# FAMILY ASSESSMENT AND THE CIRCUMPLEX MODEL:

# NEW RESEARCH DEVELOPMENTS AND APPLICATIONS

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## ABSTRACT[1]

The Family Circumplex Model and its self-report instruments, FACES II and FACES III, have been used in hundreds of research studies, which consistently find positive, linear relationships between one of its dimensions—cohesion or flexibility—and various family health outcomes. The number of studies in the disciplines of psychology, medicine, and psychiatry has grown to represent half of all studies conducted with FACES. This research provides strong support for a biopsychosocial approach to treatment, confirming that the social context of the family is useful to study and the family serves as an important resource for dealing with psychological disorders as well as physical illness. The Circumplex Model and its instruments show great promise for future research on family health behaviors and outcomes.


[1] An abbreviated version of this paper will appear as a chapter in the forthcoming *Family Assessment Package (FAP)*, to be published by Life Innovations, Inc. The FAP will introduce FACES IV, which is designed to measure the dimensions of cohesion and flexibility in a curvilinear manner as originally proposed by the Circumplex Model of Marital and Family Systems.

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# FAMILY ASSESSMENT AND THE CIRCUMPLEX MODEL: NEW RESEARCH DEVELOPMENTS AND APPLICATIONS

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## INTRODUCTION

The purpose of this paper is to show the diversity of topics that have been studied with the Circumplex Model of Marital and Family Systems (Olson, Sprenkle, and Russell, 1979) and to give examples of the utility of Family Adaptability and Cohesion Evaluation Scales (FACES)[2]. Select empirical studies illustrate how the model has been useful in disciplines such as psychology, family social science, and medicine, among others. This paper presents major findings of the research, future implications for family theory and methods, and recommendations for new directions in research, education, and practice.

The studies highlighted in this paper were chosen to represent some of the best examples of research with the FACES instruments. The studies were gathered for development of the Family Inventories Database, which contains citations and annotations for more than 500 publications on the Family Circumplex Model. This database is designed as a searchable index for use by researchers and practitioners, and it will soon be available online at www.lifeinnovations.com.

[2] Studies have used either the 30-item FACES II, designed for research, or the 20-item FACES III, which is recommended for clinical applications. Both of these versions measure cohesion and flexibility in a linear manner. Couple and family forms of the instruments are available.

In addition to FACES, some studies have used the Clinical Rating Scale, the observational measure for the Circumplex Model, or one of several related family self-report scales: Family Satisfaction, Family Strengths, and Parent-Adolescent Communication. These, along with the ENRICH Couple Research Scales, are part of the complete set of family assessment scales currently available from Life Innovations, Inc.

## Content and Organization

This paper is written for anyone who is interested in using the Circumplex Model and its instruments and would like to know more about how they have been applied. The narrative, along with tables appended to this paper, will be helpful both to researchers who are in the preliminary stages of designing a study, and to practitioners interested in gaining insights from the literature on the effects of family functioning. It is organized as follows:

The *Background* section reviews the history of developments related to the Circumplex Model and its instruments, including current efforts. This is followed by a section on *Theory and Design of the Model*, which discusses the basic dimensions of the model, explaining how cohesion and flexibility operate in a curvilinear manner and how the model serves as a family typology. This section concludes by presenting current conceptual challenges to adapt the model for cross-cultural uses and to achieve a more sophisticated circumplex design.

The section on *The Circumplex Model Instruments* describes the differences between FACES II and FACES III, the self-report measures. It also gives an overview of the Clinical Rating Scale, the observational measure, and other self-report measures used in conjunction with the Circumplex Model instruments.

The *Overview of Research with FACES* section presents the scope of research completed with the Circumplex Model, showing the multiple disciplines and topics studied. It also addresses the extent to which the original hypotheses of the model have been tested and proven, concluding with comments on the limitations and strengths of the research.

The *Selection of Empirical Studies* section highlights significant findings from studies that have used FACES II or FACES III. This is followed by *Implications of the Studies*, which addresses theoretical and methodological issues, and by *Recommendations and Future Directions*, which suggests new directions for research, family education, and clinical practice.

**Resource Sections**

The Appendix contains several resource sections. The first is *Psychometric Properties of the Instruments* (Appendix A), which documents the reliability and validity of FACES II and FACES III along with the Clinical Rating Scale. This is followed by *Norms for the FACES Instruments* (Appendix B), which provides a complete set of normative data currently available. The next resource section, *Development of the Family Inventories Database* (Appendix C), contains two tables:

- *Annotated Summary of Studies* (Table C1). This table summarizes more than 200 selected studies with information on sample characteristics, methods, and key findings related to family functioning.
- *Author Citations: By Topic* (Table C2). This table organizes citations for the publications by subject area and topic.

Two additional tables are provided in the resource section *Analysis of the Published Studies* (Appendix D):

a) *Number of Studies: By Discipline* (Table D1). This table lists the journals in which the studies were published. They are organized by disciplines including: psychology, family social science, medicine, marriage and family therapy, psychiatry, social work, education, chemical health, sociology, and family law.

b) *Number of Studies: By Topic* (Table D2). This table shows the number of studies published in various subject areas. The most prominent topics of research include theoretical and methodological issues, family counseling and education, families with special problems, family relations and dynamics, physical health, and individual development.

Finally, the *Bibliography* (Appendix E) provides a complete list of publications found in journals or books. It contains references for all of the empirical studies conducted since 1977 when the original FACES instrument was introduced. It also contains relevant commentaries on family theory and methods, validation studies and critiques of the Circumplex Model and its instruments, literature reviews on various applications, and case studies illustrating clinical interventions.

## BACKGROUND

The Family Circumplex Model and the FACES instruments are proven tools for investigating family functioning in many fields of study. Studies and reviews appear in nearly 200 journals on topics related to psychology, family social science, medicine, marriage and family therapy, psychiatry, social work, and education, among others. There

are growing numbers of studies in specialty areas such as chemical health and gerontology.

Nearly a thousand empirical studies have been completed with the FACES instruments and more than 450 are published (excluding dissertations and foreign language publications). In addition to the empirical studies, there are 75 reviews and commentaries on the model and its applications for research and clinical practice. The results from research studies repeatedly show that one or both of the dimensions—cohesion and flexibility—are related to health and developmental outcomes in families.

The FACES instruments are used to investigate family functioning not only in research and clinical practice but also in premarital and marital assessment. Two modified versions of FACES III are incorporated into the PREPARE/ENRICH Inventory (Olson, 1998) along with scales that assess many other areas of relationship functioning. One version assesses couple cohesion and flexibility; the other evaluates each partner's family-of-origin on these dimensions.

Overall, FACES is one of the most widely used family assessment devices in the world. It has been applied extensively in the United States and translated into many other languages including Swedish (Engstroem, 1991; Rastam & Gillberg, 1991), Norwegian (Dundas, 1994), Japanese (Kurokawa, 1990), Chinese (Phillips, West, Shen, & Zheng, 1998), Polish (Porzak, 1993; Radochonski, 1992), German (Kirchler, 1988; 1989), Italian (Scabini & Galimberti, 1995), Spanish (Dandes, 1986), and Hebrew (Ben-David, 1995; Teichman & Basha, 1996).

## History

The original FACES, a 111-item self-report instrument, was developed in 1978 by David Olson, Richard Bell, and Joyce Portner. It was modified several times, to improve its psychometric properties, ultimately leading to FACES II (Olson, Bell, & Portner, 1982) and then FACES III (Olson, Portner, and Lavee, 1985). Both of these instruments are in use today, along with the Clinical Rating Scale (Olson, 1993b), an observational measure based on the Circumplex Model.

The FACES self-report instruments enable classification of families as either *balanced*, (high), *midrange*, or *extreme* (low) on cohesion and flexibility. High scores are considered to be in the balanced range and represent healthy family functioning. Thus, FACES II and FACES III scores are interpreted in a linear manner, using a revised method developed by Olson and Tiesel (1992). In addition, a 3-D version of the Circumplex Model (Olson, 1991) was introduced to provide a new framework for linear interpretation.

While there is strong evidence for linearity of the self-report instruments, the observational instrument has consistently demonstrated the curvilinear nature of these dimensions (Thomas & Olson, 1993, 1994). Curvilinear interpretation is based on cohesion levels ranging from *enmeshed* (overly high) to *disengaged* (overly low) and flexibility levels ranging from *chaotic* (overly high) to *rigid* (overly low), with balanced and moderate levels in between. FACES II and FACES III, however, do not tap into the enmeshed or the chaotic extremes of these dimensions.

## Developments

Items in FACES IV, the new version of the instrument, are being revised with the goal of measuring cohesion and flexibility in a curvilinear manner. Instead of two dimensions, it seems necessary to measure four constructs. Tiesel (1994) developed separate subscales for each of the four extremes: enmeshed, disengaged, chaotic, and rigid. She found that some families scored high on both extremes of the same dimension. This is an important development that is being explored further by David Olson and colleagues.

When FACES IV is released, it will be part of a comprehensive set of inventories with measures for family satisfaction, family strengths, and communication. This set has been referred to as the Circumplex Assessment Package (Olson, 2000), and it is now called the Family Assessment Package (see Table 1).

Table 1

The Family Assessment Package

| Instrument | | Description |
|---|---|---|
| FACES IV | In development. | Individual self-report. Curvilinear scoring. |
| FACES II or FACES III | 30 items or 20 items | Individual self-report, couple or family version. Measures perceptions of cohesion and flexibility. Linear scoring. |
| Family Satisfaction | 14 items | Individual self-report. Measures satisfaction with existing levels of cohesion and flexibility. |
| Family Strengths | 12 items | Individual self-report. Subscales on family pride and family accord. |
| Parent-Adolescent Communication | 20 items | Individual self-report. Subscales on openness and problems in communication. |
| ENRICH Marital Communication | 10 items | Individual self-report. |
| Clinical Rating Scale | 17 rating categories | Observational coding system, for couples or families. |

## THEORY AND DESIGN OF THE MODEL

The Family Circumplex Model is built on the principles of family systems theory, which emphasizes the interconnectedness of family members and their behaviors. In addition, it incorporates family development theory, placing emphasis on the dynamic nature of change in families across the life cycle (Olson, McCubbin, Barnes, Larsen, Muxen, & Wilson, 1989).

### Dimensions

The Circumplex Model comprises three dimensions of family behavior: cohesion, flexibility, and communication. Cohesion and flexibility are measured by FACES II or FACES III. Communication is measured by the Parent-Adolescent Communication scale (Barnes & Olson, 1992) for families and by the ENRICH Marital Communications scale (Olson, Fournier, & Druckman, 1992) for couples. The variables are defined as follows:

a) Cohesion refers to the emotional bonding, or closeness, among family members. Optimal functioning means achieving a balance of togetherness and separateness. Family members are connected yet separate. The hypothesis is that too much or too little cohesion will lead to problems in the long term.

b) Adaptability[3], or flexibility, refers to the amount of change in family leadership and in relationship roles and rules. Optimal functioning involves a balance of stability and change. Both are necessary. Initially, this dimension was labeled “adaptability,” referring to the family’s *ability* to change, which is not directly measured; the term “flexibility,” referring to the *degree* of change,

[3] The terms "adaptability" and "flexibility" are used interchangeably in this paper.

is a better descriptor. The hypothesis is that too much or too little flexibility will lead to problems in the long term.

c) Communication is the third dimension, which facilitates a family's ability to change its levels of cohesion or flexibility. The hypothesis is that communication skills make it possible for families to change in response to situational stressors and developmental transitions.

Clustered under each dimension are several concepts that reflect the dynamics of marital and family systems. In FACES II, for example, there are two or three items representing each concept in the scale. For cohesion, the concepts are emotional bonding, family boundaries, coalitions, time, space, friends, decision-making, and interests and recreation. For flexibility, the concepts are assertiveness, leadership, discipline, negotiation, roles, and rules.

## Family Types

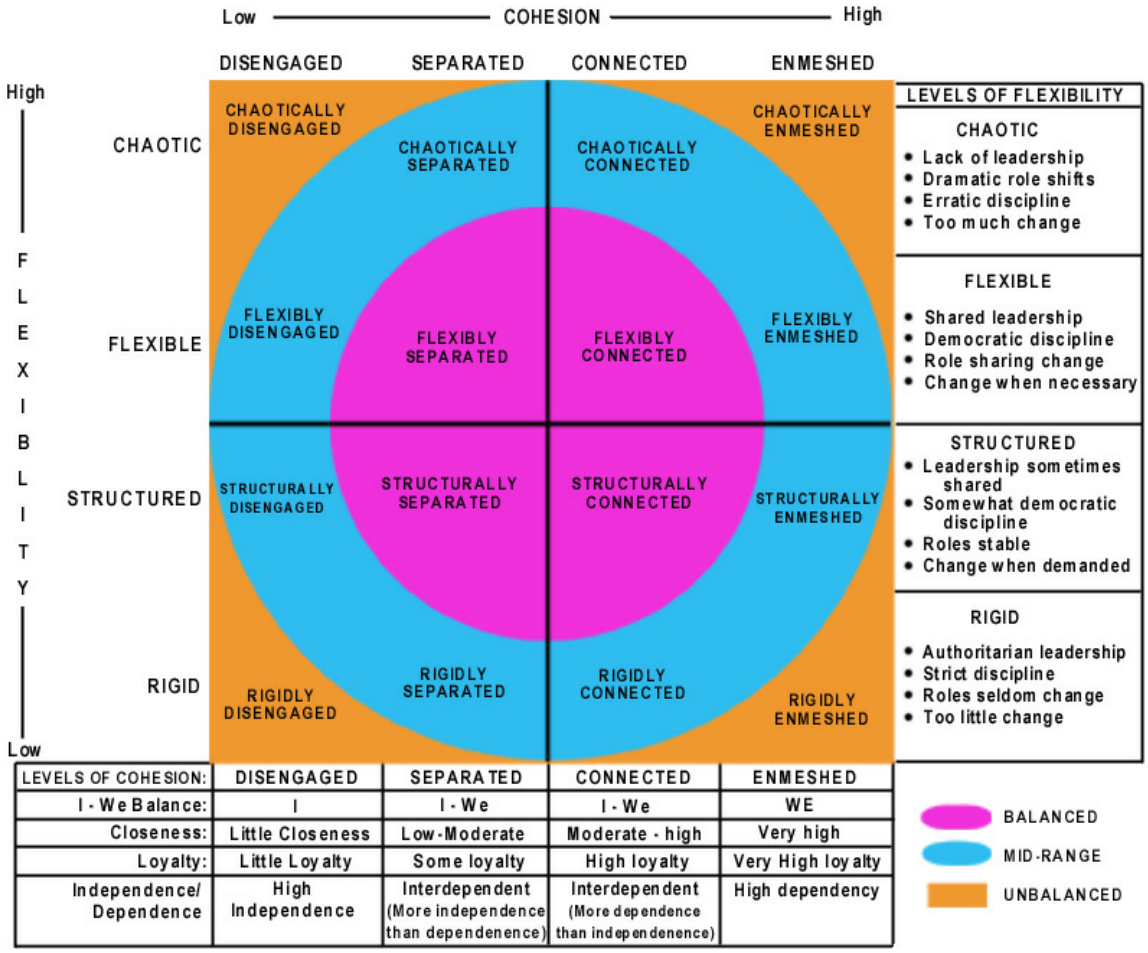
The model serves as a typology to distinguish 16 types of families (see Figure 1). The types fall into three categories: balanced; midrange; and extreme, or unbalanced.

a) There are four types of *balanced* families: flexibly connected, flexibly cohesive, structurally connected, and structurally cohesive.

b) There are six types of *midrange* families that are balanced on one dimension and extreme on the other. The types are chaotically connected, chaotically cohesive, flexibly enmeshed, structurally enmeshed, rigidly cohesive, rigidly connected, structurally disengaged, and flexibly disengaged.

c) There are four types of *extreme*, or *unbalanced*, families: chaotically disengaged, chaotically enmeshed, rigidly enmeshed, and rigidly disengaged.

