

RELATIONSHIPS AMONG FAMILY COHESION, FAMILY ADAPTABILITY,
POTENTIALLY STRESSFUL LIFE EVENTS AND SYMPTOMS OF STRESS

by

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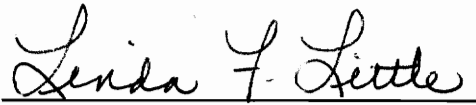
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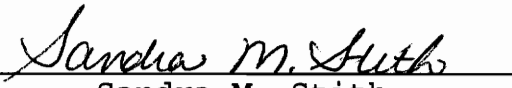
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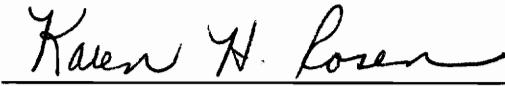
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Relationships Among Family Cohesion Family
Adaptability, Potential Stressful Life Events
and Symptoms of Stress

by

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Family and Child Development

(ABSTRACT)

The purpose of this study was to examine the relationship between potential stressors and stress symptoms mediated by family adaptability and cohesion. This study also examined whether the Family Adaptability and Cohesion Scale (FACES III) provides data to support Olson's Circumplex Model of Marital and Family Systems. That is, the results of the present project were used to supplement the current debate over FACES III's curvilinearity.

The data used in this sample are the data from a two-year research project about commercial airline pilots. The first hypothesis tested whether the FACES III sub-scales; cohesion and adaptability were linear measures or curvilinear measures. The second was that

those individuals who had higher levels of family functioning would have fewer stress symptoms, while taking number of potential stressful life events into account.

The results for the cohesion sub-scale supported using it as a linear measure. The results for the adaptability sub-scale were inconclusive. The results also demonstrated that life events and cohesion were significant predictors of stress and that family cohesion is a mediating factor in the relationship between potential stressors and experienced stress symptoms.

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Relationships Among Family Cohesion, Family
Adaptability, Potentially Stressful Life Events
and Symptoms of Stress

The purpose of this study is to examine the relationship between potential stressors and stress symptoms as mediated by family adaptability and cohesion. Furthermore, this study will provide evidence to contribute to the current debate regarding whether the Family Adaptability and Cohesion Scale (FACES III; Olson, 1985) provides data to support Olson's Circumplex Model of Marital and Family Systems.

Over the years, many studies have looked at dynamics in family systems. During the 1950's and 1960's, social science researchers began conceiving of families in terms of the interchanges between individuals within a family group (Cheatham, 1981; Haley, 1973; Olson, Sprenkle, & Russell, 1979; Buckley, 1967; Greenberg, 1977). These family interaction studies became the foundation in family research from which many of the principals of family systems theory developed (von Bertalanffy, 1968; Buckley, 1967; Olson, et al., 1979). For example, "family homeostasis" was a

term coined by Jackson (1957) to describe the consistency of family behavior patterns. Jackson suggested that these patterns were maintained by a continuous interplay of dynamic forces.

Others, like Young (1979), discussed two basic systems, opened and closed, where the closed system is typified by separation from the environment, insulation and movement toward progressive internal chaos (system unable to adapt to change), while an open system is characterized by contact and adaptive interaction with the environment. The family, as a social unit, is representative of a living open system, which has the ability to exercise differing degrees of independence; to exert power over itself; and to select available options presented to it by its surrounding environment (Young, 1979; Hesser, 1981).

From this systems perspective, the healthy family would be recognized as one which can accommodate to the developmental needs of the family as a group and of the individual members within that group (Haley, 1973; Watlawich, Beavin, & Jackson, 1967). Conversely, members of less healthy families will experience greater difficulty in attaining their individual

developmental tasks.

The theoretical conceptualization of the family as a system has led to the recognition of two dimensions that are of importance as indicators of family functioning; family cohesion and family adaptability (Olson, et al, 1979; Galvin & Brommel, 1986).

ADAPTABILITY

Family adaptability refers to the family's capacity to shift its course of action to meet obstacles (McCubbin & Patterson, 1983). Angel (1936) defined adaptability in terms of the family's capacity to function, accommodate to change, deal with problems and make decisions.

Family systems are conceptualized as receiving both positive and negative feedback in order to adapt to environmental information. Positive feedback (morphogenesis) supplies a family system with constructive, system enhancing behaviors that allows the family system to grow, create, innovate and change. Negative feedback (morphostasis), on the other hand, is change inhibiting, attempting to maintain the status-quo. Both morphogenesis and morphostasis are hypothesized as necessary for effective family

functioning, and functional families are hypothesized to be those families that maintain a balance between the two (Galvin and Brommel, 1986; Olson, et al., 1979).

In times of high stress, a family may need to be more morphogenetic (flexible) while still maintaining some degree of morphostasis (stability) (Wertheim, 1973). However, no system can function well by maintaining morphogenesis predominantly or morphostasis predominantly for a long period of time. A family must be able to adapt to normative crises without locking into overly rigid patterns (Hill, 1971; Hill & Rogers, 1964).

Minuchin (1974) stressed that a successful transition through situational or developmental changes depended on a balance between morphogenesis and morphostasis. If the family is to function adaptively, there needs to be flexibility within the boundaries of the power relationships in the family hierarchy (Olson, et al., 1979; Minuchin, 1974). Wynne (1958) further suggested that families trying to maintain the status quo in a homeostatic system can become highly disturbed. However, without some form of optimal

degree of homeostasis, the family system could not survive as a cohesive and viable unit (Minuchin, 1974; Wynne, 1958; & Cheatham, 1981). The most adequate family systems are those that maintain a balance between change and stability.

COHESION

For family systems to maintain their viability, there needs to be a balance not only between change and stability, but also between separateness and togetherness. This aspect of system viability is labelled cohesion. Family cohesion can be defined as the "emotional bonding that family members have toward one another and the degree of individual autonomy they experience" (Zuengler & Neubeck, 1983). Angel (1936) conceptualized cohesion as family integration pertaining to family unity and bonds of closeness associated with mutual interests, affiliation and financial interdependence. In the dimension of cohesion, families are seen as balancing the two extremes; both separateness and togetherness and that family members have a need for equilibrium on what Rosenblatt and Titus (1976) termed the "togetherness-separateness continuum".

Stierlin (1974) suggests that togetherness (centripetal force) occurs when family members pull one another into both an intellectual and emotional "oneness". Separateness (centrifugal force), on the other hand, is experienced when family members pull away from the family system. Stierlin (1974) hypothesized that a struggle exists to balance these opposing forces and that both centripetal (togetherness) and centrifugal forces (separateness) are generally functional for families. However, these opposing forces become dysfunctional when expressed at inappropriate times or when one force dominates the other (Olson et al, 1979). Rosenblatt and Budd (1975) suggested that cohesion was important to couples and that they try to find an optimal balance between time together and time apart.

Stress arises in families when individual family members' need for separateness and togetherness occur at different times (Lewis, 1986). In these moments of great stress, where a need for change is created, it may be necessary for a family to become more centripetal (closer) than centrifugal (separate). However, as in the case of adaptability, too much time

in either extreme will eventually lead to dysfunction.

