discipline from family relationship characteristics. The latter is the focus of this report. In other related reports (Florsheim et al., 1996; Gorman-Smith et al., 1996), we demonstrated the independent but complementary relation of parenting scales and family characteristic scales.

sion, expression, and conflict items, whereas the second comprised indicators of beliefs and values of the family. The identification of comparable dimensions across informants is a major advance. Cross-source correspondence also highlights the importance of multiple informants to measure family relationship characteristics. A single source report may describe individual perceptions or individual characteristics projected as family characteristics. However, Gondoli and Jacob's (1993) sample was limited for application to risk studies because it was 90% White and almost exclusively middle- and upper-middle class.

Sampling Limitations

In the few instances in which adequate evaluation and satisfaction of basic psychometric criteria have occurred, those segments of society most at risk are often notably underrepresented if not absent (Cauce et al., in press; Skinner, 1987). Prevalence and other risk studies have shown repeatedly that risk for psychopathology varies greatly for different ethnic and socioeconomic groups (Tolan, Henry, Guerra, Van Acker, Huesmann, & Eron, 1996; Verhulst & Koot, 1992). Furthermore, there is evidence that at least some family characteristics vary in level and pattern of relations across ethnic groups and by socioeconomic level (Darling & Steinberg, 1993; Florsheim, Tolan, & Gorman-Smith, 1996; Gorman-Smith, Tolan, Zelli, & Huesmann, 1996; Mason, Cauce, Gonzales, Hiraga, & Grove, 1994).

Validation problems due to sampling may not be limited to whether developed scales have been tested with diverse populations or such groups were included in determining scale standardization scores. The content validity of the scales may also be jeopardized. When items are not tested or developed using diverse samples, their appropriateness for tapping family process across ethnic groups may be limited. The failure to include demographically defined groups that have greater risk obscures differences due to cultural variation in family processes from those due to specific family processes that explain risk across groups (Cauce et al., in press; Staples & Miranda, 1980).[2]

These sampling limitations have been the impetus for some recent investigations. For example, Prange et al. (1992) evaluated how well the FACES III correlated to psychopathology scale scores among an ethnically diverse sample (19% African American, 71% Caucasian, 7% Latino) that had 38% of its families living below poverty level and 27% of its households including the biological father. Although these investigators used an ethnically and socioeconomically diverse sample, they did not examine how the psychometric characteristics and correlations varied across ethnic groups, socioeconomic status groups, or by other relevant demographic distinctions. That step was taken by Knight, Tein, Shell, and Roosa (1992), who reported similar internal consistency scores across Anglo and English-speaking-Latino parent–child pairs. However, they found substantial variation in the goodness of fit (GFI) of the tested scale's theorized intrascale relations to the data by ethnic group and for children versus mothers (all GFI, $< .85$, all but one $< .74$). Thus, by the conventional GFI criterion, no scale adequately fit the actual covariance matrices across sources and ethnic groups. In sum, despite these laudable and important steps, the applicability of any family measures to the segments of society facing the greatest risk remains purely speculative.

Constructs to Measure

Even when a description of a characteristic has gained theoretical acceptance, seems clinically useful, and shows empirical importance, the definition of pertinent constructs can vary among investigators and clinical and theoretical constituencies. There have been attempts to identify constructs that show consensus across theories and approaches to family therapy (Breunlin, Schwartz, & MacKuen-Karrer, 1992) or are particularly relevant to a certain problem (Tolan, Cromwell, & Brasswell, 1986). However, these attempts have not been systematically made across measures (Gondoli & Jacob, 1993).

There are few theories that delineate the essential family characteristics and even fewer with corresponding standardized assessment instruments. The role of component constructs in family systems theory and the implication of the theorized measurement model are rarely specified or considered in psychometric development (Schumm, 1982). Thus, research on family assessment by self-report has been criticized for allowing the content of the instrument to determine rather than confirm theoretical constructs (Larzelere & Skeen, 1984). The extent to which validity can be evaluated is limited because the links between theory, conceptual definition, and instrumentation are not articulated (Cook & Goldstein, 1993; Morris, Bergan, & Fulginiti, 1991). Until assessment instruments are theory-driven, the relation of common family processes to normal and abnormal development cannot be validly determined (Skinner, 1987). We present next our theoretical model and test its validity in this study.

It is unlikely that a model could be fully formulated that satisfies criteria just described by careful theoretical deliberation alone. The process is more likely to be one of moving from theory to data and then back to theoretical refinements before more analyses are done (Patterson & Bank, 1986). We reviewed theoretical, clinical, and empirical literature on family relations to identify characteristics valuable for predicting risk for child antisocial behavior, depression, and other major psychopathologies (Reiss, 1981; Sameroff & Feise, 1992; Tolan & Loeber, 1993; Tolan et al., 1986). These characteristics of family relationships are complementary to, but distinct from, parenting practices (e.g., monitoring and discipline; see Gorman-Smith et al., 1996). Constructs suggested by our review seemed to fit into two major groups: (a) qualities of family relations represented in behavioral routines and (b) family beliefs. Beliefs are represented as the values shared by the family and the meanings attached to family relations and interactions. The most studied areas of beliefs have been importance of family, developmental beliefs, and shared deviant values (Sameroff & Feise, 1992; Roehling & Robin, 1986). Behavior routines seem to represent those characteristic patterns of relations and interactions that imply family rules about behavior and determine the process of problem solving, coping, and other functions (Tolan & McKay,

[2] Of the 10 self-report measures, four rating scales, and three observation codes we reviewed, we found only two instances in which any significant portion (e.g., more than 20%) of the standardization sample included individuals from minorities ethnic groups or from the poorer segments of society. We found no instance of inclusion of evaluation of stability of constructs or relations of variables across ethnic groups or socioeconomic levels in standardization.

1996; Tolan & Gorman-Smith, in press). The most robust and promising of constructs representing behavior routines are cohesion, support, communication flow, and organization.

