


What Makes Families Healthy? Examining Correlates of Family Health in a Nationally Representative Sample of Adults in the United States

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Abstract

Conceptually, family health is crucial for individual health across the lifespan, yet previous research has lacked a validated family health measure. The current study examines the relationships between individual physical (physical activity) and mental health (depressive symptoms and executive functioning) and social determinants of health (socioeconomic status) with four domains of family health using a recently validated family health measure. The sample included 1050 US adults (40.30 years; 53.78% female) that completed a survey. The results of the structural equation model revealed that depression was associated with reduced family health across all domains. Executive functioning was associated with better family social and emotional processes and family healthy lifestyle. Physical activity was associated with improved family healthy lifestyle only. Income was positively associated with each domain,

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but subjective SES was not associated with any domain. The findings indicate the interconnectedness of family health and individual factors, particularly with depression and wealth.

Keywords

depression, executive functioning, families, family health, physical activity, socioeconomic status, structural equation modeling

Introduction

The family unit affects the development and well-being of individuals throughout the life course (Garris & Weber, 2018; Hanson et al., 2019; Schumann & Mosley, 1994). The well-being of the family is a strong predictor of individual mental, physical, and overall health (Ferrer, Palmer, & Burge, 2005). Given the importance of families to individual well-being, it is critical to understand the intersection between individual health with family health, including what makes families better positioned to positively influence the health of individual members as well as what allows the individual to positively affect the family.

Historical Examination of Families Life and Individual Member Health

Marinker (1976) tells the evolution of the modern family from a primitive function (e.g. the passing on of genes) to the primary site where children are raised and educated on social norms, expectations, and values. The family is one of the primary units where good and poor health behaviors are taught and practiced, and as such, has a significant influence on the individual. Historically, researchers have advocated for understanding family well-being better. Bauman and Grace (1974) noted that it is important to address the health needs of the individual as a part of a family context. Bomar (1990) argued that family health promotion should be distinguished from individual health promotion for clinical practice.

Because of the significant interactions between the family and individual well-being and accompanying implications on health policy and practice, some researchers have suggested treating the family as an individual unit for medical care (Marinker, 1976; Schwenk & Hughes, 1983). In a review of the literature nearly 40 years ago, Schwenk and Hughes (1983) concluded that although there is evidence to suggest that considering the family as a unit is possible, there are several research gaps that prevent it from happening. One gap that has persisted well into the 21st century has been the lack of an adequate measure of family

health. Such a measure would allow researchers to investigate the role that outside forces—such as community and culture—similarly and differentially play on family and individual health. [Schwenk and Hughes \(1983\)](#) also noted the need for research into how the health of individual members affects family health, as previous research has primarily focused on the effects in the direction of family to individual.

This study aims to address the gaps noted by [Schwenk and Hughes \(1983\)](#) by utilizing a newly developed measure of family health ([Crandall et al., 2020](#); [Weiss-Laxer, Crandall, Okano, & Riley, 2020](#)) to investigate the relationship between individual health and overall family well-being. As a first step in understanding what makes families healthy, the purpose of this study is to examine different correlates of family health. The current study examines different aspects of individual physical (physical activity) and mental health (depressive symptoms and executive functioning) and social determinants of health (socioeconomic status) and their associations with family health.

For purposes of this study, family is defined broadly to include at least two persons who are related biologically, or by adoption, marriage, or choice and “whose relationship is characterized by at least one of the following: (1) social and/or legal rights and obligations, (2) affective and emotional ties, and (3) endurance or intended endurance of the relationships” ([Weiss-Laxer et al., 2020](#)). Family health is defined as “a resource at the level of the family unit that develops from the intersection of the health of each family member, their interactions and capacities, as well as the family’s physical, social, emotional, economic, and medical resources” ([Weiss-Laxer et al., 2020](#)). Specific domains of family health include family social and emotional health processes, family healthy lifestyle, family health resources, and family external social supports ([Crandall et al., 2020](#)). Family social and emotional health processes include internal family processes such as communication, coping, and emotional safety. Family healthy lifestyle includes internal behaviors and habits adopted by the family that promote healthy living, such as daily exercise, meal planning, balanced eating, and a healthy sleep schedule. Family health resources include both family internal resources such as individual member health and help-seeking efficacy as well as external resources such as access to health care and economic resources. Family external social supports refer to the social capital that the family has access to outside of their family unit ([Crandall et al., 2020](#)).