Figure 1. Circumplex Model of Marital and Family Systems (from Olson, 2000).




| LEVELS OF COHESION: | DISENGAGED | SEPARATED | CONNECTED | ENMESHED |
|---|---|---|---|---|
| I - We Balance: | I | I - We | I - We | WE |
| Closeness: | Little Closeness | Low-Moderate | Moderate - high | Very high |
| Loyalty: | Little Loyalty | Some loyalty | High loyalty | Very High loyalty |
| Independence/ Dependence | High Independence | Interdependent (More independence than dependenence) | Interdependent (More dependence than independenence) | High dependency |

## Curvilinearity

The Circumplex Model was conceived to be curvilinear. Very high or very low scores on cohesion and flexibility were to represent *extreme* forms of family functioning. Scores in the middle range were to represent *high* or *moderate* forms of functioning. Theoretically, the extremes on the cohesion dimension are: *enmeshed* (overly high) and *disengaged* (overly low), with *connected* (moderate to high) and *separated* (low to moderate) functioning in between; and the extremes on the flexibility dimension are *chaotic* (overly high) and *rigid* (overly low), with *flexible* (moderate to high) and

*structured* (low to moderate) in between. The curvilinearity assumption has been debated extensively in the literature, and empirical support for it is mixed based on research with earlier versions of the self-report instruments. The development of FACES IV, therefore, was undertaken to unify the theory and the self-report measure.

## Conceptual Challenges

Besides curvilinearity, there are other conceptual challenges for the Circumplex Model and FACES. One is cross-cultural applicability. It is uncertain whether its theoretical premises can be universally applied. Another is the model's structural design, which is not consistent with that of circumplex models used in the field of psychology. Both of these issues need to be examined further and are discussed below.

### Cross-Cultural Applicability

The literature documents the use of FACES across the world and in the United States with various ethnic and cultural groups; however, few studies have critically examined the cross-cultural applicability of the Circumplex Model and its instruments. Because cultural values differ and norms are not available for different ethnic groups, it is important to consider the context in which FACES was developed.

Western societies tend to promote individualism, or independence, in contrast to Eastern societies, which promote collectivism, or interdependence. The implicit value system reflected in the Circumplex Model emphasizes autonomy and freedom, as opposed to conformity and compliance. Healthy families are assumed to have balanced levels of cohesion and flexibility. If there is too much cohesion, there is not enough independence and the family system is enmeshed. If there is too little flexibility, there is not enough freedom and the family system is rigid.

In Western culture, the concept of enmeshment implies that there can be too much loyalty in families, and the concept of rigidity suggests that not enough change in family roles and rules is problematic. In other cultural contexts, however, extreme togetherness or role rigidity may be acceptable, even preferred, by family members; and in certain circumstances, such family behavior may be adaptive. For example, it is possible that enmeshed family behavior in first generation immigrants is not a risk factor but rather serves a protective function. Woehrer (1988) contends that the FACES instruments are well suited to studies of highly acculturated groups but need to be modified for studies of less acculturated groups. Gorall and Olson (1995) advise caution when using FACES or the Clinical Rating Scale with diverse families, noting that "whereas theoretical models and normed assessment devices are highly useful in research and clinical practice, each family must be viewed as a unique system and assessed and treated with regard to its unique conditions and relationships" (p. 231).

Circumplex Model Design

The Family Circumplex Model, technically, is not a true circumplex design as used in the field of psychology by personality researchers (Plutchik & Conte, 1997). The circumplex design, originally introduced by Guttman (1954), refers not to curvilinearity, but to an order of relationships among variables that is linear (Eckblad, 1993). In any given set of variables, if two are perfectly negatively correlated (r =-1.0), they are placed on opposite poles, 180 degrees apart. If there is no correlation, they are placed diagonally, 90 degrees apart. The higher the positive correlation, the nearer the variables are positioned on a circular design. The ongoing work of Olson and colleagues to develop FACES IV is addressing this issue.

## THE FAMILY ASSESSMENT INSTRUMENTS

The primary inventories used today to assess family functioning with the Circumplex Model are FACES II, FACES III, and the Clinical Rating Scale. Other instruments, which are part of the Family Assessment Package, are sometimes used in conjunction with these scales. A profile of each instrument follows.

### FACES II and FACES III

FACES II and FACES III are recommended for different purposes. FACES II is suited for research and FACES III, shorter in length, for clinical applications. FACES II, overall, has stronger psychometric properties. The 30-item FACES II has higher internal consistency than the 20-item FACES III. In addition, FACES II has higher concurrent validity, especially in measuring family flexibility. (See Appendix B, *Psychometric Properties of the Instruments*, for more detailed information.)

An advantage to using FACES III, however, is the stronger evidence for orthogonality of the dimensions. Some researchers may prefer FACES III because cohesion and flexibility are not as highly correlated as in FACES II (FACES III, r =.03; FACES II, r =.65). In addition, FACES III is not influenced by social desirability effects, unlike FACES II. Both instruments discriminate well between clinical and nonclinical families (Olson, 1993a, 2000; Olson et al., 1989).

#### Validation Studies

FACES has been validated in several comparison studies of self-report instruments (Edman, Cole, & Howard, 1990; Fristad, 1989; Hampson, Hulgus, & Beavers, 1991), and it has been used to validate other instruments such as the Family Environment Scale (Miller, Epstein, Bishop, & Keitner, 1985), the Family Assessment

Device (Bloom, 1985), the Family Systems Test (Feldman & Gehring, 1988), and the Kvebaek Sculpture Technique (Berry, Hurley, & Worthington, 1990; Vandvik & Eckblad, 1993).

Linear Interpretation

FACES II and FACES III both are scored as linear measures. High scores represent balanced family functioning, and low scores represent extreme family functioning. Cohesion and adaptability each have four levels, as shown in Table 2. The levels are balanced, moderately balanced, midrange, and unbalanced; they are determined by averaging the family members' scores on cohesion and adaptability.

Table 2

Types and Levels of the Dimensions

| Family Functioning | | Dimensions | |
|---|---|---|---|
| Type | Level | Cohesion | Adaptability |
| Balanced | Very high | Very connected | Very flexible |
| Moderately balanced | High | Connected | Flexible |
| Midrange | Low | Separated | Structured |
| Unbalanced | Very low | Disengaged | Rigid |

Psychometric Properties

Both FACES II and FACES III have been tested rigorously and have proven to be reliable and valid instruments. Detailed information on the reliability and validity of the measures is contained in Appendix A.

Norms

There is normative data for FACES II and FACES III (Olson, McCubbin, Barnes, Larsen, Muxen, & Wilson, 1992) based on a national survey, however, generalizability is limited because the sample was restricted in diversity. It comprises 1,140 Lutheran

couples and 412 adolescents, representing families in all stages of the life cycle (Olson et al, 1989). More detailed information is provided in Appendix B.

## Clinical Rating Scale

The Clinical Rating Scale (Olson, 1993b) is the observational measure for the Family Circumplex Model. Unlike FACES, it is scored in a curvilinear manner. It is designed for clinical assessment and treatment planning. It is also useful to measure therapy outcome effectiveness. Furthermore, for research, it can be incorporated into multitrait-multimethod study designs to compare insider and outside perspectives (Olson, 1977).

The Clinical Rating Scale measures all three dimensions of the Circumplex Model—cohesion, flexibility, and communication. The specific coding categories for each dimension are shown in Table 3. More information on the coding system is provided in Appendix B, which contains sample guidelines.

Table 3

Observational Coding Categories of the Clinical Rating Scale

| Cohesion | Flexibility | Communication |
|---|---|---|
| Emotional bonding | Leadership | Listening skills |
| Family involvement | Discipline | Speaking skills |
| Marital relationship | Negotiation | Self-disclosure |
| Parent-child relationship | Roles | Clarity |
| Internal boundaries | Rules | Continuity/tracking |
| External boundaries | | Respect and regard |

### Curvilinear Interpretation

Comparing scores of 192 families on the Clinical Rating Scale and FACES III, Thomas and Olson (1994) found strong support for curvilinearity for the observational measure but not the self-report measure. The authors concluded that it is easier for

observers to see families functioning in the extremes—as enmeshed or chaotic—than it is for family members to do so.

Cross-Cultural Use

The applicability of the Clinical Rating Scale in different cultural contexts is unclear. It was used with pre- and post-therapy measurements of family health and pathology in a Japanese study of 10 clinical families (Otsuka & Tatsuki, 1991), and it confirmed the curvilinear nature of cohesion and adaptability. The extremely small sample size, however, limits the generalizability of the findings. Thus, more research is needed to determine the extent to which the Clinical Rating Scale may be useful cross-culturally.

## Other Related Instruments

As mentioned earlier, several other self-report scales are contained in the Family Assessment Package including Family Satisfaction, Family Strengths, and Parent-Adolescent Communication. Brief descriptions follow. More detailed information is provided in the complete *Family Assessment Package*.

Family Satisfaction

Measuring family satisfaction is an important component of the Circumplex Model that can account for family diversity. Previously, it was recommended that family members complete two forms of the FACES instrument, one representing perceived, or current family functioning and the other representing *ideal* family functioning. By comparing the differences between perceived and ideal functioning, the level of satisfaction could be determined.

It is now recommended that the Family Satisfaction scale be used for this same purpose. This self-report instrument, developed by Olson and Wilson (1992), has 14 items measuring family member satisfaction with existing levels of cohesion and flexibility. Responses are given on a 5-point scale ranging from "strongly agree" to "strongly disagree." Norms are available for parents and adolescents on each dimension and for the overall measure. The norms for this instrument and for the others below were established with the same national survey from which FACES' norms were developed (Olson et al., 1992).

Family Strengths

The Family Strengths scale (Olson, Larsen, & McCubbin, 1992) is a 12-item questionnaire, which also uses the same 5-point agreement scale. This measure is assess family resources on two dimensions: pride and accord. Pride measures loyalty, respect, and trust within the family. Accord measures the family's sense of competence. Norms are available for husbands, wives, adolescent males, and adolescent females.

Parent-Adolescent Communication

Communication is considered a facilitative dimension of the Circumplex Model. For families with children, it is measured by the Parent-Adolescent Communication scale. This 20-item self-report instrument was developed by Barnes and Olson (1992) to measure the perceptions of parents and adolescents on dyadic communication in the family. The Parent-Adolescent Communication scale taps into both positive and negative aspects of communication. It has two subscales, open family communication and problems in family communication. Norms are available for fathers, mothers, and

adolescents. For adolescents, there are two sets of norms, one for communication with fathers and the other for communication with mothers.

## OVERVIEW OF RESEARCH WITH FACES

This section provides an overview of the research conducted with the FACES self-report instruments. It describes the scope of the research, noting the multiple disciplines and prominent topics of study. It also discusses the hypotheses of the Family Circumplex Model and the extent to which they have been adequately tested. It concludes with a critique of both the limitations and the strengths of the research.

### Scope of Research

Overall, more than 450 empirical studies have been published, along with 75 reviews and commentaries that address family theory, methods, and applications involving FACES. Table 4 displays the number of empirical studies using a particular instrument.

Table 4

*Instruments Used in the Empirical Studies*

| Instrument | Number of Studies |
|---|---|
| FACES III | 237 |
| FACES II | 145 |
| FACES (Original version) | 30 |
| Clinical Rating Scale | 18 |
| Parent-Adolescent Communication | 44 |
| Family Satisfaction | 34 |
| Family Strengths | 18 |

*Note*: These figures do not take into account hundreds of dissertations, foreign language publications, and studies otherwise completed but not published in a major journal.

The studies were published in a span of 23 years, from 1977 through 1999. Since 1985, when FACES III was introduced, each year an average of 30 empirical studies has been published, along with nearly a dozen reviews or commentaries. FACES II has continued to be used throughout this period due to its strong psychometric properties. One of every three studies conducted has used FACES II.

Close to half (49%) of all the publications are in the fields of psychology (26%), medicine (16%), and psychiatry (7%). About one-third (32%) are in family social science (21%) and the related field of marriage and family therapy (11%). Other disciplines represented include social work (7%), education (5%), chemical health (3%), gerontology (2%), sociology (2%), family law (1%), and human relations (1%). (See Table 5.)

Table 5

Published Studies and Reviews: By Discipline

| Discipline | Number of Publications | Percent of Total |
|---|---|---|
| Psychology | 129 | 25.7 |
| Family Social Science | 107 | 21.3 |
| Medicine | 81 | 16.1 |
| Marriage and Family Therapy | 55 | 11.0 |
| Psychiatry | 37 | 7.4 |
| Social Work | 28 | 5.6 |
| Education | 23 | 4.6 |
| Chemical Health | 14 | 2.8 |
| Gerontology | 12 | 2.4 |
| Sociology | 9 | 1.8 |
| Family Law | 3 | .6 |
| Human Relations | 3 | .6 |
| Mass Communications | 1 | .2 |
| Total | 502 | |

## Topics of Study

Several prominent areas of research, discussed later in this paper, address topics related to a) couple and family relationships, b) families with special problems, and c) family systems and health. A complete list of topics covered in the research is shown in Figure 2. The subject areas most studied are theory and research, families with special problems, family relations and dynamics, family counseling and education, physical health, and individual development. Areas least studied include stages in the family life cycle, marriage and divorce, types of families, sexuality and reproduction, and the family and society. Table 6 displays the number of studies and reviews covering various subject areas.

Table 6

Published Studies and Reviews: By Subject Area

| Subject Area | Number of Studies | Percent of Total |
|---|---|---|
| Theory and Research | 116 | 22.3 |
| Families with Special Problems | 82 | 15.7 |
| Family Relations and Dynamics | 78 | 15.0 |
| Family Counseling and Education | 64 | 12.3 |
| Physical Health | 63 | 12.1 |
| Individual Development | 53 | 10.2 |
| The Family and Society | 35 | 6.7 |
| Sexuality and Reproduction | 9 | 1.7 |
| Types of Families | 9 | 1.7 |
| Marriage and Divorce | 7 | 1.3 |
| Stages in the Family Life Cycle | 5 | 1.0 |
| Total | 521 | |

*Note:* This table is based on the selection of more than 200 studies listed in Appendix C (see Table C1). Studies typically cover more than a single topic.