There has been a historical distinction between the family behavioral routines thought to reflect the state of emotional bonds and closeness, such as cohesion, and those reflecting the structural clarity of family interactions, such as organization (Minuchin, 1974; Wood & Talmon, 1983). What remains uninvestigated is whether this distinction reflects two components of a single underlying dimension or two dimensions of family relations.

Simultaneous consideration of beliefs and behavioral routines seem necessary to develop an adequate family relation assessment model (Gondoli & Jacob, 1993; Sameroff, Seifer, & Zax, 1982). A key theoretical question is whether these two dimensions can explain the role of various family processes (such as cohesion, organization, support, and values). It may be that family relationship characteristics are best understood as multiple independent dimensions. In addition to testing for the presence of these basic dimensions, a second key theoretical question is the relation of the basic dimensions of family processes: Do beliefs drive relations characteristics, are beliefs derivatives of family relations, or are beliefs simply one part of a multidimensional system?

In addition to these theoretical and general literature sources, we consulted the literature on family characteristics and ethnicity, which suggested that there may be some aspects of family relations that are consistent and have similar effects across ethnic and social status groups while others vary. The literature on a whole suggests that some family relationship characteristics representing behavioral routines should have consistent functions and relations to outcome across groups, but those representing beliefs may vary in impact by ethnic group (Keefe, 1984; Lee, 1988; Lyon, Henggeler, & Hall, 1992; Sameroff et al., 1982; Staples & Miranda, 1980). If so, the relation of family process to risk may be complex, and determining which characteristics have a similar role across groups and which characteristics vary by group is important (Gorman-Smith et al., 1996; Sameroff et al., 1982).

Theoretical Implications of Scoring and Comparing Sources

Theoretical disputes about what to measure have not been resolved, in part because the low-to-moderate correlations among family members' scores do not clearly direct how to configure scores (Carlton-Ford, Paikoff, & Brooks-Gunn, 1991; Fisher, Kokes, Ransom, Phillips, & Rudd, 1985). The major theoretical issue is whether in assessment the family is to be considered a collection of individuals or viewed as a unified entity reflected in the perspectives and behaviors reported by the individuals in the family (Dakof, 1996; Fisher et al., 1985). If the former perspective is taken, then individual self-reports reflect each source's unique experience and attitudes and not the interpersonal processes of the family system. Scores are not combined even if correlated. If the unitary-system perspective is taken, then self-reports are sources of shared experience representing interpersonal processes of the family (Dakof, 1996; Gorman-Smith et al., 1996; Carlton-Ford et al., 1991). We contend that most family self-report measures are meant to assess interpersonal processes and constructs and so at least implicitly reflect the family as a unitary system even if scoring has not often followed the scale's underlying theory.

If family members are sources of information about the family as a unitary system, score aggregation should treat individual reports (scores) as multiple estimates of underlying family characteristics (Cook & Goldstein, 1993). Specifically, if viewed as a system, family members' scores should be aggregated into a group score, as is commonly done to assess group-level data from individual sources, such as in organizational assessment (cf. Klein, Dansereau, & Hall, 1994; Ostroff, 1993). Similarly, the approach to aggregation should depend on the meaning of variation among family members' scores, which should depend on the theoretical meaning of the construct. For example, Sigafoos, Reiss, Rich, and Douglas (1985) proposed that disparity in reporting about family beliefs may not reflect relative functioning (e.g., greater disparity represents poorer functioning) but rather may provide information about the extent of shared family beliefs as well as the nature of those beliefs. Averaging these scores will distort the theoretical importance of difference in beliefs among members. Thus, for constructs that reflect beliefs and attitudes, both the individual level of endorsement by each member and the extent of agreement among family respondents may need to be considered in calculating family scores (e.g., scores correspond to extent of endorsement of a belief or attitude as well as agreement about the family). Multiplying rather than averaging scores maintains consideration of both average extent of endorsement and level of agreement (Fisher, 1982). For other constructs, the aggregate family score may be represented well by the average level of endorsement across family members (e.g., cohesion; Carlton-Ford et al., 1991). This latter method is theoretically congruent for constructs meant to represent the structure of the family system and regularities in daily interaction styles.

The Current Study

This article describes a theory of family relationship characteristics in regard to child and adolescent risk for psychopathology among urban populations, and it tests the reliability and validity of a related assessment model and measurement instrument. On the basis of these reviews, we sought to (a) identify existing measures to tap the two major dimensions and the promising component constructs of family processes related to risk; (b) test the relative reliability and validity of existing measures; and (c) failing satisfactory results, construct an apt measure for studies of risk among urban populations. Like Gondoli and Jacob (1993), we found that the most promising measures were the FACES III and the FAM. Our previous analyses of ethnically diverse urban samples suggested the value of the Family Belief Inventory because it measured several constructs similar to the FACES III and FAM but also tapped other important constructs (Schwartz, Fisher, Tolan, & Thomas, 1994). However, these scales did not assess variables that seemed to be important constructs in assessing ethnically diverse urban families and evaluating risk, such as religious beliefs, somatization, and deviant values (Sameroff & Feise, 1992; Staples & Miranda, 1980), so we included items from some other scales and developed

some items we considered crucial to our theoretical interests (e.g., developmental beliefs). For the validation of the model for predicting psychopathology, we focused on the two outcomes that are the most common foci of risk research: aggression and depression. Beyond hypothesizing that each scale could relate to both outcomes, we did not presuppose more specific relations.

Method

The scale development analyses were undertaken as part of the Chicago Youth Developmental Study (CYDS). The CYDS is a longitudinal study of risk and developmental trajectories of urban, poor, and ethnic-minority boys. In the CYDS, individual, family, peer, and community factors are assessed by child and parent interview, teacher report, behavioral observation, and archival sources to examine how these factors interact to influence positive development and risk for serious antisocial behavior among inner-city, young-adolescent boys. The present data are drawn from the first wave of interviews. The cross-validation was undertaken with a pretest sample from the Metropolitan Area Child Study (MACS). The MACS is a prevention field trial designed to evaluate the relative impact of increasingly intense and extensive interventions with a sample of high-risk male and female elementary school children from urban communities (Guerra, Huesmann, Tolan, Van Acker, & Eron, 1995).