Trends in Family Structure and Context

Family structure in the United States (US) has historically fluctuated over time and is increasingly diverse, with differences across race and ethnicity. Recent research indicated that in 2019, while the majority of minor children (64%) were living with two biological parents, 22% of children were in single-parent families and 9% in step-families ([Payne, 2019](#)). Among black families, only

36% lived with two biological parents and 44% lived with a single mother—the highest percentage when compared to other races (Payne, 2019). Hispanic families and families with two or more races included the highest number of cohabitating parent families (10%) and the second highest percentage of children living with a single mother (22%) (Payne, 2019).

Blended families (e.g., a household including a stepparent, stepsibling, or half-sibling) are also more common, with some studies estimating at least one-half of children will be part of a stepfamily at some point during their childhood (Harcourt, Adler-Baeder, Erath, & Pettit, 2015). Nontraditional family structures (e.g. a household lead by a single parent, gay/lesbian parents, adoptive parents, or grandparents) are particularly prevalent among certain racial groups (e.g., blacks) and those with low socioeconomic status (Cherlin, 2010). Further, a growing number of unmarried young adults head their own household. In the first half of the 20th century, only 5% of 20- to 29-year-old unmarried individuals headed their own households. This percentage has increased to 36% of women and 28% of men in this age group by 2000 (Rosenfeld, 2007). These shifts underscore the move toward a wider variety of family structures in the US, which has in turn complicated the defining of one's household as their family. With an increasing variation in family structure such as more people living alone (Cherlin, 2010) or mothers and fathers living in different households (Payne, 2019; Brown, Manning, & Stykes, 2015), it is important to examine the family beyond the confines of the household.

Conceptual Frameworks

Two perspectives provide a theoretical foundation for this study and are useful frameworks for understanding factors associated with family health. First, individuals and families are ecological levels that influence each other (Bronfenbrenner, 1979). Individual well-being may influence family health through leverage points including biological (e.g., executive functioning), behavioral (e.g., physical activity), psychological (e.g., depression), and physical environment (e.g., socioeconomic status) factors (Grzywacz & Fuqua, 2000). Relatedly, the household production of health framework (Berman, Kendall, & Bhattacharyya, 1994; Davanzo, 1990) integrates ecological ideas and posits that individuals living within the same household will combine internal and external resources to maximize health for the whole household (Schumann & Mosley, 1994). For example, individual household members may adopt certain behaviors in order to improve functioning of the household unit and maintain positive levels of overall health. In an effort to expand the household production of health model, Harkness and Super (1994) introduced the idea of the “developmental niche” framework. These researchers argue that human development occurs within household niches that are made up of three major components: (1) the physical and social setting, (2)

culturally regulated customs of childcare and rearing, and (3) the psychology of caretakers. It is through these components that health is defined, practiced, and produced. As an extension of [Harkness and Super's \(1994\)](#) three major components that make up the developmental niche of healthy families, this study explored the developmental niche of healthy families within the context of four major domains areas (i.e., family social and emotional health processes, family healthy lifestyle, family health resources, and family external social supports). One limitation of the household production of health and developmental niche frameworks is that they focus on family as a household, excluding members that may live outside of the given household. Given the changing structures of American families, it is important to expand these models to include family contexts both within and across multiple households.

Individual Health as a Correlate of Family Health

Building on the household production of health and developmental niche frameworks, some existing literature has examined the associations between individual physical, mental, and social determinants of health with family life. Given the absence of family health survey measures historically, extant literature has examined various aspects of family life that are important contributors to health. For example, [Niermann, Kremers, Renner, & Woll \(2015\)](#) examined the interrelatedness of the family health climate (e.g., perceptions and expectations within a family regarding healthy lifestyles) and physical activity in adolescents. Higher adolescent personal physical activity was associated with a more positive family health climate regarding physical activity ([Niermann et al., 2015](#)). [Krug, Wittchen, Lieb, Beesdo-Baum, and Knappe \(2016\)](#) found in a community-based sample of 1040 participants that family functioning, which is similar to family social and emotional health processes, was lower among families where one or both parents had a depressive disorder.

