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RESEARCH ARTICLE

Family Hardiness and Parent and Family Functioning in Households with Children Experiencing Adverse Life Conditions: a Meta-Analysis

Meta-análisis de la relación entre la resistencia familiar y el funcionamiento de los padres y la familia en hogares con niños que experimentan condiciones de vida adversas

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Abstract.
Objective: The purposes of the meta-analysis were to evaluate the relationship between family hardiness and different dimensions of parent and family functioning in households experiencing adverse child or family life events and circumstances and determine if family hardiness had either or both stress-buffering and health-enhancing effects on parent and family functioning. **Method:** Studies were included if the correlations between family hardiness and different dimensions of parental or family functioning were reported. The synthesis included 53 studies ($N = 4418$ participants) conducted in nine countries between 1992 and 2017. **Results:** showed that family hardiness was related to less parental stress, anxiety/depression, and parenting burden/demands and positively related to parental global health, well-being, and parenting practices. Results also showed that family hardiness was negatively related to family stress and positively related to family life satisfaction, adaptation, and cohesion. The effects sizes between family hardiness and positive parent and family functioning indicators were larger than those for stress-buffering indicators. Child and family life events and child age moderated the relationship between family hardiness and family but not parental functioning. **Conclusion:** The results are consistent with the hypothesis that family hardiness is an internal resource that simultaneously has stress-buffering and health-enhancing effects on parent and family functioning.

Resumen.
Objetivo: el presente metaanálisis buscó evaluar la relación entre resistencia y diferentes dimensiones del funcionamiento parental y familiar en hogares que experimentan acontecimientos vitales adversos tanto familiares como del niño/a. El segundo objetivo fue determinar si la resistencia familiar tenía un efecto amortiguador del estrés y/o el aumento de la salud en el funcionamiento parental y familiar. **Método:** Se incluyeron aquellos estudios que aportaban la correlación entre la resistencia familiar y una o más dimensiones de funcionamiento parental y familiar. La síntesis incluyo 53 estudios ($N = 4418$ participantes) llevados a cabo en nueve países entre 1992 y 2017. **Resultados:** No se encontró sesgo en la publicación de los tamaños de los efectos de los informes de investigación en el metaanálisis. Los resultados mostraron que la resistencia familiar estaba relacionada con menos estrés parental, ansiedad/depresión y demandas/cargas parentales y se relacionaba positivamente con la salud parental global, el bienestar emocional y las prácticas parentales. Los resultados también mostraron cómo la resistencia familiar se relacionaba de manera negativa con el estrés familiar y de manera positiva con la satisfacción con la vida, adaptación y cohesión. Los tamaños del efecto entre resistencia familiar e indicadores positivos de funcionamiento familiar y parental fueron mayores que los de la amortiguación del estrés. **Conclusiones:** Los acontecimientos de la vida del niño/a y de la familia, junto con la edad del niño/a, moderaban la relación entre la resistencia y el funcionamiento familiares, pero no el funcionamiento parental. Los resultados son consistentes con la hipótesis de que la resistencia familiar es un recurso interno que de manera simultánea tiene un efecto amortiguador del estrés y el aumento de la salud para el funcionamiento parental y familiar.

Keywords.
Family Hardiness; Parental Functioning; Family Functioning; Stress-buffering; Health-enhancing; Meta-analysis.

Palabras Clave.
Resistencia familiar; funcionamiento parental; funcionamiento familiar; amortiguación del estrés; mejora de la salud; metaanálisis.

1. Introduction

The hardiness concept was introduced by Kobasa (1979) as a personality trait to explain why some individuals do not experience deleterious effects in response to stressful life experiences. According to Kobasa, "persons who experience high degrees of stress without falling ill have a personality structure differentiating them from persons who become sick under stress. This personality difference is best characterized by the term hardiness" (1979, p. 3). Hardiness is often described in the health-related theory and research literature as individual hardiness (e.g., Schwab, 1996) or psychological hardiness (e.g., Lambert & Lambert, 1999).

McCubbin et al. (1986) introduced the concept of family hardiness to describe how families respond and adapt to stressful life events. According to these investigators, family hardiness functions as a protective factor buffering families from the negative effects of stressful life events. In addition to being considered a buffer against stressful life events, McCubbin et al. (1986) view family hardiness as a family strength having positive effects on family and individual family member functioning (McCubbin & McCubbin, 1988). Other researchers and practitioners have noted as well that family hardiness is a particular type of family strength that would be expected to be related to positive parent and family functioning (e.g., Allison et al., 2003; Dunst et al., 1988; Giblin, 1996).

Conceptualizing family hardiness as both a buffer against stressful life events and as a family strength and resource enhancing family and individual family member functioning would be expected to be empirically related to decreased negative functioning (e.g., Clark, 2002; McCubbin & Patterson, 1983) and increased positive functioning (e.g., Dunst et al., 1990; Ford-Gilboe, 1997). Accumulated evidence for these hypothesized relationships, however, is quite limited.

Searches for research reviews of family hardiness studies identified only two narrative reviews (Dervishaliaj, 2015; Huang, 1995) but no systematic reviews or meta-analyses. Results from these narrative reviews nonetheless are informative in terms of the need for the synthesis of findings from family hardiness studies. Dervishaliaj (2015) noted in her review of family hardiness studies that there have been few empirical investigations of how hardiness lessens family stress in households of children with identified disabilities. Huang (1995) concluded her review by stating that "The precise nature of the relationship between [family] hardiness and stress remains to be determined" (p. 82). These conclusions apply to other dimensions of parent and family functioning (e.g., parental depression, family cohesion) since accumulated evidence for these relationships is even more limited. No studies were included in either review that evaluated the effects of family hardiness on other dimensions of parental or family functioning.

The fact that there are no systematic reviews or meta-analyses of family hardiness studies is surprising for several reasons. First, the concept was introduced more than thirty years ago, which is ample time for researchers to have empirically investigated the relationships between family hardiness and parent and family functioning. Second, even cursory searches of ProQuest Central and Google Scholar find that the construct is cited widely in both the published and unpublished literature. Third, at the time McCubbin et al. (1986) described the key characteristics of family hardiness, they also described the development of the Family Hardiness Index, a scale to measure the relationships between family hardiness and a family's responses, adjustments, and adaptations to different life events and experiences.

The Family Hardiness Index (FHI) includes 20 items that measure three different hardiness concepts: commitment, challenge, and control. The commitment items measure internal family strengths and the ability of family members to work together (e.g., "We have a sense of being strong even when we face big problems"). The challenge items measure a family's ability to seek out and learn from new experiences (e.g., "We encourage each other to try new things and experiences"). The control items measure a familys ability to attribute management of life experiences to their behavior and actions rather than to external events or circumstances (e.g., "We believe that things will work out for the better if we work together as a family"). These are the same dimensions that "make up" the three constructs of individual and psychological hardiness (Funk, 1992; Kobasa, 1979; Kobasa et al., 1981).

Each FHI scale item is rated on a four-point scale (false, mostly false, mostly true, true), where a total scale score is the sum of ratings of the 20 items (by first reversing scores for negatively worded items). Three subscale scores can also be computed for each of the constructs described above. Cronbachs alpha for the total scale score has consistently been reported to be .80 or higher for different samples of parents and other family members (e.g., McCubbin et al., 1986; Trivette et al., 2010).

Findings from a meta-analysis of individual and psychological hardiness studies (Eschleman et al., 2010) are instructive, and informed the conduct of the research synthesis in this paper, even though these investigators explicitly excluded family hardiness studies from their research synthesis. These investigators reported the results for the relationships between hardiness and five different domains of psychological health and found differential relationships between and within domains. The five domains included dispositions (e.g., self-esteem, self-efficacy), stressors (e.g., work-related stress, family conflict), psychological strains (e.g., depression, state anxiety), psychological well-being (e.g., life satisfaction, quality of life), and health promotion (e.g., exercise, nu-

tritional habits). Results showed, for example, that hardiness was positively related to enhanced psychological well-being and negatively related to psychological strains. Whether family hardiness is differentially related to different parent and family functioning outcome measures was one focus of the meta-analysis reported in this paper.