Participants

CYDS participants. The boys who constituted the CYDS interview sample were drawn by screening 92% of all boys in the fifth and seventh grades of 17 Chicago public schools (n = 1,102) using the Achenbach Teacher Rating Form (Achenbach, 1991) to overrepresent high risk youth (e.g., half the sample is high risk). Of those contacted, 82% (399/486) agreed to be interviewed, and interviews were conducted with 362 participants (75%). The sample (n = 287) represents those for whom first-wave data for parent and child on all measures used here were available. The final sample was 56.8% African American; the remainder was Latino. Sixty-two percent of the children lived in single-parent homes. Total annual income was less than $10,000 for 48% of the families and less than $20,000 for 74% of them. Because there was a low proportion of two-parent families, these analyses relied on the reports of the child and primary caretaking parent (usually the mother).

MACS sample. Ninety-four families from the first two waves of the MACS composed the sample for cross-validation. Target children for these families were in the second (29.5%), third (40.9%), or fifth grade. We used pretest data on families receiving family intervention and comparison families not receiving the family intervention. Families were selected for participation in the intervention whose children ranked in the top half of their cohort on aggression on the basis of standardized combinations of peer and teacher ratings (Guerra et al., 1995). We used the families from this pool that had two adults because it was necessary to obtain two reports per family from the sample. The sample used here was 18% African American, 56% Latino, and 26% Caucasian; 47.5% had incomes below the poverty levels; 31% had target children that were female.

Procedure

Families were interviewed in their homes or at the university, using laptop computers and standardized interviews. Scale items were administered as part of the interviews. Reliability interviews were conducted with 15% of the sample. Pencil-and-paper reports were used in the MACS.

Measures

Family functioning. Two scales were the primary sources for items: (a) the FACES III and (b) the FAM. The FACES III consists of 20 items meant to measure two orthogonal dimensions of Cohesion and Adaptability, with internal consistencies of .77 for Cohesion and .62 for Adaptability and no correlation between the two scales (Olson et al., 1985). The FACES III Cohesion scale has been repeatedly correlated to psychopathology and other family measures (Olson et al., 1985). Frequently, adaptability is not significantly related to outcomes or other family characteristic scales (Lee, 1988). The FACES III was developed from a sample of 1,140 intact families across the life cycle, using a randomly stratified sampling method, but its ethnicity proportions are not clear (Olson et al., 1985). The FAM consists of 50 items from seven subscales and measures the overall health of the family on the basis of Role Performance, Communication, Affective Involvement, Control, and Task Accomplishment scales. Internal consistency scores had a median level of .73 and were based on a sample of 933 Canadian adults and 502 children from 475 families. Skinner et al. (1983) reported an average correlation across sources of r = .36, with the highest for Role Performance and Involvement.

These scales left several theoretically relevant areas unmeasured. From our clinical experience and research and reports on family functioning processes among Latino and African American families, religious involvement (McAdoo, 1982) and somatic expression of family tensions (Holli & Jones, 1977) were important considerations, so we added items from the Religious Orientation Scale from the Family Environment Scale (Moos & Moos, 1981) and Somatization items from the Parent and Adolescent Relationship Questionnaire (Roehling & Robin, 1986). We also included items from the Family Beliefs Inventory (Roehling & Robin, 1986) and six items referring to deviant beliefs derived from items in the National Youth Survey (Elliott, Huizinga, & Menard, 1989) and constructed eight items assessing beliefs about development (Sameroff & Feise, 1992).

A panel of experts on family characteristics and on African American and Latino cultural issues reviewed this pool of items and revised several items. We also reviewed all items to minimize jargon and increase understanding. We enlisted a focus group of parents from communities similar to those in which we were undertaking our study to review the questions. The result was a 90-item set administered to each family member as part of an interview. All items were administered with a response code of a 5-point Likert scale (measuring respondent's belief in how true the item was for his or her family).

Child status measures. To test the value of the derived scales for explaining child behavior, we examined the association between these scales and child aggression and depression.

1. Aggression. The Aggression scale items from the parent, teacher, and youth reports of the Child Behavior Checklist (CBCL; Achenbach, 1991) were standardized on our sample, and the scores averaged to make a second measure of antisocial behavior. Correlations of CBCL scores were .23, $p < .01$, for teacher to parent; .33, $p < .01$, for parent to child; and .15, $p < .05$, for teacher to child.

2. Depression. Depressive symptoms were measured by combining the standardized scores of the parent, teacher, and child reports on the CBCL (Achenbach, 1991). Sources scores correlated .13, $p < .10$, for teacher to parent; .19, $p < 05$, for child to parent; and .10 for teacher to child.

Demographics. For the CYDS prediction analyses, we include caretaker's marital status (1 = married, 2 = other), ethnicity of the child (1 = African American, 2 = Latino), child's age, and total yearly family income (5 levels: ≤ $5,000; > $5,000–≤10,000; > $10,000–≤$20,000; > $20,000–≤$30,000; > $30,000).

Results

Because the literature yields a thin strain of theoretical and empirical methodology to guide our instrument development

with an ethnically and economically diverse population, our analyses move from testing the original theoretical organization of items on scales, to making modifications based on the empirical tests, to elaborating on the theory and conducting further empirical tests, moving through several iterations to result in the final model. We tested the final model and the corresponding scales for validity by correlating to psychopathology. We also replicated this model with a second urban sample.