Minuchin (1974) also stressed the importance of affiliation in healthy family systems. The dimension of affiliation was put on a "disengaged-enmeshed" continuum. Disengaged and enmeshed parts of this dimension are considered by Minuchin as important and he suggested that families who function consistently at the extremes on the disengaged-enmeshed continuum often become pathological (Minuchin, 1974).

STRESS AND COHESION AND ADAPTABILITY

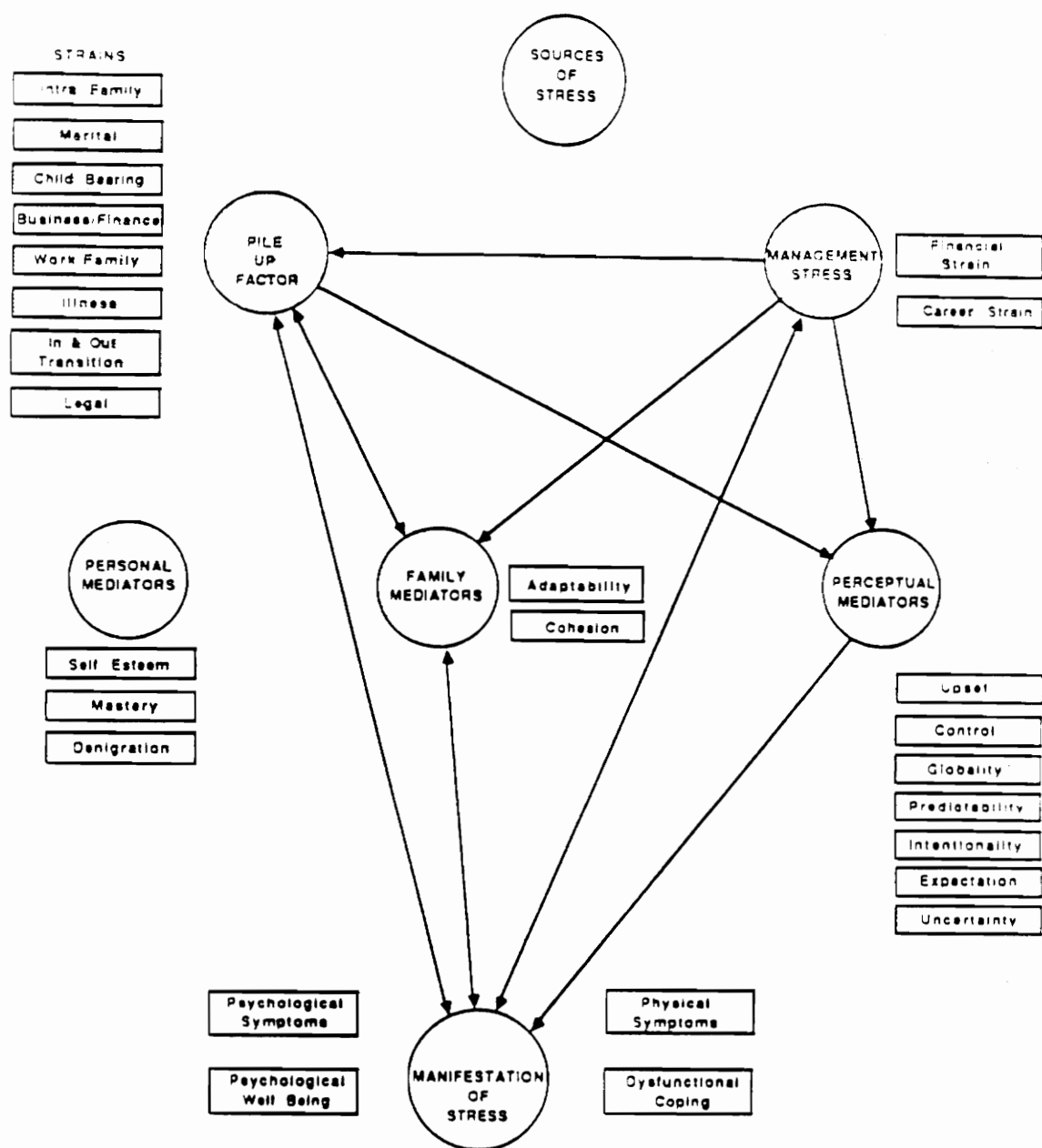
When families are able to balance the extremes of both adaptability and cohesion, they are said to be functioning optimally. These families are able to adapt and change to the demands placed on them both from within and outside the system. This being the case, these families are hypothesized to be able to cope with potentially stressful situations more effectively than families who function at the extremes of cohesion and adaptability.

In a study conducted by Galvin and Brommel (1986) using the dimensions of cohesion and adaptability, couples who portrayed their relationship as strong and stable were those who fluctuated more between the mid-

ranges of the two dimensions of cohesion and adaptability as assessed by The Circumplex Model (FACES III; Olson et al., 1983). For these couples, a strong marriage was a buffer in coping with stress more effectively. Those couples who viewed their relationship as weak and conflictual, tended to fluctuate between the extremes of cohesion and adaptability (Galvin, & Brommel 1986; Anderson, 1986).

It would appear from these results and theoretical conceptualizations that family functioning within the dimensions of cohesion and adaptability is related to how family systems cope with stress.

A systemic model of stress [Figure 1] developed by Little and Gaffney (Little, Gaffney, and Scheirer, 1987) illustrates that actual stressors do not necessarily have a linear relationship to any specifically expressed symptom. Instead, the reaction to stress is seen as interactive. This cumulative process is affected primarily by those actual sources of stress, such as job insecurity and financial strain, how the stress event is perceived (important versus not important, controllable versus not controllable, etc.), the buffers that either mitigate or exacerbate the



1. Circles denote latent variables or constructs.
2. Rectangles denote measured variables.
3. Arrows denote several proposed directional relationships.

Figure 1
Systemic Model of Stress
(Gaffney, 1987)

response to the stressful event (self-esteem, career satisfaction, family adaptability and cohesion), and the strategies used for coping with stress (functional versus dysfunctional) (Little, Gaffney and Grissmer, 1991; Gaffney, Little, and Scheirer, 1987; Gaffney, 1987).

The stability of the home and quality of spousal relations may play a significant role in serving as a buffer to stress symptoms. A data based model introduced by Cooper and Sloan (1986), using a pilot couple population, supported the concept that a strong couple combined with a stable marriage resulted in more effective pilots who coped better with stressful events both at home and at work. In their study of airline pilot couples where the couple viewed their marriage as weak and conflictual, there was an additional effect of stress from the conflictual marriage compounded with the outside stressors. Family functioning, including the couple relationship, therefore, was emphasized as a potential source of stress in situations where conditions of family life were poor or where the marital relationship was not stable and/or was conflictual. For example, couples without adequate

social supports (friends, extended family, etc.) reported experiencing higher levels of stress.

THE CIRCUMPLEX MODEL

A model that uses family cohesion and family adaptability and incorporates their relationship to stress is the Circumplex Model of Marital and Family Systems (Olson, Russell and Sprenkle, 1979, 1980, 1983). Developed by Olson and his colleagues in an attempt to bridge the gap between research, theory and practice, the Circumplex Model enables an individual to classify families into 16 specific types of families or into three general categories consisting of "balanced", "mid-range", and "extreme" families.