This paper includes the results from a meta-analysis of studies that used the Family Hardiness Index to measure family hardiness where family hardiness was correlated with different measures of parent and family functioning. The review was limited to FHI studies since it is the most widely used family hardiness measure and no studies using another family hardiness measure were located as part of the literature search described below.

The main aim of the meta-analysis was to determine if family hardiness was related to parent and family functioning in households where parents' children experienced either adverse life events involving themselves (e.g., a diagnosis of a child disability or child medical condition) or adverse life events involving a parent or family (e.g., death of a parent). This aim is based on findings from research syntheses, which indicate that the birth and rearing of a child with a disability (Hayes & Watson, 2013; Pinquart, 2018; Singer & Floyd, 2006), the diagnosis and treatment of a child with a chronic illness (Easter et al., 2015; Leeman et al., 2016; Pai et al., 2007), and a child living in a household experiencing family crises or disruptions (Eltanamly et al., 2019; Hou et al., 2019), can and often do negatively affect parent and family functioning. These consequences include, but are not limited to, increased parental stress, heightened parental depression or anxiety, increased child-rearing demands, marital dissatisfaction, family difficulties, and poor quality of family life.

Parents' responses to adverse life events and conditions involving either their children or families, however, have been found to vary considerably (e.g., Eltanamly et al., 2019; Pinquart, 2018; Scherer et al., 2019; Woolf et al., 2016). A host of child, parent, family, and external family factors have been found to influence family adaptation to adverse life events and experiences (e.g., Long & Marsland, 2011; Olsson, 2008; Slone et al., 2009). Family hardiness is one factor that is hypothesized to mitigate the negative effects of adverse child and family life events and conditions (McCubbin & McCubbin, 1988; Vandsburger & Biggerstaff, 2004) and promote and enhance positive parent and family functioning (Trivette et al., 2010). These hypothesized relationships were empirically evaluated by determining if family hardiness had stress-buffering and health-promoting effects on different dimensions of parent and family functioning in households with children experiencing different adverse life conditions.

1.1 Research Questions

Based on existing theory and research, and the hypothesized relationships between family hardiness and parent and family functioning in households with children experiencing adverse life conditions, a series of analyses were conducted to answer 11 research questions to shed light on the nature of the relationships between family hardiness and different dimensions of parent and family functioning. The 11 research questions were:

1. What are the relationships (sizes of effects) between family hardiness and different dimensions of parent functioning (stress, depression, well-being, parenting, etc.)?

2. What are the relationships (sizes of effects) between family hardiness and different dimensions of family functioning (psychological health, life satisfaction, cohesion, etc.)?

3. Are the sizes of effects between family hardiness and different dimension of parent functioning the same or different?

4. Are the sizes of effects between family hardiness and different dimensions of family functioning the same or different?

5. Are the sizes of effects between family hardiness and positive and negative parent functioning the same or different?

6. Are the sizes of effects between family hardiness and positive and negative family functioning the same or different?

7. Are the sizes of effects between family hardiness and parent and family functioning the same or different?

8. Do the sizes of effects between family hardiness and parent functioning differ as a function of child or family adverse life events or conditions?

9. Do the sizes of effects between family hardiness and family functioning differ as a function of child or family adverse life conditions?

10. Do the sizes of effects between family hardiness and parent functioning differ as a function of child age?

11. Do the sizes of effects between family hardiness and family functioning differ as a function of child age?

Guidelines for conducting a quantitative meta-analysis described by Appelbaum et al. (2018) and Siddaway et al. (2019) were used to conduct the research synthesis and report the findings of the meta-analysis. This included the methods and procedures for identifying relevant studies, conducting the meta-analysis, coding the effect sizes for the relationships between family hardiness and the parent and family functioning, assessment of the differential effects between family hardiness and parent and family functioning, and report the information included in this secondary research study.

2. Method

2.1 Research Design

A correlational research design was used to perform the meta-analysis. The correlation coefficients between FHI scores and the parent and family functioning measures were used as the sizes of effects between the independent and dependent variables.

2.2 Search Terms

Family hardiness studies were located by searching for papers including a reference to or description of the "Family Hardiness Index". All of the search sources below except one (Google Scholar) resulted in 250 or fewer results. In the one search source where more than 250 papers were located, the search was redone using "'family hardiness index OR FHI" AND "study OR investigation OR research"' as the search terms.

2.3 Search Sources and Methods

PsycNET, PubMed, ERIC (Education Resource Information Center), ProQuest Central, ProQuest Dissertations and Theses, and Google Scholar were the primary search sources for locating family hardiness studies. These were supplemented by searches of JSTOR and Google. (The latter was a primary source for unpublished dissertations and theses.) Citation searches of investigators who have published multiple papers or studies of family hardiness were also searched (Jih-Yuan Chen, Abraham Greeff, Erla Kolbrun Svavarsdottir). No limit was placed on the type of research report, year of the reports, location (country) of the study, or language of the research reports.

All of the retrieved citations from each search source, except Google Scholar, were screened to determine if a paper or report included the Family Hardiness Index. Results from Google Scholar were sorted by relevance and examined until 50 citations in a row included no citation or reference to the Family Hardiness Index or FHI. The titles, abstracts, and keywords of all papers referencing the FHI were then examined to determine if the retrieved papers included the results from a research study. In cases where this could not be ascertained, the full text of a paper was examined to determine if the FHI was included in a research report. Electronic versions of the full text of all papers identified using the above methods were then searched to determine if the FHI was used as a measure of family hardiness and related to one or more parent or family measures.

2.4 Inclusion and Exclusion Criteria

Five criteria were used for a study to be included in the meta-analysis: (1) the participants were the parents or guardians of children living in the family's household, (2) a child in the household experienced an adverse life experience or event involving either themselves (e.g., identified disability, chronic illness) or their family (e.g., living in poverty, parent divorce), (3) the FHI was completed by a parent or guardian, (4) one or more parent or family functioning measures was completed by the study participants, and (5) the correlations between the total FHI scores and parent and family functioning were reported. In studies where only FHI subscale scores were reported, the average correlation between these measures and the parent and family functioning measures were used as the best estimate of the total FHI scores. In the few studies in which univariate regression or path coefficients were reported between the FHI and a parent and family measure, these were used as the best estimate of the relationships between the independent and outcome measures.

Studies, or particular samples of study participants in a study, were excluded if the participants were not the parents or guardians in households with children (e.g., adolescent study samples) or the children or their families did not experience any discernable adverse child or family life events. Studies were also excluded if they did not include the correlations between the study measures or reported only incomplete sets of correlations (e.g., reports that included only the statistically significant correlation coefficients).

2.5 Summary Measures

The zero-order correlations between the total FHI scores and the parent and family functioning measures were used as the sizes of effect for the relationship between family hardiness and the dependent measures. Higher scores on the parent and family measures indicated either poorer or better functioning, depending on the instruments used to measure different dimensions of parental or family functioning. The signs of the correlation coefficients were reversed, where higher scores were related to poorer functioning so that higher parent and family functioning measure scores indicated better functioning.

2.6 Methods of Synthesis

Meta-Essentials was used to conduct the meta-analysis (Suurmond et al., 2017; Van Rhee et al., 2015). The data coding protocol included the correlation coefficients between the FHI and dependent measures, the sample size associated with the effect sizes, the subgroups for between-group comparisons, and the one continuously coded variable (child age) for the moderator analysis.

The input for each study was the zero-order correlations between the total FHI scores, the study sample size, and one or more parent or family functioning measures. The meta-analysis was performed with Fischer's r-to-z transformation for each FHI-outcome measure relationship, which was used to compute the average sizes of effects between measures. These were transformed back to zero-order correlations for reporting purposes. Random effects models were used because of the heterogeneity of the studies in terms of the study characteristics, participant characteristics, and the parent and family measures used by the primary study investigators.