Initial Attempts to Validate Existing Scales

Our first step was to attempt to cross-validate the existing measure's scales as designed, for each source, parent and child. Our computed coefficients alpha for the 16 scales ranged from .05 to .88. Most were at unacceptable levels and varied substantially by source.[3] Only one scale had alpha levels above .70 across sources. These unpromising results were consistent with those from an exploratory factor analysis. To do the cross-validation, we focused on items that met a minimum criterion of intercorrelation (loading above .30 on some component in the first factor analysis) and therefore were likely to determine the factor structure (37 items from the child data and 45 items from the mother data). The analysis of the child data yielded 10 factors (using an eigenvalue of 1.0 as a minimum criterion) that accounted for 57% of the variance in the items, whereas the analysis of the mother data yielded 12 factors that accounted for 63% of the variance. However, only four of the factors from the children's responses and five from the mothers' responses had adequate conceptual coherence among items to permit theoretical interpretation: Cohesion, Beliefs About Family, and Shared Deviant Beliefs from the children's responses and Cohesion, Beliefs About Family, Support, Somatization, and Shared Deviant Beliefs from the mothers' responses. There was limited correspondence between children's and mothers' scales in item loading and meaning.[4] These characteristics suggest that this factor structure did not reflect shared family processes or characteristics but rather personalized patterns of response or reactions to family situations. Thus, some theoretically important constructs emerged but with several limitations.

Initial Test of Theoretical Model

In light of these results, we next tested our theoretical model (Tolan et al., 1986; Tolan & Guerra, 1994; Tolan & McKay, 1996; Tolan & Mitchell, 1989). We hypothesized seven major factors that captured the essential family processes among the items making up the scale: Cohesion, Communication, Organization, Intrafamilial Support, Somatization, Family Beliefs, and Deviant Values. Furthermore we hypothesized the existence of subscales within Cohesion, Organization, and Beliefs About Family. We theorized that the scales could be further organized into two large factors, one referring to characteristics of style and structure of daily family interaction that serve to provide emotional care and support and one referring to family beliefs and values that guide meaning attributed to behavior by the family.

The theorized scales' internal consistency reliabilities were generally acceptable, although some were low (.44–.80 for child, .51–.80 for mother). The item composition of the scales varied by source.[5] Thus, although the scales seemed to have internal consistency and the constructs were represented across sources, they were not consistent enough to be satisfying for interpretation and future use (to permit comparison or combining of child and parent scores).

This basic, promising empirical support of the theoretical constructs supported our next step, which was to test the role of how scores were aggregated across sources. We hypothesized that combining the scores of family members prior to conducting psychometric evaluation might be more meaningful than separate factor analyses. As outlined earlier, we differentiated aggregation methods for scales that measure processes expressed in daily interaction from those representing ongoing beliefs and values of the family. Responses to daily-interaction scale items were averaged across sources. For scales representing beliefs and values, the extent of endorsement of the belief by each family member as well as the extent of agreement across sources in that endorsement level were considered. Therefore, we calculated the product of source responses.

Because we wanted to consider only items relevant to both sources, we included items that were contributors to reliability for at least one source (47 items). The calculated item responses were factor analyzed using principal-components analysis. The first analysis yielded six factors from 35 items, which accounted for 40% of variance in item scores. These six factors were then varimax rotated to clarify interpretation. The final item loadings on the six factors and scale reliabilities (alpha) are reported in Table 1. The corresponding scale scoring procedure (product or average) is noted next to the scale. We also list mean and standard deviations of "family scores" within our sample for each scale in Table 1.[6,7] The results indicate conceptually distinct and theoretically valuable factors that seem to represent a coherent set of essential family processes.

The promise of the derived factor structure, the important role of the aggregation of responses across sources, and the theoretical coherence of the scales provided a promising model. However, the factor structure among scales had not been confirmed yet, and we wanted to consider competing theoretical models of the relations between family scales. Therefore, we tested our specific structure against three alternative structures with confirmatory factor analysis using GFI criteria to compare models. The simplest alternative hypothesis was that these fac-

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[3] A table of the original scales' alphas is available from Patrick H. Tolan.

[4] A table of the factor loadings and scale alphas by source is available from Patrick H. Tolan.

[5] A table of the specific scales' alphas are available from Patrick H. Tolan.

[6] As a further test of the value of this particular scale structure, we recomputed coefficients alpha for our seven original theory-driven scales using family scores (Family Beliefs was composed of two subscales). These were substantially lower (range = .29–.99) than those obtained for the current scales. A full table of the alphas for each scale by source is available from Patrick H. Tolan.

[7] Note that we retain the distinction of two subscales within the Beliefs About Family scale. Even though the subscales were not distinct in the factor analysis, they represent two theoretically distinct domains with clinical utility, and each has acceptable internal consistencies. Their retention may be useful for some studies.

Table 1
Item Correlations, Descriptive Statistics, and Scoring Procedure of the Family Scales Combined Across Informants

Items	*r*
1. Beliefs About Family (α = .87)[a]	
a. Beliefs about family purpose	
1. Parents should teach their children what they need to know to "make it" in the world.	.75
2. Children should always talk to their parents with respect.	.70
3. Family togetherness is very important.	.69
4. No matter what, family members should stick together.	.68
5. Kids should value a close relationship with their family and not have to be asked to spend time at home.	.57
6. Family members should be able to "speak their minds" with one another.	.55
b. Beliefs about development	
7. Parents should expect kids _____'s age to do some work around the house.	.58
8. Kids _____'s age should call home if they think they might be late.	.54
9. Kids should obey their parents even when they don't agree.	.50
10. Kids _____'s age should clean up for themselves without having to be told.	.49
M	100.96
SD	14.43
Eigenvalue	6.98
2. Cohesion (α = .72)[b]	
11. We can easily think of things to do together as a family.	.58
12. Family members feel very close to each other.	.56
13. Family members ask each other for help.	.53
14. I am available when others in the family want to talk to me.	.51
15. Family members like to spend free time with each other.	.50
16. I listen to what other family members have to say, even when I disagree.	.33
M	.18
SD	1.28
Eigenvalue	2.31
3. Shared Deviant Beliefs (α = .68)[a]	
17. It's okay to skip school every once in a while.	.66
18. It's okay to fight if the other guy says bad things about you and your family.	.63
19. It's okay to steal something from someone who is rich and can easily replace it.	.63
20. It's okay to lie to someone if it will keep you out of trouble with them.	.47
M	16.28
SD	4.33
Eigenvalue	2.31
4. Support (α = .65)[b]	
21. My family expects too much of me.	.56
22. I am tired of being blamed for family problems.	.53
23. My family doesn't let me be myself.	.50
24. I often don't understand what other family members are saying.	.50
25. If someone in the family has upset me, I keep it to myself.	.46
26. I have trouble accepting someone else's answer to a family problem.	.44
M	13.82
SD	1.70
Eigenvalue	1.88
5. Organization (α = .66)[b]	
27. It is hard to identify the leaders in our family.	.59
28. I sometimes use feeling sick to get out of doing something.	.58
29. The children make the decisions in our family.	.53
30. I sometimes get headaches or other aches and pains after I fight with my family.	.52
31. My family doesn't care about me.	.44
32. It is hard to tell who does which household chores.	.39
M	12.67
SD	1.51
Eigenvalue	1.80
6. Communication (α = .54)[b]	
33. My family and I have the same views about what is right and wrong.	.60
34. My family knows what I mean when I say something.	.44
35. My family and I have the same views about being successful.	.42
M	8.73
SD	.90
Eigenvalue	1.66