*Figure 2*. Number of FACES Publications: By Subject Area and Topic

**FAMILY RELATIONS AND DYNAMICS** (78 publications)
- Communication (14)
- Family-of-origin relationships (9)
- Family relationships (20)
- Husband-wife relationships (13)
- Parent-child relationships (14)
- Father-child relationships (3)
- Mother-child relationships (3)
- Sibling relationships (2)

**MARRIAGE AND DIVORCE** (7)
- Cohabitating
- Marriage (2)
- Divorce and separation (5)
- Remarriage

**TYPES OF FAMILIES** (9)
- Dual career families
- Single parent families (2)
- Stepfamilies (4)
- Extended families (1)
- Farm families
- Military families (2)
- Missionary families

**PHYSICAL HEALTH** (63)
- Nursing (9)
- Cancer (7)
- Diabetes (8)
- Cardiological health (1)
- HIV/AIDS (1)
- Physical illness--adults (13)
- Physical illness--adolescents (11)
- Physical illness--children (13)

**INDIVIDUAL DEVELOPMENT** (53)
- Child development (7)
- Adolescent development (42)
- Emotional development
- Socialization (4)

**FAMILY COUNSELING AND EDUCATION** (64)
- Family therapy (43)
- Marriage counseling or therapy (9)
- Marital and family enrichment (1)
- Family life education (7)
- Parenting education (3)
- Financial counseling
- Program evaluation (1)

**STAGES IN THE FAMILY LIFE CYCLE** (5 publications)
- Early marriage
- Transition to parenthood (1)
- Launching (2)
- Middle years
- Aging (2)

**SEXUALITY / REPRODUCTION** (9)
- Pregnancy and childbirth (4)
- Teenage pregnancy (1)
- Abortion (1)
- Sexuality (2)
- Homosexuality (1)

**THE FAMILY AND SOCIETY** (35)
- Ethnic groups (14)
- Social class (4)
- Economics (2)
- Education (6)
- Geographic mobility (1)
- Work issues (2)
- Religion (1)
- Family rituals (1)
- Adoption and foster care (4)

**FAMILIES WITH SPECIAL PROBLEMS** (82)
- Alcoholism (4)
- Chemical dependency (8)
- Behavioral problems (9)
- Juvenile offenders (8)
- Criminal offenders (1)
- Violence-abuse (2)
- Child abuse (2)
- Incest (2)
- Learning disabilities (2)
- Developmental disabilities (2)
- Physical disabilities (5)
- Mental illness (3)
- Depression (8)
- Eating disorders
- Suicide (3)
- Stress (21)
- Death (1)
- Gifted member (1)

**THEORY AND RESEARCH** (116)
- Family theory (50)
- Family research methods (66)

## Reviews of the Literature

The FACES instruments have been profiled in a number of reviews. Some evaluate the general features of self-report family assessment measures (Halvorsen, 1991; Skinner, 1987). Others recommend specific applications in areas such as family medicine (McCubbin, McCubbin, Thompson, & Huang, 1989), medical rehabilitation (Novack & Gage, 1995), substance abuse and chemical dependency (Kumpfer & DeMarsh, 1986), clinical child psychology (Bradley & Brisby, 1990, 1993); early childhood special education (Mott, Fewell, Lewis, Meisels, Shonkoff, & Simeonsson, 1986), health care for the elderly (Doolittle & Wiggins, 1993), therapy for post-traumatic stress victims (Figley,1988), and overall mental health assessment (Clarkin & Glick, 1994). In addition, there are multiple reviews that focus on families of children with developmental disabilities (Martin & Cole, 1993; Mott et al., 1986), the divorce and remarriage process (Mathis & Yingling, 1990a, 1990b; Roberts & Price, 1985), and elderly caregiving issues (Rankin, Haut, & Keefover, 1992; Sanborn & Bould, 1991).

## Hypotheses of the Model

One way to evaluate the FACES research is to consider the hypotheses that were derived from the Circumplex Model and the extent to which they have been tested or proven. There were six original hypotheses, which addressed family functioning across the life cycle, communications skills, family ability to change, and acceptance of extreme behaviors (Olson et al., 1989).

### Functioning Across the Life Cycle

The primary hypothesis of the Circumplex Model is: “Couples/families with balanced cohesion and adaptability will generally function more adequately across the

family life cycle than will those at the extremes of these dimensions" (Olson et al., 1989, p. 66). This is the most widely tested of the hypotheses. Hundreds of studies have shown that families with balanced levels of cohesion and flexibility function better than families with extreme levels (Olson, 1996). Examples are provided in the *Description of Empirical Studies* section of this paper.

Communication Skills

Another hypothesis is: "Balanced couples/families will tend to have more positive communication skills than Extreme families" (Olson et al., 1989, p. 68). There is convincing empirical evidence that balanced families communicate better. This finding has been confirmed with multiple methods, in research using both self-report scales (Barnes & Olson, 1986) and observational coding of family interaction (Rodick, Henggler, & Hanson, 1986).

Ability to Change

Olson and colleagues (1989) describe three other Circumplex Model hypotheses that deal with the ability of families to change over time. First: "To deal with situational stress and developmental changes across the family life cycle, Balanced families will change their cohesion and adaptability, whereas Extreme families will resist change over time" (p. 68). They state that change is easier for balanced families because "Balanced families have larger behavioral repertoires and are more able to change compared to Extreme families" (p. 66). Specifically, "Positive communication skills will enable Balanced couples/families to change their levels of cohesion and adaptability more easily than those at the Extremes" (p. 68).

A longitudinal research design is best suited to determine whether balanced types are better able to change and whether extreme types resist change. In addition, more extensive statistical comparisons are needed to establish which family behaviors make the most difference in a family's ability to change. The underlying mechanism by which change occurs has not been thoroughly explored.

Support for the hypotheses dealing with change is based largely on cross-sectional data from the original study in which norms were developed for families in all stages of the life cycle (Olson et al., 1989). Some support comes also from individual case studies (Olson, 1996), however, there have been no large-scale studies done to track changes in cohesion and flexibility for the same families over time. Longitudinal research is needed to better understand the complex ways that families function and change in response to both critical and normative transitions.

Acceptance of Extreme Behaviors

One of the Circumplex Model hypotheses deals with ethnic and cultural diversity. It states: "If the normative expectations of a couple or family support behaviors on one of both extremes of the circumplex dimensions, it will function well as long as all family members accept these expectations (Olson, et al., 1989, pp. 66-67). This statement was developed because there are inherent cultural biases reflected in the other hypotheses. Family norms and expectations are not the same across all ethnic groups. As suggested earlier in this paper, the concept of enmeshment would be difficult to measure in certain cultural contexts.. Family togetherness is strongly emphasized among ethnic groups such as the Amish, Mormons, Italians, Puerto Ricans, and Slovak-Americans (Olson et al.,

1989). In general, studies of the Circumplex Model using FACES have not adequately addressed this issue. Research needs to be designed to directly test this hypothesis.

## Limitations of Research

A review of the literature using the FACES instruments is complicated by the change to linear measurement as well as some ongoing confusion about whether to use linear or curvilinear interpretation. Many of the early studies were conducted without critically examining the curvilinear assumption. Some report outcomes associated with enmeshed or chaotic family functioning, but these outcomes are likely related to highly cohesive or highly flexible functioning. Consequently, some of the past research needs to be reinterpreted. This issue can be addressed in future meta-analytic reviews.

## Strengths of Research

Nevertheless, FACES II and FACES III are practical tools for researchers and practitioners to do family assessment. As linear instruments, they have been successfully applied across multiple disciplines in hundreds of studies. Some of the best examples of the usefulness of FACES are in the areas of physical health and illness. Furthermore, an overarching theme that emerges from this overview of the empirical research is the strong support for a *biopsychosocial* approach to prevention and intervention. The studies described in the next section of this paper show that the social context of the family is useful in studying illness, and furthermore, that family functioning is a significant factor in dealing with both physical and psychological problems.

## SELECTION OF EMPIRICAL STUDIES

A complete review of the empirical studies that have used the Family Circumplex Model is not possible to present in this paper. The purpose here is to introduce findings from a selection of the empirical studies. The most noteworthy development, which shows great promise, is the research being done in medicine and related fields to investigate health behaviors and outcomes. The results show certain trends, highlighted in Table 7. Examples of studies that support these trends follow later in this section and are listed in Appendix C (see Table C1).

Table 7

Trends in FACES Research from Studies of Health and Illness

1) Balanced family functioning predicts positive health outcomes in families with chronic illness as a result of:
   a) greater medication compliance in the treatment of diabetes and rheumatoid arthritis among children and adolescents; and
   b) better adjustment for children to illnesses such as cystic fibrosis and cancer.
2) Family cohesion can improve the success of health care programs. It is shown to have positive effects on family members for:
   a) use of prenatal care;
   b) recovery from substance abuse; and
   c) management of depression.
3) Family flexibility helps children's adjustment to chronic illness by influencing factors such as coping behaviors, social acceptance, and academic competence.

To present common themes from the vast amount of research conducted with the Circumplex Model, three main categories were chosen: a) couple and family relationships, b) families with special problems, and c) family systems and health. These

represent prominent areas of research, and the studies described below illustrate typical results that can be obtained using FACES to assess family functioning.

## Couple and Family Relationships

This section on couple and family relationships describes studies in three categories: a) stages in the family life cycle, b) marital satisfaction, and c) child and adolescent development. In these studies, balanced family functioning is consistently linked with positive results, and cohesion and flexibility sometimes serve different purposes, with different effects.

### Stages in the Family Life Cycle

Studies of families across the life cycle are important to examine, given the Circumplex Model's original hypotheses about change. Olson (1993a) advocates the need for more longitudinal research in this area. While longitudinal studies have been done with the case study method (Sontag & Bubolz, 1996), none have used large samples of families. The original FACES study (Olson et al., 1989), based on cross-sectional data, nevertheless, is rich with insight, and other researchers have used this method with similar results. Consistent with Olson and colleagues' earlier findings, Mathis and Tanner (1991) found that couples in later life were significantly more satisfied with their families, compared with the norms (Olson et al., 1989). They also found that older married couples functioned as cohesively as younger married couples, but the older couples were significantly more adaptable and flexible.

### Marital Satisfaction

Relatively few studies have used FACES to explore the relationship between marital satisfaction and couple or family functioning. Findings in the Mathis and Tanner

(1991) study imply that couple flexibility may be more significant than cohesion in promoting marital stability. This is not to say that cohesion is unimportant. Rather, cohesion and adaptability may serve different purposes in a long lasting relationship. For example, in a recent study of 396 married and cohabiting couples, James and Hunsley (1995) discovered a linear relationship between cohesion and marital adjustment, but they found a curvilinear relationship between adaptability and marital satisfaction, a global rating. This suggests that high cohesion may help couples traverse difficult periods of adjustment, but balanced flexibility may keep them happy and satisfied. Adaptability (i.e., relationship functioning that is neither rigid nor chaotic) seems to be an important contributing factor to marital stability. More research is needed to investigate this further.

Child and Adolescent Development

Another important area of study, related to family life cycle, examines the effects of cohesion and flexibility on child and adolescent development. This is the focus of more than 50 studies conducted with FACES. Significant findings in this area show that family cohesion and communication influence the development of empathy and career maturity in boys and girls. Family flexibility takes on significance when family structure changes, particularly for adolescents in remarried families.

Henry, Sager, and Plunkett (1990) found that perceptions of family closeness were significantly associated with adolescents' expressions of empathic concern for others. Another factor was responsive communication with parents. Similarly, King (1989) found family cohesion was positively related to career maturity for adolescent boys and girls. For boys, family cohesion was also associated with a greater internal locus of control, which contributes to career maturity.

Research on adolescents in stepfamilies generally has found lower levels of cohesion, compared with intact families. Family adaptability and communication, however, have significant effects on adolescent adjustment. In a study of remarried households, Henry and Lovelace (1995) looked at many different family variables, and the one with the strongest relationship to adolescent family life satisfaction was family flexibility. Positive communications with stepparents was also significant.

## Families with Special Problems

This section on families with special problems gives examples of research in four areas: a) child behavioral problems, b) childhood depression, c) substance abuse, and d) family stress and coping.

### Child Behavioral Problems

In a study of children who had been referred for clinical treatment, behavioral problems were found associated with extreme levels of family cohesion and adaptability (Smets & Hartup, 1988). Children in balanced families had fewer symptoms, compared with those in midrange and extreme families. For adolescents, this finding was less strong. Another study of child behavior problems found that there was a strong relationship with depressive symptoms in the parent providing primary care; also, low family cohesion contributed to the parents' depressive symptoms (Manne, Lesanics, Meyers, Wollner, Steinherz, & Redd, 1995). The sample in this study consisted of 59 parents of children newly diagnosed with cancer.

### Childhood Depression

Warner, Mufson, and Weissman (1995) examined risk factors and mediating variables that contribute to depressive and anxiety disorders in children. A chaotic family

environment predicted dysthymia in offspring and accounted for an association found between major depression in parents and anxiety in their offspring. This sample comprised 145 children, ages 6 to 24, with diagnosed depressive or anxiety disorders. In another study, children with depression perceived less family cohesion and more disengagement than did children without depression (Kashani, Allan, Dahlmeier, Rezvani, & Reid, 1995). The authors concluded that family cohesion is a significant factor to consider in treating childhood depression.

Substance Abuse

The families of substance abusers were found disengaged, not rigidly enmeshed, as other clinical literature had indicated (Volk, Edwards, Lewis, & Sprenkle, 1989). Compared with normative data from nonclinical families, the families of substance abusers were significantly different on cohesion but not on adaptability. The sample for this study consisted of 148 adolescents in a drug rehabilitation program, along with 135 mothers and 67 fathers. In another study of families with substance abuse, measures of psychological functioning were highly correlated with family cohesion but not with family adaptability (Kang, Kleinman, Todd, Kemp, & Lipton, 1991)

Support for adaptability, however, was found in a study among high school students conducted by Smart, Chibucos, and Didier (1990). The sample consisted of 1,082 freshmen in three consecutive classes. Adolescents who perceived extreme family functioning on both cohesion and adaptability were more likely to use alcohol or marijuana, compared with adolescents who perceived balanced or moderate functioning.

Family Stress and Coping

Marotz-Baden and Colvin (1989) interviewed 72 families with an unemployed father and at least one adolescent. The higher the levels of family cohesion and adaptability, the more likely family members were to use positive coping strategies in adapting to the stressors of adolescence and unemployment. This study provides a detailed analysis of the coping strategies used by each family member. For a comprehensive review of the family processes involved in adaptation to crises and stress, the reader is referred to McCubbin and Patterson (1982).

## Family Systems and Health

This section on family systems and health focuses on two areas of research. One is pregnancy and childbirth. The other is chronic illness, specifically among children with cancer, cystic fibrosis, diabetes, and juvenile rheumatoid arthritis. For further review, there are more than 60 studies related to physical health and illness contained in the *Annotated Summary of Published Studies* (see Appendix C).

Pregnancy and Childbirth

In a study of 102 women who had miscarriages, family variables were the strongest factors for recovery. Specifically, adaptability and cohesion predicted the level of crisis and the speed of recovery (Day & Hooks, 1987). In another study, with 368 obstetric patients, family functioning was found to affect the use of prenatal care. Low levels of cohesion and extreme family functioning were associated with less utilization of services (Kugler, Yeash, & Rumbaugh, 1993). In yet another study, family functioning was found associated with infant birthweight. Compared with women from balanced families, women from extreme families gave birth to infants weighing less (Abell, Baker,

Clover, & Ramsey, 1990). This study involved a sample of 772 obstetric patients recruited during their initial prenatal visits at family medicine clinics.