The average, weighted correlations between the FHI-parent and family measures adjusted for sample size differences were used as the effect sizes for the relationships between measures. Separate analyses were performed for the different dimensions of parent functioning and the different dimensions of family functioning. The outputs included the number of effect sizes in each analysis

(k), the number of study participants (N), the weighted average effect size (r), the 95% confidence interval (CI) for the average size of effect, the Z-test for the effect size, and the p-value for determining if an average size of effect was statistically significant. The I^2 statistic was used for assessing the heterogeneity of the sizes of effects in the studies included in a particular analysis. I^2 can range between zero and 100, where values close to zero indicate similar results in different studies, and values close to 100 indicate that individual study results were quite different.

Publication bias was assessed by the Egger regression test and the Begg and Mazumdar rank-order correlation test (van Aert et al., 2019). The Egger test assesses the degree of funnel plot asymmetry in the distribution of effect sizes. A non-significant t-test for the intercept of the regression line indicates no asymmetry in the effect size distribution. The Begg and Mazumdar rank-order correlation between the effect sizes in each study and the variance for each effect size also assesses the degree of funnel plot asymmetry in the distribution of effect sizes. A non-significant correlation coefficient indicates no asymmetry. Visual inspection of both the funnel plots and normal quantile plots was also done to assess any asymmetry in the distribution of the effect sizes. A normal quantile plot provides a basis for assessing the normality of the data, where "the expectation is that [if] all data points are approximately on a straight line [...] the data follow a normal distribution" (Van Rhee et al., 2015, p. 23).

Subgroup analyses were performed to determine if there were differences in the sizes of effects between (a) the different parent functioning measures, (b) the different family functioning measures, and (c) the parent and family functioning measures. Post hoc analyses were performed as warranted to identify the nature of any differences between subgroups. The $Q_{\text{Between}}(Q_{\text{B}})$ test was used for the subgroup analyses. Q_{B} is analogous to a one-way between-group ANOVA (Hedges, 1994).

Whether the sizes of effects between family hardiness and parent and family functioning were moderated by child or family adverse life conditions were assessed by between type of life condition comparisons for children with identified disabilities, children with medical conditions, and for children experiencing adverse family life events. Whether the sizes of effects between family hardiness and parent and family functioning were related to child age was assessed by regressing the effect sizes on child age to determine if age moderated the relationships between family hardiness and parent and family functioning.

3. Search Results

3.1 Study Selection

The search procedure identified 1112 papers that included a reference to the Family Hardiness Index. After duplicates were removed, the number of remaining papers was 956. These papers were first screened to determine if the FHI was used as a measure of family hardiness in any type of research study. Eight hundred and thirty-one papers (87%) were excluded at this point in the selection process, because they did not include any data in a study of the FHI.

An additional 80 papers were excluded because they (1) did not include any quantitative data, (2) included a measure of individual or psychological hardiness and not family hardiness, (3) the study participants were not parents or childrens guardians (e.g., adolescents), (4) the parents households did not include biological, adopted, or foster children, (5) included only between-group differences in FHI scores, or (6) included incomplete correlations between FHI scores and one or more parent or family functioning measures.

Forty-five research reports met the inclusion criteria. These reports included 53 independent samples of study participants. The 53 samples were considered the number of studies for the conduct of the meta-analysis. All of the research reports were written in English except one (Choi, 2015). This one research report, however, included tables of the participants' characteristics and results in English. The studies were conducted between 1992 and 2017.

3.2 Study and Sample Characteristics

Table 1 includes selected characteristics of the studies and the adverse life conditions experienced by the parents' children and/or families. Table 2 includes selected characteristics of the study participants and their children.

Most studies (72%) included fewer than 100 study participants and 28% included 50 or fewer study participants. The studies were conducted in nine different countries with most (70%) conduced to the United States ($N = 24$) and South Africa ($N = 13$). The majority of studies (62%) were published in peer-reviewed journals and 30% were either theses or dissertations. Four of the research reports (8%) were book chapters or unpublished research reports.

The average age of most study participants (86%) was between 31 and 50 in studies including participant age. Most of the study participants (68%) completed, on average, some education beyond high school in studies, including participant education. Seventy percent or more of the study participants were female and most were the mothers of the children experiencing adverse life events. Sixteen studies (30%) included only female participants and five studies (9%) included only male participants. Seventy percent or more of the study participants were married or living with a partner in studies reporting marital status.

Forty-one (41) percent of the parents' children were preschoolers (0–5), 19% were elementary school age (6–9), 17% were middle school age (10–13), 11% were high

Table 1

Selected Characteristics of the Family Hardiness Studies

Study	Sample	Country	Source	Life Event or Condition
Ahlert & Greeff (2012)	54	SA	Journal Article	Children with a hearing loss
Bigalke (2011)	125	USA	Masters Thesis	Children with a chronic illness
Bigalke (2015)	115	USA	Dissertation	Children with cancer
Bishop & Greeff (2015)	42	SA	Journal Article	Children with schizophrenia
Brown et al. (2010)	31	SA	Journal Article	Children with Type 1 diabetes
Chen (2008)	80	Taiwan	Journal Article	Children with muscular dystrophy
Chen & Clark (2010)	126	Taiwan	Journal Article	Children with muscular dystrophy
Chen et al. (2014)	122	Taiwan	Journal Article	Children with attention deficit disorders
Chen et al. (2015)	113	Taiwan	Journal Article	Children with muscular dystrophy
Chick (1998)	75	Canada	Masters Thesis	Children with Type 1 diabetes
Choi (2015)	145	SK	Journal Article	Children with Down Syndrome
Donnelly (1994)	27	USA	Journal Article	Children with asthma
Failla & Jones (1991)	57	USA	Journal Article	Children with a disability
Gralton (2017) Sample 1	48	USA	Dissertation	Infants born prematurely
Gralton (2017) Sample 2	110	USA	Dissertation	Infants born prematurely
Greeff & Human (2004)	39	SA	Journal Article	Families where a parent died
Greeff & van der Merwe (2004)	98	SA	Journal Article	Children of single divorced parents
Greeff et al. (2006)	68	Belgium	Journal Article	Children of parents who divorced
Greeff & Aspeling (2007)	65	Belgium	Journal Article	Children of single divorced parents
Greeff & du Toit (2009)	38	SA	Journal Article	Children of parents who remarried
Greeff & Fillis (2009)	51	SA	Journal Article	Families living in poverty
Greef & van der Walt (2010)	34	SA	Journal Article	Children with autism
Greeff & Lawrence (2012)	38	SA	Journal Article	Families who lost their homes by fire
Greeff et al. (2012)	68	SA	Journal Article	Children with a physical disability
Greeff & Nolting (2013)	40	SA	Journal Article	Children with a disability
Greeff et al. (2014)	25	Belgium	Journal Article	Children with cancer
Huang (1996) Sample 1	76	USA	Dissertation	Children with a disability
Huang (1996) Sample 2	76	USA	Dissertation	Children with a disability
Koegelenberg (2013)	51	SA	Masters Thesis	Children with Type 1 diabetes
Ladewig et al. (1992) Sample 1	37	USA	Journal Article	Children held hostage
Ladewig et al. (1992) Sample 2	21	USA	Journal Article	Children held hostage
Lapin (2015)	183	USA	Dissertation	Children with asthma
McCubbin et al. (1998)	150	USA	Book Chapter	Children living in families in crisis
McNaughton et al. (2004)	182	USA	Journal Article	Immigrant families
McStay & Trembath (2014) S1	98	Australia	Journal Article	Children with autism
McStay & Trembath (2014) S2	98	Australia	Journal Article	Children with autism
Nabors et al. (2013)	95	USA	Journal Article	Children with a chronic illness
Olsen et al. (1999) Sample 1	54	USA	Journal Article	Children with a disability
Olsen et al. (1999) Sample 2	54	USA	Journal Article	Children with a disability
Pate & Pate (2016)	70	Slovenia	Book Chapter	Children with a chronic illness
Puasiri et al. (2011)	237	Thailand	Journal Article	Children with a mental illness
Raisanen (2013)	87	USA	Masters Thesis	Children who were adopted
Roper et al. (2013) Sample 1	209	USA	Unpublished Study	Children with a disability
Roper et al. (2013) Sample 2	209	USA	Unpublished Study	Children with a disability
Small (2010)	30	SA	Masters Thesis	Children with a physical disability
Snowdon et al. (1994)	50	Canada	Journal Article	Children with a disability
Svavarsdottir et al. (2000) S1	75	USA	Journal Article	Children with asthma
Svavarsdottir et al. (2000) S2	62	USA	Journal Article	Children with asthma
Thornton (2018)	38	USA	Dissertation	Children with a disability
Uthis (1999)	145	Thailand	Dissertation	Family members with HIV/AIDS
VanSolkema (1997)	65	USA	Masters Thesis	Children with a disability
Varner (2009)	106	USA	Dissertation	Families living in poverty
Walsh (2004)	26	Canada	Dissertation	Military deployment

