Understanding Family Dynamics in a Cross-Cultural Sample: A Multinational Study

Abstract

The Family Systems Circumplex Model posits that balanced levels of cohesion and adaptability are associated with positive familial outcomes, whereas extremely high or low levels of these factors are associated with deleterious outcomes. Despite the popularity and utility of this model in Western cultures, there is a dearth of empirical data supporting its use in more culturally diverse contexts. The current, preregistered study assessed the Family Circumplex Model, cultural factors, and emerging adult outcomes across seven countries (i.e., China, Iran, Nigeria, Switzerland, Turkey, the United Kingdom, and the United States). Participants were $N = 3,593$ emerging adults, mostly self-identifying as women (71.3%). Collaborators were participants in Psi Chi's Network for International Collaborative Exchange (NICE) and administered measures related to family dynamics and cultural orientation to participants in a random order. Results indicated that the Family Circumplex Model did not fit cross-culturally. As such, a new model was adapted, the Expanded Circumplex Model, which demonstrated invariance across samples and between women and men. The Expanded Circumplex Model retained 6 constructs with differences regarding the separation of disengagement into 2 variables and the combining of adaptive flexibility and cohesion. The current study suggests that the cultural context in which family dynamics occur should be taken into consideration when conceptualizing family dynamics theory and measurement. Future work should seek to replicate and further apply the Expanded Circumplex Model to familial outcomes.

Keywords: Family Circumplex Model, family dynamics, open science, cross-cultural psychology

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Families look and function differently, and these differences must be considered across

the lifespan. Some individuals come from single-parent family structures, from homes with high

levels of communication and warmth, or homes with high levels of conflict and stress. Family

structures and dynamics have been shown to influence behavioral outcomes among adults such

as risky sexual behavior or substance use (Oliveira et al., 2020). Hence, it is not surprising that examination of family structures and dynamics is an important component in understanding psychopathology, behavioral etiology, and targets of intervention (Härkönen et al., 2017). What continues to need clarification, however, is how these structured interventions may vary between different cultures and contexts. Indeed, due to the high clinical relevance of family dynamics, it is desirable that empirical results be generalizable to other contexts within and across countries.

Despite years of research, however, there has been mixed success in validating models of family structure cross-culturally (e.g., Rada & Olson, 2016; Turkdogan et al., 2019; Pirutinsky & Kor, 2023). Although cross-cultural research on attachment has been conducted applying the widely used Circumplex Model of Family Dynamics (e.g., van Ijzendoorn & Sagi-Schwartz, 2008), which postulates that developmental outcomes are relevant to cohesion and adaptability within family structures, this body of work has found mixed results in cross-cultural samples (Pirutinsky & Kor, 2013; Yi, 2009). To illustrate, Pirutinsky and Kor (2013) observed that the Circumplex Model did not appropriately describe the family dynamics of Orthodox Jews in Israel. Ultimately, outcomes in this sample were better explained by a model including cohesion-adaptability, enmeshment, chaos, and disengagement (a four-factor structure) than the original model structured around cohesion and adaptability (two factors).

Furthermore, research on parenting styles suggests different mental health outcomes by regions within the United States, as well as across different countries (Lansford, 2010; McKinney & Brown, 2017; Sorkhabi, 2005). This suggests that aspects of the parent–child relationship, including conflict, cohesion, discipline, communication, and warmth, vary by ecological context (Sorkhabi & Mandara, 2013; Szapocznik & Kurtines, 1993). A person's individual experience is likely influenced by their environment (e.g., norms, expectations,

culture). Thus, children in different environments are likely to perceive family dynamics and

parent behaviors differently, and therefore, may experience different psychological outcomes

(Lerner & Kauffman, 1985; McKinney & Brown, 2017).

Another factor hindering the generalization of family research is bias in sample selection.

Family interventions and policies have been potentially biased by an overreliance on research

involving Western, Educated, Industrialized, Rich, and Democratic (WEIRD) populations, as

well as a focus on White persons within WEIRD countries (Ards et al., 1998; Pelton, 2015; for

more information on WEIRD populations see Henrich et al., 2010; Olson et al., 2019).