Executive functioning involves multiple cognitive processes, housed primarily in the frontal lobes of the brain, that aid in managing one's life and reaching short-term and long-term goals ([Center for the Developing Child at Harvard University, 2011](#)). Numerous studies have indicated a link between the family environment and the development of executive functioning ([Duran, Cottone, Ruzek, Mashburn, & Grissmer, 2020](#); [Fatima, Sheikh, & Ardila, 2016](#)). Less is known about how an individual's executive functioning in adulthood affects family health. At the individual level, a review of 15 studies reported a bidirectional positive relationship between low executive functioning and unhealthy behaviors such as obesity-related health behaviors ([Smith, Hay, Campbell, & Trollor, 2011](#)). In a sample of 492 mothers of young children, [Bauer, Weeks, Lumeng, Miller, and Gearhardt \(2019\)](#) found that mothers with lower executive functioning were less likely to use healthy food-related parenting processes and were more likely to establish a poorer food

environment for their families compared to mothers with higher cognitive abilities.

Objective and subjective socioeconomic status (SES) are both known predictors of individual health and well-being. Objective SES includes participant education and household income. Subjective SES is defined as the individual's assessment of their socioeconomic status in relation to others around them. Research investigating the relationship between subjective SES and aspects of family health is limited, and studies on the relationship between objective SES and family health have demonstrated mixed results. Using data from a sample of 218 Australian families, [Denny, Gavidia-Payne, Davis, Francis, and Jackson \(2014\)](#) reported that in terms of family connectedness, communication, problem-solving, social support, family cohesion, and religious support, those with lower SES did not differ significantly from those with higher SES. A review of the literature by [McLoyd \(1990\)](#) indicated that lower socioeconomic status is associated with weaker parent-child relationships and that child abuse is more likely to happen in families suffering from economic instability. Qualitative and mixed-methods studies have found that there are specific aspects of family life that may vary based on SES ([Jarrett, Jefferson, & Kelly, 2010](#); [Mistry, Lowe, Benner, & Chien, 2008](#); [Raniga & Mthembu, 2017](#)). To maintain family stability, many low income families rely on external social supports such as resource pooling within the extended family and establishing networks both inside and outside of the community ([Jarrett et al., 2010](#); [Mistry et al., 2008](#)).

Aims and Hypotheses

Although prior research has examined the relationship between individual health with various aspects of family well-being, there have been, to our knowledge, no prior studies examining correlates of family health due to the absence of a holistic family health measure. The household production of health framework suggests that the known relationships between certain health factors and individuals may look different when examining them for the family instead of just the individual. In this study, we investigated the association between individual health factors and adult-reported family health. We examined individual mental health (depressive symptoms and executive functioning), physical activity (physical health), and socioeconomic status (financial/economic health) and their association with the developmental niche as defined by four comprehensive domains of family health.

Our overall hypothesis was that higher socioeconomic status, executive functioning, and physical activity would be positively associated with family health and that depressive symptoms would be negatively associated with family health. Specifically, we predicted that adult physical activity would be strongly positively correlated with family healthy lifestyle, as family healthy

lifestyle targets several health behaviors at the family level. We predicted that depressive symptoms would be most strongly negatively related to family social and emotional health processes because depression is related to the mental and emotional state. Additionally, we hypothesized that high executive functioning would be most strongly associated with family social and emotional health processes because executive functioning increases an individual's capacity for planning, coping, and communicating with others. Regarding socioeconomic status, we predicted that subjective SES would have a stronger relationship with family health than objective SES measures (education and income) since in some cases, subjective SES is a stronger predictor of individual health than objective measures (Cundiff & Matthews, 2017; Präg, Mills, & Wittek, 2016). Last, because family external social supports and family health resources refer to external social and physical resources, we hypothesized that these domains would be most strongly associated with socioeconomic status.

Methods

Sample

A national sample of 1050 adults was recruited via Qualtrics. Five respondents were excluded from the analysis due to missing data on demographic controls, resulting in a final sample size of 1045. Quota sampling was used to ensure the participants were representative of a variety of family types (e.g. married with children, empty nesters, single) and socioeconomic statuses (e.g., minority race, education level). Respondents completed a survey that included self-reported measures of family health, depression, socioeconomic status, executive functioning, and physical activity. Participants were required to provide consent before proceeding with the survey and were given a credit to their Qualtrics account upon survey completion. Approval for this study was obtained from the Institutional Review Board (IRB).

Past research has found that online panels such as Qualtrics provide reliable samples and reach participants in hard-to-reach areas (Roulin, 2015; Walter, Seibert, Goering, & O'Boyle, 2019). Attention filters are recommended to ensure response validity (Beymer, Holloway, & Grov, 2018). The current survey included multiple attention filter questions spaced throughout the survey to ensure that participants were reading questions and that attention was held from beginning to end.