[a] Scoring procedure = product. [b] Scoring procedure = average.

tors represented six correlated but different domains of family functioning and should not be aggregated. A second variation was that the scales constitute six processes that aggregate into a single underlying family functioning factor. The third model hypothesized was that the Beliefs scales (Family Beliefs and Shared Deviant Values) represented an underlying construct akin to Reiss's family paradigm (Reiss, 1981), and therefore Beliefs underlies other family processes. Our theorized model was that there are two related but distinct primary domains of family influence: (a) family cohesion as the base for other aspects of daily interaction patterns (communication, support, organization); and (b) beliefs and values and the relative level of agreement about these within the family (Gorman-Smith et al., 1996; Tolan & McKay, 1996; Tolan & Mitchell, 1989).

We used *LISREL* structural equation modeling (Hoyle, 1995) analyses to test the relative fit of the models. Confirmatory factor analysis indicated that the six-factor model was not adequate by conventional standards to account for the variance in item scores, $\chi^2(495, N = 287) = 895.68, p < .001$; GFI = .85; root mean square residual [RMSR] = .08. Thus, it appeared that the scale interrelations were not adequately represented as six correlated but distinct dimensions (see Figure 1).

Similarly, the model in which six measured scales were hypothesized to represent a single underlying general family functioning factor was not adequate by conventional standards, $\chi^2(9, N = 287) = 58.67, p < .001$; GFI = .94; RMSR = .07 (see Figure 2). The fit of the model that Family Beliefs "drive" the relationships also was not adequate, $\chi^2(8, N = 287) = 83.46, p < .001$; GFI = .91; RMSR = .10 (see Figure 3). We then tested the model that two underlying dimensions of Emotional Cohesion and Beliefs About Family are represented by the six scales. As can be seen in Figure 4, this model yielded the best fit, $\chi^2(8, N = 287) = 4.44, p < .001$, RMSR = .07, GFI = .95, but the results suggested that further modification was needed. We therefore freed parameters to permit Deviant Beliefs, Organization, and Support to represent a third latent factor and to permit the error of Support and Communication

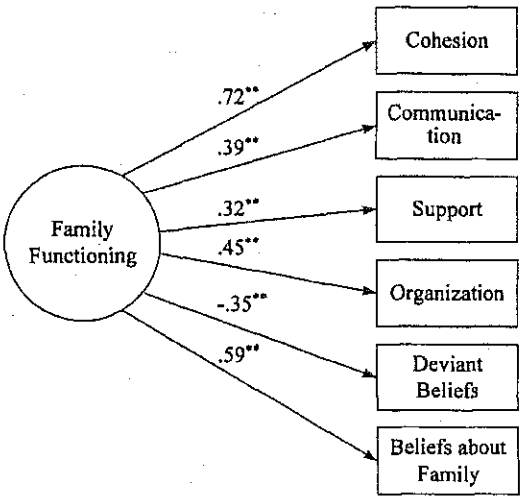

Figure 2. Single-factor model of family process characteristics. $^{**}p < .01$.

to correlate. These modifications yielded an excellent fit to the data, $\chi^2(4, N = 287) = 3.92, p > .41$, RMSR = .02, GFI = .98. The third factor is heavily dependent on the score on the Organization scale but also is related to deviant Beliefs and Support (see Figure 5). We labeled it *Structure* to reflect its theoretical link to the Structure dimension, as distinct from Cohesion as hypothesized by Minuchin (1974) and supported in empirical tests (Szapocznik, Kurtines, Santisteban, & Rio, 1990; Wood & Talmon, 1983).

Although this modified model seemed to verify the validity of the theorized assessment model with the CYDS sample, it was not clear that it would hold for each of the ethnic groups in the sample. We therefore assessed whether the model reported in Figure 5 could reproduce the intercorrelations among the family scales in each ethnic group separately. For both ethnic

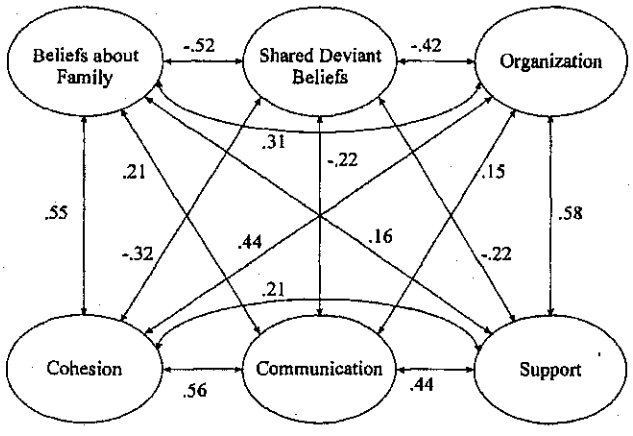

Figure 1. Confirmatory factor solution for the family assessment scales (6 independent factor model). All correlations are significant at $p < .05$.