Note. SA=South Africa, SK=South Korea, and USA=United Sates of America.

Table 2

Selected Characteristics of the Study Participants

Study	Sample Size	Participant Characteristics				Child Age (Years)	
		Age (Years)	Yrs. of School	Percent Female	Percent Married	Mean Age	Age Range
Ahlert & Greeff (2012)	54	34	14	93	63	**5**	**1–10**
Bigalke (2011)	125	40	10	100	85	**7**	**4–18**
Bigalke (2015)	115	36	16	73	86	**5**	**0–10**
Bishop & Greeff (2015)	42	56	NR	83	43	31	24–38
Brown et al. (2010)	31	NR	NR	55	NR	NR	1–7
Chen (2008)	80	43	13	57	91	**6**	**1–15**
Chen & Clark (2010)	126	43	10	57	73	NR	NR
Chen et al. (2014)	122	40	9	87	97	10	4–16
Chen et al. (2015)	113	46	14	57	68	32	22–42
Chick (1998)	75	42	12	94	88	13	2–21
Choi (2015)	145	NR	14	82	NR	12	10–22
Donnelly (1994)	27	33	14	67	NR	4	1–5
Failla & Jones (1991)	57	29	12	100	75	4	0–6
Gralton (2017) Sample 1	48	31	14	50	65	0	NA
Gralton (2017) Sample 2	110	31	15	50	100	0	NA
Greeff & Human (2004)	39	46	13	82	100	16	11–21
Greeff & van der Merwe (2004)	98	42	NR	91	0	15	**12–19**
Greeff et al. (2006)	68	46	10	85	0	19	16–30
Greeff & Aspeling (2007)	65	46	13	85	0	19	12–30
Greeff & du Toit (2009)	38	43	13	89	100	16	7–26
Greeff & Fillis (2009)	51	35	11	100	0	16	13–19
Greef & van der Walt (2010)	34	36	NR	86	79	3	1–4
Greeff & Lawrence (2012)	38	NR	9	82	79	NR	NR
Greeff et al. (2012)	68	47	13	75	100	20	15–19
Greeff & Nolting (2013)	40	40	NR	93	100	13	8–18
Greeff et al. (2014)	25	44	14	69	92	NR	NR
Huang (1996) Sample 1	76	32	14	100	96	4	2–7
Huang (1996) Sample 2	76	34	14	0	96	4	2–7
Koegelenberg (2013)	51	41	12	88	71	**4**	**1–16**
Ladewig et al. (1992) Sample 1	37	36	14	100	95	8	6–9
Ladewig et al. (1992) Sample 2	21	39	14	100	95	8	6–9
Lapin (2015)	183	26	NR	100	NR	**2**	**1–3**
McCubbin et al. (1998)	150	29	NR	92	52	3	0–6
McNaughton et al. (2004)	182	36	9	100	83	10	8–12
McStay & Trembath (2014) S1	98	42	13	100	91	9	1–16
McStay & Trembath (2014) S2	98	44	12	0	91	9	1–6
Nabors et al. (2013)	95	32	NR	75	77	5	0–24
Olsen et al. (1999) Sample 1	54	33	14	100	100	4	1–6
Olsen et al. (1999) Sample 2	54	35	16	0	100	4	1–6
Pate & Pate (2016)	70	38	15	75	93	NR	NR
Puasiri et al. (2011)	237	46	NR	54	76	**13**	NR
Raisanen (2013)	87	42	NR	100	87	7	4–17
Roper et al. (2013) Sample 1	209	40	NR	100	100	9	NR
Roper et al. (2013) Sample 2	209	42	NR	0	100	9	NR
Small (2010)	30	44	12	100	59	5	4–17
Snowdon et al. (1994)	50	41	14	97	72	12	2–37
Svavarsdottir et al. (2000) S1	75	33	15	100	89	**2**	**0–5**
Svavarsdottir et al. (2000) S2	62	35	15	0	98	**2**	**0–5**
Thornton (2018)	38	31	15	100	84	11	0–31
Uthis (1999)	145	47	9	70	68	16	7–26
VanSolkema (1997)	65	57	NR	63	NR	35	18–58
Varner (2009)	106	27	13	94	46	4	3–5
Walsh (2004)	26	36	15	100	100	NR	1–21+

school age (14–17), 6% were young adults (18–20), and 6% were older adults residing in their parents' homes. The adverse life events or conditions experienced by the parents' children and families included identified intellectual, psychological, or physical disabilities in 23 studies (43%), medical diagnoses or chronic illnesses in 16 studies (30%), and adverse family life circumstances or events in 14 studies (26%).

3.3 Study Measures

The total FHI scale scores were used as the family hardiness measure in all but three studies (Greeff & Nolting, 2013; McStay et al., 2014; Small, 2010). FHI total scale scores in these three studies were estimated by computing the average correlation between the FHI subscale scores and the parent and family functioning measures.

Twenty-five different scales were used to measure parent functioning and 25 different scales were used to measure family functioning. The 50 scales are listed in Appendix A. They are categorized by the particular constructs that the different scales measured. Each scale was first categorized as either a parent or family functioning measure based on the attributional targets of the scale items (Bugental et al., 1998). The item content of each scale was then examined to determine the targets of appraisals for assigning a scale to a particular parent or family functioning dimension. In studies where a scale included indicators of different parent or family dimensions, the scale was categorized based on the preponderance of scale items that were measured.

Table 3 includes descriptions of the main targets of appraisal for both the parent and family functioning dimensions. The parent functioning measures assessed four different dimensions of parental health (global health, stress, anxiety/depression, and well-being) and two different dimensions of parenting (demands and practices). The family functioning measures assessed two different dimensions of family psychological health (stress and life satisfaction) and two different dimensions of family resilience (adaptation and cohesion).

4. Synthesis Results

The 53 studies included 35 effect sizes for the relationships between FHI scores and the different dimensions of parent functioning and 74 effect sizes for the relationships between FHI scores and the different dimensions of family functioning. The total number of study participants was 4418. Appendices B and C include, respectively, the data used for conducting the meta-analysis of the relationships between FHI and parent and family functioning.

4.1 Publication Bias

Table 4 shows the results from the publication bias analyses for the parent and family functioning measures. The table includes both the observed and adjusted average effect sizes and 95% CI for both the parent and family measures. The analyses imputed five effect sizes for the parent functioning measures and none for the family functioning measures. The Egger regression test and the Begg and Mazumdar rank-order correlation tests were non-significant for both sets of measures.