Chronic Illness Among Children

Overall, family flexibility seems to influence adherence to treatment protocols, while family cohesion promotes positive coping behaviors in dealing with chronic illness. In the research on families with children who have diabetes, balanced flexibility was important for children's adjustment and it was found significantly related to medication compliance and metabolic control

In contrast, the research on families of children with cancer suggests that extreme levels of family functioning are adaptive and sometimes necessary. This difference may be explained by the context of the illness. Diabetes has significant effects on lifestyle, requiring changes in diet and other routines, but diabetes is not life threatening the same as cancer. Even though recovery for children with cancer has dramatically improved, a diagnosis of cancer is likely to provoke extreme reactions even among balanced families. More explanation and details of the studies follow.

Cancer. In families of children undergoing treatment for cancer, Horwitz and Kazak (1990) found a high proportion of scores in the extreme ranges of adaptability: 56% were either “chaotic” or “rigid,” compared with 20% in a comparison group. Cohesion scores were not significantly different. Remarkably, the siblings in these families tended to be well adjusted psychologically. This finding lends support to Olson’s (1993a) belief that it is normative for families, in response to a major stressor, to function at one of the extremes without harmful effects. Such a response may be natural and a necessary part of the process to mobilize support for dealing with the crisis.

An extreme form of family functioning may serve a purpose for a limited period of time, but if it persists, it could be problematic. In order for families to deal effectively with a chronic illness, acceptance of the illness is important. For this to occur, balanced levels of adaptability become important, particularly for the psychosocial adjustment of the child suffering from the illness. Kazak and Meadows (1989), for example, found that family adaptability predicted the social acceptance and the scholastic competence of children with cancer. These were found to be important factors that contributed to the adjustment of the children with cancer.

Cystic Fibrosis. Family functioning was also determined to be an important mediating variable influencing children's adjustment to cystic fibrosis. Lewis and Khaw (1982) found that extreme family functioning, not simply the presence of the illness, had effects on the psychosocial adjustment of the children.

Diabetes. Hanson, De Guire, Schinkel and Burghen (1992) studied 95 families of youth with insulin dependent diabetes mellitus, involving both mothers and fathers in the study. Family functioning predicted positive outcomes for the youth with diabetes, beyond the effects of illness-specific measures such as family support. A high level of family adaptability, interpreted linearly, combined with a low level of "nonsupport," uniquely predicted adherence to the treatment protocol. In this study, acceptance of the illness and metabolic control were not associated with any of the measures.

Two other studies found associations for metabolic control. One was conducted by Cederblad, Helgesson, Larsson, and Ludvigsson (1982) using a Swedish sample of 33 families with children between 10 and 14 years of age who had been managing diabetes for at least two years. They found that metabolic control was positively correlated with

the mothers' perceptions of family adaptability, and it was associated with less anxiety and acting out behaviors in the child. In addition, metabolic control was negatively correlated with the fathers' perceptions of family enmeshment (or high cohesiveness, if interpreted linearly). Overall, the families with diabetic children in the Swedish study tended to have very high scores on cohesion, compared with a control group. Research with a U.S. sample also found metabolic control to be strongly related to family adaptability as well as marital satisfaction; it was only marginally related to family cohesion (Hanson, Henggeler, Harris, Burghen, & Moore, 1989).

In yet another study, poor health outcomes for youth with diabetes were found related to negative coping behaviors, such as "avoidance" or "ventilation" (Hanson, Harris, Relyea, Cigrang, Carle, & Burghen, 1989). Low family cohesion was strongly associated with these behaviors; and as the duration of the illness increased, family adaptability mediated these behaviors.

Juvenile Rheumatoid Arthritis. In a study by Chaney and Peterson (1989), extreme levels of family functioning were associated with poor medication compliance in the treatment of juvenile rheumatoid arthritis. This is consistent with the findings reported for families with children who have other chronic illnesses such as diabetes.

## IMPLICATIONS OF THE STUDIES

This section covers theoretical and methodological issues mentioned in the literature. In addition, several new issues are identified related to advances in statistical analysis techniques.

## Theoretical Issues

Cohesion, adaptability, and communication are considered essential domains of family functioning, but the extent to which the Circumplex Model and its instruments successfully tap into these domains has been contested, sometimes vigorously (Beavers & Voller, 1983). In addition, the concept of curvilinearity has been hotly debated (Cluff, Hicks, & Madsen, 1994; Olson, 1994). These issues are discussed here.

### The Essential Domains of Family Functioning

As a starting point, one of the most helpful theoretical frameworks is that provided by Harold Grotevant and Cindy Carlson (1989), who conceptualize four domains of family functioning: structure, process, affect, and orientation. They note that the FACES instrument taps into family structure and process, but not affect or orientation. Cohesion is a measure of family *structure*, and adaptability a measure of family *process*.

According to Grotevant and Carlson (1989, p. 75):

- Structure refers to how a family is organized; it is defined as "the roles and patterns that provide a framework within which the family functions."
- Process refers to the family's actions and activities involving "control, regulatory, and communication functions."
- Affect refers to "the expression of emotion within the family."
- Orientation refers to "family's attitudes about itself" particularly in relation to the outside world.

Family *affect*, or the expression of emotion, is reflected in the dimension of communication, which is not measured directly by FACES, however, it is part of the

family communications instruments provided in the complete set of family inventories developed by Olson and colleagues (1992). The family's *orientation*—how it views itself relative to other families—as defined by Grotevant and Carlson (1989) seems most related to Family Pride, a subscale of the Family Strengths inventory. The Family Satisfaction scale may also tap into this domain. The Family Strengths and Family Satisfaction scales are part of the Family Assessment Package, which was described earlier in this paper.

This discussion implies that no single instrument can capture the complexity of family functioning. Support for studying families with multiple instruments is growing. An excellent example is the study of family cohesion and control conducted by Dickerson and Coyne (1987). Using FACES along with the Family Environment Scale and the Family Assessment Device, the authors concluded that these three scales seem to tap into different dimensions of family functioning. Halvorsen (1991) reached a similar conclusion in an evaluative review of eight self-report instruments, however, he did not state it in terms of appreciation for the complexity of family functioning. Instead, Halvorsen, whose field is family medicine, pointed out that there is a lack of agreement on key concepts and definitions in the family field. More work is needed to clarify theoretical distinctions and related measurements, especially now that family assessment tools such as FACES are being applied in a wide range of disciplines.

The Debate on the Curvilinearity Hypothesis

Constructive criticism and lively debate about theoretical and methodological issues in the assessment of family functioning seem healthy for the field as it continues to develop. One of the most hotly debated issues in the field has been the curvilinear

hypothesis (Cluff, Hicks, & Madsen, 1994; Olson, 1994). Although the evidence against curvilinearity may be stronger than that for it, there is at least some evidence for it that cannot easily be dismissed. Some of the important studies on both sides of this topic are briefly mentioned here:

Enmeshment-Disengagement Continuum. In a study using the original version of FACES, in which four self-report measures were examined, Bloom and Naar (1994) were unable to confirm the enmeshment-disengagement continuum, thus casting doubt on the curvilinear interpretation of cohesion. In an earlier study, using FACES II, however, Henggeler, Burr-Harris, Borduin, and McCallum (1991) found support for a curvilinear interpretation of the scores on both dimensions. They concluded that curvilinear treatment of the data was better at discriminating between antisocial and nonproblem youth.

Response Format. Response format was investigated as a possible solution to the curvilinearity dilemma. In a study by Pratt and Hansen (1987), the authors found that a bipolar response format worked to operationalize the curvilinear hypothesis. Their results, however, were rejected later by Perosa and Perosa (1990), who provide strong evidence that FACES III measures cohesion and adaptability in a linear manner.

Item Construction. Item construction was another avenue explored to find support for the curvilinear hypothesis. Ben-David and Jurich (1993) set out to demonstrate that rewording of the adaptability subscale in FACES III would successfully elicit curvilinear responses, and to some extent, they succeeded; however, the nature of this research was qualitative and the sample was small.

In a number of studies, researchers who attempted curvilinear interpretation of the findings rejected it in favor of linear interpretation. In some cases, however, when curvilinear results were not found, the theoretical concepts were dismissed. This is unfortunate, because linear interpretation of the dimensions of cohesion and adaptability is valid. Given the lack of conclusive evidence for curvilinearity, linear scoring of FACES II and FACES III remains the standard today. Researchers conducting literature reviews or meta-analyses in the future will need to consider whether to re-interpret the results of past studies.

## Methodological Issues

General limitations of self-report instruments have been well-documented (Grotevant and Carlson, 1989), such as constraints in the wording of the questions and the response format. For example, family members may interpret the items differently than the researchers intended. They also may not accurately report their behaviors.

It is common for family members to have different perceptions of the same events. The convergent and divergent perspectives in the family are diagnostically useful in clinical settings, but they can be just as useful for research analyses. Three methodological issues are discussed here, including suggestions for interviewing multiple family members, using multiple methods for scoring, and employing a variety of statistical techniques.

### Multiple Family Members

Common to studies of families in the past is the practice of including only the mothers' reports of family functioning. Many of the published articles have this limitation. Several studies, however, advocate for inclusion of fathers in the sample.

Fathers' perceptions of family functioning were found important to have when mothers' reports did not correlate with outcomes. For example, in a study of juvenile rheumatoid arthritis, Chaney and Peterson (1989) found that the fathers' reports of family satisfaction were positively associated with their children's medication compliance. In another study, low cohesion and poor parent-adolescent communication predicted severe family problems, but only fathers' reports were related strongly to their children's symptomatic behavior (Marett, Sprenkle, & Lewis, 1992). The sample in this study consisted of 54 families with adolescents participating in a substance abuse assessment project. These findings underscore the importance of having fathers involved in family assessment and treatment.

Another limitation for some family studies is the exclusion of child or adolescent reports. In general, it is common to find that adolescent reports do not match those of the parents. In one large study, involving 281 Australian families, adolescents were less satisfied than parents with family adaptability levels; and the parents perceived more family cohesion than the adolescents, although cohesion levels reported by adolescents were high (Noller & Callan, 1986). The authors concluded adolescents want emotional support and connection in their families along with changes and more flexibility in family relationship roles and rules.

Instrument Scoring Methods

A hallmark study of family functioning by Larsen and Olson (1990) examined how individual perceptions of stress and coping vary among family members and analyzed the effects of the unit of analysis. The authors demonstrated the use of multiple scoring methods for comparison purposes. They found that family and couple mean

scores as well as discrepancy scores emerged as discriminators in some cases when the individual family member scores did not.

This adds complexity, for which statistical designs of the past may be inadequate. It also raises new issues, which interpersonal relationship researchers have attempted to deal with over the last decade. New techniques for statistical analysis are beginning to grab the attention of family science scholars, as explained in the next section.

Statistical Analysis Techniques

The most common statistical technique used with the FACES instruments is correlation of the dimensions with outcomes, to determine whether positive or negative relationships exist. This fits with the linear scoring of results. Another common technique is the use of the chi-square statistic to compare balanced, midrange, and extreme families. This is particular useful with small sample sizes. Some of the studies with large samples have used multivariate statistical techniques including analysis of variance (ANOVA). With this technique, it is important to examine interaction effects along with the main effects of the variables, because complex relationships between the levels of cohesion and adaptability can sometimes be discovered. This has been overlooked in a number of studies.

Another issue arises from recent advances in the use of statistical techniques for measuring nonindependence of the data (Kenny, 1995). More attention needs to be focused on whether a dyad or the individual is the appropriate unit of analysis. The intraclass correlation, measuring similarity between sets of family members, can be calculated for this purpose. If there is independence, the individual can be used as the unit of analysis; but if there is not independence, then the dyad must be the unit of analysis.

To date, only one study with FACES has used the intraclass correlation to evaluate the similarity of couple perceptions (Deal, Wampler, and Halverson, 1992). Besides the intraclass correlation, other statistical techniques such as repeated measures ANOVA and hierarchical regression modeling may be useful in some circumstances (Maguire, 1999).

Finally, a technique for examining data at the family level is the use of confirmatory factor analysis with structural equation modeling. This is appropriate when multiple perspectives in a family have been measured on the same variables (Bartle-Haring & Gavazzi, 1996). If the perspectives are found to converge, then a single latent variable can be created. Martin and Cole (1993) demonstrated this technique with a revised version of FACES III designed to measure the functioning of each dyad (mother-father, mother-child, and father-child) in the family. Such sophistication in the application of statistical methods is a promising development for family assessment.

## RECOMMENDATIONS AND FUTURE DIRECTIONS

This section begins by discussing use of the Circumplex Model with systems other than families, noting novel extensions of the model being applied in the fields of education and human resources. Next, it presents unique and relevant applications for clinical practice and family education, and finally, new areas of focus for research.

### Extensions of the Model in Other Settings

The Circumplex Model has been extended for applications in settings, beyond the family. Two new applications of the model are reported in the literature. One is to treat the health care team as a family system (Baker & Pontious, 1984); this has proven an effective way to better understand its functioning, leading to solutions for improved patient care. The other is viewing schools and families as interconnecting systems

(Lusterman, 1989) to improve the functioning of the educational delivery system. These efforts suggest that the Circumplex Model may be a promising tool for organizational development. Cohesion and flexibility are likely important aspects of group functioning not only in health care and educational settings, but also in business environments. More research on such extensions of the model is merited.

## Unique Applications in Clinical Practice

The Circumplex Model is a valuable tool for guiding interventions at the family level. It can also be used to assess dyadic functioning, by using the couple version of FACES II or FACES III along with the ENRICH Inventory scales for marital satisfaction, communication, and conflict resolution (Olson et al., 1992).

The self-report and the observational measure, in combination, are recommended for treatment planning (Olson, 1989) to enable clinicians to gather multiple views on family functioning—from both the insider and the outsider perspectives—a strategy that Olson (1977) has recommended for research designs as well. Medical family therapy is a new area in which to apply these measures of the Circumplex Model..

Specifically the model can be used as a tool to help families construct solutions to move from one level of family functioning to another, or simply to better understand each other's perceptions and needs. FACES and the Clinical Rating Scale can establish a baseline at the start and measure progress during the course of treatment. Scores on discrepancy between family members and family distance from center are useful to show family members when discussing where they are at present and where they would like to be in the future. Finally, it may be useful also to explore what family members think they

each contribute uniquely to their specific type of family, to formulate insights about how family member actions and reactions interact to produce a particular form of functioning.

One of the benefits of having a vast body of research on family functioning is that information on normative family processes can be given to those seeking treatment. The results of studies with families coping with stress and chronic illness, for example, can be shared to normalize the experience. As mentioned earlier, some studies have shown that even extreme functioning can be useful in certain situations when families need to mobilize resources and support to deal with crises.

## Relevance of the Model in Family Education Programs

The development of family education programs based on the Circumplex Model has received little attention in the literature, yet the findings from many of the studies have relevance for this purpose. Providing information about each stage of the family life cycle is potentially one of the most significant educational uses of the model. Insights about family development can be gleaned from the studies of early marriage, the transition to parenthood, launching, the middle years, and aging. In addition, the Circumplex Model can be used interactively with families, with group exercises that promote active engagement with the typology. As an example, families could be asked to develop strategies for actions they would carry out to move along the continuum of cohesion or adaptability, or to change family functioning from one type to another. Groups of families participating in this exercise would benefit from sharing ideas with each other.

## New Areas of Focus for Research

Given the vast number of studies conducted with FACES II and FACES III, the opportunity now exists for researchers to conduct meta-analyses, however, this comes with the caveat that the results of some past studies may need to be modified using linear scoring and interpretation.