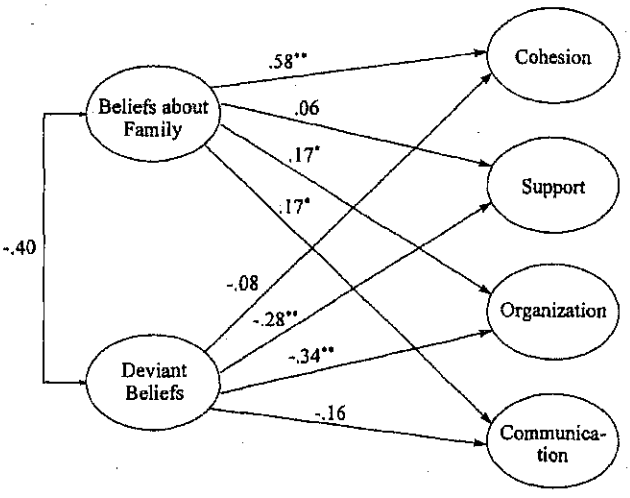

Figure 3. Beliefs driving model of family process characteristics. $^{*}p < .05$. $^{**}p < .01$.

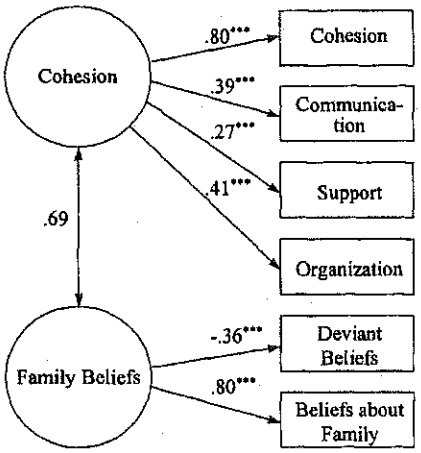

Figure 4. Two-dimension model of family process characteristics. ***$p < .01$.

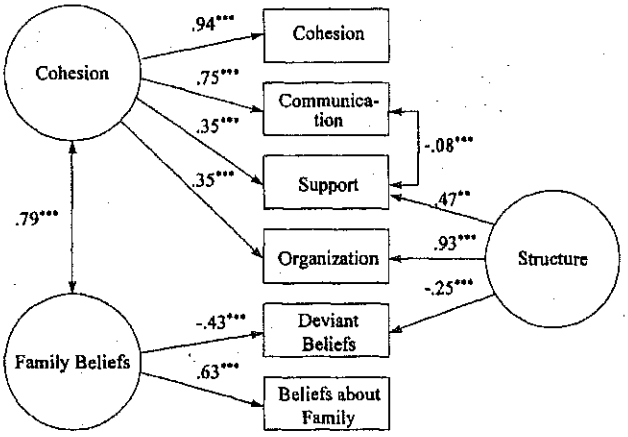

Figure 6. Cross-validation of the three-dimension model with MACS sample. **$p < .05$. ***$p < .01$.

groups, the fit of this model to the observed intercorrelations was quite acceptable, $\chi^2(4, N = 163) = 2.26$, $p = .69$, RMSR = .01, GFI = 1.00 for African Americans; $\chi^2(4, N = 124) = 5.90$, $p = .21$, RMSR = .64, GFI = .98 for Hispanics. Furthermore, the estimated parameters were approximately equal.[8]

We then cross-validated the factor-scale structure with a separate sample. As can be seen in Figure 6, the model is a good fit to our MACS sample, $\chi^2(4, N = 94) = 3.43$, $p > .45$, RMSR = .05, GFI = .98. Notably, this sample was more diverse ethnically (26% Caucasian), had a younger age group targeted, and included female target children. Also, the sources for reports were parents. Thus, despite differences in all of these characteristics, this assessment model holds quite well for both samples of urban families.[9]

Prediction of Child Functioning

To test the relationship of the developed family functioning scales and theoretical dimension to child functioning, we regressed the composite CBCL Depression and Aggression scale scores on the six scales for the CYDS sample and then did so on the three underlying dimensions' composites. We hypothesized that all six scales would independently contribute to explaining each dependent variable[10] and that composites calculated for three higher order factor scales[11] would account for the variance in the dependent variable as well as did all six measured scales. We ran these regressions for the entire CYDS sample, given the similarities in model fit and because our interest was in basic validity.[12] We also entered family income, age, and ethnicity as control variables.

As can be seen in Table 2, none of the demographics account for differences in aggression or depression when family relations scales are also considered, except that Latino ethnicity relates to likelihood of depression. Also, parental marital status has a near-significant relation in each regression (p between .10 and .15). For the measured scales, Beliefs About Family and Support provided unique variance explanation to each outcome. Communication and Deviant Beliefs did not relate to either outcome. Organization did not relate to Aggression, and Cohesion had a significant relation only to Aggression. The Organiza-

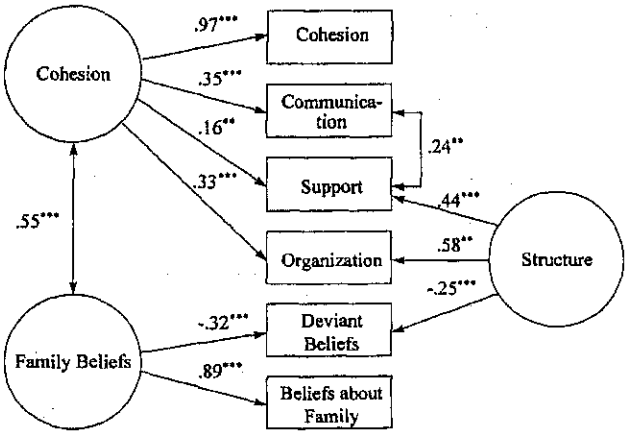

Figure 5. Three-dimension model of family process characteristics. **$p < .05$. ***$p < .01$.

[8] A table of correlations by ethnic group is available from Patrick H. Tolan.

[9] Sample size precluded comparison within this sample of model fit. However, alphas are similar across age, ethnic group, and gender. These analyses are available from Patrick H. Tolan.

[10] There is a thin strain of literature on family processes related to depression in children and a thinner strain to guide hypotheses about the differential impact of processes (see Capaldi, 1991; Dadds & Sanders, 1992; Florsheim et al., 1996). Therefore, we tested a hypothesis that each scale should be uniquely influential for both dependent variables.