The Circumplex Model hypothesizes a curvilinear relationship between both cohesion and adaptability and optimal family functioning. Families that occupy the four central zones [Figure 2] are considered "balanced" on both adaptability and cohesion. The eight zones surrounding the balanced types are considered "mid-range", while the four zones at the corners of the model are considered "extreme" (Green, Harris, Forte, & Robinson, 1991). These "extreme" families function outside of the optimal or "balanced" zones on both

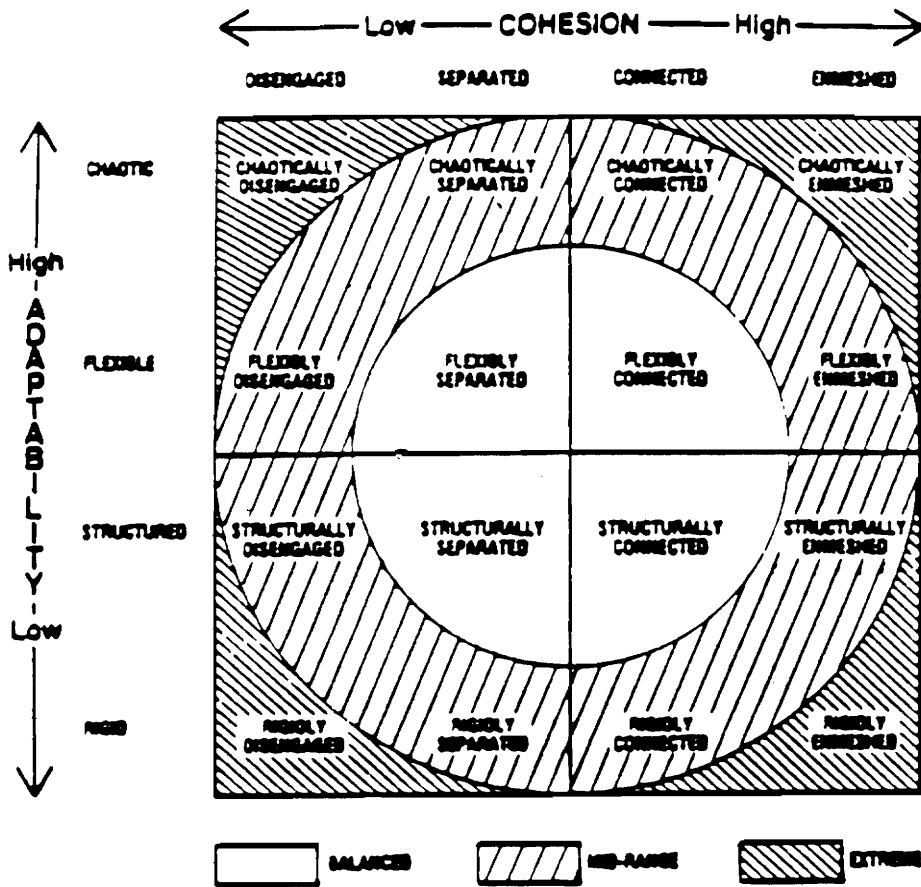


Figure 2

The Circumplex Model

Sixteen Types of Marital and Family Systems

(Olson, Russell & Sprenkle, 1983)

cohesion and adaptability and are considered more likely to respond dysfunctionally to stressful events over time.

Two major hypotheses associated with the Circumplex Model (Olson, Bell, & Portner, 1978) are

"a) couples/families without serious problems will change their cohesion and adaptability to an adjacent level (type) to deal with situational or developmental stress; b) couples/families with serious problems will either not change their cohesion or adaptability or will fly to opposite extremes (on one or both dimensions) to deal with situational or developmental stress".

Olson's Circumplex Model theorizes that those families in the "balanced range" will function more adequately at the onset of potentially stressful events than those in the "extreme ranges". This hypothesis is based on the assumption that families functioning in the extreme ranges will have difficulty coping with situational and developmental stressors where as families functioning in the balanced range will cope better as they undergo normative changes and any stress related to these changes (Olson, Portner, & Lavee, 1985). So, as potentially stressful events or crises come along, those families viewed as "balanced" cope better than those families viewed as "extreme".

Looking at family functioning within the Circumplex Model, the health and quality of the family relationship can be determined by assessing the factors of cohesion and adaptability (Olson, Russell, & Sprenkle, 1983). Each dimension ranges from an extreme low to an extreme high, along with two moderate or "balanced" levels in between. Cohesion ranges from one extreme of enmeshment (family members are so closely bonded that individuals experience little autonomy) to the other extreme of disengagement (family members experience little closeness and solidarity and have high levels of autonomy). The two moderate or "balanced" levels of cohesion are labelled as "separated" and "connected" representing optimal or balanced levels of cohesion when there is a fluctuation between the two.

Adaptability ranges from one extreme of rigidity (families that repress growth) to the other extreme of chaos (families that experience extensive change) (Anderson & Gavazzi, 1990; Galvin & Brommel, 1986; Olson, 1985). Chaotic families have little or no leadership, inconsistent or no discipline, engage in endless negotiations, have erratic role shifts and have

few explicit rules. Rigid families are seen as authoritarian, strict disciplinarians, limited negotiators, and are seen as having rigid or stereotyped roles and many explicit rules. The two moderate or "balanced" levels of adaptability are "flexible" and "structured", representing optimal family functioning when there is a fluctuation between the two.

In healthy functioning families (balanced) as measured by FACES, individual members within the family were found to be better able to both experience and balance independence from the family as well as connectedness to their family. Also, these healthy family systems were capable of and able to change their power structure, role relationships, and relationship rules in response to situational and developmental stressors as they arose (Olson, McCubbin, Larsen, Muxen, & Wilson, 1983; Anderson, 1986; Masselam, Marcos, & Stunkard, 1990).

Conversely, those families who are more vulnerable to act dysfunctionally were found more likely to fall into one or the other of the extremes of cohesion and adaptability. These families were seen as either

overly rigid and enmeshed to overly disengaged and chaotic, with little fluctuation or movement within the mid-ranges of cohesion and adaptability (Galvin & Brommel, 1986; Olson, et al., 1983; Anderson, 1986; Anderson, & Gavazzi, 1990).

The extremes in functioning lessen the buffers of stress and families who function at these extremes tend to suffer an additional pile-up of stressors, with conflict in relationships (marriage) adding to outside stressors (Olson, et al., 1983; Olson, 1986). This "pile-up of demand" as McCubbin and Patterson (1981) termed it, affects both the individual and family. As this "pile-up demand" increases, the individual and the family's ability to cope can decrease, increasing feelings of being overwhelmed and thus becoming more prone to physical and psychological symptoms of stress (Holmes & Rahe, 1967).

The Circumplex Model assumes that individuals and the families in a balanced system will change and that this change is beneficial to the maintenance and improvement of family functioning. It also hypothesizes that a dysfunctional family (extreme) will resist change when change is required (Olson & Portner,

1983).