Furthermore, recent research has indicated that the largest growing populations are in Africa and

the Middle East, yet these populations are most often left out of research, thus indicating a

greater need for research including participants from these areas (United Nations, 2019).

Family Circumplex Model

Developed in Western contexts, the Family Circumplex Model is a foundational model in

family research that proposes that family systems, style of interaction, and structure affect the

development and mental health of individuals within the system (Olson, 2000; Olson et al., 1979;

Olson et al., 2019). The two major components of this model are cohesion and adaptability. The

first component, cohesion, is defined by the level of closeness between family members, loyalty,

and level of dependence on one another. Cohesion ranges from disengaged (e.g., family

members spending little to no time together or actively avoiding one another) to enmeshed (e.g.,

family members spending the majority of their time together and depending on one another

highly). The second component, adaptability, includes whether leadership is shared in the family

(e.g., authoritarian leadership in rigid families), the types of discipline used (e.g., inconsistent

discipline in chaotic families), role change (e.g., roles change as children age in adaptable

families), and change to dynamics under external stress (e.g., structured families change when demanded). Significant research has found success validating the Circumplex Model in European contexts (e.g., Everri et al., 2020; Vegas et al., 2022) and, with necessary revision, in African or Middle Eastern contexts (Megersa & Tefera, 2022; Sarour & El Keshky, 2022; Turkdogan et al., 2019). Research regarding the Family Circumplex Model has generally supported that children have the most positive outcomes when families have high cohesion, characterized by strong bonds with some autonomy, and high adaptability, characterized by the ability to share roles and leadership and change dynamics somewhat when under duress (Gomes & Gouveia-Pereira, 2020; Kouneski, 2002). Further, balanced family systems are thought to have good communication (i.e., members actively listen to others and only speak for themselves) while unbalanced systems have poor communication (i.e., speaking for others, inappropriate self-disclosure, lack of active listening; Dunst, 2021; Kouneski, 2002).

Although an abundance of research has suggested that less optimal family dynamics are associated with negative outcomes, multiple studies demonstrated mixed findings regarding the measurement of family dynamics as well as outcomes across cultures (Olson et al., 2019). The Family Circumplex Model's foundation is grounded in Westernized values of individualism and autonomy, which might not promote optimal outcomes across all cultures or contexts (Kouneski, 2002; Pirutinsky & Kor, 2013). Pirutinsky and Kor (2013) suggested that assumptions made by the Family Circumplex Model may require adjustment in cross-cultural samples to better generalize to family functioning in nonwesternized samples, and Olson (2000) also suggested that family outcomes would vary based on family member satisfaction within the dynamic. More specifically, Olson (2000) discussed the likelihood that ethnic and cultural considerations would change what was considered functional within a family system, and that interpretation by

clinicians should be guided by this understanding (Gorall & Olson, 1995). Furthermore, the most recent version of the self-report questionnaire assessing this model also incorporates satisfaction, as Olson (2011) suggested that individual perception may impact relevant outcomes. Understanding that cultural context changes how family dynamics influence future behaviors is central to understanding how to measure and generalize the Circumplex Model across contexts.

Cross-Cultural Family Dynamics

Because the family unit is an important system for human development, it is imperative to consider the continuum of collectivist and individualistic values that affect the way individuals perceive themselves within family systems. Collectivism values group-oriented priorities over individual needs and highlights societal values, whereas individualism prioritizes individuality, autonomy, and agency over the values of their systems (Schwartz et al., 2012). Thus, family cohesion may be different in a collectivist society where individualism and autonomy may be less valued. Indeed, positive life outcomes may be promoted in collectivist societies through more rigid family dynamics and the presence of filial piety (Chen, 2014). Similarly, values of conservatism and authoritarianism in certain regions of the United States may promote respect for authority figures, such as family elders (McKinney & Brown, 2017). These societal factors and values may play important roles in understanding the family system and potential associated outcomes of children in these families.