Another research opportunity is to conduct more in-depth analyses of the family typology specified in the Circumplex Model. Detailed profiles of the family types have not yet been developed. In addition, not enough research has shown conclusively that certain family types are linked to specific symptoms or disorders. This is an important area to continue study

Greater understanding of the changes that occur in family systems is also needed, The vast majority of the research to date has been cross-sectional or used small samples. While it has yielded worthwhile results, even better information could be gathered by following the same persons in their families over time. Only longitudinal research can provide information on continuity and change in family functioning, leading to a more complete understanding of effects and outcomes. This is needed to further test the Circumplex Model hypotheses that assume balanced families have a greater ability to change in response to stress or developmental transitions and that such change is facilitated by their communications skills and behavioral repertoire.

Finally, new norms for use in studies of different ethnic and cultural groups is currently not available. This is much needed to explore the hypothesis that extreme functioning, as defined by the Circumplex Model, may be normative in certain cultural contexts.

## CONCLUSION

The FACES II and FACES III instruments measure cohesion and flexibility in a linear manner. High cohesion and flexibility levels reflect balanced family functioning. Low levels reflect two extreme forms of family functioning, namely disengaged and rigid. Unlike the Clinical Rating Scale, these instruments do not measure overly cohesive, enmeshed families, or overly flexible, chaotic families. These instruments have strong psychometric properties with high reliability and validity. FACES II is better suited to research than clinical use, whereas FACES III, the shorter instrument, has been applied effectively both in research and clinical settings.

FACES IV, soon to be released, is designed to measure cohesion and flexibility in a curvilinear manner, capturing both the overly high—enmeshed and chaotic—and the overly low—disengaged and rigid—forms of family functioning. It will become part of the new Family Assessment Package, which contains measures also for family communication, satisfaction, and strengths.

This development is a significant step toward a complete, unified approach to family assessment. It gives researchers and practitioners the tools to assess multiple domains of family functioning, to gain a more complete understanding of the complexity of family systems. Moreover, it shows excellent promise for use in future research on health behaviors and outcomes.

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*Appendix A*

## PSYCHOMETRIC PROPERTIES OF THE INSTRUMENTS

Following is a summary of the psychometric properties of FACES II, FACES III, and the Clinical Rating Scale—the primary Family Circumplex Model instruments.

### Family Adaptability and Cohesion Evaluation Scales (FACES)

Sample Items

FACES II has 30 items: 16 for cohesion and 14 for flexibility. FACES III has 10 items for cohesion and 10 items for flexibility. Sample items from both dimensions of the FACES III instrument are shown here:

Family members feel very close to each other. (Cohesion)

Family members ask each other for help. (Cohesion)

Family members like to spend time with each other. (Cohesion)

Different persons act as leaders in our family. (Flexibility)

In solving problems, the children's suggestions are followed. (Flexibility)

Rules change in our family. (Flexibility)

A 5-point rating scale is used to gather individual self-reports: 1 = Almost Never; 2 = Once in a While; 3 = Sometimes; 4 = Frequently; 5 = Almost Always.

Reliability

Cronbach alpha reliability is higher for FACES II (cohesion, .87; adaptability, .78) than for FACES III (cohesion, .77; adaptability, .62), the shorter, 20-item scale. Test-retest reliability coefficients are in the .80s for each dimension in both instruments (Olson et al., 1982; Olson et al., 1985).

Validity

Concurrent validity is higher for FACES II, especially on the adaptability dimension, when compared to the global measure of family health in the Self-Report Family Inventory (SFI) (Hampson, Hulgus, & Beavers, 1991). The FACES II adaptability correlated .79 with the SFI health measure, compared with .45 for FACES III. Cohesion correlated .79 in FACES II and .84 in FACES III.

## Clinical Rating Scale

The Clinical Rating Scale (CRS) is the observational measure for the Circumplex Model. It incorporates a global rating of family functioning on the three dimensions—cohesion, flexibility, and communication—as well as ratings of specific categories within each dimension.

Observational Coding Categories

For the dimension of *cohesion*, the rating categories are emotional bonding, family involvement, marital relationship, parent-child relationship, internal boundaries (time, space, and decision-making), and external boundaries (friends, interests, and activities). For *flexibility*, the categories are leadership (control), discipline, negotiation, roles, and rules. For *communication*, the categories are listener's skills (empathy and attentive listening), speaker's skills (speaking for self and speaking for others), self-disclosure, clarity, continuity/tracking, and respect/regard.

Following are sample guidelines for coding. A single category from each dimension is represented. Note that emotional bonding has four levels, which correspond to the family types: disengaged, separated, connected, and enmeshed. Similarly,

leadership has four levels corresponding to the family types: rigid, structured, flexible, and chaotic. At each level, one of two ratings is possible.

Table A1

Sample Guideline for Coding Family Cohesion

| | Disengaged | | Separated | | Connected | | Enmeshed | |
|---|---|---|---|---|---|---|---|---|
| Category | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Emotional Bonding | Extreme emotional separateness. | | Emotional separateness. | | Emotional closeness. | | Extreme emotional closeness. | |
| | Lack of family loyalty. | | Occasional family loyalty. | | Some separateness. | | Little separateness. | |
| | | | | | Loyalty to family expected. | | Loyalty to family demanded. | |

*Source*: Olson, 1993b.

Table A2

Sample Guideline for Coding Family Flexibility

| | Rigid | | Separated | | Connected | | Enmeshed | |
|---|---|---|---|---|---|---|---|---|
| Category | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Leadership (Control) | Authoritarian leadership. | | Primarily authoritarian but some equalitarian leadership. | | Equalitarian leadership with fluid changes. | | Limited and/or erratic leadership. Parental control unsuccessful. Rebuffed. | |
| | Parent(s) highly controlling. | | | | | | | |

*Source*: Olson, 1993b.

Table A3

Sample Guideline for Coding Family Communication

| | Low | | Facilitating | | High | |
|---|---|---|---|---|---|---|
| Category | 1 | 2 | 3 | 4 | 5 | 6 |
| Clarity | Inconsistent and/or unclear verbal messages. | | Some degree of clarity, but not consistent across time or across all members. | | Verbal messages very clear. | |
| | Frequent incongruences between verbal and non-verbal messages. | | Some incongruent messages. | | Generally congruent messages. | |

*Source*: Olson, 1993b.

Reliability

Reliability of the CRS is strong as evidenced by these results: a) inter-rater agreement is 95% on cohesion, 91% on adaptability, and 97% on communication; b) inter-rater correlations are .83 for cohesion, .75 for adaptability, and .94 for communication; and c) alpha reliability is .95 for cohesion, .94 for adaptability, and .97 for communication.

Validity

There is evidence for validity of the instrument. The CRS discriminates well between clinical and nonclinical families (Thomas & Olson, 1993). Significantly more clinical families exhibit extreme levels of cohesion and flexibility.

Clinical Utility

The clinical utility of the CRS has been demonstrated with multiproblem and severely dysfunctional families (Maynard & Olson, 1987; Walsh & Olson, 1989), and for families with specific problems such as chemical dependency (Killorin & Olson, 1984), child sexual abuse (Trepper & Sprenkle, 1988), and juvenile criminal offenses (Maynard & Hultquist, 1988).

*Appendix B*

## NORMS FOR THE FACES INSTRUMENTS

This resource section provides information on the original sets of norms established for FACES II and FACES III. Table B1 shows the number of families surveyed in the national sample (Olson et al., 1989). Table B2 displays the norms as mean scores with standard deviations on both dimensions of the scales. Cutting points are also available for FACES II (Olson & Tiesel, 1992) and FACES III (Olson et al., 1985).

Table B1

National Sample of Families in All Stages of the Life Cycle

| | | Sample Sizes | | |
|---|---|---|---|---|
| Life Cycle Stage: | | Individual Adults | Couples | Adolescents |
| 1. | Young couples with children | 242 | 121 | -- |
| 2. | Families with preschoolers (up to 5 years old) | 296 | 148 | -- |
| 3. | Families with school age children (ages 6 to 12) | 258 | 129 | -- |
| 4. | Families with adolescents (ages 13 to 18) | 872 | 261 | 350 |
| 5. | Launching families (first adolescent 19 or older; another adolescent living at home) | 444 | 191 | 62 |
| 6. | Empty nest families (no children at home) | 288 | 144 | -- |
| 7. | Retired couples (male older than 65) | 292 | 146 | -- |
| | Total for all stages | 2,692 | 1,140 | 412 |

*Source*: Olson et al, 1989.

Table B2

National Norms for FACES II and FACES III

| | FACES II | | | | FACES III | | | |
|---|---|---|---|---|---|---|---|---|
| | Cohesion | | Adaptability | | Cohesion | | Adaptability | |
| Group: | Mean | SD | Mean | SD | Mean | SD | Mean | SD |
| Young couples with children (N=242) | -- | -- | -- | -- | 41.6 | 4.7 | 26.1 | 4.2 |
| Parents and adolescents (Stages 4 and 5) (N=1,315) | -- | -- | -- | -- | 37.1 | 4.5 | 24.3 | 3.3 |
| Adolescents (N=416) | 56.3 | 9.2 | 45.4 | 7.9 | -- | -- | -- | -- |
| Individual adults in all stages (N=2,453) | 64.9 | 8.4 | 49.9 | 6.6 | 39.8 | 5.4 | 24.1 | 4.7 |
| Couples in all stages (N=1,226) | -- | -- | -- | -- | 38.5 | 4.7 | 24.1 | 3.6 |

*Source*: Olson et al., 1985 for FACES III and Olson et al., 1992 for FACES II.

Appendix C

## DEVELOPMENT OF THE FAMILY INVENTORIES DATABASE

The Family Inventories Database is being developed as a searchable index of all the published studies, reviews, and commentaries related to the Circumplex Model and its instruments. It will soon be available online at www.lifeinnovations.com. An abbreviated version of the database is presented in this section. Two tables are provided:

a) *Annotated Summary of Studies* (Table C1). This table contains summary information for more than 200 of the studies on applications of the Circumplex Model. The annotations, organized alphabetically by author, show the instruments used in each study, the characteristics of the sample, and major findings related to the Circumplex Model. In addition, keywords are listed.

b) *Author Citations: By Topic* (Table C2). This displays the authors and year of publication for the 200 some studies organized by topic. It is provided to facilitate reviews of the literature by researchers or practitioners.

*Please note that Table C1, Annotated Summary of Studies,*

*is provided under separate cover.*

## FAMILY RELATIONS AND DYNAMICS

### Communication

Amerikaner, M., Monks, G., Wolfe, P., & Thomas, S. (1994)
Anderson, S. A. (1985)
Baldwin, S. E., & Baranoski, M. V. (1990)
Barnes, H., & Olson, D.H. (1985)
Bhushan, R., Shirali, K. A. (1992)
Friedman, A. S., & Utada, A. (1992)
Henry, C. S., & Lovelace, S. G. (1995)
Masselam, V. S., Marcus, R. F., & Stunkard, C. L. (1990)
Marett, K. M., Sprenkle, D. H., & Lewis, R. A. (1992)
Henry, C. S., Sager, D. W., & Plunkett, S. W. (1996)
Mendenhall, T. J., Grotevant, H. D., & McRoy, R. G. (1996)
Morrison, G. M., & Zetlin, A. (1988)
Pink, J., & Wampler, K. (1985)
White, F. (1996b)

### Family-of-origin relationships

Amerikaner, M., Monks, G., Wolfe, P., & Thomas, S. (1994)
Carnes, P. (1988)
Carson, D. K., Gertz, L. M., Donaldson, M. A., Wonderlich, S. A. (1990)
Craddock, A. E. (1983)
Craddock, A. E. (1990)
DeHart, S. S., Hovland, J., Sharma, A. R., & Fulkerson, J. A. (1991)
Jackson Wilson, A. G., & Borgers, S. B. (1993)
Mann, B. J. (1992)
Warner, V., Mufson, L., & Weissman, M. M. (1995)

### Family relationships

Barnes, H. (1988)
Bischof, Gary P., Stith, S. M., & Wilson, S. M. (1992)
Carnes, P. (1988)
Carson, D. K., Gertz, L. M., Donaldson, M. A., Wonderlich, S. A. (1990)
Cox, R. P. (1993)
Doherty, W. J., & Allen, W. (1994)
Ellerman, D. A., & Strahan, B. J. (1995)
Farrell, M. P., & Barnes, G. M. (1993)
Kennedy, G. (1985)
Knight, G. P., Tein, J. Y., Shell, R., & Roosa, M. (1992)
Lusterman, D. (1989)
Marett, K. M., Sprenkle, D. H., & Lewis, R. A. (1992)
Maynard, P. E., & Olson, D. H. (1987)
Morrison, G. M., & Zetlin, A. (1988)
Moy, S., & Mahoney, H. N. (1987)
Patton, W., & Noller, P. (1991)
Roberts, T. W. (1994)
Russell, C. S. (1979)
Smets, A. C., & Hartup, W. W. (1988)
Volk, R. J., Edwards, D. W., Lewis, R. A., & Sprenkle, D. H. (1989)

**Husband-wife relationships**
Anderson, S. A. (1985)
Barnes, H. (1988)
Fisiloglu, H., & Lorenzetti, A. F. (1994)
Martin, J. M., & Cole, D. A. (1993)
Mathis, R. D., & Tanner, Z. (1991)
Mathis, R. D., & Yingling, L. C. (1990a)
Mathis, R. D., & Yingling, L. C. (1990b)
Mathis, R. D., & Yingling, L. C. (1990c)
Mathis, R. D., & Yingling, L. C. (1991)
Mendenhall, T. J., Grotevant, H. D., & McRoy, R. G. (1996)
Roy, R., & Thomas, M. R. (1989)
Russell, C. S. (1989)
Sprenkle, D. H., & Olson, D. H. (1978)

**Parent-child relationships**
Baldwin, S. E., & Baranoski, M. V. (1990)
Barnes, H. (1988)
Barnes, H., & Olson, D.H. (1985)
Bhushan, R., Shirali, K. A. (1992)
Farrell, M. P., & Barnes, G. M. (1993)
Friedman, A. S., & Utada, A. (1992)
Friedman. A. S., Utada, A., & Morissey, M. R. (1987)
Garbarino, J., Sebes, J., & Schellenbach, C. (1985)
Henry, C. S., & Lovelace, S. G. (1995)
Henry, C. S., Sager, D. W., & Plunkett, S. W. (1996)
Horwitz, W. A., & Kazak, A. E. (1990)
Howes, M. J., Hoke, L., Winterbottom, M., & Delafield, D. (1994)
Martin, J. M., & Cole, D. A. (1993)
Rosenthal, J. A., & Groze, V. (1990)

**Father-child relationships**
Lewis, F. M., Woods, N. F., Hough, E. E., & Bensley, L. S. (1989)
Pink, J., & Wampler, K. (1985)
White, F. (1996b)

**Mother-child relationships**
Black, M. M., Nair, P., & Harrington, D. (1994)
Rodick, J. D., Henggeler, S. W., & Hanson, C. L. (1986)
White, F. (1996b)

**Sibling relationships**
Hanson, C. L., Henggeler, S. W., Harris, M. A., Cigrang, J. A., Schinkel, A. M., Rodrigue, J. R., & Klesges, R. C. (1992)
Horwitz, W. A., & Kazak, A. E. (1990)

