



Parental warmth and flourishing in mid-life

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ABSTRACT

Objective: This study examined the longitudinal association between parental warmth and offspring flourishing in mid-life. We also considered associations between parental warmth and a number of mental health problems and adverse health behavioral outcomes.

Method: Longitudinal data from the Midlife in the United States Study ($N = 3,929$, mean baseline age = 47.4 years) were analyzed using generalized estimating equations. Parental warmth in childhood was recalled at phase I (1995–1996), while flourishing and other outcomes were self-reported at phase II (2004–2006). Following an approach developed by Keyes, flourishing was operationalized as a combined measure incorporating assessments of three aspects of well-being, including emotional, psychological, and social well-being.

Results: The results suggest that parental warmth was positively associated with the continuous score of flourishing ($B = 0.21$, 95% $CI = 0.18, 0.25$). The association was not specific to any particular component (emotional, psychological, or social well-being) or subdomain of flourishing. Parental warmth was also inversely associated with several adverse health behavior outcomes such as drug use and smoking.

Conclusions: Parental warmth in childhood may help promote offspring functioning across multiple domains of well-being in mid-life. The findings help to strengthen the call for a public health focus on the importance of parenting for outcomes beyond childhood and well into adulthood, and suggest the value of targeting parenting practices for prevention and intervention strategies to improve population health and well-being.

1. Introduction

Empirical research has linked flourishing, measured with various approaches, to a broad range of better outcomes such as fewer conduct problems in adolescents and lower mortality in adults (Keyes, 2006; Keyes and Simoes, 2012; World Health Organization, 2009a). In comparison, antecedents of flourishing have remained relatively understudied (Huppert and So, 2013). While mental wellbeing and illness are correlated concepts and many risk factors for mental illness have been identified (Manderscheid et al., 2010), they are distinct concepts and may have different predictors (World Health Organization, 2009a). Understanding factors that promote well-being may require different research from what has been done to reduce illness, as reducing illness alone may not be sufficient for identifying strategies that enable individuals to attain and maintain well-being (Kobau et al., 2011; Seligman, 2008).

While there has not been a standard definition of flourishing given its multifaceted nature, it is sometimes understood as “a combination of

feeling good and functioning effectively, and the experience that life is going well” (Huppert and So, 2013) or “a state in which all aspects of a person's life are good” (VanderWeele, 2017a). The concept of human flourishing has received growing interest as an additional approach to measuring progress, improving policy decisions, and enhancing population well-being (Hone et al., 2014).

There is some general consensus across various conceptual models of flourishing that have been proposed (Diener et al., 2010; Huppert and So, 2013; Keyes, 2002; Seligman, 2012; VanderWeele, 2017a). That is, flourishing is a multi-dimensional construct combining multiple aspects of well-being, and it captures the high end of well-being spectrum (Hone et al., 2014). While there has been a concern that flourishing is no more than a reframing of work on psychopathology, growing evidence has suggested that the absence of illness does not necessarily imply the presence of positive health and well-being (Keyes, 2002). For instance, the association between psychological well-being and cardiovascular health often remained robust after adjusting for psychological ill-being (Boehm and Kubzansky, 2012; Soo et al., 2018). Such work

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provides evidence that well-being or flourishing is worth studying in its own right.

Having positive family relationships has been hypothesized as an essential asset in promoting flourishing (VanderWeele, 2017a). In particular, the parent-child relationship is crucial for shaping offspring trajectories of health and well-being over the life span (Ranson and Urichuk, 2008). For instance, negative parenting practices (e.g., cold, unsupportive, neglectful) may create or exacerbate children's vulnerability to emotional dysregulation, psychological distress, social incompetency, disrupted neurobiological functioning, and the adoption of risky behaviors (e.g., smoking, drug use) as stress coping strategies. Such biopsychosocial risk profiles and adverse behavioral patterns may persist into adulthood and also increase individuals' exposure to further adversity as they age, leading to long-term health consequences (Elstad, 2005; Felitti et al., 1998; Repetti et al., 2002). Conversely, positive parenting (e.g., secure attachment) provides children with a sense of emotional security and social integration. It shapes children's trust and positive expectations of others, and boosts a sense of self-worth. Such experiences facilitate the formation of developmental and salutogenic assets such as psychosocial resources and behavioral patterns that would help increase resilience, maintain health, and promote multiple aspects of well-being in later life (Bretherton, 1992). One dimension of such positive parenting attributes is parental warmth. A number of empirical studies have linked parental warmth to better offspring health and well-being outcomes such as greater psychosocial well-being, and lower risk of adverse health behaviors, mental disorders and physical illness in later life (Huppert et al., 2010; Khaleque, 2013; Ranson and Urichuk, 2008; Shakya et al., 2012; Yap et al., 2014). However, prior work has often examined parental warmth in relation to a single dimension of well-being in separate studies. To our knowledge, the association between parental warmth and composite measures of flourishing (incorporating multiple aspects of well-being simultaneously) has not been studied. Flourishing, as broadly conceived, provides a more comprehensive picture of health, well-being, and wholeness (VanderWeele, 2017a). For instance, the composite measure of flourishing was a stronger predictor of all-cause mortality, as compared to considering single components (e.g., emotional, psychological, social) of well-being separately (Keyes and Simoes, 2012). Parental warmth likely exerts pervasive influences on multiple aspects of offspring well-being through various pathways (Bretherton, 1992; Ranson and Urichuk, 2008), and multi-component measures of flourishing may provide a more holistic evaluation of such effects. While interventions on improving parenting are available (World Health Organization, 2007, 2009b), the progress on evaluating and implementing such programs has been relatively slow (Chu et al., 2012). Evidence on the long-term association between parental warmth and composite flourishing may help strengthen the case for implementing parenting programs at the population level, and for targeting parenting practices to improve population health and well-being over the lifecourse.