An empirical study conducted in Turkey, mainly a collectivistic and relational culture (Kağıtçıbaşı, 2007), showed that parental overprotection and guilt induction are positively related to perceived parental warmth and not associated with attachment insecurity among Turkish school children (Sümer & Kağıtçıbaşı, 2010). Additionally, some emerging adult children may be satisfied with lower or higher frequency of supportive behaviors. Thus, the level

of cohesion that children report may be impacted by how much and what type of support they receive from their parents (Furman & Buhrmester, 1992). The construct of cohesion may change based on cultural values and how those values impact children's perceptions of their parents' behaviors. Olson has also suggested renorming of cohesion when evaluating the validity of the model (Olson et al., 2019). Moreover, research has suggested that families with different cultural backgrounds and unique circumstances (e.g., cancer diagnosis) may have cohesion, but still require intervention (Yi, 2009).

Current Study

The current study assessed the Family Circumplex Model to determine validity across samples with varying cultures and demographics. The current study used multigroup analysis to determine differences and similarities in family dynamics across regions within the United States, and between countries outside of the United States, and focused on culture, location, and gender. A preregistration template detailing all methods, measures, hypotheses, and planned analyses was completed prior to data collection.

Hypothesis 1 stated that the Circumplex Model would be validated in individual samples from more Westernized regions and cultures (e.g., Northeastern and Midwestern regions of the U.S., Switzerland, and the United Kingdom), but that it would have poorer model fit for less westernized samples (e.g., Iran, Nigeria). Given that this hypothesis was somewhat exploratory, and the few international studies to date, we anticipated that exploratory factor analysis would be required if the theoretical model fit was poor (e.g., Pirutinksy & Kor, 2013). Thus, Hypothesis 2 stated that exploratory factor analysis may reveal a model that better fits samples with poorer model fit from Hypothesis 1.

Method

Procedure

Collaborators were invited to collect online survey data of their institution's students through Psi Chi's Network for International Collaborative Exchange (NICE): Crowd, crowd-sourced project (Cuccolo et al., 2021; see also: https://osf.io/4ct72/). Collaborators voluntarily signed up if they were interested in the project and did so in exchange for shared crowd-sourced data upon completion, as well as authorship on the main publication. Collaborators at each site completed their own Institutional Review Board protocol housed under their own institution, with the indication that aggregate anonymous data would be shared upon completion of data collection. All data collections were conducted anonymously online with some completed through undergraduate psychology participant pools, some through voluntary participation, and others through paid participation. Qualtrics was used for almost all data collections, with several sites using Google Forms or Unipark when Qualtrics was not supported at the collaborator's institution. The study's seven measures assessed demographics (including an assessment of socioeconomic status, SES) as well as family dynamics, filial piety, cultural orientation, emerging adulthood adjustment, substance use, and risky sexual behaviors. Questionnaires were presented in randomized order to participants, who were asked to respond based on current perceptions of current family interactions. Measures were piloted in countries where English was not the first language to determine if translation was necessary. After piloting, it was only necessary to translate measures into German, Persian, and Turkish. Measures were translated and back-translated using standard practice (e.g., Chapman & Carter, 1979).

Participants

Each collaborator obtained at least 100 participants, resulting in data collection from emerging adults at 18 sites across the United States (see Table 1) and six sites outside the United

States located in China, Nigeria, Switzerland, Iran, Turkey, and the United Kingdom ($N = 3593$).

Participants ranged in age from 18 to 63 ($M = 20.31$, $SD = 4.14$) with the most indicating their

gender as women (71.3%) and the remaining reporting men (27.9%) and nonbinary (0.4%).

Participants in the United States reported racial backgrounds of White (59.1%), Black (12.3%),

Hispanic (10.1%), Asian (11.9%), Native American (0.8%), Native Hawaiian (0.9%), and Other

(4.2%). Participants reported that 11.6% of fathers and 10.4% of mothers completed education

lower than a primary education degree or high school equivalent, 35.7% of fathers and 29.4% of

mothers completed a primary education degree or high school equivalent, 12.3% of fathers and

15.3% of mothers completed a 2-year higher education degree, 24.6% of fathers and 27.9% of

mothers completed a four-year degree, and 15.8% of fathers and 17.0% of mothers completed a

graduate degree.

