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Family Strengths, the Circumplex Model of Family Systems, and Personal and Family Functioning: A Meta-Analysis of the Relationships Among Study Measures

(Fortalezas Familiares, el Modelo Circunflejo de Sistemas Familiares y el Funcionamiento Personal y Familiar: un Metaanálisis de las Relaciones entre las Medidas del Estudio)

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Abstract

Findings from a meta-analysis of studies investigating the relationships between family strengths and personal and family well-being and functioning are reported. The research synthesis included 33 studies conducted in six countries of 8259 study participants. The Family Strengths Scale developed by David Olson and his colleagues was used to measure family strengths. The studies included five personal functioning measures (depression, loneliness, stress, well-being, & belief appraisals) and five family functioning measures (communication, cohesion, flexibility, marital satisfaction, & stress). The correlations between family strengths and personal and family functioning were used as the effect sizes for the relationships between measures. Results showed that family strengths were related to each of the personal and family functioning measures, there were no differences in the sizes of effect between either the five personal functioning or the five family functioning measures, and that the size of effect for the relationship between family strengths and family functioning was nearly twice as large as the size of effect for the relationship between family strengths and personal functioning. The findings are discussed in terms of the how family strengths are important beliefs and practices for explaining healthy personal and family functioning. Five different limitations are also described.

Keywords: Family Strengths, Personal Functioning, Family Functioning, Meta-Analysis

Resumen

Se reportan los hallazgos del meta-análisis de estudios que investigan las relaciones entre las fortalezas familiares y el bienestar y funcionamiento personal y familiar. Se incluyeron 33 estudios realizados en seis países con un total de 8259 participantes. Para medir las fortalezas familiares se utilizó la Escala de Fortalezas Familiares desarrollada por David Olson y colegas. Además, los estudios incluyeron cinco medidas de funcionamiento personal (depresión, soledad, estrés, bienestar y valoración de creencias) así como cinco medidas de funcionamiento familiar (comunicación, cohesión, flexibilidad, satisfacción marital y estrés). Las correlaciones entre fortalezas familiares y el funcionamiento personal y familiar fue utilizado con el tamaño del efecto para las relaciones entre medidas. Los resultados muestran que las fortalezas familiares se relacionaron con cada una de las medidas de funcionamiento personal y familiar, aunque no hubo diferencias significativas en los tamaños del efecto entre las cinco medidas de funcionamiento personal y las cinco medidas de funcionamiento familiar; al mismo tiempo, el tamaño del efecto para la relación entre las fortalezas familiares y el funcionamiento familiar fue cercana al doble de largo que el tamaño del efecto de la relación entre las fortalezas familiares y el funcionamiento personal. Se discuten los hallazgos en términos de la forma en que las fortalezas familiares son creencias y prácticas importantes para explicar un saludable funcionamiento personal y familiar. También se describen cinco diferentes limitaciones.

Palabras Clave: Fortalezas familiares, Funcionamiento Personal, Funcionamiento Familiar, Meta-Análisis.

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Introduction

The circumplex model of marital and family systems (Olson, 2000a; Olson & Gorall, 2003; Olson et al., 2014; Olson et al., 2019) has been widely used to investigate family and family member coping, adaptation, and functioning in families experiencing different life events or families who are at different stages in life-cycle changes (e.g., Amerikaner et al., 1994; Mendenhall et al., 1996; Munton & Reynolds, 1995; Szczesniak & Tulecka, 2020; Thomas & Ozechowski, 2000). The circumplex model includes three interrelated dimensions: cohesion, flexibility, and communication.

Cohesion includes the beliefs and behavior that characterize the emotional bonding between different family members (e.g., collective decision-making, mutual interests, time spent together, respect for family member boundaries, and family). As noted by Olson (2000a), cohesion focuses on a balance between family member togetherness and family member separateness.

Flexibility includes the beliefs and behavior that characterize the role relationships, relationship rules, negotiation styles, and amount of control family members have in terms of adapting to changing family situations. Family member flexibility focuses on a balance between stability and change in family life circumstances (Olson, 2000a). The term adaptability is used interchangeably with flexibility when describing this circumplex model dimension (e.g., Olson, 2000a; Olson & Gorall, 2003).

Communication includes the behavior, skills, and interactional patterns that facilitate positive interactions and transactions among family members (e.g., mutual respect and trust, listening skills, nonverbal communication, and communicative clarity. According to Olson (2000a), family member communication is considered a mechanism that facilitates the intersection of family cohesion and family flexibility.

Olson and his colleagues also describe several related circumplex model family concepts (e.g., Olson, 2011; Olson & Gorall, 2003; Olson et al., 2014; Olson et al., 2019) and instruments and scales (Olson et al., 2002) for measuring those family concepts. The related family concepts include parent-adolescent communication (Barnes & Olson, 1982), family communication (Olson, 2010), family stress (Olson, 2000b), family satisfaction (Olson & Willson, 1982), and family strengths (Olson et al., 1985).

Most investigations including measures of the three circumplex model dimensions and related family concepts have assessed the relationships between family cohesion, family adaptability, family communication, family stress, family satisfaction, and parent-adolescent communication (e.g., Amerikaner et al., 1994; Everri et al., 2016; Henry et al., 1996; Olson, 2011; Smith et al., 2009). Results from these studies show that the different circumplex model measures are robust predictors of different health-related outcomes (e.g., well-being, life satisfaction, marital satisfaction). The family strengths concept has received much less attention compared to the other circumplex model related family concepts.

A review by Kouneski (2000) of articles published in peer-reviewed journal articles of each of the circumplex model variables and related family concepts identified 508 studies. The review included articles published between 1977 and 1999. The majority of articles (83%) focused on family adaptability and cohesion (Olson, 1985, 2010). The least described or investigated variable was family strengths (3.5% of the studies). The same search for articles published in peer-reviewed journals between 2000 and 2020 identified 1,218 papers. The majority of articles (78%) focused on family adaptability and cohesion, and the fewest number of articles (3%) included descriptions of family strengths.