Measures

Family health. Family health was measured using the Family Health Scale (Crandall et al., 2020), a 32-item measure with four subscales: family social and emotional health processes, family healthy lifestyle, family health resources,

and family external social supports. Measured on a five-point Likert scale ranging from “strongly disagree” to “strongly agree,” sample items included: “In my family, we rarely express affection to each other” and “In my family, family members pay attention to me” (Table 1 contains a list of all items by subscale). Participants answered each item based on who they considered their family to be. Higher scores indicated better family health. Prior studies have demonstrated high internal reliability across all subscales, with Cronbach’s alphas for each subscale ranging from .82 to .92 (Crandall et al., 2020).

Physical activity. Physical activity was assessed using two items taken from the Physical Health Measure of the Behavioral Risk Factor Surveillance System (BRFFS) questionnaire (Center for Disease Control and Prevention, 2011). After asking if they participated in vigorous physical activity, participants were then asked, “On average, how many days per week do you do these vigorous activities for at least 10 minutes at a time (e.g., running, aerobics, heavy yard work, or anything else that causes a large increase in breathing and heart rate)?” Answers ranged from 0 to 7 days per week.

Depression. We used the 9-item Patient Health Questionnaire (Kroenke, Spitzer, & Williams, 2001) to measure depressive symptoms. Response options were examined on a 4-point Likert scale ranging from “not at all” to “nearly every day.” All items were preceded by the following stem: “Over the last 2 weeks, how often have you been bothered by any of the following problems?” Example items included “trouble falling or staying asleep, or sleeping too much” and “feeling down, depressed or hopeless.” Higher scores indicated higher rates of depressive symptoms. Reliability in other studies has been good for this scale [$\alpha = .89$; (Kroenke et al., 2001)].

Executive functioning. Executive functioning was assessed using 15 items from the Learning, Executive, and Attention Functioning (LEAF) scale (Castellanos, Kronenberger, & Pisoni, 2018) that measured attention, planning, and problem-solving. Items assessed how often participants participated in certain behaviors (e.g., “have problems being easily distracted” and “struggle when learning new material”) on a 4-point Likert scale ranging from “never” to “very often.” Items were reverse coded so that higher scores indicated better executive functioning. Prior studies have indicated high internal reliability for the subscales used (Cronbach’s alphas ranging from .86 to .92; (Castellanos et al., 2018).

Socioeconomic status. Objective SES was measured using household income and participant education. Annual household income was categorized in US\$20,000 increments, with the exception of the lowest two categories (“less than US\$10,000 per year” and “US\$10,000 to US\$20,000 per year”). The highest category was described as “US\$180,000 or more per year.” Higher scores represented higher income. Education was categorized as those who had obtained a bachelor’s degree or higher versus those who had not.

Subjective SES was assessed by a single question used from the Add Health study: “Think of this ladder as representing where people stand in the

Table 1. Mean Scores for Family Health Scale Items for the Total Sample and by Measurement of Family by Household or Outside of Household.

FHS#	Item	Total sample N = 1045	Participant only considered people in their household n = 565	Participant considered people outside of their household n = 478	P-value
	Family social and emotional health processes				
1	We rarely express affection to each other (R)	3.93	3.90	3.98	.38
2	There is a feeling of togetherness	4.14	4.16	4.13	.82
3	We care for one another	4.54	4.56	4.52	.92
4	We support each other	4.43	4.45	4.41	.86
5	We rarely do things together (R)	3.73	3.78	3.67	.16
6	The things we do for each other make us feel a part of the family	4.18	4.19	4.16	.76
7	We have fun together	4.30	4.32	4.28	.71
9	We discuss problems and feel good about the solutions	3.82	3.88	3.75	.07
11	Family members pay attention to me	3.93	3.97	3.88	.19
12	Overall, I am happy with my relationship with my family members	4.13	4.16	4.10	.63
13	I feel safe in my family relationships	4.36	4.39	4.31	.32
23	We stay hopeful even in difficult times	4.15	4.13	4.17	.22
25	We have beliefs that give us comfort	4.15	4.14	4.16	.69
	Family healthy lifestyle				
15	We make a point of being physically active during daily life	3.58	3.60	3.57	.54
17	We usually have fresh fruits and vegetables in our home	4.01	4.01	4.02	.75

(continued)

Table 1. (continued)