**MARRIAGE AND DIVORCE**

**Marriage**
Fisiloglu, H., & Lorenzetti, A. F. (1994)
Mathis, R. D., & Yingling, L. C. (1990a)

**Divorce and separation**
Hysjulien, C., Wood, B., & Benjamin, G. A. H. (1994)
Mathis, R. D., & Yingling, L. C. (1990a)
Mathis, R. D., & Yingling, L. C. (1990b)
Mathis, R. D., & Yingling, L. C. (1990c)
Mathis, R. D., & Yingling, L. C. (1991)

**TYPES OF FAMILIES**

**Dual career families**

**Single parent families**
Kennedy, G. (1985)
Rodick, J. D., Henggeler, S. W., & Hanson, C. L. (1986)

**Stepfamilies**
Garbarino, J., Sebes, J., & Schellenbach, C. (1985)
Henry, C. S., & Lovelace, S. G. (1995)
Kennedy, G. (1985)
Pink, J., & Wampler, K. (1985)

**Extended families**
Woehrer, C. (1988)

**Military families**
Kugler, J. P., Yeash, J., & Rumbaugh, P. C. (1993)
McCubbin, H. I., & Patterson, J. M. (1982)

**PHYSICAL HEALTH**

**Nursing**
Abell, T. D., Baker, L. C., Clover, R. D., & Ramsey, C. N. (1990)
Cederblad, M., Helgesson, M., Larsson, Y., & Ludvigsson, J. (1982)
Chaney, J. M., & Peterson, L. (1989)
Cowen, L., Mok, J., Corey, M., MacMillan, H., Simmons, R., & Levison, H. (1986)
Cox, R. P. (1993)
Philici, L. (1988)
Smith, C. E. (1993)
Smith, C. E. (1994)
Zabora, J. R., Fetting, J. H., & Shanley, V. B., Seddon, C. F., & Enterline, J. P. (1989)

**Cancer**
Fobair, P. A., & Zabora, J. R. (1995)
Horwitz, W. A., & Kazak, A. E. (1990)
Howes, M. J., Hoke, L., Winterbottom, M., & Delafield, D. (1994)
Kazak, A. E., & Meadows, A. T. (1989)
Lewis, F. M., Woods, N. F., Hough, E. E., & Bensley, L. S. (1989)
Manne, S. L., Lesanics, D., Meyers, P., Wollner, N., Steinherz, P., & Redd, W. (1995)
Zabora, J. R., Fetting, J. H., & Shanley, V. B., Seddon, C. F., & Enterline, J. P. (1989)

**Diabetes**

Cederblad, M., Helgesson, M., Larsson, Y., & Ludvigsson, J. (1982)
Hanson, C. L., De Guire, M. J., Schinkel, A. M., & Burghen, G. A. (1989)
Hanson, C. L., Harris, M. A., Relyea, G., Cigrang, J. A., Carle, D. L., & Burghen, G. A. (1989)
Hanson, C. L., Henggeler, S. W., & Burghen, G. A. (1987)
Hanson, C. L., Henggeler, S. W., Harris, M. A., Burghen, G. A., & Moore, M. (1989)
Hanson, C. L., Henggeler, S. W., Harris, M. A., Cigrang, J. A., Schinkel, A. M., Rodrigue, J. R., & Klesges, R. C. (1992)
Lewis, F. M., Woods, N. F., Hough, E. E., & Bensley, L. S. (1989)
Mengel, M. B., Lawler, M. K., Volk, R. J., Viviani, N. J., Dees, M. S., & Davis, A. B. (1992)

**Cardiological health**

Drory, Y., & Florian, V. (1991)

**HIV/AIDS**

Black, M. M., Nair, P., & Harrington, D. (1994)

**Physical illness-general-adults**

Dandes, H. M. (1986)
Drory, Y., & Florian, V. (1991)
Fobair, P. A., & Zabora, J. R. (1995)
Furst, A. (1983)
Hambley, J., Brazil, K., Furrow, D., & Chua, Y. Y. (1989)
Hanson, C. L., De Guire, M. J., Schinkel, A. M., & Burghen, G. A. (1989)
Howes, M. J., Hoke, L., Winterbottom, M., & Delafield, D. (1994)
Lewis, F. M., Woods, N. F., Hough, E. E., & Bensley, L. S. (1989)
Miller, I. W., Epstein, N. B., Bishop, D. S., & Keitner, G. I. (1985)
Rankin, E. D., Haut, M. W., & Keefover, R. W. (1992)
Roy, R., & Thomas, M. R. (1989)
Smith, C. E. (1993)
Smith, C. E. (1994)

**Physical illness-general-adolescents**

Cederblad, M., Helgesson, M., Larsson, Y., & Ludvigsson, J. (1982)
Chaney, J. M., & Peterson, L. (1989)
Hanson, C. L., Harris, M. A., Relyea, G., Cigrang, J. A., Carle, D. L., & Burghen, G. A. (1989)
Hanson, C. L., Henggeler, S. W., & Burghen, G. A. (1987)
Hanson, C. L., Henggeler, S. W., Harris, M. A., Burghen, G. A., & Moore, M. (1989)
Hanson, C. L., Henggeler, S. W., Harris, M. A., Cigrang, J. A., Schinkel, A. M., Rodrigue, J. R., & Klesges, R. C. (1992)
Kazak, A. E., & Meadows, A. T. (1989)
Magill, J., & Hurlbut, N. (1986)
Mengel, M. B., Lawler, M. K., Volk, R. J., Viviani, N. J., Dees, M. S., & Davis, A. B. (1992)
Walker, L. S., & Greene. J. (1987)
Walker, L. S., McLaughlin, J. F., & Greene, J. W. (1988)

**Physical illness-general-children**

Cederblad, M., Helgesson, M., Larsson, Y., & Ludvigsson, J. (1982)
Chaney, J. M., & Peterson, L. (1989)
Cowen, L., Mok, J., Corey, M., MacMillan, H., Simmons, R., & Levison, H. (1986)
Horwitz, W. A., & Kazak, A. E. (1990)
Kazak, A. E. (1986)
Kazak, A. E., & Meadows, A. T. (1989)
Kazak, A. E., Reber, M., & Snitzer, L. (1988)
Lewis, B. L., & Khaw, K. (1982)
Manne, S. L., Lesanics, D., Meyers, P., Wollner, N., Steinherz, P., & Redd, W. (1995)
McCubbin, M. (1988)
Philici, L. (1988)
Radochonski, M. (1992)
Stabler, B., Clopper, R. R., Siegel, P. T., Stoppani, C., Compton, P. G., & Underwood, L. E. (1994)

**INDIVIDUAL DEVELOPMENT**

**Child development**

Ellerman, D. A., & Strahan, B. J. (1995)
Kashani, J. H., Allan, W. D., Dahlmeier, J. M., Rezvani, M., & Reid, J. C. (1995)
Manne, S. L., Lesanics, D., Meyers, P., Wollner, N., Steinherz, P., & Redd, W. (1995)
Michaels, C., & Lewandowski, L. (1990)
Stabler, B., Clopper, R. R., Siegel, P. T., Stoppani, C., Compton, P. G., & Underwood, L. E. (1994)
West, J. D., Hosie, T. W., & Mathews, F. N. (1989)
Whitehead, L. C. (1988)

**Adolescent development**

Bakken, L., & Romig, C. (1989)
Bhushan, R., Shirali, K. A. (1992)
Browne, B. A., & Francis, S. K. (1993)
Cox, R. P. (1996)
Craddock, A. E. (1990)
Franklin, C. (1992)
Franklin, C., & Streeter, C. L. (1992)
Fremouw, W., Callahan, T., & Kashden, J. (1993)
Friedman, A. S., & Utada, A. (1992)
Friedman. A. S., Utada, A., & Morissey, M. R. (1987)
Garbarino, J., Sebes, J., & Schellenbach, C. (1985)
Geber, G., & Resnick, M. D. (1988)
Gehring, T., & Feldman, S. (1988)
Henry, C. S., Sager, D. W., & Plunkett, S. W. (1996)
Jackson, E. P., Dunham, R. M., & Kidwell, J. S. (1990)
Kashani, J. H., Allan, W. D., Dahlmeier, J. M., Rezvani, M., & Reid, J. C. (1995)
Kawash, G., & Kozeluk, L. (1990)
King, S. (1989)
Magill, J., & Hurlbut, N. (1986)
Marett, K. M., Sprenkle, D. H., & Lewis, R. A. (1992)
Marotz-Baden, R., & Colvin, P. L. (1989)
Masselam, V. S., Marcus, R. F., & Stunkard, C. L. (1990)
Morrison, G. M., & Zetlin, A. (1988)
Morrow, M. R. (1995)
Palmer, S., & Cochran, L. (1988)

Patton, W., & Noller, P. (1991)
Pillay, A. L., & Wassenaar, D. R. (1997a)
Pillay, A. L., & Wassenaar, D. R. (1997b)
Reinherz, H. Z., Stewart-Berghauer, G., Pakiz, B., Frost, A. K., Moeykens, B. A., & Holmes, W. M. (1989)
Rudd, N. M., Stewart, E. R., McKenry, P. C. (1993)
Shields, G., & Clark, R. D. (1995)
Smart, L., Chibucos, T. R., & Didier, L. A. (1990)
Smets, A. C., & Hartup, W. W. (1988)
Smith, M. B., Canter, W. A., & Robin, A. L. (1989)
Stabler, B., Clopper, R. R., Siegel, P. T., Stoppani, C., Compton, P. G., & Underwood, L. E. (1994)
Tanner, Z. (1992)
Walker, L. S., & Greene. J. (1987)
Walker, L. S., McLaughlin, J. F., & Greene, J. W. (1988)
Watson, M., & Protinsky, H. (1988)
West, J. D., Hosie, T. W., & Mathews, F. N. (1989)
White, F. (1996a)
White, F. (1996b)

**Emotional development**

**Socialization**

Barber, B. K., & Buehler, C. (1996)
Craddock, A. E. (1983)
White, F. (1996a)
White, F. (1996b)

**FAMILY COUNSELING AND EDUCATION**

**Family therapy**

Barton, K., & Wood, S. (1995)
Beavers, W. R., & Voeller, M. N. (1983)
Carnes, P. (1988)
Constantine, L. L., & Israel, J. T. (1985)
Cox, R. P. (1993)
Flores, M., & Sprenkle, D. H. (1988)
Franklin, C., & Jordan, C. (1992)
Franklin, C., Nowicki, J., Trapp, A., Schwab, A. J., & Petersen, J. (1993)
Franklin, C., & Streeter, C. L. (1992)
Furst, A. (1983)
Goldklank, S. (1986)
Green, R. (1989)
Green, R. G., Kolevzon, M., & Vosler, N. (1985)
Hecker, L. L., & Schindler, M. (1994)
Henry, C. S., Sager, D. W., & Plunkett, S. W. (1996)
Kashani, J. H., Allan, W. D., Dahlmeier, J. M., Rezvani, M., & Reid, J. C. (1995)
Kazak, A. E., McCannell, K., Adkins, E., Himmelberg, P., & Grace, J. (1989)
Killorin, E., & Olson, D. H. (1984)
Maddock, J., & Lange, C. (1988)
Mann, B. J. (1992)
Marett, K. M., Sprenkle, D. H., & Lewis, R. A. (1992)
Masselam, V. S., Marcus, R. F., & Stunkard, C. L. (1990)
Maynard, P. E., & Hultquist, A. (1988)

Maynard, P. E., & Olson, D. H. (1987)
McGhaha, J., & Fournier, D. (1987)
McKain, J. (1987)
Otsuka, M., & Tatsuki, S. (1991)
Palmer, S., & Cochran, L. (1988)
Rankin, E. D., Haut, M. W., & Keefover, R. W. (1992)
Russell, C. S. (1979)
Russell, C. S. (1980)
Russell, C. S. (1989)
Russell, C. S., & Olson, D. H. (1982)
Russell, C. S., Olson, D. H., Sprenkle, D. H., & Atilano, R. B. (1983)
Smets, A. C., & Hartup, W. W. (1988)
Smith, C. W. (1989)
Thomas, V., & Olson, D. H. (1993)
Thomas, V., & Olson, D. H. (1994)
Trepper, T., & Sprenkle, D. (1988)
Volk, R. J., Edwards, D. W., Lewis, R. A., & Sprenkle, D. H. (1989)
Watson, M., & Protinsky, H. (1988)
Walsh, F., & Olson, D. H. (1989)
Zacks, E., Green, R., & Marrow, J. (1988)
Zarski, J. J., Depompei, R. A., & Zook, A. (1988)

**Marriage counseling and therapy**

Bagarozzi, D. A. (1994)
Fisiloglu, H., & Lorenzetti, A. F. (1994)
Mathis, R. D., & Yingling, L. C. (1990a)
Mathis, R. D., & Yingling, L. C. (1990c)
Mathis, R. D., & Yingling, L. C. (1991)
Russell, C. S. (1989)
Russell, C. S., & Olson, D. H. (1982)
Smith, C. W. (1989)
Sprenkle, D. H., & Olson, D. H. (1978)

**Marital and family enrichment**

Doub, G., & Scot, V. M. (1987)

**Family life education**

Barozzi, R. L. (1982)
Bredehoft, D. J., & Hey, R. N. (1985)
Henry, C. S., Sager, D. W., & Plunkett, S. W. (1996)
Palmer, S., & Cochran, L. (1988)
Pillay, A. L., & Wassenaar, D. R. (1997a)
Pillay, A. L., & Wassenaar, D. R. (1997b)
Watson, M., & Protinsky, H. (1988)

**Parenting education**
Bredehoft, D. J., & Hey, R. N. (1985)
West, J. D., Hosie, T. W., & Mathews, F. N. (1989)
Whitehead, L. C. (1988)

**Program evaluation**
Doub, G., & Scot, V. M. (1987)

**STAGES IN THE FAMILY LIFE CYCLE**

**Transition to parenthood**
Kazak, A. E., McCannell, K., Adkins, E., Himmelberg, P., & Grace, J. (1989)

**Launching**
Craddock, A. E. (1990)
Jackson, E. P., Dunham, R. M., & Kidwell, J. S. (1990)

**Middle years**

**Aging**
Mathis, R. D., & Tanner, Z. (1991)
Rankin, E. D., Haut, M. W., & Keefover, R. W. (1992)

**SEXUALITY AND REPRODUCTION**

**Pregnancy and childbirth**
Abell, T. D., Baker, L. C., Clover, R. D., & Ramsey, C. N. (1990)
Dandes, H. M. (1986)
Kugler, J. P., Yeash, J., & Rumbaugh, P. C. (1993)
Reeb, K. G., Graham, A. V., Zyganski, S. J., & Kitson, G. C. (1987)

**Teenage pregnancy**
Geber, G., & Resnick, M. D. (1988)

**Abortion**
Bagarozzi, D. A. (1994)

**Sexuality**
Baldwin, S. E., & Baranoski, M. V. (1990)
Carnes, P. (1988)

**Homosexuality**
Zacks, E., Green, R., & Marrow, J. (1988)

**THE FAMILY AND SOCIETY**

**Ethnic groups**
Baranowski, T., Dworkin, R. J., Hooks, P., Nadar, P. R., & Brown, J. (1986)
Dandes, H. M. (1986)
Flores, M., & Sprenkle, D. H. (1988)
Florian, V. (1989)
Florian, V., Mikulincer, M., & Weller, A. (1993)