Inspection of the funnel plot for the parent functioning measures indicated minimal asymmetry as evidenced by the small difference in the observed and adjusted effect sizes (Table 4). The normal quantile plot for the parent functioning measures found that almost all of the data points approximated a straight line. The funnel plot for the family functioning measures showed an equal distribution of the effect sizes below and above the average effect size, which accounts for no difference in the observed and adjusted average effect sizes (Table 3). Inspection of the normal quantile plot of the effect sizes for family functioning showed that all but a few of the data points approximated a straight line for the family functioning measures. The results from the publication bias analyses, taken together, indicated no publication bias for the studies in the meta-analysis.

4.2 Parent Functioning Measures

Findings for the parent functioning measures are shown in Table 5. Family hardiness was significantly related to all six dimensions of parent functioning and for all parent-related measures combined as evidenced by the Z-test results. Family hardiness was associated with less parental stress, less parental anxiety and depression, and fewer parenting demands, and was associated with more positive global health functioning, better parental well-being, and more positive parenting practices. The results indicate that family hardiness is associated with different dimensions of parent functioning.

The 6 Between Type of Parent Functioning Measure comparison was $Q_{\mathrm{B}} = 9.39, df = 5, 29, p = .095$. The sizes of effects ranged between $r = .27$, 95%CI=.02, .50, $Z = 2.74$, $p = .003$ for parenting demands and $r = .54$, 95%CI $= .30, .71$, $Z_s = 5.04$, $p_s = .000$ for parental well-being.

Whether family hardiness had stronger stress-buffering or health enhancing effects was determined by comparing the sizes of effects between family hardiness and negative and positive parent functioning. The average size of effect for the relationship between family hardiness and positive parent functioning (global health, well-being, and parenting practices) was $r = .48$, 95%CI=.36, .58, $Z = 7.56$, $p = .000$, and the average size of effect for the relationship between family hardiness and negative parent functioning (stress, anxiety/depression, and parenting demands) was $r = .37$, 95%CI=.27, .45, $Z = 7.90$, $p = .000$. The between type of parent functioning measures comparison was $Q_{\mathrm{B}} = 2.78$, $df = 1, 33$, $p = .095$. The pattern of results is consistent with the hypothesis that family hardiness is a buffer against the negative effects of stressful life experiences and is a family resource that is associated with healthy parental functioning.

Table 3

Parental and Family Functioning Measures Used at the Outcome Measures in the Family Hardiness Studies

Outcome Measures	Attributional Targets of the Scale Items
Parental Functioning Measures	
Parental Global Health	The parental global health scales included indicators of parent physical health, mental health, social health, life appreciation, exercise, and nutrition
Parental Stress	The parental stress scales included indicators of heightened parent reactions in response to stressful life events such as child-rearing responsibilities, daily hassles, unexpected life events, and marital discord
Parental Anxiety and Depression	The parental anxiety and depression scales included indicators measuring a parents sense of despair or dejection and dread or uneasiness
Parental Psychological Well-Being	The parent psychological well-being scales included indicators of a parents heightened positive sense of purpose and meaning and positive feelings of life satisfaction.
Parenting Demands	The parenting demands scales included indicators of an increased burden on parenting as a result of a child disability or medical condition
Parenting Practices	The parenting practices scales included indicators of a parent's sense of competence and enjoyment in carrying-out parenting roles and responsibilities
Family Functioning Measures	
Family Stress	The family stress scales included indicators of family distress, negative affect, stressful family member interactions, and family difficulties
Family Life Satisfaction	The family life satisfaction scales included indicators of satisfaction with the quality of family life, marital relationships, shared family time, and family member communication
Family Adaptation	The family adaptation scales included indicators of a familys responses to problems, conflicts, difficulties, crises, and hardships
Family Cohesion	The family cohesion scales included indicators of family member cooperation and coordination, mutual respect, and shared responsibilities

Table 4

Results of the Publication Bias Analyses

	Observed Average r		Adjusted Average r		Egger Regression Test		Begg-Mazumber Rank-Order Test	
Outcome Measures	r	95%CI	r	95%CI	t-test	p-value	Z-test	p-value
Parental Measures	.43	.40, .46	.39	.35, .42	0.58	0.57	0.34	0.73
Family Measures	.52	.49, .54	.52	.49, .54	0.16	0.87	0.28	0.78

Table 5

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

Parental Functioning Measures	k	N	r	95%CI	Z-test	p-value	I^2
All Parent Measures Combined	35	3772	.41	.34, .48	10.64	.000	83
Parental Global Health	4	474	.50	.22, .70	5.43	.000	79
Parental Stress	6	705	-.37	-.12, -.57	3.80	.000	86
Parental Anxiety & Depression	9	994	-.43	-.32, -.53	8.01	.000	62
Parental Well-Being	7	520	.54	.30, .71	5.07	.000	85
Parenting Demands	6	702	-.27	-.02, -.50	2.74	.003	86
Parenting Practices	3	377	.31	.21, .41	12.94	.000	0

Note. k=Number of effect sizes, N=Number of study participants, r=Average weighted effect size, and CI=Confidence interval.

The sizes of effects in Table 5 show that the effect sizes for the two parenting measures are smaller than those for the four psychological health-related parent measures. A post-hoc analysis comparing the sizes of effects of the two different types of parent measures resulted in $Q_{\mathrm{B}} = 5.33$, $df = 1, 33$, $p = .021$. The average

size of effect for the two parenting measures was $r = .28$, 95%CI=.14, .41, $Z = 4.58$, $p = .000$, and the average size of effect for the four health-related measures was $r = .46$, 95%CI=.38, .53, $Z = 10.42$, $p = .000$. The result indicates that the strength of the relationship for family hardiness is stronger for parent health compared to the parenting functioning measures.

Although family hardiness was related to each of the parent functioning measures, there was, however, heterogeneity in the sizes of effect in the primary studies for 5 of the 6 parent functioning measures as evidenced by the inconsistency (I^2) findings. This indicates that the strength of relationships between family hardiness for each of the dimensions of parent functioning, except parenting practices, varied in the studies in the effect size analyses. This was not unexpected given the differences in measures used to assess each type of parent functioning (Appendix C) and because of the heterogeneity in the study and participant characteristics (Appendices A and B).

4.3 Family Functioning Measures

Table 6 shows the results for the relationships between family hardiness and the family functioning measures. The sizes of effects were all statistically significant as evidenced by the Z-test results. The findings indicate that families with higher FHI scores reported less stress and better life satisfaction, adaptation, cohesion, and overall positive family functioning. There was, however, considerable variability in the findings reported in the primary studies as evidenced by the large inconsistency results for all but one dimension of family functioning. This is most likely due to the same study and participant characteristics as was the case for the parent functioning measures.

The 4 Between Type of Family Functioning Measure comparison was not significant, $Q_B = 5.38$, $df = 3,70$, $p = .146$. However, as shown in Table 6, the sizes of effect for the positive indicators of family functioning (life satisfaction, adaptation, and cohesion) were larger compared to family stress. A post-hoc test comparing family stress with each of the other three family measures was statistically significant, $Q_B = 4.18$, $df = 1,72$, $p = .041$. The combined size of effect for family life satisfaction, adaptation, and cohesion was $r = .50$, 95%CI=.48, .52, $p = .000$ compared to $r = .38$, 95%CI=.25, .50, $p = .000$ for family stress, $r = .38$, 95%CI=.25, .50, $p = .000$. The result is also consistent with the hypothesis that family hardiness is a buffer against the negative effects of stressful family life events and is a family strength associated with enhanced positive family functioning.

4.4 Parent Functioning vs. Family Functioning

Whether family hardiness was differentially related to parent and family functioning was assessed with a 2 Between Type of Outcome Measure analysis. There was no difference in the sizes of effects for the parent or family functioning measures, $Q_B = 2.84$, $df = 1,17$, $p = .092$. The average size of effect for parent functioning was $r = .41$, 95%CI=.34, .48, $p = .000$ and the average size of effect for family functioning was $r = .48$, 95%CI=.44, .52, $p = .000$. The results indicate that family hardiness is positively associated with both parent and family functioning.