[11] These composites were formed for the regression analyses by standardizing the measured scales' scores and summing the scores of contributing scales, weighted by the coefficients in the MACS confirmatory (the more general) sample. Almost identical results occur if CYDS weightings are used.

[12] Cross-validation of regressions for the MACS sample was not possible because of potential intervention effects.

Table 2
Regressions of Standardized Scores of Aggression and Depression on Family Scales and Dimensions

Predictors	Aggression		Depression	
	β	T	β	T
Measured scales				
Marital status	−.12	−1.73	−.12	−1.68
Income[a]	.15	2.34	.05	.70
Age	−.15	−1.30	−.16	−1.32
Ethnicity[b]	.09	1.21	.16	2.75*
Beliefs about family	.21	2.80*	.18	2.48**
Cohesion	−.15	−1.98**	−.09	−1.22
Deviant beliefs	−.06	.91	−.03	−.48
Support	−.14	−2.15*	−.16	−2.48**
Organization	−.10	−1.44*	−.18	−2.60
Communication	−.05	−.82	.01	.12
Dimension composites				
Marital status	−.12	−1.75	−.12	−1.66
Income	.15	2.26*	.04	.67
Age	−.13	1.10	−.17	−1.44
Ethnicity	.12	−.79	.16	2.42*
Beliefs	.19	2.78**	.23	3.40**
Cohesion	−.19	−2.58**	−.25	−3.46**
Structure	−.17	−2.15**	−.12	−1.99*

[a] Annual income coded 1 = $5,000 or less; 2 = more than $5,000 to $10,000; 3 = more than $10,000 to $20,000; 4 = more than $20,000 to $30,000; 5 = more than $30,000. [b] Coded 0 = African American, 1 = Latino.
* $p < .05$. ** $p < .01$.

tion scale's differential contribution by dependent variable is consistent with other findings that suggest that rule and role clarity correlates negatively to antisocial behavior but is not a critical issue in depressive symptoms (Capaldi, 1991; Florsheim et al., 1996). In each case, the dependent variable was related to a combination of several family scales, with aspects of family beliefs as well as family interaction characteristics contributing to the regression. When the three higher order composites were tested, for both dependent variables all contributed unique variance explanation, with Structure less related to Depression. Collectively they explained as much of the variance as the specific-scales model, lending further support to the validity of the higher order model (see Table 2). In light of the differences by outcome of the manifest scales, these results suggest that these underlying dimensions represent better general risk. However, it may be important to consider the specific scales as well as the underlying dimensions, depending on the outcome of interest.

Discussion

These analyses provide empirical support for a modified version of our theoretical model of assessment and measurement of a specific set of general family processes based on self-reports of family members. Our intent was to provide a valid model for urban families from diverse ethnic backgrounds. In particular, we were interested in developing an assessment model that overcame the psychometric, sampling, methodologic, and theoretical limitations of most other measures and that included important family characteristics that could be used in multiconstruct, multilevel models of risk and development (Mason et al., 1994; Tolan, Guerra, & Kendall, 1995). Two particular advancements are provided here. The first is the focus on family beliefs and two interaction characteristics simultaneously. The second is the articulation and testing of a theoretical model of the interrelationship of family processes. Although values and beliefs probably influence most measures of family characteristics, they are rarely acknowledged components. Even rarer is the assessment of specific beliefs and family relationship indicators in a single measure. When both have been included in measures such as the FES or FAM, there has been little theoretical consideration of the relation of the two dimensions.

These results do not coincide fully with any set of previous findings but confirm findings from several other cross-scale valuations and seem to coincide with consistencies across studies as well as the strongest findings within each study (Gorman-Smith et al., 1996; Tolan & Guerra, 1994). Thus, this model may serve as a general model for diverse studies. However, at present the validity is limited to urban families.

Although these analyses are a first examination of this model and are limited in several ways, the findings are strong and suggest that the model will be robust. The model considers what families believe as well as what they do in their day-to-day interactions. It suggests that emotional closeness and a predictable structure of interactions are important, distinct aspects of day-to-day family interactions. As we have found these family processes to be complementary to but different from the robust parenting practice characteristics of monitoring and discipline, these constructs and this model of family processes may add an important additional consideration in assessing development and risk (Gorman-Smith et al., 1996).

These analyses suggest six major aspects of family relationships, representing three underlying dimensions. One dimension is the Beliefs of the family and indicates the expectations about the importance of the family, purpose of the family, and expectations about child development. The construct is akin to Reiss's concept of family paradigm, which represents the family's worldview or believed purpose, combined with the construct of family developmental beliefs proposed by Sameroff et al. (1982). As scored here, this dimension also is influenced by the agreement among family respondents as well as the type of beliefs held. In day-to-day life, these beliefs influence motivation and meaning attached to behavior among family members. Thus, it is not surprising to find substantial variation in scores on beliefs scales across demographic and risk groups (Gorman-Smith et al., 1996). The underlying Beliefs factor has a strong relationship to family *Cohesion*, which represents the extent of emotional closeness and dependability, support, and clear communication among family members. Cohesion has been a central tenet in most family-systems theories and has been one of the most robust correlates to indexes of adjustment (Lyon et al., 1992; Mason et al., 1994; Tolan, 1988). This study suggests that high cohesion is not a characteristic of enmeshment, but rather it represents strong sustained emotional support and warmth. Also, it appears to be better to consider it as an underlying, multicomponent characteristic than as a single-dimension overt characteristic. Orthogonal to these dimensions but sharing

measured scales is family *Structure,* which represents organization, predictability of expectations, and dependability of family roles. Thus, families that are organized have a structure of support and of not tolerating antisocial values. Similarly, families with low organization may promote deviant beliefs and fail to support family members (Voorhis, Cullen, Mathers, & Garner, 1988). The prediction of aggression and depression suggest that these underlying dimensions relate to both major types of child psychopathology but that somewhat different aspects of them are important for understanding each type.