The reasons why family strengths have been studied less often is not clear given the calls for more family strengths research (e.g., DeFrain & Asay, 2007; Giblin, 1996; Lopez, 2009; Marsh, 2003; Walsh, 1994) that focuses on the relationships between family strengths and family and family member psychological health and functioning (e.g., Carr, 2000; Marsh, 2003; Walsh, 1994). Walsh (1994), for example, noted the need for research to "identify family strengths and resources that are crucial in mastering life challenges and promoting the well-being and healthy development of individual family members" (p. 175).

Circumplex Model and Family Strengths

Olson and Gorall (2003) describe family strengths as those "family characteristics and dynamics that enable families to show resilience and deal successfully with family problems" (p. 533). According to Olson et al. (1987), family strengths include family member beliefs and values (e.g., family member loyalty), family member communication practices (e.g., family member respect for one another), and family member and family unit competencies (e.g., family member problem solving).

Although the family strengths concept is not explicitly described as a key construct of the circumplex model, one can discern that family strengths (beliefs, behavior, and practices) are an integral part of each of the three model dimensions. For example, shared values are a concept that is part of family cohesion, working together is a concept that is part of family role relationships (adaptability), and positive family member interactions are part of family communication.

Family Strengths Scale

Olson and his colleagues (Olson, Larsen, et al., 1982; Olson et al., 1983, 1985, 1987) described the family strengths construct and the development of the Family Strengths Scale as part of the development of family inventories for measuring the circumplex model constructs (e.g., Olson

., 2002; Olson, McCubbin, et al., 1982; Olson et al., 2000). Based on findings in the family strengths literature and the results from a survey of family strengths (Olson et al., 1983), 25 items were developed to measure family strengths. Factor analysis of the items was used to identify 12 items that measured two dimensions of family strengths: Family pride (7 items) and family accord (5 items). The family pride items measure different dimensions of intrafamily beliefs and behavior (e.g., trust and loyalty). The family accord items measure different aspects of family mastery and competence (e.g., problem-solving and achieving desired outcomes).

Persons completing the scale are asked to rate each FSS scale item as "they apply to your family." The items are rated on a 5-point scale ranging from strongly disagree to strongly agree (that the items apply to a respondent's family). Three scores can be computed from the item ratings: Family pride (sum of the 7 pride scale item ratings), family accord (sum of the 5 scale item ratings), and a total family strengths score (sum of the pride and accord item ratings reversing the scores for negatively worded items). The internal consistency estimates for the three measures range between .72 and .83 (Olson et al., 1987). Test-retest stability estimates for scores obtained four weeks apart ranged between .73 and .79 (Olson et al., 1987).

Searches for reviews of Family Strengths Scale (Olson et al., 1987) studies where family strengths were related to any of the three circumplex model dimensions, related family concepts, or personal and family functioning, identified no literature reviews or research syntheses. Research syntheses are important because they permit the "integration of existing knowledge and research findings…to increase the generality and applicability of those findings" (Wyborn et al., 2018, p. 72). Meta-analyses are particularly useful for conducting research syntheses since the methodology permits a determination of whether the relationships (sizes of effects) between a construct of interest (e.g., family strengths) and one or more variables hypothesized to be related to that construct (e.g., psychological well-being, family cohesion, marital satisfaction) provide accumulated evidence of replication (Kline, 2004).

Purpose of the Meta-Analysis

How family strengths are related to the three circumplex model dimensions, related family concepts, and personal and family functioning was the focus of the meta-analysis described in this paper. The investigation focused on studies using the Family Strengths Scale (Olson et al., 1987) to measure family strengths where strengths measures were related to any of the three circumplex model dimensions, related family concepts, or different domains of individual family member psychological health (depression, anxiety, well-being, etc.) or family functioning (e.g., marital satisfaction, family well-being). Six hypotheses (H) were tested as part of the meta-analysis based on either or both theoretical formulations and empirical evidence in the published and unpublished literature.

H1: Family strengths were hypothesized to be related to different dimensions of personal functioning based on findings from studies demonstrating relationships between the three circumplex model dimensions, related family concepts, and different measures of family member mental health and psychological well-being (e.g., Amerikaner et al., 1994; Aslani & Purgam, 2012; Rivero-Lazcano et al., 2011; Stewart et al., 1994)

H2: Family strengths were hypothesized to be related to family functioning based on findings from studies where results show that positive family cohesion, flexibility, and communication are associated with more positive family functioning (e.g., Farrell & Barnes, 1993; Gorall & Olson, 1995; Olson et al., 1980).

H3: Family strengths were hypothesized to be related to each of the three circumplex model dimensions based on the contention that family strengths are one of several "related family concepts" that would be expected to covary with measures of family cohesion, flexibility, and communication (Olson, 2000a, p. 530).

H4: Family pride and family accord were hypothesized to be related to the different circumplex model dimensions, related family concepts, and both personal and family functioning based on the theoretical formulations of the circumplex model indicating that the different constructs are interrelated (e.g., Olson, 2000a; Olson & Gorall, 2003).

H5: The sizes of effects for the relationships between family pride, family accord, and both personal and family functioning were expected to be very much the same. This expectation is based on the fact the descriptions of family pride and family accord in the published and unpublished literature do not include any theoretical foundations or empirical evidence for expecting differential relationships between these two types of family strengths and circumplex model dimensions, related family constructs, or personal or family functioning.

H6: The sizes of effect for the relationship between family strengths and family functioning were expected to be larger than the sizes of effect for the relationship between family strengths and personal functioning. This is based on the theoretical foundations of the circumplex model and its emphasis on how positive family cohesion, flexibility, and communication are expected to be related to optimal couple and family functioning (e.g., Olson & Gorall, 2003) and findings showing that the circumplex model related family concepts (including strengths) show a stronger relationship with family functioning compared to personal functioning (e.g., Dunst & Trivette, 2009; Verrastro et al., 2020).