Because the constructs measured by the parent and family functioning measures were so different, the between types of family measure analysis was repeated for domains assessing only psychological health. The parent psychological health-related measures included parental stress, anxiety/depression, and well-being, and the family psychological health-related measures included family stress and life satisfaction. There was no difference in the sizes of effect between the parent and family measures, $Q_B = .01$, $df = 1,42$, $p = .903$. The average size of effect for the parent health-related measures was $r = .45$, 95%CI=.35, .53, $p = .000$ and the average size of effect for the family health-related measures was $r = .44$, 95%CI=.37, .51, $p = .000$. The result indicates that the strength of the relationship between family hardiness and parent and family psychological health is much the same.

4.5 Child and Family Moderator Effects

The primary interest of the moderator analyses was whether the relationship between family hardiness and parent and family functioning was differentially associated with the three different types of adverse life events experienced by the parents families and children. A secondary interest included the analysis of any differential effects of child age on the association between family hardiness and parent and family functioning. Child age was expected to moderate the relationship between family hardiness and parent and family functioning based on evidence that parents and families of older children experience more stress than do parents and families of younger children (e.g., Macias et al., 2003; Orr et al., 1993).

4.6 Adverse life events comparisons

Table 7 shows the sizes of effects for the relationships between family hardiness and parent and family functioning for the three different child and family adverse life conditions. All six sizes of effects were statistically significant as evidenced by the Z-test results.

The between type of adverse life events comparisons was $Q_B = 2.06$, $df = 2,32$, $p = .358$ for the parent functioning measures and $Q_B = 14.78$, $df = 2,71$, $p = .001$ for the family functioning measures. Examination of the results in Table 7 shows that the effect sizes between family hardiness and both parental and family functioning were larger for children with disabilities compared to the families experiencing the other two adverse life events. Post-hoc analyses showed that there was no statistically significant difference in the sizes of effect for children with disabilities compared to the families experiencing the other two adverse life events, $Q_B = 1.95$, $df = 1,33$,

Table 6

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

Family Functioning Measures	k	N	*r*	95%CI	*Z*-test	*p*-value	I^2
All Family Measures Combined	74	6431	.48	.44, .52	20.17	.000	76
Family Stress	13	1265	-.38	-.25, -.50	6.02	.000	79
Family Life Satisfaction	9	934	.51	.47, .55	23.24	.000	0
Family Adaptation	15	1393	.46	.35, .56	8.13	.000	83
Family Cohesion	37	2839	.51	.45, .56	15.15	.000	76

Note. k=Number of effect sizes, N=Number of study participants, *r*=Average weighted effect size, and CI=Confidence interval.

$p = .162$, for parent functioning. There was, however, a statistically significant difference in the sizes of effects for children with disabilities compared to the other two groups, $Q_B = 14.88$, $df = 1, 72$, p = .000, for family functioning. The finding indicates that the strength of the relationship between family hardiness and family functioning was stronger in households of children with disabilities compared to households experiencing other adverse life events.

4.7 Child age

The analysis of effect sizes regressed on child age was not statistically significant for parent functioning, $\beta = .04$, $Z = .58$, $p = .563$, but was statistically significant for family functioning, $\beta = .42$, $Z = 7.33$, $p = .000$. The strength of the relationship between family hardiness and family functioning was stronger in households of older children. The result is not consistent with previous studies where parents and families of older children experience more stress than parents and families of younger children.

5. Discussion

Findings from the different sets of analyses provided a basis for answering each of the 11 research questions (RQ). Results showed that family hardiness was related to less parental stress, anxiety/depression, and parenting demands, and better parental global health, well-being, and parenting practices (RQ1). Results also showed that family hardiness was related to less family stress and better family life satisfaction, adaptation, and cohesion (RQ2). The patterns of results are consistent with the hypothesis that family hardiness would be related to less negative and more positive parent and family functioning (McCubbin & McCubbin, 1988). The findings are similar to the results reported by Eschleman et al. (2010) in their meta-analysis of the relationship between individual hardiness and different dimensions of psychological health. These investigators found that hardiness was associated with less negative indicators of psychological health and more positive indicators of psychological functioning.

Results from the comparative analyses between family hardiness and the six different dimensions of parent functioning (RQ3) and the four different dimensions of family functioning (RQ4) indicated no differential relationships between family hardiness and the different types of parent and family functioning. Analyses of the differential effects between family hardiness and positive and negative parent and family functioning showed that the strength of the relationships was larger for positive parental functioning compared to negative parental functioning (RQ5) and the size of effect was larger for positive family functioning compared to negative family functioning (RQ6). These results suggest that family hardiness had value-added effects in terms of having health promotion benefits beyond those having stress-buffering effects (Dunst et al., 1990; Ford-Gilboe, 1997).

The comparison of the relationship between family hardiness and parental and family functioning indicated that the sizes of effects were almost identical (RQ7). This result indicates that parents as individuals and the family as an integrated unit derive similar psychological benefits from the "make up" of family hardiness (DeMarco et al., 2000; Ford-Gilboe, 2002).

The strength of the relationships between family hardiness and parental functioning was not moderated by the type of adverse child or family life event or experience (RQ8). The strength of the relationships between family hardiness and family functioning was moderated by the type of adverse child or family life event or experience (RQ9). The strength of the relationship between family hardiness and family functioning was stronger in households where children had a disability compared to the other two adverse child and family life events. Results nonetheless indicated that family hardiness had both stress-buffering and health promotion effects on both parental and family functioning in households, regardless of the type of adverse life events or circumstances as evidenced by the statistically significant results for each adverse child or family life event (Table 6). It would be of interest to know, however, if specific child or family life conditions (e.g., children with physical disabilities vs. intellectual disabilities, children with asthma vs. diabetes, parents who divorced vs.

Table 7

Sizes of Effects and 95% Confidence Intervals for the Relationships Between Family Hardiness and Parent and Family Functioning for Each of the Three Child and Family Life Condition Groups

Child and Family Life Conditions	k	N	*r*	95%CI	*Z*-test	*p*-value
Parental Functioning Measures						
Children with Identified Disabilities	11	1654	.48	.35, .59	7.24	.000
Children with Medical Conditions	16	1466	.37	.24, .49	5.79	.000
Family Adverse Life Conditions	8	652	.38	.26, .49	7.02	.000
Family Functioning Measures						
Children with Identified Disabilities	37	3571	.54	.50, .59	19.69	.000
Children with Medical Conditions	23	1753	.39	.30, .47	8.40	.000
Family Adverse Life Conditions	14	1107	.42	.33, .51	8.63	.000

Note. k=Number of effect sizes, N=Number of study participants, *r*=Average weighted effect size, and CI=Confidence interval.

the death of a parent) moderates the relationship between family hardiness and parental or family functioning. These types of analyses would likely increase knowledge of the conditions under which family hardiness has stress-buffering and health promotion benefits.

Child age did not moderate the strength of the relationships between family hardiness and parental functioning (RQ10) but did moderate the strength of the relationship between family hardiness and family functioning (RQ11). The size of effect between family hardiness and family functioning was larger in households with older compared to younger children. Examination of the distribution of effect sizes for family functioning showed that the older children in the studies in the meta-analysis were mostly children with disabilities. A parsimonious explanation for the age-related effects of family hardiness is that parents and other family members had more years of experience adapting to their children's conditions. Silibello et al. (2016), for example, found that the adaptation of families in households with children with rare types of disabilities was related to accumulated life experiences involving the care of their children.

5.1 Contributions to Theory and Research

Family hardiness has been primarily conceptualized as a stress-buffering construct (e.g., Carson et al., 1994; Raisanen, 2013) and as a resilience factor that contributes to adaptation to family-related hardships (e.g., Greeff & van der Walt, 2010; Hackbarth et al., 2012). In those instances where family hardiness is considered an internal family strength (McCubbin & McCubbin, 1988), it is also conceptualized as a construct that lessens the negative effects of adverse life events (e.g., Garcia-Cadena et al., 2014; Leske & Jiricka, 1998). Findings from the meta-analysis indicated that family hardiness lessened the negative effects of adverse life events for different dimensions of parent and family functioning. The patterns of results are consistent with stress-buffering and protective factor perspectives of the effects of family hardiness. Neither of these perspectives, however, explain the health promotion influences of family hardiness.