FACES III

To assess family functioning within the Circumplex Model, Olson (1985) developed the Family Adaptability and Cohesion Scale (FACES). First developed in 1979, it has been modified several times. FACES III is the third version in a series of FACES scales developed to assess the two dimensions of the Circumplex Model. FACES III is designed to measure both perceived and ideal family functioning, with the perceived and ideal discrepancies being an inverse measure of family satisfaction.

FACES III is used to categorize families as being either balanced, mid-range, or extreme. It originally assumed that those families who function most effectively ("balanced") will score in the middle of the scale while those families who are dysfunctional ("extreme") are likely to score at the lower or higher ends of the scale.

However, recent research has suggested that FACES III as an indicator of the Circumplex categories within a curvilinear model is not accurate (Green, et al; 1991). The data seem to indicate that FACES III is

best used as a linear indicator, with the high scores on the dimensions of cohesion and adaptability being reconceptualized as indicating more "balanced" or healthy levels and lower scores on the same two dimensions indicating "extreme" or unhealthy levels. The linear model of FACES III hypothesizes that those families that function most adequately (balanced) will score higher than those families considered dysfunctional (Olson, 1991).

The purposes of this research project are both to:

- 1) Examine the relationship between potential stressors and stress symptoms as they are mediated by family adaptability and cohesion; and
- 2) Test whether FACES III is a curvilinear or linear measure of cohesion and adaptability as it relates to stress symptoms. This will be done by testing two contrasting hypotheses;

A) Curvilinear: Families are viewed as falling into three categories of balanced, mid-range, or extreme on FACES III, those scoring high or low are considered in the extreme categories, while those in the middle are considered balanced or mid-ranged. Those families who are considered "balanced" (those

that score in the middle of FACES III) will experience fewer stress symptoms than those at either end of the extreme of both cohesion and adaptability (those scoring extremely low or extremely high on FACES III); and

B) Linear: Families are viewed as falling into three categories of balanced, mid-range and extreme. Those scoring high on FACES III are considered balanced, those scoring in the middle are considered mid-range, and those scoring lowest are considered extreme. Those families considered "balanced" (those scoring high on FACES III) will experience fewer stress symptoms than those considered "extreme" (those scoring low on FACES III) on both cohesion and adaptability.

Methods

Sample

Included in this paper are the data from a portion of a two-year research project conducted by a team of researchers from Virginia Polytechnic Institute and State University in cooperation with the Airline Pilots Association (ALPA) (Little, Gaffney, & Scheirer, 1987). The overall purpose of the original project was to examine pilot stress from a broad contextual perspective as it related to work conditions of pilot groups. The data for this study consist exclusively of male pilots, because of the low number of female pilots.

Pilot groups were selected from two stable and one unstable airline. Pilots from the unstable airline had just experienced the sale of their airline following a period of major financial losses, upheaval and labor management conflict. Pilots from the two stable airlines were selected randomly based upon size, geographical location and a history of corporate stability.

The pilots from the stable and unstable airline groups did not differ significantly in marital status

(chi-square (df = 5) = 6.34, $p > 0.05$), gender (chi-square (df = 1) = 1.10, $p > 0.05$), number of times married (chi-square (df = 9) = 9.03, $p > 0.05$), number of dependents (chi-square (df = 5) = 5.17, $p > 0.05$), age of youngest child (chi-square (df = 5) = 6.34, $p > 0.05$), or proportion of family income from employment as a pilot (chi-square (df = 4) = 7.22, $p > 0.05$). The pilots in the unstable airline group were older (chi-square (df = 4) = 18.43, $p < 0.05$), better educated (chi-square (df = 5) = 23.92, $p < 0.05$) and had spent more years at their present rank (chi-square (df = 6) = 27.22, $p < 0.05$) as compared to those in the stable airline group (Little, Gaffney, Rosen, & Bender, 1990). These differences were considered by the researchers not to have a significant impact for the results of the study.

Procedure

Pilots were asked to respond to a comprehensive Pilot Stress Survey. The original data collected were on 11 measures of well-being including the three instruments used in this study: Family Inventory of Life Events and Changes (McCubbin, 1987), FACES III (Olson, 1985), and Individual Symptoms of Stress Scale (Gaffney, 1987).

The questionnaires were distributed by mail to a random sample of pilots (n=839) selected from a complete alphabetized list of the members of the Airline Pilots Association of the three carriers used in this study. A table of random numbers was used to select which pilots were to receive the questionnaire. A sample of 215 and 223 pilots each from two smaller and stable airlines and 401 pilots from an airline considered unstable were taken and assigned to receive a questionnaire. One hundred and four and 116 pilots, respectively, returned the questionnaire, from Stable Airline 1 and Stable Airline 2 and 212 from the unstable airline (51% return rate).

The project was introduced via a cover letter from the researchers explaining that little systematic research had been conducted on the interaction among airline pilots, their spouses, their work environment, and their handling of work demands. It was emphasized that the results of the study depended heavily on the accuracy of their responses. Participants were assured by the researchers and the ALPA that individual results would be confidential and that all the results would be presented in aggregate form only. Participation was

strictly voluntary.

Instruments

This study analyzed the results from three of the 11 instruments used in the larger study: 1) Olson's Family Adaptability and Cohesion Scale (FACES III): 2) McCubbin's Family Inventory of Life Events and Changes (FILE); and 3) Gaffney's Individual Symptoms of Stress Scale which is used to measure stress symptoms.

Family functioning was assessed by the couple version of the Family Adaptability and Cohesion Scale (FACES III) (Olson, Portner and Levee, 1985). FACES III is a 20-item self-report scale used to measure the two major dimensions of the Circumplex Model; cohesion (disengaged, separated, connected, and enmeshed) and adaptability (rigid, structured, flexible, and chaotic). The Circumplex Model theorizes that cohesion and adaptability have an important relationship to family functioning throughout the life cycle.

FACES III contains 10 items measuring cohesion and 10 items measuring adaptability. Subjects rate statements such as "Family members feel very close to each other" and " We approve of each others friends" (cohesion) and "Rules change in our marriage" and "Our

family changes its way of handling tasks" (adaptability). The responses range from "almost never" to "almost always" on a 5-point Likert Scale. The reliability estimates calculated by Olson and Portner (1983) for their total sample were 0.77 for cohesion, 0.62 for adaptability and 0.68 for the total scale. The test-retest reliability after 5 weeks are 0.83 for cohesion and 0.80 for adaptability (Olson & Portner, 1983; Olson, 1985, 1986; Buehler, 1990). The reliabilities obtained for this study were 0.86 for cohesion and 0.74 for adaptability.

Discriminant validity for FACES III was assessed by a Pearsons correlation between cohesion and adaptability ($r=0.03$). This shows that the dimensions of cohesion and adaptability are independent (Edman, Cole, & Howard, 1990).

Pile-up of stressors was assessed by the Family Inventory of Life Events and Changes (FILE) (McCubbin, Patterson, & Wilson, 1981; McCubbin & Patterson, 1987), a 71-item instrument that measures normal and non-normal life events which have occurred within the last year. In all, the 71-item instrument is grouped into nine sub-scales of stressful events including intra-

family, marriage, pregnancy and childbearing, finance and business, work-family transitions, illness and family care, family losses, family transitions and legal problem strains. With this instrument, the degree of family pile-up can be assessed.