Findings from the meta-analysis were expected to shed light on the relationships between family strengths and (a) the three dimensions of the circumplex model, (b) related family concepts, and (c) different domains of personal and family functioning. The meta-analysis is part of a line of research investigating the relationships between family

strengths measured by strengths scales having different theoretical and conceptual foundations and different domains of personal and family functioning (Dunst, 2020, under review; Dunst et al., 2021).

Guidelines described by Siddaway et al. (2019) for conducting a meta-analysis and the reporting standards described by Appelbaum et al. (2018) for quantitative meta-analyses were used to conduct the literature review to identify family strengths studies, aggregate the results from different studies, and report the findings of the research synthesis. This permitted the inclusion of information necessary for readers to understand the methodological approach for computing effect sizes in primary studies, aggregating study results, performing different sets of analyses, reporting the meta-analysis results, and describing the results in ways permitting evaluation of each of the research synthesis hypotheses.

Method

Search Strategy

An iterative search strategy was used to identify studies that used the Family Strengths Scale (FSS) to measure family strengths and relate strengths to variations in other measures of interest. This was the case for three reasons. First, different investigators used different scale names to describe the FSS. Second, different investigators used terms other than family strengths to describe the family strengths construct. Third, investigators other than Olson and his colleagues have developed scales that also include Family Strengths Scale in the scale name.

Search Terms

Natural language searches were used to locate family strengths studies because family strengths is not a controlled vocabulary term in any of the thesauri for the electronic databases used to locate studies. The term strengths is included in two thesauri but refer to physical strengths or strengths training.

Research reports were first located by searching different databases using "family strengths scale" as the search term. A second search was conducted using "family strength scale" as the search term since some investigators used strength and not strengths to describe the scale. These were followed by separate searches using each of the following search terms: "family strengths index," "family strength index," family strengths inventory," "family strength inventory," "family strengths questionnaire," "family strength questionnaire," "family strengths survey," and "family strength survey." This was done because the FSS has been described by different investigators using these names for describing or citing the FSS.

As part of the above searches, family strengths scales other than the FSS were identified where the circumplex model of family systems was not the foundation for scale development.

This included instruments such as the Kansas Family Strengths Scale and Korea Family Strengths Scale. Additional searches were therefore conducted using "family strengths" AND Olson, "family strength" AND Olson, "family strengths" AND "circumplex model", and "family strength" AND "circumplex model" as search terms. This was done to reduce the number of search results for published and unpublished papers that did not reference or use the Olson et al. (1987) FSS.

Studies using either the FSS family pride subscale or the FSS family accord subscale were located using the search terms "family pride" AND Olson, "family accord" AND Olson, "family pride" AND "circumplex model", and "family accord" AND "circumplex model". Additional searches of other terms used by investigators to describe family pride and family accord (e.g., family resources were used to describe family pride, and family conflict was used to describe family accord) were conducted. Each of the alternate terms was searched together with Olson to identify FSS studies (e.g., "family resources" AND Olson).

To be assured no FSS research reports were missed as part of the above search strategy, follow-up searches were conducted as variations in the ways investigators described or referenced the FSS or the two FSS subscales were identified. How these searches were conducted differed as a function of the search sources and the mechanics of formulating search queries in different electronic databases (Lucas & Cutspec, 2007).

Search Sources

The primary search sources were PsycNET, ProQuest Central, PubMed, ERIC (Educational Resource Information Center), ProQuest Dissertations and Theses, and Google Scholar. Once these sources were searched for research reports, secondary searches of Google, JSTOR, and ResearchGate were done to identify any missed published or unpublished research reports. The primary and secondary search sources were supplemented by examination of the reference sections of published papers, the literature review sections of dissertations and theses, and the FSS journal articles cited in the Kouneski (2000) review to identify other FSS research reports.

Search Methods

If a primary search source resulted in fewer than 100 search results, every paper was examined to determine if it included a reference to the FSS. Where a primary search source resulted in more than 100 search results, the papers were sorted by relevance, and the first 100 papers were all searched for the FSS. Thereafter, the search results were examined until 50 papers in a row included no description or reference to the FSS. This was required only

in ProQuest Central and Google Scholar.

Electronic searches of the complete text of all located papers were done to determine if the FSS was used in a quantitative study investigating the relationships between family strengths and other variables of interest. This involved searches for all of the search terms described above. When non-searchable papers were located, each paper was read to determine if the FSS was referenced or used in a study.

Inclusion and Exclusion Criteria

Studies were included if the FSS was used to measure family strengths (total scale score, family pride subscale score, or family pride subscale score) and the correlations between any of the three FSS family strengths measures and any of the circumplex model dimensions, related family concepts, and either or both personal and family functioning measures were reported. No limitation was placed on the type of research report, where the study was conducted, or the year of publication.

Studies were excluded if the correlations between the measures of interest were not reported. Studies were also excluded if incomplete sets of correlations were reported or correlations were reported as non-significant. Data under these two conditions were considered not missing at random (Graham, 2012). Correlations were considered missing at random if variables of interest were included in a study but only certain relationships were the focus of investigation (e.g., family strengths and other predictor variables were correlated with only life satisfaction).

Correlate Measures

The correlate variables were categorized as either personal functioning measures or family functioning measures depending on the attributional targets of the scale item measures (Bugental, Johnston, New, & Silvester, 1998). The scale items for the personal functioning measures were respondents' beliefs or judgments of his or her own behavior (e.g., anxiety) or beliefs (e.g., efficacy). The scale items for the family functioning measures were the respondents' beliefs or judgments about their family and/or relationships with family members (e.g., marital satisfaction).

Methods of Analysis

Meta-Essentials was used to perform the meta-analysis (Suurmond et al., 2017; Van Rhee et al., 2015). The input for the FSS measures was the correlation coefficient and sample size in each study for the relationship between each family strengths measure and the personal and family functioning measures. The direction of effects of the correlation coefficients was reversed where family strengths were expected to be related to less negative functioning (e.g., higher levels of family strengths were expected to be related to less stress resulting in a negative correlation between measures). The analyses were performed with Fisher's r-to-z transformation for each FSS-functioning measure variable. These were transformed back to zero-order correlations for reporting purposes.