In regard to the issue of sampling, these results suggest that most family-relationship characteristics among ethnic minority and Caucasian families living in poor, urban communities are similar to those found in samples of other segments of society (Knight et al., 1992; Tolan, 1988). Whether for a high-risk or a general population sample or for an adolescent or child-age sample of families, the results are consistent. This has not been demonstrated for other scales, to date. However, the results also highlight the need for greater evaluative complexity including some specific variations in the interrelations of family characteristics to outcome (Cauce et al., in press; Hui & Triandis, 1985; Szapocznik et al., 1990). Our initial attempt was to cross-validate existing scales, for parsimony and because many of these scales are widely used by other investigators. Some had been used in studies of poor and ethnically diverse samples, but had not been tested for validity with those samples. The results of this study suggest they are not likely to have adequate validity for such groups. Like Knight et al. (1992), we were concerned about the assumption that these scales retain their psychometric qualities when applied to an ethnically and economically diverse sample. Unlike Knight et al., however, we did not conclude that the scales were applicable as designed, perhaps because of differences in the scales used and perhaps because of our approach to evaluation. Knight et al. focused on cross-ethnic group similarity in scales rather than the overall theoretical robustness of the scales. Thus, their conclusions are about the extent to which the scale content differs when applied across groups. They focused on reliability separate from consideration of the factor structure of the scales and relationship between scales. They also limited their comparison to English-speaking Latinos and Caucasians. Our samples included African Americans, Latinos (including Spanish-speaking Latinos), and Caucasians. It may be that the differences in sampling and analytical focus led to different conclusions.

These analyses also indicate the extent to which scoring, particularly aggregation of scores, is an important consideration in family assessment (Fisher et al., 1985; Skinner, 1987). This is not simply a matter of meeting traditional psychometric criteria for combining scores, but it requires careful theoretical consideration of what an aggregation method implies about the meaning of combined scores. When we examined family aggregate scores based on theoretical contentions about how responses should reflect family rather than individual characteristics, the theoretically meaningful scales emerged and formed a coherent model of the relationships among family processes. However, the complex issue of level of phenomena measured merits further careful consideration (Shinn, 1990). Also, methodological issues such as how to combine more than two scores need further exploration.

This study is a major step in validating a theory of family functioning and developing a corresponding assessment model, as well as a consideration of key analytic issues in family assessment measures. As we have shown elsewhere (Florsheim et al., 1996; Gorman-Smith et al., 1996), these scales are distinct from but related to key parenting characteristics such as monitoring and discipline effectiveness and merit consideration in addition to parenting characteristics in risk models. Cross-validation considering other ethnic groups, socioeconomic circumstances, and children of different ages and genders was established here. However, further generalization studies should be pursued. For example, few middle class and only urban families were included in our study. These findings may not apply to other segments of society. However, the current study represents a sorely needed focus on a segment of society underrepresented in scale development studies. The norm has been to use scales with this sample without their inclusion in scale development. As risk is greatest for the urban poor, their absence in scale development and validity analysis is more problematic. However, steps need to be taken to determine the capability and limitations of this measure and the approaches used here. In addition, a desirable next step is to evaluate the robustness of these constructs if other methods of assessment, such as observational data, are used.

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Table 1
Item Correlations, Descriptive Statistics, and Scoring Procedure of the Family Scales Combined Across Informants

Items	*r*
1. Beliefs About Family (α = .87)[a]	
a. Beliefs about family purpose	
1. Parents should teach their children what they need to know to "make it" in the world.	.75
2. Children should always talk to their parents with respect.	.70
3. Family togetherness is very important.	.69
4. No matter what, family members should stick together.	.68
5. Kids should value a close relationship with their family and not have to be asked to spend time at home.	.57
6. Family members should be able to "speak their minds" with one another.	.55
b. Beliefs about development	
7. Parents should expect kids _____'s age to do some work around the house.	.58
8. Kids _____'s age should call home if they think they might be late.	.54
9. Kids should obey their parents even when they don't agree.	.50
10. Kids _____'s age should clean up for themselves without having to be told.	.49
M	100.96
SD	14.43
Eigenvalue	6.98
2. Cohesion (α = .72)[b]	
11. We can easily think of things to do together as a family.	.58
12. Family members feel very close to each other.	.56
13. Family members ask each other for help.	.53
14. I am available when others in the family want to talk to me.	.51
15. Family members like to spend free time with each other.	.50
16. I listen to what other family members have to say, even when I disagree.	.33
M	.18
SD	1.28
Eigenvalue	2.31
3. Shared Deviant Beliefs (α = .68)[a]	
17. It's okay to skip school every once in a while.	.66
18. It's okay to fight if the other guy says bad things about you and your family.	.63
19. It's okay to steal something from someone who is rich and can easily replace it.	.63
20. It's okay to lie to someone if it will keep you out of trouble with them.	.47
M	16.28
SD	4.33
Eigenvalue	2.31
4. Support (α = .65)[b]	
21. My family expects too much of me.	.56
22. I am tired of being blamed for family problems.	.53
23. My family doesn't let me be myself.	.50
24. I often don't understand what other family members are saying.	.50
25. If someone in the family has upset me, I keep it to myself.	.46
26. I have trouble accepting someone else's answer to a family problem.	.44
M	13.82
SD	1.70
Eigenvalue	1.88
5. Organization (α = .66)[b]	
27. It is hard to identify the leaders in our family.	.59
28. I sometimes use feeling sick to get out of doing something.	.58
29. The children make the decisions in our family.	.53
30. I sometimes get headaches or other aches and pains after I fight with my family.	.52
31. My family doesn't care about me.	.44
32. It is hard to tell who does which household chores.	.39
M	12.67
SD	1.51
Eigenvalue	1.80
6. Communication (α = .54)[b]	
33. My family and I have the same views about what is right and wrong.	.60
34. My family knows what I mean when I say something.	.44
35. My family and I have the same views about being successful.	.42
M	8.73
SD	.90
Eigenvalue	1.66

[a] Scoring procedure = product. [b] Scoring procedure = average.