Measures

Family Circumplex Model

The Family Adaptability and Cohesion Scale (FACES-IV; Olson, 2011) is a 42-item

measure that assesses adaptability and cohesion dimensions of family dynamics on a 5-point

scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Six subscales include Balanced Cohesion

(e.g., Family members are involved in each other's lives), Balanced Adaptability (e.g., Discipline

is fair in our family), Disengaged (e.g., Our family seldom depend on each other), Enmeshed

(e.g., We spend too much time together), Rigid (e.g., Our family is highly organized), and

Chaotic (e.g., Things do not get done in our family). Published studies validating FACES

included samples from North America and Europe and consistently demonstrated good internal

reliability with Cronbach's alpha scores ranging from .75 to .89 (Olson, 2011). The FACES has

also been used in China ($\alpha = .74$; Ye et. al., 2019) and Korea ($\alpha = .76$–.89; Lee et al., 2010), as

well as with Asian Americans (Cheung & Park, 2010). Alphas for the current study ranged from .77 to .87.

Cultural Orientation

The Culture Orientation Scale (Triandis & Gelfand, 1998) is a 16-item measure that assesses four dimensions of cultural orientation on a 9-point scale ranging from 1 (*never or definitely no*) to 9 (*always or definitely yes*). Four subscales include Vertical Collectivism (e.g., Family members should stick together, no matter what sacrifices are required), Vertical Individualism (e.g., Winning is everything), Horizontal Collectivism (e.g., If a coworker gets a prize, I would feel proud), and Horizontal Individualism (e.g., I rely on myself most of the time; I rarely rely on others). Multiple studies have indicated good convergent and discriminant validity with similar measures with alphas ranging from .62 to .80 (Triandis & Gelfland, 1998). The current study created one Total Orientation scale for use in the prediction model by reverse coding the Vertical and Horizontal Individualism scales and summing them with the Collectivism scales, such that higher scores indicated higher levels of collectivism and lower scores indicated higher levels of individualism, which resulted in an alpha of .83 (Triandis & Gelfland, 1998). Furthermore, to differentiate cases by cultural orientation for use in confirmatory factor analysis model testing, cutoffs were used for scores > 72 as collectivistic and < 72 as individualistic (e.g., Cai & Fink, 2002).

Data Analytic Plan

Preliminary Analyses

A priori power analyses indicated that a sample size of 890 with a moderate correlation (*r* = .30) with β = .20 would power the analyses adequately (Byrne, 2016; Hulley et al., 2007; Kline, 2014). Cases missing greater than 5% of data were removed, resulting in a loss of *N* = 40

across variables. The 15 cases reporting non-binary gender identity were not incorporated in the metric invariance testing analyses due to the small sample size. All variables were analyzed for assumptions (i.e., linearity, normality, homoscedasticity, and multicollinearity; see Kline 2013, 2014; Tabachnik & Fidell, 2007). Stochastic regression imputation using maximum-likelihood estimates was then conducted in AMOS 26.0.

<div align="center">**Results**</div>

Structure of Family Dynamics

Hypothesis 1a

To test Hypothesis 1a, confirmatory factor analysis was conducted using six latent factors of the Circumplex Model (i.e., Cohesion, Disengaged, Enmeshment, Adaptability, Chaotic, and Rigid) indicated by loading the seven items from each subscale onto the latent variables as described across multiple studies validating the FACES-IV (Olson, 2011). Following recommendations (Hu & Bentler, 1999; Schreiber et al., 2006; Schumacker & Lomax, 2016), we used several model fit indices to examine the entire sample together. Fit indices evaluated included (a) the comparative fit index (CFI), (b) the Tucker-Lewis index (TLI), (c) the standardized root mean square residual (SRMR) with values less than .08 suggesting good fit and less than .06 better fit, and (d) the root mean square error of approximation (RMSEA) with values less than .05 indicative of excellent fit and between .08 and .05 considered good fit. To improve fit, modification indices were examined. Error terms were correlated when modification indices suggested at least a 20-point change in the chi-square parameter due to similarity of question wording. To maintain the same model used by Olson (2011), no items were deleted. Once the overall sample did not have good fit, individual samples were tested in a multilevel confirmatory factor analysis, and the same steps described above were conducted.