Random effects models were used to perform the analyses because of the heterogeneity of the studies in terms of the study participants, family life conditions that were the focus of interest in the primary studies, and the differences in the scales and instruments used to measure personal and family functioning. Three different analyses were performed on each set of aggregate data: Publication bias, the strengths of the relationships between family strengths and personal and family functioning, and between-group comparisons to ascertain any differential effects of family strengths.

The Egger regression test and the Begg and Mazumber rank-order correlation test were used to assess publication bias (van Aert et al., 2019). Non-significant test results indicate no publication bias. Publication bias was also assessed by visual inspection of both the funnel plots and normal quantile plots for ascertaining any asymmetry in the distributions of effect sizes for both sets of data. An equal distribution of effect sizes in a funnel plot and a distribution of effect sizes that approximate a straight line in a normal quantile plot indicates no publication bias.

The average, weighted correlations between family strengths and the personal and family functioning measures were used to ascertain the strength of the relationships between measures. Separate analyses were performed for different personal functioning measures (e.g., depression, stress, well-being) and different family functioning measures (e.g., cohesion, marital satisfaction). The output for each analysis included the number of studies in an analysis (k), number of study participants (N), the average, weighted effect size (r) for the relationship between family strengths and variables of interest, the 95% confidence interval for the average effect size, the Z-test for the average effect size, and the p-value for determining if the average effect size was statistically significant.

QBetween (QB) was used to test for between effect size differences for the type of personal functioning measures, type of family functioning measures, type of family strengths measures (pride vs. accord), and the two types of functioning measures (personal vs. family). QB is analogous to a one-way between-group ANOVA for effect size data (Hedges, 1994).

Results

Study Selection

The six primary search sources yielded 1,166 non-duplicate published and unpublished papers that referenced or cited a family strengths scale. One hundred and thir-

ty-three papers (11%) were excluded because they included a reference or citation to a family strengths scale other than the FSS (Olson et al., 1987). The remaining 1,033 papers were screened to determine if the FSS was used to measure family strengths. Nine hundred and sixty-seven papers (94%) were excluded because the author(s) only cited or referenced the FSS and did not use the scale to measure family strengths. The remaining 66 papers used the FSS to measure family strengths but 40 of the research reports (61%) did not include the correlations among the FSS and one or more measures of interest or reported incomplete sets of correlations.

Twenty-six research reports met the inclusion criteria. Seven of the reports included data for independent samples of study participants. The 33 samples were considered individual studies for conducting the meta-analysis. Table 1 includes selected characteristics of the FSS studies. The 33 studies included 8,259 participants. The median number of study participants was 138 (Range 32 to 1326). Twenty-four studies were conducted in the United

Table 1

Selected Characteristics of the Family Strengths Scale Studies

	Study Samples		Research Reports	
Study	Number	Country	Source	Language
Abbott & Meredith (1986) Sample 1	60	United States	Journal Article	English
Abbott & Meredith (1986) Sample 2	60	United States	Journal Article	English
Brage & Meredith (1994)	156	United States	Journal Article	English
Cardona (2105) Sample 1	46	Mexico	Master's Thesis	Spanish
Cardona (2015) Sample 2	46	Mexico	Master's Thesis	Spanish
Castillo et al. (2004)	140	Spain	Journal Article	Spanish
Chebra (1996)	308	United States	Dissertation	English
Fine et al. (1997)	39	United States	Journal Article	English
Ford-Gilboe (1997) Sample 1	138	United States	Journal Article	English
Ford-Gilboe (1997) Sample 2	138	United States	Journal Article	English
Glidden & Floyd (1997) Sample 1	100	United States	Journal Article	English
Glidden & Floyd (1997) Sample 2	89	United States	Journal Article	English
Glidden (2000)	123	United States	Journal Article	English
Grein & Glidden (2015)	85	United States	Journal Article	English
Izydorczyk et al. (2019)	201	Poland	Journal Article	English
Jelonkiewicz (2010)	1326	Poland	Journal Article	English
Lin & Chen (1994)	649	USA/Taiwan	Unpublished Study	English
Martinez-Pampliega et al. (2017)	665	Mexico	Journal Article	English
Meredith et al. (1986)	304	United States	Journal Article	English
Mullen (1989) Sample 1	42	United States	Dissertation	English
Mullen (1989) Sample 2	32	United States	Dissertation	English
Parkerson et al. (1989, 1991)	246	United States	Journal Article	English
Patel (1993)	130	United States	Dissertation	English
Penas et al. (2020)	81	Spain	Journal Article	English
Proctor (1996)	84	United States	Dissertation	English
Schrodt (2009)	426	United States	Journal Article	English
Tiesel (2006) Sample 1	177	United States	Unpublished Study	English
Tiesel (2006) Sample 2	667	United States	Unpublished Study	English
Thompson & Schrodt (2015)	267	United States	Journal Article	English
Vosler & Page-Adams (1996)	147	United States	Journal Article	English
Voydanoff & Donnelly (1989) S1	299	United States	Journal Article	English
Voydanoff & Donnelly (1989) S2	328	United States	Journal Article	English
Xia et al. (2004)	660	China	Journal Article	English

Note. S = Study Sample

States, three were conducted in Mexico (Cardona, 2015; Martinez-Pampliega et al., 2017), two were conducted in Poland (Izydorczyk et al., 2019; Jelonkiewicz, 2010), two were conducted in Spain (Castillo et al., 2004; Penas et al., 2020), and one study was conducted in China (Xia et al., 2004). One study included a sample of American and Taiwanese study participants (Lin & Chen, 1994).

Twenty-three studies were published in peer-reviewed journals, four were dissertations, five were unpublished research reports, and two were master's theses. Thirty papers were published in English and three papers were published in Spanish.