Respondents are asked to check "yes" or "no" to the life events that occurred to any member of the family both within and prior to a year ago.

The reported reliabilities for FILE calculated by McCubbin & Patterson (1981, 1983) range from 0.72 to 0.81 using Cronbach's alpha. The estimate for overall reliability for FILE was 0.80. Test-retest reliability estimates revealed relatively stable responses across all sub-scales after 5 weeks ranging from 0.66 for business strains to 0.84 for pregnancy and childbearing strain (Olson, McCubbin, Barnes, Larsen, Muxen, & Wilson, 1982; Beuhler, 1990).

Individual Symptoms of Stress was assessed by a scale constructed for this study by Gaffney (1987). This symptoms of stress scale is an 18-item self-report scale used to measure the severity and scope of symptoms of stress experienced during participants recent past ("past few weeks"). Subjects are asked to

rate statements such as "feeling hopeless about the future", "excessive anger", and "having a pessimistic attitude". Each item in the scale is rated on a 5-point Likert Scale, ranging from "almost never" to "almost always". The 18-items included in the stress scale were those that commonly appear in literature pertaining to stress and were taken from sources including standard stress literature (Lecker, 1978; Neurnberg, 1981; Selye, 1978); DSM III's criteria for depressive neurosis; Pearlin and Schooler's (1978) Depression Model; and the FAA (1983) Stress Symptom checklist for pilot training (Gaffney, 1987).

For analysis, each response of "frequently" and "almost always" was analyzed as the respondent experiencing the symptom in his\her near past. Those responses of "almost never", "once in a while", and "sometimes" were analyzed as if the symptom had not occurred recently.

The symptoms of Stress Scale was assessed for internal reliability for each airline group and all airlines combined. Cronbach's alpha ranged from 0.73 to 0.88 for the stable and unstable airlines, and was established at 0.86 for all pilots combined (Little, et

al., 1990; Gaffney, 1987). For this study, a reliability of $\alpha = 0.91$ was obtained.

ANALYSIS

Frequencies of demographic variables were used to describe the sample. Means, standard deviations, and reliability estimates were calculated for all scales. To test the curvilinearity of FACES III, an ANOVA was performed to demonstrate differences in stress symptoms between the extremes, mid-range and balanced categories as originally designated. If the mean score on stress symptoms fell appropriately with high stress symptoms in the extreme groups and low stress symptoms in the middle group, curvilinearity would have been supported. If the mean score on stress symptoms fell with high scores corresponding to low cohesion and adaptability scores and low scores corresponding to high cohesion and adaptability score than linearity would have been supported.

An exploration of the relationship between potential stress (FILE) and stress symptoms as mediated by family functioning was also conducted. This analysis depended on whether curvilinearity or linearity was supported. If curvilinearity was

supported, an ANOVA would be performed with a 3x3 analysis for both cohesion and adaptability categories, by FILE scores comparing means on stress symptoms. If linearity was supported, a multiple regression procedure would be used with cohesion, adaptability, FILE and their interaction terms regressed on to stress symptoms.

RESULTS

There was no significant difference between pilot groups in the unstable airline with those in both stable airlines when compared on FACES III. Therefore, all pilots were grouped together.

TEST OF CURVILINEARITY

In the first part of the study, a one way ANOVA with a Scheffe procedure was used to determine the linearity or curvilinearity of FACES III. Adaptability and cohesion were each looked at individually comparing each with individual symptoms of stress (Stressym). Based on scores from Olson's manual (1985), the FACES III scores on adaptability and cohesion were categorized into their 4 respective groups: Adaptability (Rigid, 10-19; Structured, 20-24; Flexible, 25-28, Chaotic, 29-50) and Cohesion

(Disengaged, 10-34; Separated, 35-40; Connected, 41-45; Enmeshed, 46-50). Table 1 presents the one way ANOVA results for both cohesion and adaptability.

The results of the Scheffe procedure for cohesion indicate that there were significant differences in stress symptoms between groups ($F(3,398) = 5.64$, $p < 0.001$). The analysis showed that those with high scores on cohesion experienced fewer stress symptoms while those who scored low on cohesion experienced more stress symptoms. These differences were significant between group 1 and group 3 and 4 at the 0.05 level.

The results for adaptability indicate that there were no significant differences in stress symptoms between groups ($F(3,333) = 0.62$, $p > 0.05$). There was no consistent pattern and little variance on stress symptoms between the groups for adaptability.

These results indicate that the cohesion sub-scale is a linear indicator of family functioning, with higher scores indicating better functioning as indicated by fewer stress symptoms. The results for the adaptability sub-scale are less conclusive. They demonstrate neither a curvilinear or linear trend.

Table 1

**One way ANOVA using cohesion and adaptability as independent variables
and individual symptoms of stress as dependent variable**

A D A P T A B I L I T Y		C O H E S I O N	
	Individual Symptoms of Stress (mean scores)		Individual Symptoms of Stress (mean scores)
Group 1 (10-19)	14.87	Group 1 (10-34)	17.88
Group 2 (20-24)	15.95	Group 2 (35-40)	16.15
Group 3 (25-28)	16.97	Group 3 (41-45)	13.11a
Group 4 (29-50)	15.25	Group 4 (46-50)	12.31a
F = 0.624 NS		F = 5.64, $p < 0.001$ a = group is significantly different from Group 1 at 0.05 level	

Multiple Regression Results For Symptoms of Stress

Since the cohesion sub-scale was a linear measure, multiple regression procedures were used to explore the relationship between potential stress and stress symptoms. To first get a general impression of the relationships between cohesion, adaptability, potential stressors and stress symptoms, Pearsons correlations were calculated.

Table 2 presents these correlations. The results show that the cohesion sub-scale is correlated significantly with all the instruments (FILE $r = -0.17$, $p < 0.01$, Adapt $r = 0.21$, $p < 0.01$, and Stressym $r = -0.22$, $p < 0.01$). These results suggest that as cohesion increases, there is a decrease in life events (FILE) and stress symptoms (Stressym). Adaptability was significantly correlated only to cohesion suggesting that as cohesion increases, adaptability also increases. FILE and Stressym were significantly correlated ($r = 0.49$, $p < 0.01$) suggesting that as life events increase stress symptoms also increase.

A hierarchical multiple regression procedure was used to further test these relationships. The independent variables were life events (FILE),

Table 2**Correlations between measurements**

	FILE	Cohesion	Adaptability	Stressym
FILE	---	-0.17*	0.08	0.49*
Cohesion		---	0.21*	-0.22*
Adaptability			---	0.03
Stressym				---

* p < 0.01

cohesion, adaptability, cohxlife and adxlife while stress symptoms (stressym) is the dependent variable. The variables cohxlife and adxlife are the interaction of life events with both adaptability and cohesion, respectively. We chose to use the multiplicative model because the prediction of symptoms of stress in relationship to life events may depend on the level of family functioning. The level of cohesion may effect how the life events are viewed and thus the amount of stress symptoms that will be experienced.