Gorall, D. & Olson, D. H. (1995)
Heras, P., & Revilla, L. A. (1994)
Knight, G.P., Tein, J.Y., Shell, R., & Roosa, M. (1992)
Reeb, K. G., Graham, A. V., Zyganski, S. J., & Kitson, G. C. (1987)
Takeda, J., & Tatsuki, S. (1991)
Tanner, Z. (1992)
Vega, W. A., Patterson, T., Sallis, J., Nader, P., Atkins, C., & Abromson, I. (1986)
Watson, M., & Protinsky, H. (1988)
Woehrer, C. (1988)

**Social class**
Flores, M., & Sprenkle, D. H. (1988)
Franklin, C., & Streeter, C. L. (1992)
Jackson Wilson, A. G., & Borgers, S. B. (1993)
Marotz-Baden, R., & Colvin, P. L. (1989)

**Economics**
Marotz-Baden, R., & Colvin, P. L. (1989)
Stabler, B., Clopper, R. R., Siegel, P. T., Stoppani, C., Compton, P. G., & Underwood, L. E. (1994)

**Education**
Lusterman, D. (1989)
Masselam, V. S., Marcus, R. F., & Stunkard, C. L. (1990)
Meyers, J. (1985)
Morrow, M. R. (1995)
Tanner, Z. (1992)
West, J. D., Hosie, T. W., & Mathews, F. N. (1989)

**Geographic mobility**
Munton, A. G., Reynolds, S. (1995)

**Work issues**
King, S. (1989)
Patton, W., & Noller, P. (1991)

**Religion**
Moy, S., & Mahoney, H. N. (1987)

**Family rituals**
Hecker, L. L., & Schindler, M. (1994)

**Adoption and foster care**
Deiner, P., Wilson, N. J., & Unger, D. G. (1988)
Geber, G., & Resnick, M. D. (1988)
Mendenhall, T. J., Grotevant, H. D., & McRoy, R. G. (1996)
Rosenthal, J. A., & Groze, V. (1990)

**FAMILIES WITH SPECIAL PROBLEMS**

**Alcoholism**

DeHart, S. S., Hovland, J., Sharma, A. R., & Fulkerson, J. A. (1991)
Killorin, E., & Olson, D. H. (1984)
Smart, L., Chibucos, T. R., & Didier, L. A. (1990)
Smith, M. B., Canter, W. A., & Robin, A. L. (1989)

**Chemical dependency**

DeHart, S. S., Hovland, J., Sharma, A. R., & Fulkerson, J. A. (1991)
Friedman, A. S., & Utada, A. (1992)
Friedman. A. S., Utada, A., & Morissey, M. R. (1987)
Kang, S., Kleinman, P. H., Todd, T., Kemp, J., & Lipton, D. S. (1991)
Killorin, E., & Olson, D. H. (1984)
Marett, K. M., Sprenkle, D. H., & Lewis, R. A. (1992)
Smart, L., Chibucos, T. R., & Didier, L. A. (1990)
Smith, M. B., Canter, W. A., & Robin, A. L. (1989)
Volk, R. J., Edwards, D. W., Lewis, R. A., & Sprenkle, D. H. (1989)

**Behavioral problems**

Barber, B. K., & Buehler, C. (1996)
Franklin, C. (1992)
Lusterman, D. (1989)
Manne, S. L., Lesanics, D., Meyers, P., Wollner, N., Steinherz, P., & Redd, W. (1995)
Marett, K. M., Sprenkle, D. H., & Lewis, R. A. (1992)
Meyers, J. (1985)
Michaels, C., & Lewandowski, L. (1990)
Rosenthal, J. A., & Groze, V. (1990)
Smets, A. C., & Hartup, W. W. (1988)

**Juvenile offenders**

Bischof, Gary P., Stith, S. M., & Wilson, S. M. (1992)
Cox, R. P. (1996)
Druckman, J. M. (1979)
Henggeler, S. W., Burr-Harris, A. W., Borduin, C. M., & McCallum, G. (1991)
Maynard, P. E., & Hultquist, A. (1988)
McGhaha, J., & Fournier, D. (1987)
Rodick, J. D., Henggeler, S. W., & Hanson, C. L. (1986)
Shields, G., & Clark, R. D. (1995)

**Criminal offenders**

Henggeler, S. W., Burr-Harris, A. W., Borduin, C. M., & McCallum, G. (1991)

**Violence-abuse**

Garbarino, J., Sebes, J., & Schellenbach, C. (1985)
McKain, J. (1987)

**Child abuse**

Barton, K., & Wood, S. (1995)
Trepper, T., & Sprenkle, D. (1988)

**Incest**
Carson, D. K., Gertz, L. M., Donaldson, M. A., Wonderlich, S. A. (1990)
Trepper, T., & Sprenkle, D. (1988)

**Learning disabilities**
Michaels, C., & Lewandowski, L. (1990)
Morrison, G. M., & Zetlin, A. (1988)

**Developmental disabilities**
Martin, J. M., & Cole, D. A. (1993)
Morrison, G. M., & Zetlin, A. (1988)

**Physical disabilities**
Florian, V. (1989)
Kazak, A. E. (1986)
Magill, J., & Hurlbut, N. (1986)
McCubbin, M. (1988)
Zarski, J. J., Depompei, R. A., & Zook, A. (1988)

**Mental illness**
Franklin, C. (1992)
Miller, I. W., Epstein, N. B., Bishop, D. S., & Keitner, G. I. (1985)
Warner, V., Mufson, L., & Weissman, M. M. (1995)

**Depression**
Fremouw, W., Callahan, T., & Kashden, J. (1993)
Kashani, J. H., Allan, W. D., Dahlmeier, J. M., Rezvani, M., & Reid, J. C. (1995)
Manne, S. L., Lesanics, D., Meyers, P., Wollner, N., Steinherz, P., & Redd, W. (1995)
Reinherz, H. Z., Stewart-Berghauer, G., Pakiz, B., Frost, A. K., Moeykens, B. A., & Holmes, W. M. (1989)
Rudd, N. M., Stewart, E. R., McKenry, P. C. (1993)
Smith, C. E. (1993)
Stabler, B., Clopper, R. R., Siegel, P. T., Stoppani, C., Compton, P. G., & Underwood, L. E. (1994)
Warner, V., Mufson, L., & Weissman, M. M. (1995)

**Suicide**
Fremouw, W., Callahan, T., & Kashden, J. (1993)
Pillay, A. L., & Wassenaar, D. R. (1997a)
Pillay, A. L., & Wassenaar, D. R. (1997b)

**Stress**
Bagarozzi, D. A. (1994)
Black, M. M., Nair, P., & Harrington, D. (1994)
Dandes, H. M. (1986)
Farrell, M. P., & Barnes, G. M. (1993)
Fremouw, W., Callahan, T., & Kashden, J. (1993)
Garbarino, J., Sebes, J., & Schellenbach, C. (1985)
Harper, S. H., Anderson, R. A., & Anderson, W. T. (1993)
Larsen, A., & Olson D.H. (1990)
Lewis, F. M., Woods, N. F., Hough, E. E., & Bensley, L. S. (1989)
Marotz-Baden, R., & Colvin, P. L. (1989)
McCubbin, H. I., & Patterson, J. M. (1982)
McCubbin, M. (1988)

McGhaha, J., & Fournier, D. (1987)
Mengel, M. B., Lawler, M. K., Volk, R. J., Viviani, N. J., Dees, M. S., & Davis, A. B. (1992)
Moy, S., & Mahoney, H. N. (1987)
Munton, A. G., Reynolds, S. (1995)
Philici, L. (1988)
Radochonski, M. (1992)
Rankin, E. D., Haut, M. W., & Keefover, R. W. (1992)
Smith, C. E. (1994)
Walker, L. S., & Greene. J. (1987)

Death
McCubbin, H. I., & Patterson, J. M. (1982)

**Gifted member**
West, J. D., Hosie, T. W., & Mathews, F. N. (1989)

**THEORY AND RESEARCH**

**Family theory**
Alexander, B. B., Johnson, S. B., & Carter, R. L. (1984)
Anderson, S. A., & Gavozzi, S. M. (1990)
Baranowski, T., Dworkin, R. J., Hooks, P., Nadar, P. R., & Brown, J. (1986)
Barber, B. K., & Buehler, C. (1996)
Beavers, W. R., Hampson, R. B., & Hulgus, Y. F. (1985)
Beavers, W. R., & Voeller, M. N. (1983)
Ben-David, A., & Jurich, J. (1993)
Ben-David, A., & Sprenkle, D. H. (1993)
Bloom, B. L., & Naar, S. (1994)
Bray, J. H., Williamson, D. S., & Malone, P. E. (1984)
Burr, W. R. (1991)
Burr, W. R., & Lowe, T. A. (1987)
Cluff, R. B., & Hicks, M. W. (1994)
Cluff, R. B., Hicks, M. W., & Madsen, C. H. (1994)
Constantine, L. L. (1993)
Constantine, L. L., & Israel, J. T. (1985)
Daley, J. G., Sowers-Hoag, K., & Thyer, B. A. (1991)
Dundas, I. (1994)
Eckblad, G. F. (1993)
Epstein, N. B., Bishop, D. S., & Levin, S. (1978)
Fobair, P. A., & Zabora, J. R. (1995)
Farrell, M. P., & Barnes, G. M. (1993)
Franklin, C., & Jordan, C. (1992)
Franklin, C., & Streeter, C. L. (1993)
Fristad. M. A. (1989)
Green, R. (1989)
Green, R., Harris, Jr., Forte, J., & Robinson, M. (1991a)
Green, R. G., Kolevzon, M., & Vosler, N. (1985)
Grotevant, H. D., & Carlson, C. I. (1989)
Hampson, R. B., Beavers, R. W., & Hulgus, Y. F. (1988)
Hampson, R. B., Hulgus, Y. F., & Beavers, R. W. (1991)
Henggeler, S. W., Burr-Harris, A. W., Borduin, C. M., & McCallum, G. (1991)
James, S., & Hunsley, J. (1995)
Joanning, H. (1985)

Joanning, H., & Kuehl, B. P. (1986)
Kazak, A. E. (1986)
Kazak, A. E., McCannell, K., Adkins, E., Himmelberg, P., & Grace, J. (1989)
Killorin, E., & Olson, D. H. (1984)
Kunce, J. T., & Priesmeyer, M. L. (1985)
Larsen, A., & Olson D.H. (1990)
Lee, C. (1988)
McCubbin, H. I., & Patterson, J. M. (1982)
Miller, I. W., Epstein, N. B., Bishop, D. S., & Keitner, G. I. (1985)
Otsuka, M., & Tatsuki, S. (1991)
Perosa, L. M., & Perosa, S. L. (1990)
Pratt, D. M., & Hansen, J. C. (1987)
Shields, G., & Clark, R. D. (1995)
Shields, C. G., Franks, P., Harp, J. J., McDaniel, S. H., & Campbell, T. L. (1992)
Thomas, V., & Olson, D. H. (1993)
Thomas, V., & Olson, D. H. (1994)
Zlotogorski, Z. (1983)

**Family research methodology**

Alexander, B. B., Johnson, S. B., & Carter, R. L. (1984)
Anderson, S. A., & Gavozzi, S. M. (1990)
Baranowski, T., Dworkin, R. J., Hooks, P., Nadar, P. R., & Brown, J. (1986)
Barber, B. K., & Buehler, C. (1996)
Barton, K., & Wood, S. (1995)
Beavers, W. R., Hampson, R. B., & Hulgus, Y. F. (1985)
Ben-David, A., & Jurich, J. (1993)
Ben-David, A., & Sprenkle, D. H. (1993)
Berry, J. T., Hurley, J. H., & Worthington, E. L. (1990)
Bloom, B. L., & Naar, S. (1994)
Bray, J. H., Williamson, D. S., & Malone, P. E. (1984)
Burr, W. R., & Lowe, T. A. (1987)
Carlson, C. I., & Grotevant, H. D. (1987)
Cluff, R. B., Hicks, M. W., & Madsen, C. H. (1994)
Daley, J. G., Sowers-Hoag, K., & Thyer, B. A. (1990)
Daley, J. G., Sowers-Hoag, K., & Thyer, B. A. (1991)
Dandes, H. M. (1986)
Dickerson, V. (1987)
Dundas, I. (1994)
Eckblad, G. F. (1993)
Edman, S. O., Cole, D. A., & Howard, G. S. (1990)
Epstein, N. B., Bishop, D. S., & Levin, S. (1978)
Fobair, P. A., & Zabora, J. R. (1995)
Florian, V., Mikulincer, M., & Weller, A. (1993)
Franklin, C., & Streeter, C. L. (1993)
Fristad, M. A. (1988)
Fristad. M. A. (1989)
Gehring, T., & Feldman, S. (1988)
Green, R. (1989)
Green, R., Harris, Jr., Forte, J., & Robinson, M. (1991a)
Green, R., Harris, Jr., Forte, J., & Robinson, M. (1991b)
Green, R. G., Kolevzon, M., & Vosler, N. (1985)
Grotevant, H. D., & Carlson, C. I. (1989)
Hampson, R. B., Beavers, R. W., & Hulgus, Y. F. (1988)
Hampson, R. B., Hulgus, Y. F., & Beavers, R. W. (1991)
Hecker, L. L., & Schindler, M. (1994)

Henggeler, S. W., Burr-Harris, A. W., Borduin, C. M., & McCallum, G. (1991)
Jacob, T. (1995)
James, S., & Hunsley, J. (1995)
Joanning, H. (1985)
Joanning, H., & Kuehl, B. P. (1986)
Kazak, A. E. (1986)
Kazak, A. E., McCannell, K., Adkins, E., Himmelberg, P., & Grace, J. (1989)
Knight, G. P., Tein, J. Y., Shell, R., & Roosa, M. (1992)
Kuehl, B. P., Schumm, W. R., Russell, C. S., & Jurich, A. P. (1988)
Kunce, J. T., & Priesmeyer, M. L. (1985)
Larsen, A., & Olson D.H. (1990)
Lee, C. (1988)
Miller, I. W., Epstein, N. B., Bishop, D. S., & Keitner, G. I. (1985)
Otsuka, M., & Tatsuki, S. (1991)
Perosa, L. M., & Perosa, S. L. (1990)
Pratt, D. M., & Hansen, J. C. (1987)
Russell, C. S. (1979)
Russell, C. S. (1980)
Russell, C. S., Olson, D. H., Sprenkle, D. H., & Atilano, R. B. (1983)
Shields, G., & Clark, R. D. (1995)
Shields, C. G., Franks, P., Harp, J. J., McDaniel, S. H., & Campbell, T. L. (1992)
Takeda, J., & Tatsuki, S. (1991)
Thomas, V., & Olson, D. H. (1993)
Thomas, V., & Olson, D. H. (1994)
Vandvik, I. H., & Eckblad, G. F. (1993)
Vega, W. A., Patterson, T., Sallis, J., Nader, P., Atkins, C., & Abromson, I. (1986)
Walker, L. S., McLaughlin, J. F., & Greene, J. W. (1988)
Wampler, K. S., Halverson, C. F., Moore, J. J., & Walters, L. H. (1989)
Zacks, E., Green, R., & Marrow, J. (1988)
Zarski, J. J., Depompei, R. A., & Zook, A. (1988)

Appendix D

## ANALYSIS OF PUBLISHED STUDIES

Following are tables that analyze all of the publications found on the Circumplex Model and its instruments that are listed in the *Bibliography*. These tables illustrate the wide application of the Circumplex Model instruments across many academic disciplines and topics.

a) *Number of Studies: By Discipline* (Table D1) shows the journals in which studies were published, spanning disciplines such as psychology, family social science, medicine, marriage and family therapy, psychiatry, social work, education, chemical health, sociology, and family law.

b) *Number of Studies: By Topic* (Table D2) shows the range of topics addressed by the studies. The most prominent include theory and research, family counseling and education, families with special problems, family relations and dynamics, physical health, and individual development.