Sample Characteristics

Selected characteristics of the study participants are shown in Table 2. Adolescents were study participants in eight studies, university students were study participants in five studies, and older adults were study participants in 18 studies. Seventeen of the samples experienced some type of adverse or stressful life events (cancer, disability, teen pregnancy, mental illness, homelessness, etc.).

The median age of the study participants was 35 years (Range = 11 to 65). The median number of years of formal education completed by the study participants was 14 (Range = 7 to 18). The study participants were all female or predominately female in 10 studies and were all male or predominately male in three studies. Half of the studies had proportionally equal distributions of female and male study participants.

Study Measures

The total FSS scores were the family strengths measure in 23 studies. Family accord was assessed in six studies and family pride was assessed in five studies. None of the studies included both the FSS total scale score and either or both family pride and family accord as family strengths measures. Only two studies included both the family pride and family accord subscales to measures family strengths (Glidden, 2000; Glidden & Floyd, 1997).

Thirty-six different scales and instruments were used to measure personal functioning and 18 different scales and instruments were used to measure family functioning. Five different domains of personal functioning were assessed in the studies (depression, loneliness, stress, well-being, and personal beliefs). Five different domains of family functioning were assessed in the studies (family member communication, family cohesion, family flexibility, marital satisfaction, and family stress). The scales measuring the different domains of personal and family functioning are shown in the Appendix. The categorizations of the measures according to domain were first done by determining the targets of attributional appraisals (study participant or his/her family) and then by the types of functioning assessed by the scale items.

Synthesis Results

The 33 studies included 45 effect sizes for the relationships between family strengths and personal functioning and 38 effect sizes for the relationships between family strengths and family functioning. The sample sizes for the two sets of effect sizes were 7,999 for personal functioning and 8,829 for family functioning, respectively.

Publication Bias

Table 3 shows the results for assessing publication bias. The observed and adjusted average correlation coefficients (z scores) were almost identical as were the 95% confidence intervals for the sizes of effects. The two Egger Regression Tests and the two Begg-Mazumber Rank-Order Correlation Tests were non-significant. Visual inspection of the funnel plots for the two sets of data showed equal distributions of effect sizes and visual inspection of the normal quantile plots showed that each set of effect sizes approximated straight lines. Results indicated that there was no publication bias for the family strengths-personal functioning relationships and family strengths-family functioning relationships in the primary studies.

Personal Functioning Measures

Table 4 shows the results for the relationships between family strengths and the five different domains of personal functioning. The Table includes the sizes of effects for all strengths measures combined, the total FSS scores, family pride, and family accord for each domain of personal functioning. All of the average sizes of effects for family strengths-personal functioning relationships having at least three effect sizes were statistically significant.

The size of effect for all strengths measures and all personal functioning measures combined was r = .36. The average size of effect for all family strengths measures combined and each of the personal functioning measures ranged between r = .30 (personal beliefs) and r = .42 (well-being). The average size of effect for the relationships between the FSS total scale scores and each of the personal functioning measures ranged between r = .35 (loneliness) and r = .43 (well-being). The different sets of analyses indicated that family strengths were associated with each of the different types of personal functioning measures (i.e., the more strengths that were present in a family, the less stress, depression, and loneliness and the more positive the well-being and personal belief appraisals of the study participants).

Between type of personal functioning measure comparisons. Two between type of personal functioning measure comparisons were run: One for all family strengths measures combined and one for the FSS total scale scores. The 5 Between Type of Personal Functioning Measure compa-

Table 2

Selected Characteristics of the Family Strengths Scale Study Participants

Study	Participants	Age (years)		Yrs. Education		Gender (%)	
		Mean	Range	Mean	Range	Female	Male
Abbott & Meredith (1986) Sample 1	Parents of Children with Disabilities	38	NR	14	NR	50	50
Abbott & Meredith (1986) Sample 2	Parents of Children without Disabilities	35	NR	15	NR	50	50
Brage & Meredith (1994)	Adolescents	14	11-18	9	7-10	60	40
Cardona (2015) Sample 1	Parents of Children with Mental Illness	41	30-61	12	8-16	94	6
Cardona (2015) Sample 2	Adolescents with Mental Illness	13	9-17	10	5-13	56	44
Castillo et al. (2004)	Adults with Drug Addictions	29	20-38	NR	NR	11	89
Chebra (1996)	University Students	21	18-23	15	13-16	92	8
Fine et al. (1997)	Stepfathers	40	27-54	15	11-20	0	100
Ford-Gilboe (1997) Sample 1	Parents of Adolescents	39	20-59	15	8-17	100	0
Ford-Gilboe (1997) Sample 2	Adolescents	12	10-14	7	4-9	54	46
Glidden & Floyd (1997) Sample 1	Birth Mothers	35	27-42	13	10-17	100	0
Glidden & Floyd (1997) Sample 2	Adoptive Mothers	42	32-50	14	10-17	100	0
Glidden (2000)	Parents of Adopted Children with Disabilities	43	34-53	14	8-20	97	3
Grein & Glidden (2015)	Parents of Children with Disabilities	38	43-46	14	11-16	100	0
Izdorczyk et al. (2019)	Adults with Mental Illness	29	18-62	14	8-16	47	53
Jelonkiewicz (2010)	Adolescents	17	15-20	11	10-12	55	45
Lin & Chen (1994)	University Students	20	18-24	14	13-16	60	40
Martinez-Pampliega et al. (2017)	University Students	22	18-41	NR	NR	79	21
Meredith et al. (1986)	Married Parents	37	NR	16	NR	61	39
Mullen (1989) Sample 1	Adults with Cancer	57	31-75	NR	NR	57	43
Mullen (1989) Sample 2	Spouses of Partners with Cancer	59	42-77	NR	NR	66	34
Parkerson et al. (1989, 1991)	Adults with Health Problems	36	18-49	13	10-18	50	50
Patel (1993)	Homeless Adults	35	22-60	11	8-19	27	73
Penas et al. (2019)	Immigrant Parents	38	20-50	10	8-15	100	0
Proctor (1996)	Pregnant Teenagers	16	12-18	10	7-12	100	0
Schrodt (2009)	University Students	20	18-24	14	13-16	63	37
Tiesel (1997) Sample 1	Adolescents	14	12-18	14	7-12	58	38
Tiesel (1997) Sample 2	Community Residents	39	18-64	11	8-16	58	38
Thompson & Schrodt (2015)	University Students	20	16-23	14	13-16	59	37
Vosler & Page-Adams (1996)	Plant Workers	44	30-60	13	10-16	0	100
Voydanoff & Donnelly (1989) S1	Community Adults	35	18-65	14	6-18	0	48
Voydanoff & Donnelly (1989) S2	Community Adults	35	18-65	14	6-18	52	0
Xia et al. (2004)	Adolescents	16	12-19	11	7-13	65	35

Note. S = Study Sample.