A forced entry procedure entering FILE, cohesion, adaptability, and then their interactions was used to explore their contribution to the amount of variance accounted for while controlling for all other independent variables. The FILE measures showed the greatest change in R^2 (0.26) and accounted for most of the variance, 26.3%. Cohesion, which accounted for about 1.0% of the variance, did provide a significant change in R^2 (0.009). Finally, the interaction of life events (LIFE) and adaptability (ADXLIFE) accounted for 0.87% of the variance, and created a significant change in the amount of variance accounted for by the model ($R^2 = 0.0087$). Adaptability and the interaction of

cohesion and LIFE (COHXLIFE) accounted for very little variance and therefore were not significant predictors of stress symptoms.

Table 3 presents the result of the Full Model. The most significant predictors were FILE (Beta = 0.54, $p < 0.001$) and cohesion (Beta = -0.21, $p < 0.05$) and the interaction between adaptability and FILE, (Beta = -0.45, $p < 0.05$). This suggests that cohesion and FILE are good predictors of stress and that the interaction between adaptability and FILE may be a predictor of stress.

The final test performed was a stepwise regression procedure, where those measures that contribute least to the explained variance are removed. Table 3 presents the results after the step-wise procedure. The most significant predictors of stress were again FILE ($F = 109.7$, $p < 0.001$) and cohesion ($F = 4.2$, $p < 0.05$), accounting for 27.3% of the variance in stress symptoms. This suggests that family cohesion is a mediating factor in the relationship between potential stressors and experienced stress symptoms. However, the interaction of adapt. and life events was dropped during the stepwise regression suggesting that

Table 3

Multiple Regression Using FILE FACES III and their Interaction to Predict Symptoms of Stress, with Full Model and Stepwise Results

Variable	FULL MODEL				STEPWISE	
	r	β	F	R ² Change	β	F
FILE	0.51	0.54	4.2*	0.26***	0.496	109.7***
Cohesion	-0.18	-0.21	5.3*	0.009*	-0.097	4.2*
Adaptability	0.02	0.17	3.8	0.0001	-	-
COHXLIFE	0.46	0.35	1.9	0.001	-	-
ADXLIFE	0.45	-0.45	4.0*	0.0087*	-	-

* p < 0.05	Total R ² = 0.283	R ² = 0.273
** p < 0.01	F (5,331) = 26.15	F (2,334) = 62.74
*** p < 0.001	p < 0.001	p < 0.001

this interaction is not a significant mediating factor for stress symptoms. The interaction of adaptability and life events was dropped in the step-wise regression suggesting that the interaction is not a mediating factor for stress symptoms.

DISCUSSION

The first finding of this study tends to support the newer argument that FACES III is a linear measure, at least for the sub-scale that measures cohesion. Those persons with high cohesion scores, experienced fewer stress symptoms, while those who had low cohesion scores, experienced more stress symptoms. There was not enough evidence to support either linearity or curvilinearity for the adaptability scale.

These results support other findings presented on FACES III (Green, et al., 1991, & Olson, 1991). Green and colleagues (1991) examined 2440 males from the Virginia National Guard. As with these findings, Green failed to confirm the predicted curvilinear relationship of cohesion and adaptability with respect to family functioning. As with our study, the FACES III adaptability sub-scale was found to be unrelated to measures of family well-being; balanced families were

no more likely than mid-range or even extreme families to receive high scores on the well-being measures. However, the cohesion sub-scale was related to these measures of family well-being in a linear manner (Green, et al., 1990).

The second part of this research examined FACES III as it relates to potential stressors and experienced stress, a seldom explored area. McCubbin and Patterson (1982) noted that normal life events such as parenthood, death, retirement, etc., have an impact on the family which causes it to either produce or has the potential to produce necessary changes in the family social system. Tension arises as these life events occur calling the family to manage these stressors. When this tension is not overcome, stress symptoms emerge. This stress has the potential to pull the family together, move the family to a higher order of functioning and effectiveness or to tear the family apart. How the family reacts to this stress depends on the resources available to the family for meeting the demands of these stressor events and the family's ability to prevent a stressor event from becoming a crisis (McCubbin & Patterson, 1983; McCubbin & Boss,

1980; Antonovsky, 1979; Burr, 1973).

Competent families have been found to have high levels of cohesion, be open to communication from within and outside the family and capable of dealing with tension rather than attempting to maintain a tension-free environment (Hansen & Hill, 1964; Hill, 1965). Other studies have found that individual members within a competent family expect that most encounters with people will be positive and they are respectful of others views and feelings. They tend to show initiative and energy when responding to stress (Lewis, Beavers, Gossett & Phillips, 1976).

How is it that some families can cope with normal stressor events while others cannot? A family's ability to cope with these normative stressors is related to family happiness and comfort, along with the family's ability to deal with mounting stress in a spirit of teamwork and cooperation, mutual need-meeting and support. For those families who are dysfunctional, there exists greater conflict and a cycle of destructive reactions that has the potential to destroy the family (McCubbin & Figley, 1983).

The second finding of this study supported these

conceptualizations of stress and family dynamics. Potentially stressful events and cohesion were significant predictors of individual symptoms of stress. The results demonstrated that individuals in families perceived to have high cohesion scores going through normal life events and stressors tend to experience fewer individual symptoms of stress than those with lower cohesion scores.

Limitations and Implications

The limitations of this study include a sample limited to males only, using a self report questionnaire. Also, the measure of individual symptoms of stress was newly developed and there were no opportunities for validation.

The implications of these findings indicate that the adaptability sub-scale of FACES III should not be used as a family assessment tool to determine family functioning and well-being. This study failed to find evidence that adaptability is a valid indicator of a family's reaction to and handling of stressful events. However, the cohesion sub-scale may be a useful linear measure of family functioning. The consistent linear correlations of the cohesion sub-scale indicate that it

may be an adequate indicator of family functioning and well-being.

This study indicates that when a family has a high level of cohesion, there are fewer symptoms of stress experienced. Thus for clinicians, it then becomes important to assess the level of cohesion in the family. After assessment, if the family has low levels of cohesion, the clinicians can create strategies to enhance the family's cohesion. So that as stressor events occur, the family has the resources to deal with the stressors and avoid becoming dysfunctional. Cohesion may be a resource that, once developed or enhanced, may help the family to cope better during normative stressful events. With this resource, the family may gain some sense of control and be better able to handle these normative stressor events, keeping the family from experiencing the "pile up" effect of stressors and feeling overwhelmed.

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Appendix A

Instruments Used

SECTION I: FOR ALL PILOTS**A. Demographics**

Please answer the following demographics questions. When answering a multiple choice question, please enter the corresponding number which is shown in parenthesis next to the answer.