FHS#	Item	Total sample N = 1045	Participant only considered people in their household n = 565	Participant considered people outside of their household n = 478	P-value
18	We help each other avoid unhealthy habits	3.47	3.52	3.41	.09
19	We make a point to follow medical recommendations	3.98	3.94	4.02	.21
20	We help each other in seeking healthcare services when needed (such as making doctor's appointments)	4.13	4.15	4.10	.28
21	We help each other make healthy changes	3.91	3.96	3.85	.08
	Family health resources				
28	If we needed help from others, we would have real difficulty finding transportation to get to that help (R)	3.68	3.61	3.75	.21
29	If we needed outside help, we would not know what sort of help was available (R)	3.56	3.47	3.65	.05
30	Financial difficulties would be an obstacle to getting outside help (R)	3.18	3.15	3.21	.49
31	We do not trust doctors and other health professionals (R)	4.14	4.11	4.16	.48
32	A lack of health insurance would prevent us from asking for medical help (e.g., no health insurance or inadequate coverage) (R)	3.45	3.30	3.63	.00
38	My MENTAL health or the MENTAL health of my family members got in the way of MY FAMILY's normal daily activities (such as household chores, work, school, or recreation) (R)	3.58	3.52	3.65	.09

(continued)

Table 1. (continued)

FHS#	Item	Total sample N = 1045	Participant only considered people in their household n = 565	Participant considered people outside of their household n = 478	P-value
42	Family worries and problems distracted me when I was working (R)	3.36	3.30	3.45	.09
43	My family did not have enough money at the end of the month after bills were paid (R)	3.61	3.58	3.66	.45
47	My family did not have adequate housing (R) Family external social supports	4.34	4.33	4.35	.57
33	We have people outside of our family who we can turn to for help (such as for advice, help with childcare, a ride somewhere, or to borrow some money or something valuable)	3.68	3.64	3.73	.21
34	We have people outside of our family we can turn to when we have problems at school or work	3.63	3.59	3.67	.40
35	If we needed financial help, we have people outside of our family we could turn to for a loan (e.g., for US\$200)	3.35	3.36	3.34	.76
36	If we needed help, we have people outside of our family who could provide our family with a place to live	3.43	3.41	3.45	.81

United States. At the top of the ladder (step 10) are the people who have the most money and education, and the most respected jobs. At the bottom of the ladder (step 1) are the people who have the least money and education, and the least respected jobs or no job. Where would you place yourself on this ladder? Pick the number for the step that shows where you think you stand at this time in your life, relative to other people in the United States” (Bradshaw, Kent, Henderson, & Setar, 2017). Scores ranged from 1 to 10, with higher scores indicating higher subjective SES.

Controls. We included the following controls in the model: gender (1 = female; 0 = male; no participants reported other genders), education (1 = bachelor’s degree or higher; 0 = less than a bachelor’s degree), marital status (1 = married; 0 = not married), participant age, and number of people living in the household.

Analytic Methods

Data were cleaned and item distributions examined in STATA 16. Model paths were examined using structural equation modeling (SEM) in Mplus version 7. We first set up the measurement model by conducting confirmatory factor analysis (CFA) of all latent variables (four family health variables, depressive symptoms, and executive functioning). The measurement model indicated good fit based on the Root Mean Square of Approximation (RMSEA = .045) and the Comparative Fit Index (CFI = .960), with factor loadings for each item ranging from .49 to .90.

After establishing the measurement model, we examined pairwise correlations in Mplus using the newly created latent variables. Next, we fit a structural model by regressing the four family health constructs on depressive symptoms, executive functioning, income, education, subjective SES, and the number of days of vigorous physical activity. Controls were included in the model by regressing the independent and dependent variables on gender, education, marital status, age, and number of people living in the household.

The following model fit indices and cutoffs were used to examine adequate fit: RMSEA < .08 and CFI > .90 (Brown, 2006). Because the data were categorical, we used a robust weighted least squares maximum likelihood. Missing data were minimal and handled using full information maximum likelihood.

Results

The sample was 53.78% female, with an average age of 40.30 years. Average household size was 3.21 people. Nearly half (46.22%) of participants were married. Over a third (35.10%) had a high school education or less, and 13.75% had a master’s degree or higher. The average self-ranking on the SES ladder item was 5.37 out of 10. Nearly a fourth (24.04%) had an annual

Table 2. Sample Descriptive Statistics, N = 1045.