Table 3

Results of the Publication Bias Analyses

	Observed Average z		Adjusted Average z		Egger Regression Test		Begg-Mazumber Rank-Order Test	
Study Measures	z	95% CI	z	95% CI	t-test	p-value	Z-test	p-value
Personal Functioning	.39	.37, .41	.38	.35, .40	0.89	0.380	0.31	0.754
Family Functioning	.71	.69, .74	.70	.68, .72	1.19	0.240	0.15	0.880

Note. z = Fisher's transformation of the correlation coefficients.

Table 4

Average Effect Sizes and 95% Confidence Intervals for the Relationships Between Family Strengths and Different Dimensions of Personal Psychological Health Functioning

Personal Functioning Measures	k	N	r	95% CI	Z-test	p-value
All Measures Combined	45	7999	.36	.32, .41	14.51	.000
Depression						
All Strengths Measures Combined	13	2202	.33	.22, .44	6.02	.000
Total Family Strengths Scale Scores	5	951	.39	.09, .62	3.56	.000
Family Accord Subscale Scores	5	939	.33	.07, .55	3.44	.000
Family Pride Subscale Scores	3	312	.24	.09, .24	6.89	.000
Loneliness						
Total Family Strengths Scale Scores	3	315	.35	.12, .55	6.30	.000
Stress						
All Strengths Measures Combined	12	2425	.38	.27, .48	7.35	.000
Total Family Strengths Scale Scores	5	1334	.36	.12, .56	4.10	.000
Family Accord Subscale Scores	5	901	.42	.18, .62	4.60	.000
Family Pride Subscale Scores	2	189	.32	.19, .44	---	---
Well-Being						
All Strengths Measures Combined	10	1977	.42	.32, .51	8.73	.000
Total Family Strengths Scale Scores	8	1807	.43	.30, .54	7.43	.000
Family Accord Subscale Scores	2	170	.36	.20, .75	---	---
Personal Beliefs						
All Strengths Measures Combined	7	1080	.30	.20, .40	6.70	.000
Total Family Strengths Scale Scores	3	532	.39	.23, .52	10.33	.000
Family Pride Subscale Scores	4	548	.24	.06, .40	4.19	.000

Note. k = Number of effect sizes, N = Number of study participants, r = Average weighted effect size, and CI = Confidence interval. Statistical significance results are reported only for measures have three or more effect sizes.

rison for all family strengths measures combined was QB = 3.83, df = 4, 40, p = .4290. The 5 Between Type of Personal Functioning Measure comparison for the FSS total scores was QB = 1.23, df = 4, 19, p = .8730. Both results indicate that the strength of relationships between family strengths and the five domains of personal functioning is much the same.

Between family pride and family accord comparison. The average size of effect for the relationship between family accord and the personal functioning measures combined was r = .37 (95% CI = .26, .47) and the average size of effect for the relationship between family pride and the personal functioning measures combined was r = .25 (95% CI = .19, .32). The two sizes of effects differed significantly, QB = 4.70, df = 1, 19, p = .0300. The result indicates that there was more covariation between family accord and personal functioning than there was for the relationship between family pride and personal functioning.

Family Functioning Measures

The results from the analyses of the relationships between family strengths and family functioning are shown in Table 5. Each of the average effect sizes for the family strengths-family functioning measure relationships having at least three effect sizes were statistically significant.

The size of effect for the relationship for all family strengths measures and all family functioning measures combined was r = .64. The average size of effect for all strengths measures combined and the different domains of family functioning ranged between r = .59 (family cohesion and family stress) and r = .77 (marital satisfaction). The average size of effect for the relationships between the

Table 5

Average Effect Sizes and 95% Confidence Intervals for the Relationships Between Family Strengths and Different Dimensions of Family Functioning

Family Functioning Measures	k	N	*r*	95% CI	*Z*-test	*p*-value
All Measures Combined	38	8829	.64	.57, .71	13.47	.000
Family Member Interactions						
All Strengths Measures Combined	12	3244	.62	.49, .73	8.21	.000
Total Family Strengths Scale Scores	10	1924	.64	.48, .76	7.05	.000
Family Accord	2	1320	.55	.16, .79	---	---
Family Cohesion						
All Strengths Measures Combined	11	1904	.59	.42, .72	6.64	.000
Total Family Strengths Scale Scores	4	820	.68	.25, .89	4.57	.000
Family Pride	4	276	.73	.65, .81	3.54	.000
Family Accord	3	734	.45	.12, .80	3.45	.005
Family Flexibility						
Total Family Strengths Scale Scores	3	876	.63	.39, .87	3.46	.005
Marital Satisfaction						
Total Family Strengths Scale Scores	7	2454	.77	.58, .87	7.22	.000
Family Stress						
Total Family Strengths Scale Scores	5	351	.59	.16, .83	3.69	.000

Note. k = Number of effect sizes, N = Number of study participants, *r* = Average weighted effect size, and CI = Confidence interval. Statistical significance results are reported only for measures including three or more effect sizes.

FSS total scales scores and the different domains of family functioning ranged between r = .59 (family stress) and r = .77 (marital satisfaction). The results indicate that family strengths are related to both the circimplex model dimensions (cohesion, flexibility, and communication) and other family functioning measure constructs (marital satisfaction and family stress).