When the CFA failed to fit the overall and individual samples of data, in order to test Hypotheses 1b, a random half of the dataset was selected, and an exploratory factor analysis was conducted in SPSS 26.0. Maximum likelihood method of extraction was used, with a direct oblimin rotation (Costello & Osborne, 2005). The scree plot, eigenvalues, and pattern matrix were examined to determine the number of factors and items per factor (O'Connor, 2000). Items were selected for each factor if their loading was greater than .50 on the factor and less than .20 on any other factors. The other half of the dataset was then used to conduct a CFA on the new model. To achieve good model fit, modification indices were examined to delete items that cross-loaded inappropriately until the good model fit was achieved. To examine metric invariance of the new model, a multigroup analysis was then conducted with each sample as an individual group, and an additional analysis was conducted for gender. Fit indices were used to determine configural, metric, and scalar invariance across samples and gender (Putnick & Bornstein, 2016).

Hypothesis 1b

Descriptive statistics for all measures can be found in Table 2. Fit indices for each model's CFA can be found in Table 3. Confirmatory factor analysis of the Circumplex Model in the overall sample had a poor model fit before and after correlating error terms. Similarly, the Circumplex Model did not fit in any of the individual samples, neither the individualistic sample, nor the geographically western sample. An exploratory factor analysis of a random half of the sample was conducted, and the scree plot suggested models with between four and eight factors. Examination of the pattern matrix and eigenvalues determined that items on the seventh and eight factor cross-loaded and were not useful for model creation. Additionally, the fifth and sixth factors appeared to contribute a meaningful portion of the variance (i.e., > 3% each). Thus, a six-

factor model was examined with items that loaded greater than .5 on one factor and less than .2 on other factors. A CFA of the six-factor model revealed that the fit was just below adequate (i.e., CFI = .91, TLI = .89, RMSEA = .05, SRMR = .05); thus, removal of five items that had high regression weights and cross-loaded onto other items resulted in good model fit (i.e., CFI = .96, TLI = .95, RMSEA = .04, SRMR = .03). This resulted in a 19-item, six-factor measure (see Table 4).

Metric invariance was then tested using multigroup analysis for each individual sample collected. Multigroup analysis of all 18 samples (i.e., $N > 100$) revealed ΔCFI was less than .001, ΔRMSEA was less than .001, and ΔSRMR was less than .001, suggesting that metric invariance was achieved across all samples (see Table 5). Similarly, gender multigroup analysis resulted in ΔCFI less than .001, ΔRMSEA less than .001, and ΔSRMR less than .001, also suggesting metric invariance across gender of reporters (see Table 6). Thus, the constructs of the new model were similar across samples and genders reporting. The new model (i.e., Expanded Circumplex Model) consisted of six variables (see Table 4) including (a) *Cohesive Adaptability*, which is a mixture of items representing both the Olson model cohesion and adaptability constructs and suggesting overall adaptive family functioning; (b) *Chaotic Roles,* which include items from the chaotic construct that all focus on a lack of clarity of role within family; (c) *Consequences,* which includes items from Olson's rigid construct specifying clarity of consequences and strictness of consequences; (d) *Enmeshment*, which includes two of the original items from Olson's enmeshment construct; (e) *Avoidance of Family*, which includes items from Olson's disengaged construct regarding preference of spending time outside of the family; and (f) *Seldom Depend*, which also includes items from Olson's disengaged construct with items focusing more on family members seldom doing things together rather than preferring to spend time apart.

Although *Avoidance of Family* and *Seldom Depend* are conceptually similar, factor loadings

suggested that respondents did not vary their responses together if they indicated purposeful

avoidance of family contrasting to family members not requiring one another to live their daily

lives.

Discussion

The results of the current study suggest that the Circumplex Model did not achieve

adequate fit across a global sample, thus supporting Hypothesis 1. Unexpectedly, the model also

did not fit within the individual samples collected, including samples from similar regions

collected for the validation of the FACES-IV (Olson, 2011). It must also be noted that in the

validation study of the FACES-IV, no error terms were correlated in contrast to the current study

where model fit was not achieved prior to or after correlating error terms (Olson, 2011).

Furthermore, in the FACES-IV validation study, participants were recruited through college

attending university students who engaged in snowball recruitment, with the final sample

ranging in age from 18 to 59 in comparison to the current samples range from 18 to 63. A new

model was therefore created; however, it is important to note that replication is key to

determining the robustness of the Expanded Circumplex Model. Although the constructs were

relatively similar to the Circumplex Model, some notable differences exist.