SAMPLE QUESTION

For example, if you are 42 years old, your answer to the following sample question should look like this:

 2 4. What is your Age: Under 30 (0)
 31 - 40 (1)
 41 - 50 (2)
 51 - 60 (3)
 Over 60 (4)

 ___ 1. What is your sex? Male (0) Female (1)

___ 2. What is your age? Under 30 (0)
 31 - 40 (1)
 41 - 50 (2)
 51 - 60 (3)
 Over 60 (4)

___ 3. What is the highest level of academic education you have completed?

High school (0)	Post graduate credits (3)
1-3 years college (1)	Masters degree (4)
Bachelors degree (2)	Post masters degree (5)

___ 4. What is your present marital status?

Single, never married (0)
 First marriage (1)
 Remarried (2)
 Cohabiting as husband & wife but not married (3)
 Separated (4)
 Divorced (5)

___ 5. If remarried, please enter the number of times married.

- ___ 6. If married, please enter the number of years you have been married to your present spouse.
- ___ 7. Please enter the number of dependents.
- ___ 8. Please enter the age of your oldest child.
- ___ 9. Please enter the age of your youngest child.
- ___ 10. Please enter your present flight status:
2nd Officer (0) 1st Officer (1)
Captain (2) Other (3)
- ___ 11. Please enter the number which corresponds to the name of your present employer:
Eastern (0) Piedmont (1)
USAir (2) Other (3) Please Specify:___
- ___ 12. Enter the number of years you have worked for your present employer.
- ___ 13. If you have worked for your present employer for less than 18 months, please enter the name of your previous employer/carrier.
- ___ 14. What is your current airline domicile? _____
- ___ 15. In what state does your family reside? _____
- ___ 16. Please enter the number of years you have remaining before retirement.
- ___ 17. Please enter the number of years you have flown in your present flight crew status.
- ___ 18. What is the percent of total family income derived from your airline job?
Less than 25% (0)
25% - 49% (1)
50% - 74% (2)
75% - 99% (3)
100% (4)

Symptoms of Stress Scale

Please indicate about how often, in the past few weeks, you have experienced the following. Please circle the number below answer.

	Almost Never	Once in Awhile	Some- times	Fre- quently	Almost Always
1. Feeling hope- less about the future	0	1	2	3	4
2. Irritability	0	1	2	3	4
3. Excessive anger	0	1	2	3	4
4. Inability to concentrate	0	1	2	3	4
5. Decreased attention	0	1	2	3	4
6. Accident proneness	0	1	2	3	4
7. fatigue, low energy, loss of "joie de vivre"	0	1	2	3	4
8. Trouble getting to sleep or staying asleep	0	1	2	3	4
9. Migraine headaches	0	1	2	3	4
10. Feeling like a pressure cooker about to explode	0	1	2	3	4
11. Having "no feeling" in emotional situations	0	1	2	3	4
12. Decreased en- joyment or interest in sex	0	1	2	3	4

	Almost Never	Once in Awhile	Some- times	Fre- quently	Almost Always
13. Procras- tination	0	1	2	3	4
14. General dis- satisfaction	0	1	2	3	4
15. Not going to work, not coming home	0	1	2	3	4
16. Feeling lonely	0	1	2	3	4
17. Crying easily or feeling like crying	0	1	2	3	4
18. Having a pessimistic attitude	0	1	2	3	4

Family Inventory of Life Events and Changes

The following list of family life changes can happen in a family at any time. "Family" means a group of two or more people living together who are related by blood, marriage or adoption. This includes persons who lives with you and to whom you have a long term commitment.

DIRECTIONS

Please read each family life change and decide whether it happened to any member of your family -- including you.

First, decide if it happened any time during the last year and check YES or NO. (If no change, or statement doesn't apply to your family, check No.)

Second, for some family changes decide if it happened more than a year ago and check YES or NO. It is okay to check YES twice if it happened both times -- during the past year or more than a year ago.

FAMILY LIFE CHANGES	DID THE CHANGE HAPPEN IN YOUR FAMILY?			
	Within the Past Year		More Than A Year Ago	
	YES	NO	YES	NO
1. Increase of husband/fathers time away from family	(a)___	(b)___	(c)___	(d)___
2. Increase of wife/mothers time away from family	(a)___	(b)___	(c)___	(d)___
3. A member appears to have emotional problems	(a)___	(b)___	(c)___	(d)___
4. A member appears to depend on alcohol or drugs	(a)___	(b)___	(c)___	(d)___
5. Increase in conflict between husband and wife	(a)___	(b)___		
6. Increase in arguments between parent(s) and child(ren)	(a)___	(b)___		
7. Increase in conflict among children in the family	(a)___	(b)___		

FAMILY LIFE CHANGES	DID THE CHANGE HAPPEN IN YOUR FAMILY?			
	Within the Past Year		More Than A Year Ago	
	YES	NO	YES	NO
8. Increased difficulty in managing teenage children	(a)___	(b)___		
9. Increased difficulty in managing preschool age child(ren) (6-12 yrs.)	(a)___	(b)___		
10. Increased difficulty in managing preschool age child(ren) (2-1/2-6 yrs)	(a)___	(b)___		
11. Increased difficulty in managing toddler(s) (1-2-1/2 yrs.)	(a)___	(b)___		
12. Increased difficulty in managing infant(s) (0-1 yrs.)	(a)___	(b)___		
13. Increased in the amount of "outside activities" which child(ren) are involved in	(a)___	(b)___		
14. Increased disagreement about a member's friends or activities	(a)___	(b)___		
15. Increased in the number of problems or issues which don't get resolved	(a)___	(b)___		
16. Increase in the number of tasks or chores which don't get done	(a)___	(b)___		
17. Increased conflict with in-laws or relatives	(a)___	(b)___		
18. Spouse/parent was separated or divorced	(a)___	(b)___	(c)___	(d)___

FAMILY LIFE CHANGES	DID THE CHANGE HAPPEN IN YOUR FAMILY?			
	Within		More Than	
	the Past Year		A Year Ago	
	YES	NO	YES	NO
19. Spouse/parent has an "affair"	(a)___	(b)___	(c)___	(d)___
20. Increased difficulty in resolving issues with a "former" or separated spouse	(a)___	(b)___		
21. Increased difficulty with sexual relationship between husband and wife	(a)___	(b)___		
22. Spouse had unwanted or difficult pregnancy	(a)___	(b)___	(c)___	(d)___
23. An unmarried family member got pregnant	(a)___	(b)___	(c)___	(d)___
24. A family member had an abortion	(a)___	(b)___	(c)___	(d)___
25. A family member gave birth to or adopted a child	(a)___	(b)___	(c)___	(d)___
26. Took out a loan or re-financed a loan to cover increased expenses	(a)___	(b)___	(c)___	(d)___
27. Went on welfare	(a)___	(b)___	(c)___	(d)___
28. Change in conditions (economical, political, weather) which hurts family business	(a)___	(b)___	(c)___	(d)___
29. Change in Agriculture Market Stock Market, or Land Values which hurts family investments and/or income	(a)___	(b)___	(c)___	(d)___
30. A member started a new business	(a)___	(b)___	(c)___	(d)___