Between type of family functioning measure comparisons. The 5 Between Type of Family Functioning Measure comparison for all family strengths measures combined was QB = 3.29, df = 4, 33, p = .5110. The same comparison for the FSS total scale scores was QB = 2.62, df = 4, 24, p = .6230. The results indicate that the strength of the relationships between family strengths and each of the five family functioning measures were much alike.

Between family pride and family accord comparison. The average size of effect for the relationship between family pride and the family functioning measures combined was r = .67 (95% CI = .15, .90) and the average size of effect for the relationship between family accord and the family functioning measures combined was r = .49 (95% CI = .30, .64). The difference between the two effect sizes approached a conventional level of statistical significance, QB = 2.82, df = 1, 6, p = .0930, even with just eight between type of family strengths comparisons.

Between Type of Functioning Measure Comparisons

Whether the strength of the relationships between family strengths and personal and family functioning were similar or different was determined by two between type of functioning measure comparisons, one for all strengths measures combined and one for the FSS total scale scores. The average size of effect for the relationship between family strengths and family functioning for all strengths measures combined was r = .64 (95% CI = .57, .71) and the average size of effect for the relationship between family strengths and personal functioning for all strengths measures combined was r = .36 (95% CI = .32, .41). The 2 Between Type of Functioning Measure comparison was significant, QB = 42.29, df = 1, 81, p = .0000. The average size of effect for the relationship between the FSS total scale scores and family functioning was r = .67 (95% CI = .59, .44) and the size of effect for the relationship between the FSS total scale scores and personal functioning was r =.39 (95% CI = .33, .45). The 2 Between Type of Functioning Measure comparison was significant, QB = 30.29, df = 1, 51, p = .0000. Both results indicate that the strength of the relationship between family strengths and family functioning is larger than the size of effect between family strengths and personal functioning.

Discussion

The meta-analysis included 26 studies and 33 independent samples of study participants. The samples included adolescents, college students, and older adults. Seventeen samples experienced some type of adverse or stressful life events. The participants completed the Family Strengths Scale (Olson et al., 1987) or one of the FSS subscales and one or more scales assessing five personal or five family functioning measures. The correlations between the family strengths measures and personal and family functioning were used as the sizes of effect for the relationships between family strengths and the covariate measures. Analyses of the pattern of distribution of effect sizes for the two sets or correlation coefficients found no publication bias between published and unpublished research reports.

Results provided support for 5 of the 6 study hypotheses. Family strengths were related to the five different domains of personal functioning (H1) and the five different domains of family functioning (H2). Family strengths were also related to measures of each of the three dimensions of the circumplex model and several related family constructs (H3). The pattern of results is consistent with the contentions by Olson and his colleagues (e.g., Olson, 2000a; Olson & Gorall, 2003; Olson et al., 2019) that related family constructs, including family strengths, would be related to the three dimensions of the circumplex model and other family functioning measures. The results add to the knowledge base by showing how family strengths are related to attenuated poor psychological functioning and enhanced positive psychological functioning. These findings are consistent with those reported in studies where the different dimensions of the circumplex model are related to different health-related outcomes (e.g., Amerikaner et al., 1994; Verrastro et al., 2020).

Family pride and family accord were both related to different domains of personal and family functioning in a way consistent with the study hypothesis (H4). Family pride was related to less depression, more positive belief appraisals, and more family cohesion. Family accord was related to less depression and stress, enhanced well-being, and more family cohesion. The results, however, did not provide support for the hypothesis that there would be no differential relationships between the two FSS subscale measures and personal and family functioning (H5). Family accord had a larger size of effect for the relationship between family strengths and personal functioning compared to the size of effect for family pride. Family pride had a larger size of effect for the relationship between family strengths and family functioning compared to the size of effect for family accord. Both results, however, need to be interpreted with caution because of the small number of effects for the relationships between the two FSS subscales and personal and family functioning.

The results are consistent with the hypothesis that the size of effect for the relationship between family strengths and family functioning would be larger than the size

of effect for the relationship between family strengths and personal functioning (H6). This expectation was based on ascertains by Olson and his colleagues (e.g., Olson & Gorall, 2003; Olson et al., 2019) that positive indicators of the different dimensions of the circumplex model and related family concepts are important for optimal couple and family functioning. The hypothesized differential relationships between family strengths and personal and family functioning are also based on findings from a meta-analysis of studies of another family strengths scale that has quite different conceptual and operationalized foundations (Dunst et al., 2021). Findings from the meta-analysis showed that the size of effect for family strengths and different measures of family well-being was larger than the size of effect for family strengths and different measures of personal well-being. The results from this meta-analysis and the other meta-analysis by the author and his colleagues indicate that different measures of family strengths behave in the same way in terms of the relationships with other measures of personal and family functioning.

Two other sets of results deserve comment because they illustrate how family strengths are related to multiple domains of personal and family functioning. The between domain comparisons, one for the relationships between family strengths and personal functioning and the other for the relationships between family strengths and family functioning, were both statistically non-significant. The results indicated that the covariation between family strengths and different domains of personal functioning were much the same and the covariation between family strengths and different domains of family functioning are also much alike. These findings highlight the fact that family strengths play an important role in explaining variations in healthy personal functioning and healthy family functioning (e.g., DeFrain & Asay, 2007; Lingren et al., 1987; Summers et al., 1989).

The meta-analysis, and the pattern of findings in the research synthesis, provide the types of evidence that Marsh (2003), Walsh (1994), and others (e.g., Giblin, 1996; Lopez, 2009) have argued are needed for understanding the relationships between family strengths and different domains of healthy personal and family functioning. Walsh (1994) and Lopez (2009) in particular noted the need for research to identify how family strengths are related to personal and family well-being and the healthy development of individual family members and the family as a unit. Findings from the meta-analysis and other research syntheses in this line of research (Dunst, 2020, under review; Dunst et al., 2021) show that family strengths are related to different domains of personal functioning (e.g., depression, anxiety, parenting practices) and different domains of family functioning (e.g., satisfaction, interactions, well-being).