Findings from the meta-analysis showed that family hardiness was positively related to different dimensions of parent and family functioning (general health functioning, parental well-being, parenting practices, family life satisfaction, family adaptation, and family cohesion). Although previous research indicates that the positive and negative psychological functioning are more independent than dependent (e.g., Huppert, 2003; Saheer et al., 2017; Schmukle et al., 2002), results from the meta-analysis showed that family hardiness was related to less negative and more positive parent and family functioning. Findings from a study by Karademas (2007) indicate that different dimensions of psychological health have both common and specific antecedents. Where the antecedents of positive and negative indicators of psychological health are common, the result is less negative and more positive functioning as found in the meta-analysis. According to Lightsey (1996), psychological resources are a factor that helps explain the stress-buffering and health-enhancing effects of these common factors. Hardiness was identified by Lightsey (1996) as a psychological resource related to healthy functioning. Family hardiness therefore can be considered a family resource that has both protective and health-enhancing benefits. The results add to both theory and research by showing how family hardiness behaves in a way similar to personal hardiness and is, therefore, a family-related variable that is associated with variations in different dimensions of parent and family functioning. The same is the case for other types of family strengths (Dunst, 2021a, 2021b).

5.2 Limitations

The limitations of the meta-analysis are the same as those noted by Eschleman et al. (2010). First, the family hardiness studies relied on self-report data for both the independent and dependent measures. Second, causal

inferences may not be warranted given the fact that the data are correlational. Third, the number of studies and effect sizes for each of the parent functioning measures was less than 10. This was also the case for one of the family functioning measures (life satisfaction). Fourth, few primary study investigators employed the same parent and family measures (see Appendix C). This, in part, is likely part of the reason there was heterogeneity in the sizes of effects in the studies in 8 of the 10 analyses of parent and family functioning (Tables 4 and 5). Fifth, the relationship between family hardiness and other dimensions of parent and family functioning may be different than that found in the meta-analysis. This warrants other studies employing different types of parent and family measures that would be expected to be related to family hardiness.

6. Conclusion

Findings from the meta-analysis were similar to those reported by Eschleman et al. (2010) for the relationships between individual hardiness and different dimensions of psychological functioning. This is also true in terms of the stress-buffering and health-promotion relationships between family hardiness and parent and family functioning reported by Eschleman et al. (2010) for individual hardiness. Results from the meta-analysis reported in this paper indicated that family hardiness is an internal family strength and resource (Lightsey, 1996) that both buffers families from the negative effects of adverse child and family life events and has value-added positive effects on different dimensions of parent and family functioning.

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Appendix A

Table 8

Family Hardiness Study Outcome Measures and Categorization by Measurement Constructs

Parent-Related Measures	Source	# Studies
Global Health Measures		
Duke Health Profile	Parkerson et al. (1990)	3
Health Promotion Lifestyle Profile	Chen et al. (2006)-Investigator Adapted	1
Stress Measures		
Parenting Stress Index	Abidin (1997)	2
Parental Stress Scale	Berry and Jones (1995)	1
Everyday Stress Index	Hall (1983)	1
Perceived Stress Scale	Cohen et al. (1983)	1
Pediatric Inventory for Parents Scale	Streisand et al. (2001)	1
Anxiety and Depression Measures		
CES-Depression Scale	Radloff (1977)	4
State-Trait Anxiety Inventory	Spielberger et al. (1970)	2
Hopkins Symptom Checklist	Derogatis et al. (1974)	1
Brief Symptom Inventory	Derogatis and Melisaratos (1983)	1
Thai Emotional Problems Scale	Uthis (1999)-Investigator Adapted	1
Psychological Well-Being Measures		
General Well-Being Schedule	Dupuy (1977)	2
Orientation to Life Questionnaire	Antonovsky (1987)	2
Positive and Negative Affect Scales	Watson et al. (1988)	1
Spiritual Well-Being Scale	Paloutzian and Ellison (1982)	1
Satisfaction with Life Scale	Diener et al. (1985)	1
Parenting Demands Measures		
Care of My Child Scale	McCubbin and Svavarsdotirr (1996)	2
Care of My Child Scale	McCubbin et al. (1993)	1
Demands and Illness Inventory	Rungreangkulkij et al. (2002)	1
Caregiver Commitment Questionnaire	Rowe (1989)-Investigator Adapted	1
FaMM Condition Management Subscale	Knafl et al. (2009)	1
Parenting Practices Measures		
Parenting Sense of Competence Scale	Johnston and Mash (1989)	1
Parent Behavior Inventory	Lovejoy et al. (1999)	1
Caregiver Satisfaction Subscale	Ferrari et al. (1993)	1
Family-Related Measures		
Stress Measures		
Family Inventory of Life Events	McCubbin & Patterson (1991)	5
FIRMA-G Family Stressors Index	McCubbin et al. (1996)	2
Family Distress Index	McCubbin & Patterson (1981)	1
Thai Family Stress Inventory	Puasiri et al. (2011)-Investigator Adapted	1
FSSI Family Stress Subscale	Halvorsen (1991)	1
FaMM Family Difficulties Subscale	Knafl et al. (2009)	1
FIRMA-G Family Strains Index	McCubbin and Petterson (1981)	1
Family Dysfunction Index	McCubbin et al. (1993)	1
Family Well-Being Measure	Choi (2015)-Investigator Adapted	1
Life Satisfaction Measures		
Family APGAR	Smilkstein (1978)	4
Family Quality of Life Survey	Park et al. (2003)	2
Family Adaptation Scale	Antonovsky and Sourani (1988)	2
Kansas Marital Satisfaction Scale	Grover et al. (1984)	1

Family Crisis Oriented Personal Evaluation Scales	McCubbin et al. (2000)	5
Family Problem Solving and Communication Index	McCubbin et al. (1996)	4
Family Inventory of Resources for Management	McCubbin et al. (1981)	4
FACES Adaptation Subscale	Olson et al. (1985)	1
FaMM Parental Mutuality Subscale	Knafl et al. (2009)	1
Cohesion Measures		
Family Sense of Coherence Scale	Antonovsky and Sourani (1988)	12
Family Attachment and Changeability Index	McCubbin et al. (1996)	8
McMaster Family Assessment Device	Miller et al. (1985)	8
Feetham Family Functioning Survey	Roberts and Feetham (1982)	7
FACES Cohesion Subscale	Olson et al. (1985)	1
Brief-Family Assessment Measure-III	Skinner et al. (1995)	1
Thai Family Functioning Inventory	Puasiri et al. (2011)-Investigator Adapted	1

Appendix B

Table 9

Sizes of Effect Between Family Hardiness and Different Dimensions of Parent Functioning