Table D1

Number of Studies: By Discipline

| Journal | Number |
|---|---|
| **Psychology ……..……** | **129** |
| Journal of Family Psychology ……. | 15 |
| Journal of Abnormal Child Psychology ……. | 9 |
| Journal of Adolescence …… | 8 |
| Journal of Youth and Adolescence …… | 8 |
| Psychological Reports …….. | 8 |
| Child Development …… | 6 |
| Journal of Consulting and Clinical Psychology …… | 6 |
| Journal of Adolescent Research ……. | 5 |
| Journal of Counseling and Development …….. | 5 |
| Journal of Counseling Psychology ……. | 5 |
| Japanese Journal of Family Psychology …….. | 4 |
| Journal of Clinical Child Psychology …….. | 4 |
| Journal of Social and Personal Relationships ……. | 4 |
| Perceptual and Motor Skills …… | 3 |
| Journal of Clinical Psychology …… | 2 |
| Journal of Early Adolescence ……. | 2 |
| Journal of Psychology ……. | 2 |
| Journal of Personality and Clinical Studies …….. | 2 |
| Social Behavior and Personality ……. | 2 |
| Journal of Social Behavior and Personality …….. | 1 |
| Journal of Applied Psychology …… | 1 |
| Journal of Applied Social Psychology …… | 1 |
| Journal of Community Psychology ……. | 1 |
| Journal of Emotional and Behavioral Disorders …… | 1 |
| Journal of Genetic Psychology …… | 1 |
| Journal of Psychology and Christianity ……. | 1 |
| Journal of Psychopathology and Behavioral Assessment | 1 |
| British Journal of Clinical Psychology …… | 1 |
| Counseling Psychology Quarterly …….. | 1 |
| Cross Cultural Psychology Bulletin …… | 1 |
| Current Directions in Psychological Science …… | 1 |
| Developmental Psychology ……. | 1 |
| Health Psychology ……. | 1 |
| Journal of Clinical Psychology in Medical Settings …. | 1 |
| The Family Psychologist …….. | 1 |
| Multivariate Experimental Clinical Research ……. | 1 |
| Psychologia: An International Journal of Psychology in the Orient …….. | 1 |
| Psychotherapy in Private Practice ……. | 1 |
| South African Journal of Psychology ……. | 1 |
| Suicide and Life-Threatening Behavior ……. | 1 |
| Topics in Family Psychological Counseling ……. | 1 |
| **Family Social Science ……..……** | **107** |
| Family Process …….. | 49 |
| Family Relations …… | 15 |
| Journal of Divorce and Remarriage …… | 11 |
| Journal of Marriage and the Family ……... | 8 |
| Australian Journal of Sex, Marriage and Family …….. | 4 |
| Marriage and Family Review …….. | 4 |
| Families in Society …… | 3 |
| Journal of Comparative Family Studies …… | 3 |

Table D1 (cont'd)

Number of Studies: By Discipline

| Journal | Number |
|---|---|
| Family Perspective …….. | 2 |
| Family Science Review …… | 2 |
| Journal of Family Issues …….. | 2 |
| Journal of Divorce …… | 2 |
| Journal of Family Studies …… | 1 |
| Journal of Child and Family Studies …….. | 1 |
| **Medicine ……** | **81** |
| Family Systems Medicine …… | 9 |
| Journal of Developmental and Behavioral Pediatrics.. | 8 |
| International Journal of Eating Disorders …….. | 7 |
| Journal of Pediatric Psychology ……. | 6 |
| Journal of Psychosocial Oncology ……. | 4 |
| The Journal of Family Practice ……... | 4 |
| Children's Health Care ……. | 3 |
| Research in Nursing and Health ……. | 3 |
| Pediatrics …… | 2 |
| Issues in Comprehensive Pediatric Nursing ……. | 2 |
| Social Science Medicine …….. | 2 |
| American Journal of Occupational Therapy ……. | 2 |
| Families, Systems and Health ……. | 2 |
| Journal of Adolescent Health ……... | 2 |
| Advances in Nursing Science …….. | 1 |
| Archives of Physical Medicine and Rehabilitation ….. | 1 |
| British Journal of Medical Psychology …… | 1 |
| Clinical Nursing Research ……..… | 1 |
| Clinical Pediatrics …… | 1 |
| Diabetes Care ……. | 1 |
| Family Practice Research Journal …….. | 1 |
| Health Education Quarterly …….. | 1 |
| Israel Journal of Medical Sciences …… | 1 |
| Journal of Asthma …….. | 1 |
| Journal of Autism and Developmental Disorders ……. | 1 |
| Journal of Head Trauma Rehabilitation ……. | 1 |
| Journal of Health and Social Behavior …….. | 1 |
| Journal of Parenteral and Enteral Nutrition …….. | 1 |
| Journal of Pediatrics …….. | 1 |
| Journal of Pediatric Nursing ……. | 1 |
| Journal of Psychosomatic Research …….. | 1 |
| Journal of Traumatic Stress ……. | 1 |
| Maternal-Child Nursing Research …….. | 1 |
| Military Medicine …… | 1 |
| Nursing Research …….. | 1 |
| Pediatrics Adolescent Endocrinology ……. | 1 |
| Psychosomatic Medicine …….. | 1 |
| Rehabilitation Counseling Bulletin …….. | 1 |
| Therapeutic Recreation Journal …….. | 1 |
| **Marriage and Family Therapy ……** | **55** |
| Journal of Marital and Family Therapy …….. | 13 |
| Family Therapy …… | 12 |
| Journal of Psychotherapy and the Family ……. | 11 |
| The American Journal of Family Therapy ……. | 7 |

Table D1 (cont'd)

Number of Studies: By Discipline

| Journal | Number |
|---|---|
| Contemporary Family Therapy …….. | 3 |
| Journal of Family Psychotherapy …….. | 2 |
| American Journal of Family Therapy ……. | 2 |
| The Family Journal: Counseling and Therapy for Couples and Families ……... | 2 |
| Clinical Supervisor ……. | 1 |
| Journal of Family Therapy …….. | 1 |
| Journal of Marriage and Family Counseling ……. | 1 |
| **Psychiatry ……** | **37** |
| Journal of the American Academy of Child and Adolescent Psychiatry …….. | 12 |
| Adolescence ……... | 7 |
| Issues in Mental Health Nursing ……. | 4 |
| Journal of Child Psychology and Psychiatry ……. | 3 |
| Comprehensive Psychiatry …….. | 2 |
| Psychiatry ……..… | 2 |
| Transactional Analysis Journal …… | 2 |
| Australian and New Zealand Journal of Psychiatry …. | 1 |
| Child Psychiatry and Human Development …….. | 1 |
| Journal of Affective Disorders …….. | 1 |
| The Journal of Nervous and Mental Disease ……... | 1 |
| Review of Bulimia and Anorexia Nervosa ……. | 1 |
| Schizophrenic Research …….. | 1 |
| **Social Work ……..** | **28** |
| Journal of Family Violence …….. | 4 |
| Journal of Social Service Research ……... | 4 |
| Journal of Research on Adolescence …… | 2 |
| Social Service Review …… | 2 |
| Child and Youth Services …… | 2 |
| Children and Youth Services Review …… | 2 |
| Research on Social Work Practice ……. | 2 |
| Journal of Early Intervention …… | 1 |
| Journal of Independent Social Work …….. | 1 |
| Journal of Offender Rehabilitation …….. | 1 |
| Journal of Social Work Education …… | 1 |
| Child and Adolescent Social Work Journal …… | 1 |
| Child and Youth Care Quarterly …….. | 1 |
| Social Casework ……..…. | 1 |
| Social Work …….. | 1 |
| Social Work in Education …….. | 1 |
| Social Work in Health Care …… | 1 |
| **Education ……..……** | **23** |
| Topics in Early Childhood Special Education …….. | 4 |
| Journal of College Student Development …….. | 3 |
| Early Education and Development …….. | 2 |
| Gifted Child Quarterly ……. | 2 |
| The School Counselor …… | 2 |
| Educational and Psychological Measurement ……. | 2 |
| Journal for the Education of the Gifted …….. | 1 |
| Journal of Learning Disabilities …… | 1 |

Table D1 (cont'd)

Number of Studies: By Discipline

| Journal | Number |
|---|---|
| Journal of School Psychology | 1 |
| School Psychologist …… | 1 |
| School Psychology Quarterly …… | 1 |
| Journal of Educational Research ……. | 1 |
| The Alberta Journal of Educational Research …….. | 1 |
| High School Journal …….. | 1 |
| **Chemical Health ……..…….. ** | **14** |
| Journal of Substance Abuse …… | 3 |
| International Journal of Addictions ……. | 2 |
| Journal of Child and Adolescent Substance Abuse … | 1 |
| Journal of Drug Education ……. | 1 |
| Journal of Drug Issues …….. | 1 |
| Journal of Studies on Alcohol ……. | 1 |
| Journal of Substance Abuse Treatment …… | 1 |
| Addiction …….. | 1 |
| Drugs and Society ……. | 1 |
| Family Dynamics of Addiction Quarterly ……... | 1 |
| Substance Use and Misuse ……. | 1 |
| **Gerontology …….. ** | **12** |
| Gerontologist …….. | 3 |
| Educational Gerontology …….. | 2 |
| Death Studies ……. | 2 |
| Omega—Journal of Death and Dying …… | 2 |
| Activities, Adaptation and Aging ……. | 1 |
| Psychology and Aging …….. | 1 |
| Journal of Gerontological Social Work ……... | 1 |
| **Sociology …… ** | **9** |
| Journal of Sociology and Social Welfare …….. | 2 |
| Lifestyles …….. | 2 |
| Sex Roles ……..… | 2 |
| Journal of Children in Contemporary Society ……... | 1 |
| Journal of Black Studies ……... | 1 |
| Small Group Research …….. | 1 |
| **Family Law …….. ** | **3** |
| Mediation Quarterly …….. | 2 |
| Family and Conciliation Courts Review ……. | 1 |
| **Human Relations …… ** | **3** |
| Career Development Quarterly ……... | 1 |
| Human Relations …… | 1 |
| Journal of Counseling and Human Service Professions | 1 |
| **Mass Communication …… ** | **1** |
| Journal of Broadcasting and Electronic Media ……. | 1 |

NOTE: In addition journal publications, the database contains references for 25 chapters in books and two books.

Table D2

Number of Studies: By Topic

| Topic | Number |
|---|---|
| **THEORY AND RESEARCH ……..** | **116** |
| Family research methodology …… | 66 |
| Family theory …… | 50 |
| **FAMILIES WITH SPECIAL PROBLEMS ……** | **82** |
| Stress …….. | 21 |
| Behavioral problems …… | 9 |
| Juvenile offenders …… | 8 |
| Chemical dependency …… | 8 |
| Depression …… | 8 |
| Physical disabilities …….. | 5 |
| Alcoholism …….. | 4 |
| Mental illness …… | 3 |
| Suicide …… | 3 |
| Child abuse …… | 2 |
| Developmental disabilities …….. | 2 |
| Incest …….. | 2 |
| Learning disabilities …….. | 2 |
| Violence-abuse …… | 2 |
| Criminal offenders …… | 1 |
| Death …….. | 1 |
| Gifted member ……... | 1 |
| **FAMILY RELATIONS AND DYNAMICS ……** | **78** |
| Family relationships …….. | 20 |
| Communication …… | 14 |
| Parent-child relationships …… | 14 |
| Husband-wife relationships …… | 13 |
| Family-of-origin relationships …….. | 9 |
| Father-child relationships …… | 3 |
| Mother-child relationships …… | 3 |
| Sibling relationships …… | 2 |
| **FAMILY COUNSELING/EDUCATION ……** | **64** |
| Family therapy ……... | 43 |
| Marriage counseling and therapy ……... | 9 |
| Family life education …… | 7 |
| Parenting education …… | 3 |
| Marital and family enrichment …… | 1 |
| Program evaluation …….. | 1 |
| **PHYSICAL HEALTH ……..** | **63** |
| Physical illness-general-adults ……... | 13 |
| Physical illness-general-children …… | 13 |
| Physical illness-general-adolescents …… | 11 |
| Nursing ……... | 9 |
| Diabetes …… | 8 |
| | 7 |

Table D2 (cont'd)

Number of Studies: By Topic

| Topic | Number |
|---|---|
| Cancer …… | 1 |
| Cardiological health …….. | 1 |
| HIV/AIDS …… | |
| **INDIVIDUAL DEVELOPMENT** …….. | **53** |
| Adolescent development …… | 42 |
| Child development …… | 7 |
| Socialization …….. | 4 |
| **THE FAMILY AND SOCIETY ……** | **35** |
| Ethnic groups …… | 14 |
| Education ……... | 6 |
| Adoption and foster care ……. | 4 |
| Social class …… | 4 |
| Economics ……. | 2 |
| Work issues ……... | 2 |
| Family rituals …….. | 1 |
| Geographic mobility …….. | 1 |
| Religion …….. | 1 |
| **SEXUALITY AND REPRODUCTION ……..** | **9** |
| Pregnancy and childbirth …… | 4 |
| Sexuality …… | 2 |
| Abortion …….. | 1 |
| Homosexuality ……... | 1 |
| Teenage pregnancy …… | 1 |
| **TYPES OF FAMILIES ……** | **9** |
| Stepfamilies ……... | 4 |
| Single parent families ……... | 2 |
| Military families …….. | 2 |
| Extended families …….. | 1 |
| **MARRIAGE AND DIVORCE ……..** | **7** |
| Divorce and separation …… | 5 |
| Marriage …… | 2 |
| **STAGES IN THE FAMILY LIFE CYCLE ……..** | **5** |
| Aging ……... | 2 |
| Launching …….. | 2 |
| Transition to parenthood …….. | 1 |

Appendix E

## BIBLIOGRAPHY

Following is a comprehensive list of published journal articles and books that focus on the Circumplex Model and its instruments. It includes a) empirical studies that have used FACES or other instruments in the Family Assessment Package; b) commentaries on family theory and methods; c) validation studies and critiques of the instruments; d) literature reviews on applications; and e) clinical case studies. The bibliography is organized into six parts, as follows:

1. Circumplex Model of Marital and Family Systems: Reviews and Commentary on Theory, Methods, and Applications
2. Family Adaptability and Cohesion Evaluation Scales: Empirical Studies
3. Family Satisfaction Scale
4. Family Strengths Scale
5. Parent-Adolescent Communication Scale
6. Clinical Rating Scale: Empirical Studies, Reviews, and Commentary

For each reference, a printed copy of the publication was available for review. Excluded from this list are dissertations and foreign language publications. The references were gathered using the two databases: the Family Studies database maintained by the National Information Services Corporation (NISC), Baltimore, MD; and the PsycInfo database maintained by the American Psychological Association (APA), Washington, D.C. The databases were searched through April 1999 and May 1999, respectively.

## CIRCUMPLEX MODEL OF MARITAL AND FAMILY SYSTEMS

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