<i>Variable</i>	<i>Mean/% (SD)</i>
Age (in years)	40.30 (17.25)
Number of people in the household	3.21 (2.11)
Female (%)	53.78
Married (%)	46.22
Race (%)	
White	60.78
Subjective SES	5.37 (2.11)
Education (%)	
Less than high school	11.83
High school graduate	23.27
Some college	20.38
Two-year degree	9.33
Four-year degree	21.44
Master's degree	10.87
Professional or doctorate degree	2.88
Income (%)	
Less than US\$10000	14.33
US\$10,000 < US\$20000	9.71
US\$20,000 < US\$40,000	21.35
US\$40,000 < US\$60,000	15.58
US\$60,000 < US\$80,000	12.12
US\$80,000 < US\$100,000	9.90
US\$100,000 < US\$120,000	5.19
US\$120,000 < US\$140,000	3.56
US\$140,000 < US\$160,000	2.21
US\$160,000 < US\$180,000	1.25
US\$180,000 or more	4.81

income of less than US\$20,000 per year, and 16.29% had an income of US\$80,000 or more. [Table 2](#) includes the full results for demographic variables. A correlation matrix of all key study variables and controls is included in [Table 3](#).

Predictors of Family Health

Physical health. The number of days of vigorous physical activity was associated with better family healthy lifestyle only.

Mental health. Depression was negatively associated with each of the family health domains. Its strongest association was with family health resources.

Table 3. Pairwise Correlations of Family Health, Individual Health Indicators, and Demographic Factors.

	Family SEHP	Family HL	Family HR	Family ESS	Depression	EF	Physical Activity	Subjective SES	Income	BS Degree	Married	Age	# in Household	Female
Family SEHP	1.000													
Family HL	0.766***	1.000												
Family HR	0.486***	0.403***	1.000											
Family ESS	0.465***	0.492***	0.407***	1.000										
Depression	-0.473***	-0.399***	-0.254***	-0.633***	1.000									
EF	0.410***	0.381***	0.509***	0.186***	-0.774***	1.000								
Physical activity	0.069	0.186***	0.007	0.057	-0.042	0.057	1.000							
Subjective SES	0.221***	0.330***	0.219***	0.226***	-0.230***	0.198***	0.132***	1.000						
Income	0.258***	0.307***	0.332***	0.234***	-0.279***	0.218***	-0.013	0.456***	1.000					
BS degree	0.191***	0.246***	0.202***	0.153***	-0.213***	0.199***	-0.009	0.344***	0.488***	1.000				
Married	0.261***	0.251***	0.230***	0.095**	-0.311***	0.216***	0.038	0.284***	0.434***	0.328***	1.000			
Age	0.117***	0.089**	0.281***	-0.131***	-0.376***	0.261***	0.039	0.111***	0.203***	0.165***	0.364***	1.000		
# in household	0.051***	0.043***	-0.052*	0.039*	0.059***	-0.012	-0.087	-0.006	0.036*	-0.063*	0.042***	-0.215***	1.000	
Female	-0.065*	-0.116***	-0.120***	-0.029	0.177***	-0.097**	0.015	-0.202***	-0.259***	-0.182***	-0.257***	-0.288***	0.051***	1.000

Family SEHP = Family Social and Emotional Health Processes, Family HL = Family Healthy Lifestyle, Family HR = Family Health Resources, Family ESS = Family External Social Supports, EF = Executive Functioning.

p* < .05. *p* < .01. ****p* < .001.

Of the four domains, executive functioning was positively associated with family social and emotional health processes and family healthy lifestyle. Executive functioning was not associated with the other two domains of family health.

Social Determinants of Health. [Table 4](#) includes the full results of the final model (Model Fit: RMSEA = 0.041; CFI = 0.956). Annual household income was positively associated with all four family health domains. Subjective socioeconomic status was positively associated with family healthy lifestyle and family external social supports only. Educational status was not associated with any of the family health domains.

Sensitivity Analyses

Given that respondents were allowed to define their family as people who may have resided in their household only or to also included family members who resided outside of their household, it was important to examine if there were differences in how respondents reported their family health based on who they considered to be their family. [Table 1](#) includes the item means of the Family Health Scale for the whole sample, for those who considered only members of their household when completing the family health items, and for the portion of the sample who also considered family to include people outside of their household. Of the 32 items in the Family Health Scale, only one item varied based on who the respondent considered to be their family (see [Table 1](#)). In the final model, we added a control for who the respondent considered to be their family. The addition of the control did not change the results.