FAMILY LIFE CHANGES	DID THE CHANGE HAPPEN IN YOUR FAMILY?			
	Within		More Than	
	the Past Year		A Year Ago	
	YES	NO	YES	NO
31. Purchased or built a house	(a)___	(b)___	(c)___	(d)___
32. A member purchased a car or other major item	(a)___	(b)___		
33. Increasing financial debts due to ever-use of credit cards	(a)___	(b)___		
34. Increased strain on family "money" for medical/dental expenses	(a)___	(b)___		
35. Increased strain on family "money" for food, clothing, energy, home care	(a)___	(b)___		
36. Increased strain on family "money" for child(ren)'s education	(a)___	(b)___		
37. Delay in receiving child support or alimony payments	(a)___	(b)___		
38. A member changed to a new job/career	(a)___	(b)___	(c)___	(d)___
39. A member lost or quit a job	(a)___	(b)___	(c)___	(d)___
40. A member retired from work	(a)___	(b)___	(c)___	(d)___
41. A member started or returned to work	(a)___	(b)___	(c)___	(d)___
42. A member stopped working for extended period (e. g., laid off, leave of absence, strike)	(a)___	(b)___		

FAMILY LIFE CHANGES	DID THE CHANGE HAPPEN IN YOUR FAMILY?			
	Within the Past Year		More Than A Year Ago	
	YES	NO	YES	NO
43. Decrease in satisfaction with job/career	(a)___	(b)___		
44. A member had increased diffi- culty with people at work	(a)___	(b)___		
45. A member was promoted at work or given more responsibility	(a)___	(b)___		
46. Family moved to a new home/ apartment	(a)___	(b)___		
47. A child/adolescent member changed to a new school	(a)___	(b)___		
48. Parent/spouse became seriously ill or injured	(a)___	(b)___	(c)___	(d)___
49. Child became seriously ill or injured	(a)___	(b)___	(c)___	(d)___
50. Close relative or friend of family became seriously ill	(a)___	(b)___	(c)___	(d)___
51. A member became physically dis- abled or chronically ill	(a)___	(b)___	(c)___	(d)___
52. Increased difficulty in managing a chronically ill or disabled member	(a)___	(b)___	(c)___	(d)___
53. Member or close relative was committed to an institution or nursing home	(a)___	(b)___	(c)___	(d)___
54. Increased responsibility to provide direct care or finan- cial help to husband's and/ or wife's parent(s)	(a)___	(b)___		

FAMILY LIFE CHANGES	DID THE CHANGE HAPPEN IN YOUR FAMILY?			
	Within		More Than	
	the Past Year		A Year Ago	
	YES	NO	YES	NO
55. Experienced difficulty in arranging for satisfactory child care	(a)___	(b)___		
56. A parent/spouse died	(a)___	(b)___	(c)___	(d)___
57. A child member died	(a)___	(b)___	(c)___	(d)___
58. Death of husband's or wife's parent or close relative	(a)___	(b)___	(c)___	(d)___
59. Close friend of family died	(a)___	(b)___	(c)___	(d)___
60. Married son or daughter was separated or divorced	(a)___	(b)___	(c)___	(d)___
61. A member "broke up" a relationship with a close friend	(a)___	(b)___		
62. A member was married	(a)___	(b)___		
63. Young adult member left home	(a)___	(b)___		
64. A young adult member began college (or post high school training)	(a)___	(b)___		
65. A member moved back home or a new person moved into household	(a)___	(b)___		
66. A parent/spouse started school (or training program) after being away from school for a long time	(a)___	(b)___		
67. A member went to jail or juvenile detention	(a)___	(b)___	(c)___	(d)___
68. A member was picked up by police or arrested	(a)___	(b)___	(c)___	(d)___

FAMILY LIFE CHANGES	DID THE CHANGE HAPPEN IN YOUR FAMILY?			
	Within		More Than	
	the Past Year		A Year Ago	
	YES	NO	YES	NO
69. Physical or sexual abuse or violence in the home	(a)____	(b)____	(c)____	(d)____
70. A member ran away from home	(a)____	(b)____	(c)____	(d)____
71. A member dropped out of school or was suspended from school	(a)____	(b)____		

Family Adaptability and Cohesion Scale

Using the following numbers, please describe your family now:

1 = ALMOST NEVER

2 = ONCE IN A WHILE

3 = SOMETIMES

4 = FREQUENTLY

5 = ALMOST ALWAYS

- ___ 1. Family members ask each other for help.
- ___ 2. In solving problems, the children's suggestions are followed.
- ___ 3. We approve of each other's friends.
- ___ 4. Children have a say in their discipline.
- ___ 5. We like to do things with just our immediate family.
- ___ 6. Different persons act as leaders in our family.
- ___ 7. Family members feel closer to other family members than to people outside the family.
- ___ 8. Our family changes its way of handling tasks.
- ___ 9. Family members like to spend free time with each other.
- ___ 10. Parent(s) and children discuss punishment together.
- ___ 11. Family members feel very close to each other.
- ___ 12. The children make the decisions in our family.
- ___ 13. When our family gets together for activities, everybody is present.
- ___ 14. Rules change in our family.
- ___ 15. We can easily think of things to do together as a family.

1 = ALMOST NEVER

2 = ONCE IN A WHILE

3 = SOMETIMES

4 = FREQUENTLY

5 = ALMOST ALWAYS

- ___ 16. We shift household responsibilities from person to person.
- ___ 17. Family members consult other family members on their decisions.
- ___ 18. It is hard to identify the leader(s) in our family.
- ___ 19. Family togetherness is very important.
- ___ 20. It is hard to tell who does which household chores.

VITA

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EDUCATION

- 1987 **Virginia Polytechnic Institute and State University, Blacksburg, VA.**
B.S. in Psychology and B.A. in Chemistry.
- 1992 **Virginia Polytechnic Institute and State University, Northern Virginia Graduate Center, Falls Church, VA.**
Master of Science in Family and Child Development/Marriage and Family Therapy.

PROFESSIONAL EXPERIENCE

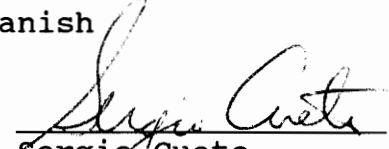
- 1992 **Juvenile Justice for Hispanics**
Social Worker working with first offender Hispanic juveniles, doing family assessments and identifying any needs the family may have, direct the family to services available and assess if delinquent youth is appropriate for Alternative Community Services.
- 1992 **City of Alexandria**
Co-facilitator of a Domestic Violence group for Hispanics. Duties were to have group recognize and deal with their anger in more constructive and non-violent ways.
- 1990- **Center for Family Services at Virginia Polytechnic Institute and State University**
Intern therapist handling families, couples, and individuals both in Spanish and English.
- 1991-92 **Center for Family Services**
Community liaison between the Center and minority groups, especially Latin Americans.

- 1990-91 **Bishop Dennis O'Connell High School**
Chemistry teacher working with those
students with special needs.
- 1989-90 **Virginia Polytechnic Institute and State**
University, Falls Church, Virginia
Graduate assistant, Department of Family and
Child Development. Duties included office
management of records, intakes, and in
charge of minority recruitment.
- 1989 **Open Door Shelter, Montgomery County,**
Maryland
Counselor in charge of 6 adolescents in
crisis situation, offering intense
individual, group and family counseling.
- 1987 **Virginia Polytechnic Institute and State**
University, Blacksburg, Virginia
Research assistant for the department of
Psychology. Leadership role given in
research dealing with assessing coping of
children in crisis situations.

Professional Memberships

Student member, American Association of
Marriage and Family Therapy

LANGUAGES: Fluent in English and Spanish


Sergio Cueto