Study	Outcome Measure	Sample Size	Correlation	95% CI (Confidence Interval)	
				Lower CI	Upper CI
Chen & Clark (2010)	Global Health	126	.32	.15	.47
Chen et al. (2014)	Global Health	122	.65	.53	.74
Chen et al. (2015) 1	Global Health	113	.41	.24	.55
Chen et al. (2015) 2	Global Health	113	.57	.43	.68
Bigalke (2011)	Parenting Stress	125	.23	.05	.39
Bigake (2015)	Parenting Stress	115	.32	.14	.48
McNaughton et al. (2004)	Parenting Stress	182	.10	-.05	.24
McStay et al. (2014) 1	Parenting Stress	98	.59	.44	.71
McStay et al. (2014) 2	Parenting Stress	98	.61	.47	.72
Raisanen (2013)	Parenting Stress	87	.28	.07	.47
Ladewig et al. (1992) 1	Anxiety/Depression	37	.22	-.12	.52
Ladewig et al. (1992) 2	Anxiety/Depression	21	.64	.26	.85
McNaughton et al. (2004)	Anxiety/Depression	182	.35	.21	.47
Nabors et al. (2013)	Anxiety/Depression	95	.32	.12	.49
Pate & Pate (2016)	Anxiety/Depression	70	.23	-.01	.44
Roper et al. (2013) 1	Anxiety/Depression	209	.54	.44	.63
Roper et al. (2013) 2	Anxiety/Depression	209	.56	.46	.65
Uthis (1999)	Anxiety/Depression	145	.42	.27	.55
Walsh (2004)	Anxiety/Depression	26	.57	.21	.79
Pate & Pate (2016) 1	Parent Well-Being	70	.10	-.14	.33
Pate & Pate (2016) 2	Parent Well-Being	70	.26	.02	.47
Svavarsdottir et al. (2000) 1	Parent Well-Being	75	.70	.56	.80
Svavarsdottir et al. (2000) 2	Parent Well-Being	75	.75	.63	.84
Svavarsdottir et al. (2000) 1	Parent Well-Being	62	.60	.41	.74
Svavarsdottir et al. (2000) 2	Parent Well-Being	62	.60	.41	.74
Varner (2009)	Parent Well-Being	106	.54	.39	.66
Chick (1998)	Parenting Demands	75	.17	-.06	.39
Choi (2015)	Parenting Demands	145	.61	.52	.72
Puasiri et al. (2011)	Parenting Demands	237	.14	.01	.26
Svavarsdottir et al. (2000)	Parenting Demands	75	.09	-.14	.31
Svavarsdottir et al. (2000)	Parenting Demands	62	.14	-.12	.38
Varner (2009)	Parenting Demands	106	.35	.17	.51
Raisanen (2013)	Parenting Practices	87	.27	.06	.46
Uthis (1999) 1	Parenting Practices	145	.35	.20	.49
Uthis (1999) 2	Parenting Practices	145	.30	.14	.44

Appendix C

Table 10

Sizes of Effect Between Family Hardiness and Different Dimensions of Family Functioning

Study	Outcome Measure	Sample Size	Correlation	95% CI (Confidence Interval)	
				Lower CI	Upper CI
Choi (2015) 1	Family Stress	145	.60	.48	.70
Choi (2015) 2	Family Stress	145	.41	.26	.54
Choi (2015) 3	Family Stress	145	.61	.50	.70
Donnelly (1994)	Family Stress	27	.07	-.34	.45
Failla & Jones (1991)	Family Stress	57	.05	-.18	.28
Huang (1996) 1	Family Stress	76	.58	.40	.71
Huang (1996) 2	Family Stress	76	.51	.32	.66
McCubbin et al. (1998)	Family Stress	150	.23	.07	.38
Puasiri et al. (2011)	Family Stress	237	.28	.16	.39
Svavarsdottir et al. (2000) 1	Family Stress	75	.30	.07	.50
Svavarsdottir et al. (2000) 2	Family Stress	62	.18	-.08	.42
Walsh (2004) 1	Family Stress	26	.19	-.23	.55
Walsh (2004) 2	Family Stress	26	.58	.23	.80
Chen & Clark (2010)	Life Satisfaction	126	.51	.37	.63
Chen et al. (2014)	Life Satisfaction	122	.59	.46	.70
Chen et al. (2015)	Life Satisfaction	113	.44	.28	.58
Chick (1998)	Life Satisfaction	75	.48	.28	.64
Donnelly (1994)	Life Satisfaction	27	.56	.21	.78
McStay & Trembath (2014) 1	Life Satisfaction	98	.54	.38	.67
McStay & Trembath (2014) 2	Life Satisfaction	98	.55	.39	.68
Puasiri et al. (2011)	Life Satisfaction	237	.46	.35	.56
Thornton (2018)	Life Satisfaction	38	.54	.26	.74
Choi (2015)	Family Adaptation	145	.56	.44	.66
Chick (1998)	Family Adaptation	75	.62	.45	.74
Gralton (2017) 1	Family Adaptation	46	.06	-.24	.35
Gralton (2017) 2	Family Adaptation	110	.29	.11	.45
Gralton (2017) 3	Family Adaptation	48	.48	.22	.68
Gralton (2017) 4	Family Adaptation	110	.07	-.12	.26
Lapin (2015)	Family Adaptation	183	.43	.30	.54
McCubbin et al. (1998)	Family Adaptation	150	.41	.27	.54
Olson et al. (1999) 1	Family Adaptation	54	.49	.25	.67
Olson et al. (1999) 2	Family Adaptation	54	.34	.07	.56
Puasiri et al. (2011)	Family Adaptation	237	.72	.65	.78
Snowdon et al. (1994)	Family Adaptation	50	.59	.37	.75
Thornton (2018)	Family Adaptation	38	.58	.31	.76
VanSolkema (1997)	Family Adaptation	65	.59	.40	.73
Walsh (2004)	Family Adaptation	26	.45	.06	.72
Ahlert & Greeff (2012)	Family Cohesion	54	.48	.24	.67
Bishop & Greeff (2015)	Family Cohesion	42	.69	.48	.82
Brown et al. (2010)	Family Cohesion	31	.54	.21	.76
Chen (2008)	Family Cohesion	80	.73	.61	.82
Chen et al. (2014)	Family Cohesion	122	.66	.55	.75
Chen et al. (2015)	Family Cohesion	113	.74	.64	.81
Chick (1998)	Family Cohesion	75	.42	.21	.59
Choi (2015) 1	Family Cohesion	145	.63	.52	.72
Choi (2015) 2	Family Cohesion	145	.60	.48	.70
Failla & Jones (1991)	Family Cohesion	57	.45	.21	.64

Gralton (2017) 1	Family Cohesion	48	.30	.01	.54
Gralton (2017) 2	Family Cohesion	110	.22	.03	.39
Gralton (2017) 3	Family Cohesion	48	.30	.01	.54
Gralton (2017) 4	Family Cohesion	110	.24	.05	.41
Greeff & Aspeling (2007)	Family Cohesion	65	.52	.31	.68
Greeff & du Toit (2009)	Family Cohesion	38	.68	.45	.82
Greeff & Human (2004)	Family Cohesion	39	.37	.05	.62
Greeff & Van der Merwe (2004)	Family Cohesion	98	.60	.45	.71
Greeff et al. (2006)	Family Cohesion	68	.51	.31	.67
Greef & Fillis (2009)	Family Cohesion	51	.53	.29	.71
Greef & van der Walt (2010)	Family Cohesion	34	.76	.56	.88
Greef & Lawrence (2012)	Family Cohesion	38	.38	.06	.63
Greef et al. (2012)	Family Cohesion	68	.48	.27	.65
Greef & Nolting (2013)	Family Cohesion	40	.51	.23	.71
Greef et al. (2014)	Family Cohesion	25	.24	-.19	.59
Huang (1996) 1	Family Cohesion	76	.51	.32	.66
Huang (1996S) 2	Family Cohesion	76	.58	.40	.71
Koegelenberg (2013)	Family Cohesion	51	.54	.30	.71
Lapin (2015)	Family Cohesion	183	.31	.17	.44
McCubbin et al. (1998)	Family Cohesion	150	.31	.16	.45
McNaughton et al. (2004)	Family Cohesion	182	.18	.03	.32
Nabors et al. (2013)	Family Cohesion	95	.48	.31	.62
Small (2010)	Family Cohesion	30	.37	-.01	.65
Snowdon et al. (1994)	Family Cohesion	50	.39	.12	.61
Svavarsdottir et al. (2000) 1	Family Cohesion	75	.75	.63	.84
Svavarsdottir et al. (2000) 2	Family Cohesion	62	.60	.41	.74
Varner (2009)	Family Cohesion	106	.51	.30	.67

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