Discussion

Prior research has examined the relationship between various aspects of individual health and some areas of family well-being. This study is the first of its kind to examine the relationship between individual health and a comprehensive measure of family health. Consistent with the socioecological model ([Brofenbrenner, 1979](#)), our overarching hypothesis was that higher individual physical, mental, and financial health would be associated with better family health. Results indicated that this was generally true. Each aspect of individual health was significantly associated with at least one aspect of family health, with the exception of educational status. Depression and income were the most consistently associated with family health across all domains, with depression having the strongest associations. These findings are consistent with the household production of health framework ([Berman et al., 1994](#); [Davanzo, 1990](#)) that suggests that family health is developed from internal (e.g., individual member mental health) and external (e.g., income)

Table 4. Structural Equation Model Results of the Association between Individual Health and Family Health, $N = 1045$.

	Family Social and Emotional Health Processes	Family Healthy Lifestyle	Family Health Resources	Family External Social Supports
Depression	−0.352***	−0.205***	−0.540***	−0.319***
Executive functioning	0.103*	0.160**	0.054	−0.050
Income	0.091*	0.107**	0.191***	0.159***
Bachelor's degree	0.015	0.060	−0.029	0.024
Subjective SES	0.058	0.149***	0.026	0.105**
Days of vigorous physical activity	0.048	0.154***	−0.015	0.050
Controls				
Married	0.106**	0.082*	−0.043	0.002
Age	−0.088*	−0.104**	0.053	−0.292***
Number of people in household	0.044	0.021	0.006	−0.018
Female	0.048	−0.005	0.039	0.009

* $P < .05$ ** $P < .01$ *** $P < .001$. Model Fit: RMSEA = 0.041; CFI = 0.956.

resources. Below, we elaborate on the findings as they relate to each domain of family health.

Individual Physical Health and Family Health

Vigorous physical activity was strongly associated with healthy family lifestyle in the expected direction. This corroborates our hypothesis, the household production of health framework, and other studies that have found a link between individual physical activity and family health behaviors (Komulainen et al., 2019; Mutz & Albrecht, 2017; Niermann et al., 2015).

Individual Mental Health and Family Health

Adult depressive symptoms were moderately to strongly negatively associated with all four domains of family health, highlighting the importance of internal resources in producing family health. Although we hypothesized that depression would be most strongly associated with social and emotional health processes, results indicated that in actuality, depressive symptoms were

more strongly related to family health resources. This is intriguing as supporting studies also show that those without adequate health resources (the ability to find transportation to get help, know what kind of help is available, trust doctors and other healthcare professionals, and have adequate insurance) also seem to have higher rates of mental health problems (Barrett & Turner, 2005). Due to the cross-sectional nature of the study, it remains unclear whether depressive symptoms affect the family's health or whether depression is a result of an unhealthy family. If family relationships and the overall health of the family are viewed as negative, individual members may become more depressed (Friedemann & Webb, 1995). Similarly, if a family does not feel they have resources outside of their family or does not trust those who can help, their depression could be worsened. Alternatively, if a family member is depressed, it may be more challenging to maintain family relationships or access resources to support the family. An important next step is to collect longitudinal data to further understand the relationships between depression and the family.

Contrary to our hypothesis, executive functioning was more strongly correlated with family healthy lifestyle than with any other family health domain. This finding is consistent with extant literature that links executive functioning to healthy lifestyle factors such as sleep, physical activity, and diet. For example, a study of 3667 adults found that executive functioning was associated with more physical activity and higher healthy eating scores (Cohrdes, Mensink, & Hölling, 2018). Fanning et al. (2017) showed that sleep was associated with improvement in the executive functioning skills of self-monitoring and goal-setting and that greater moderate to vigorous physical activity was associated with better performance on spatial working memory tasks. Balanced diets have been found to reduce the risk of cognitive impairment and diseases such as Alzheimer's disease (Singh et al., 2014).

Our finding that executive functioning was not associated with family health resources or family external social supports contradicts previous studies demonstrating a link between executive functioning and depressive symptoms (Evans, Kouros, Samanez-Larkin, & Garber, 2016), parental stress (Wagner et al., 2016), and self-efficacy (Hughes et al., 2015). However, these studies either did not control for SES or used only education as a measure of SES. In the current study, by contrast, we controlled for multiple aspects of SES. Further, our study used a composite measure of executive functioning rather than breaking it into its multiple individual components. This may account for our non-significant finding as different facets of executing function may be differentially related to family health resources and family external social support.

Social Determinants and Family Health

Household family income, more so than participant education or subjective SES, was the SES measure most strongly correlated with all four of the family

health domains. Our results suggest that even beyond family relationships, economic distress can affect a family's ability to engage in healthy lifestyle behaviors and may even affect their social support system. This result is consistent with the household production of health that suggests that external resources such as income may be important to producing family health.