Several limitations are noted both in terms of the FSS and the meta-analysis. First, although the FSS was first made available nearly four decades ago, there have only been about 30 research studies that have investigated the relationships between family strengths and different domains of personal and family functioning. This may be the case, in part, by the fact that Olson et al. (1987) once stated that despite family strengths showing promise as an important circumplex model related concept, the final 12 item version of the scale is “comparatively bland” (p. 192).

Second, the number of studies that have included analyses of the relationships between the three circumplex model dimensions and related family constructs is even smaller. Only one circumplex model dimension (cohesion) and only two related family constructs (parent-child communication and marital satisfaction) have been examined in the studies in the meta-analysis. Other related family concepts (family communication, family satisfaction, and family stress) were examined in just a few studies.

Third, and because of the above two limitations, the number of effect sizes for the relationships between family strengths and any of the family functioning measures were very small which may have affected the validity of the results. This is especially the case for studies that used the FSS subscales to measure family strengths. For example, no studies included analyses of the relationships between family pride and accord and family flexibility, marital satisfaction, and family stress.

Fourth, the limitation just described also applies to studies examining the relationships between family strengths and personal functioning. The relationships between the total FSS scale scores, family pride subscale scores, family accord subscale scores, and each of the different domains of personal functioning, with one exception (personal well-being), included five or fewer effect sizes. This raises concerns about the generalizability of the results.

Fifth, very few studies used the same measures of personal and family functioning. A concerted effort was made to categorize the scales according to the item content of the measures but there is no assurance that the scales for assessing each of the personal functioning and family functioning domains are measuring the same constructs. This as well raises a concern because any assumption about the homogeneity of the different scale items may not be warranted.

Notwithstanding these limitations, the patterns of results are almost identical to those found in meta-analyses of studies using the Family Hardiness Index (McCubbin et al., 1986) and Family Functioning Style Scale (Deal et al., 2009) to evaluate the relationships between family strengths and different domains of personal and family functioning (Dunst, under review; Dunst et al., 2021). The results from these meta-analyses together with the results reported in this paper include converging evidence that family strengths play an important role in explaining healthy personal and family functioning.

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Appendix
Personal and Family Functioning Measures Used as the Covariates of Family Strengths

Personal and Family Measures		Sources	No. of Studies
	Psychological Health Measures		
Depression			
	Beck Depression Scale	Beck et al. (1961)	4
	PERI Depression Subscale	Dohrenwend et al. (1980)	2
	Symptom Checklist Depression Subscale	Derogatis (1992)	2
	CES Depression Scale	Radloff (1977)	1
	Positive and Negative Syndrome Scale	Kay, Fiszbein, and Opler (1987)	1
	DUHP Depressive Symptom Subscale	Parkerson et al. (1981)	1
	General Health Questionnaire	Goldberg and Hillier (1979)	1
	Generalized Contentment Scale	Hudson (1993)	1
Loneliness			
	UCLA Loneliness Scale	Russell, Peplau, and Cutrona (1980)	2
	Loneliness Inventory-Short Form	Woodward (1988)	1
Stress			
	Hoylrod QRS Stress Subscale	Friedrich et al. (1983)	5
	PERI Anxiety Subscale	Dohrenwend et al. (1980)	2
	CISS-S Emotional Distress Subscale	Endler and Parker (1990)	2
	DUPH Emotional Function Subscale	Parkerson et al. (1981)	1
	OSI Psychological Strain Subscale	Osipow and Spokane (1987)	1
Well-Being			
	Subjective Well-Being Scale	Andrews and Withey (1976)	2
	Parental Expressiveness Scale	Yarcheski (1984)	2
	Psychological Well-Being Subscale	Veit and Ware (1983)	2
	Health Promoting Lifestyle Profile	Walker et al. (1987)	2
	Questionnaire of Subjective Well-Being	Grob et al. (1991)	1
	Positive and Negative Mood Scale	Wojciszke and Baryla (2005)	1
Personal Beliefs			
	Self-Efficacy Scale	Sherer et al. (1982)	2
	Health Locus of Control Scale	Wallston et al. (1978)	2
	Self-Esteem Scale	Rosenberg (1965)	1
	Alienation Scale	Patel (1993) IDM[a]	1
	DUKE Social Health Profile Subscale	Parkerson, Broadhead, and Tse (1990)	1
	Family Functioning Measures		
Family Member Communication			
	Parent-Adolescent Communication Scale	Barnes and Olson (1982)	6
	FACES-IV Family Communication Subscale	Olson (2008)	1
	Stepparent Behavior Inventory	Fine, Ganog, and Coleman (1997)	1
	FCEI Expressiveness Subscale	Fitzpatrick and Ritchie (1994)	1
	FCEI Parent-Child Interactions Subscale	Fitzpatrick and Ritchie (1994)	1
	Adult Sibling Relationship Questionnaire	Stocker, Lanthier, and Furman (1997)	1
	Parent Child Communication Patterns	Thompson and Schrodt (2015) IDM[a]	1
Family Cohesion			
	FACES II-Cohesion Subscale	Olson, Portner, and Lavee (1981)	2
	FACES III-Cohesion Subscale	Olson (1985)	2
	FACES IV-Cohesion Subscale	Olson (2008, 2011)	1
Family Flexibility			
	FACES-II Flexibility Subscale	Olson et al. (1981)	1
	FACES-IV Flexibility Subscale	Olson (2008, 2011)	1
	Family Adjustment Scale	Elias (1989)	1
Marital Satisfaction			
	FACES-IV Family Satisfaction Subscale	Olson (2008)	7
Family Stress			
	Family Stress Scale	Olson (2000)	2
	Dyadic Adjustment Scale	Spanier (1976)	2
	Interparental Conflict Scale	Grych, Seid, and Fincham (1992)	1

[a]IDM = Investigator developed measure.

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