Specifically, the Circumplex Model consists of six constructs on dimensions of

adaptability (i.e., Adaptability, Chaotic, and Rigid) and cohesion (i.e., Cohesion, Disengaged,

and Enmeshment). The Expanded Circumplex Model also consists of six constructs, starting with

Cohesive Adaptability which reflects both cohesion and adaptability constructs, suggestive of an

overall adaptive family functioning construct. Along the dimension of cohesion, Enmeshment

remained the same with fewer items in the new construct; however, Disengagement appeared to

be comprised of two separate constructs, one suggestive of preferring to spend time with others outside of the family (i.e., Avoidance of Family) and one suggestive of rarely spending time with family members (i.e., Seldom Depend on Family). Chaotic Adaptability became Chaotic Roles, with questions focusing on chaotic leadership in the family, whereas Rigid Adaptability became Consequences with questions focusing on strict, clear consequences for actions in the family. The final new model resulted in a 19-question survey that had good fit across the entire sample and was not significantly different within individual samples (i.e., metric invariance). Given that there is some consistency between the Expanded Circumplex Model and the Circumplex Model, global family dynamics may not be as different as expected and may not be as regionally or culturally discriminant as expected. Indeed, the newly identified model demonstrated invariance across samples of emerging adults regardless of region or culture.

Limitations

Although the sample was relatively large, diverse, and represented similar ages compared to samples used in previous validation studies (e.g., Olson, 2011), the use of a cross-sectional sample of mostly college-attending emerging adults has limitations. Furthermore, the distribution of participants from rural, urban, or suburban locations is unclear in the current study. Samples of similar age groups that are not in college may uncover family dynamics that differ from the current sample, which may influence the validation of the Circumplex Model or the new model. Furthermore, the use of samples with younger children or parent-report may further change the validation outcome for either model. The use of the FACES-IV may be a limitation such that there may be facets of family dynamics that were not addressed in the measure for our global sample, particularly with regard to language barriers. Specifically, qualitative research on family dynamics with other cultures and languages may better assist in describing the family dynamics

of other cultures than the use of an English-validated model and measure. Given that the

Circumplex Model has multiple studies that support its validation, however, it is important that

replication occurs to determine if the Expanded Circumplex Model continues to represent diverse

samples of family dynamics. Furthermore, given that certain aspects of the previous validation

studies' methodologies were not known to the current authors, it is difficult to determine if the

same analysis procedure was followed, and thus difficult to say whether the current study was

able to replicate the Circumplex Model adequately. Analytical variability has contributed to

failures to replicate in other recent large-scale collaborations (Jones et al., 2018). Additionally,

the samples collected in the current study may not reflect the samples collected in the FACES-IV

validation study, which may have resulted in a cohort effect. Finally, the inclusion of MENA and

African populations were narrow and, while demonstrating the increasing need for those

populations in foundational theory, require further broader inclusion.

Conclusions

Considering the widespread use of the Circumplex Model and the FACES-IV in clinical

applications and practice, the current study may provide some insight into its utility and

interpretation, particularly for diverse families. Regarding use of the FACES-IV, it is suggested

that interpretation should shift based on cultural and ethnic norms (Gorall & Olson, 1995; Olson

et al., 2019). In a world increasing in globalization and shifting cultural standards, the current

study confirms the need to assess cultural factors relevant to families in psychodiagnostics and

intervention targets. Some aspects of the current study results suggest unique needs for

interpretation across international families, specifically, further examination of nuanced

differences among disengagement regarding active avoidance rather than more passive

separateness. Future directions regarding clinical outcomes and implications for different cultural

or geographic backgrounds may be key to understanding the potential utility of a modified

Circumplex Model. Replication is required before a shifted model, the Expanded Circumplex

Model, is used to inform clinical practice. However, we are optimistic about the likelihood of

replication given the creation of a global model with good fit. Refinement of The Expanded

Circumplex Model may also be furthered by mixed methods (i.e., qualitative and quantitative) in

global samples. Importantly, the current study demonstrated that cross-cultural research benefits

the understanding of clinical models currently in use and further demonstrates the necessity of

inclusion of MENA and African peoples in cross-cultural research.

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