Although the relationship between higher income and improved family health was significant across the domains, associations were modest. This may be in part because according to the family resilience theory, families experiencing financial hardship are compelled to adopt financial and social strategies to minimize unfavorable outcomes associated with the hardship, which strategies increase family unity and health (Patterson, 2002). Thus, this may mitigate the negative effect that low socioeconomic status has on family health in some families.

Contrary to our hypothesis, subjective SES was not associated with family social and emotional health processes or family health resources, though it was positively associated with family healthy lifestyle and family external social supports. Although research suggests that subjective SES is a valuable predictor of individual health (Cundiff & Matthews, 2017), it may not hold the same weight when assessing the overall health of the family. An important next research step may be to measure family subjective SES from the viewpoint of multiple family members.

In the current study, there was not a significant relationship between family health and education, which suggests that families can have strong family health regardless of the educational status of adult members. Without accounting for household family income, educational status (bachelor's degree) was significant with all four of the family health domains (Table 3). However, the relationship disappeared when income was included. Other studies have found a relationship between education and some healthy behaviors in the family (Komulainen et al., 2019); however, based on our preliminary findings, it may be that a lack of income versus a lack of education creates more stress on the family thereby challenging healthy family processes, behaviors, access to resources, and external supports. These findings show the continued need to investigate this relationship, especially as it pertains to differing family structures.

Examining the Family Beyond the Structure of the Household

In the current study, participants were able to consider their family as either people who lived in their household only or to also include family members who lived outside of the household. There were no differences in family health based on whether participants considered only family in the context of the household or if they also included family members outside of the household. These findings are important as they may help to expand conceptual

frameworks (such as the household production of health and developmental niche) to consider the importance of family members who may live outside of the household. Furthermore, the results speak to the utility of the Family Health Scale across a variety of family structures. Nontraditional family structures have become increasingly prevalent over the past decades as the rates of cohabitation and childbearing in cohabitation have risen, and the rate of divorce remains high (Cherlin, 2010), making it essential that a measure of family health not be restricted to the traditional family structure in which members reside together in a single household. While the nature and structure of the family has changed and continues to change, what is slower to change is how the family is considered in research, policy, and practice (Meyer, 2001). For example, the US Census defines families as those who are related by birth, adoption, or marriage AND who reside in the same household (United States Census Bureau, 2020) and much of the family research focuses at the household level. Such definitions, policies, and practices can be problematic as fewer than half of children grow up with both of their parents living in the same household (Pew Research Center, 2015).

Implications for Policy and Practice

Whereas findings from this study further support the complex interconnectedness between family health and both micro level and macro level influences, practitioners and policy makers seeking to impact either family or individual health would be wise to consider these important and complex interconnections. Previous commentary has spoken to this need (Hanson et al., 2019; Denham, Eggenberger, Young, & Krumwiede, 2016) encouraging both practitioners and policy makers to “think family” in all aspects of their professional work. These recommendations are deeply rooted in the household production of health framework and the need to support families for health production. Whether a community health worker, medical provider, program planner, or elected official, “thinking family” can be accomplished through the careful consideration of four key family impact principles: family engagement, family responsibility, family stability, and family diversity (Crandall et al., 2019; Novilla, Broadbent, Glade, & Crandall, 2020). See Hanson et al. (2019) for additional detail.

Strengths and Limitations

The primary limitation of our study was that it was cross-sectional. This prevented us from being able to report the directionality of the results. Longitudinal data is needed in order to determine causality of each of the correlates with family health. Another important limitation was that our survey gathered data about the collective health of an entire family unit; however, data was gathered only through the responses of one family member. In order to gain a

better representation of overall family health, responses from multiple members within the same family need to be collected and analyzed. Additionally, our study was conducted on a sample of adults living in the United States. The sample was not representative of some groups as the survey was administered online and in English which excluded American adults that do not speak English or do not have access to a computer, smartphone, or internet from participating. Further research should evaluate family health among international samples and additional US-based samples that include more ethnic and racial diversity. Finally, we measured all of the individual indicators of health (physical activity, depressive symptoms, SES, and executive functioning) based on participant self-report. Objective measures such as observation of physical activity or administration of executive functioning tasks would lead to more accurate conclusions.

Despite these limitations, this is the first study to examine correlates of family health using a comprehensive family health measure. Although the findings are preliminary, they provide initial insight into what contributes to healthy families. Future research can build off of this work by collecting longitudinal data among multiple family members.

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