This study examined the longitudinal association between parental warmth and offspring flourishing in mid-life. Following an approach developed by Keyes (2002), flourishing was operationalized as a combined measure incorporating assessments of three aspects of well-being, including emotional, psychological, and social well-being. Following prior work (Adam and Chase-Lansdale, 2002; Gunnoe et al., 1999; Slack et al., 2004; Slopen et al., 2017; Walsh et al., 2003), we adjusted for a wide range of childhood familial factors that have been linked to parenting and/or offspring health (e.g., family socioeconomic status, parental substance use, family religiosity) as covariates. There has been suggestive evidence that mental illness and some adverse health behaviors may be associated with lower likelihood to flourish (Keyes and Simoes, 2012). Therefore, in secondary analyses we took an outcome-wide analytic approach (VanderWeele, 2017b) to examine parental warmth in relation to multiple mental health problems (e.g., depression) and adverse health behavior outcomes (e.g., smoking, drug use). We also examined maternal and paternal warmth separately across

outcomes. We hypothesized that parental warmth would be positively associated with the composite flourishing measures and the associations would not be specific to particular component or subdomain of flourishing, but rather parental warmth would influence all three primary flourishing components (i.e., emotional, psychological, and social well-being) as well as the 13 subdomains that comprise these three components (Keyes, 2002) (see methods and the supplementary materials for details). We also expected that parental warmth would be inversely associated with various mental health problems and adverse behavioral outcomes. In addition, we hypothesized that maternal and paternal warmth would both matter for offspring flourishing.

2. Method

2.1. Study sample

This study used data from the Midlife in the United States (MIDUS) study, initiated between 1995 and 1996 to investigate psychosocial factors, health, and well-being in mid-life. The first phase of the study (MIDUS I) recruited 7108 non-institutionalized individuals (including 950 siblings and 957 twin pairs) between 25 and 74 years old from across the United States through random digit dialing. Over 90% of the respondents were White. Participants were invited to participate in a phone interview, and were then mailed a self-administered questionnaire. The second phase of the study (MIDUS II) was conducted around 2004 to 2006, which followed up 70% ($N = 4963$) of the original participants (Radler and Ryff, 2010).

Parental warmth and flourishing were only assessed in the self-administered questionnaire (SAQ). A total of 6325 participants completed the SAQ at phase I, and 4669 of them remained in the cohort at phase II (Table S1 compares baseline characteristics of the participants who remained in the cohort and those lost to follow-up). Among participants who remained in the cohort ($N = 4669$), 3929 individuals completed the SAQ at phase II. The analytic sample for the current study was drawn from those who completed the SAQ at both phases ($N = 3929$; 569 of them either siblings or twins). Since this study used de-identified and publicly available data, it was exempted from review by the institutional review board (IRB) at Harvard T.H. Chan School of Public Health. The original MIDUS study was approved by the IRB at the University of Wisconsin-Madison. All participants provided written informed consent (Radler, 2014).

2.2. Exposure assessment

2.2.1. Parental warmth

Parental warmth during a respondent's years of growing up was measured with a six-item Parental Support Scale (Rossi, 2001) at phase I (Table S2). Maternal and paternal warmth were assessed separately (e.g., "How much love and affection did your mother/father give you?"). Response categories ranged from one (a lot) to four (not at all). Responses were reverse coded so that higher scores indicate greater warmth. In our analytic sample, over 98% of the participants had data on all items of the maternal warmth scale, and another 1% had data on at least half of the scale items (i.e., three out of the six items). Similarly, over 94% of the participants had data on all items of the paternal warmth scale, and another 1% had data on at least half of the scale items. For participants with data on at least half of the scale items, missing data were imputed with the mean value of the completed items (Graham, 2009); participants with missing data on more than half of the scale items were considered as missing on maternal or paternal warmth. Maternal and paternal warmth were calculated by summing responses across items on the maternal ($\alpha = 0.89$) and paternal scales ($\alpha = 0.91$) separately. An overall parental warmth score was created by taking the average of maternal and paternal warmth (Rothrauff et al., 2009). The parental warmth score was used as a continuous variable. As a sensitivity analysis, we also created tertiles of the parental warmth

score based on its distribution in the sample, to assess the possibility of discontinuous effects (Boehm et al., 2017).

2.3. Primary outcome assessment

Following Keyes' definition (Keyes, 2002), composite flourishing was assessed with the components of emotional, psychological, and social well-being. All components were measured at phase II as described below (Keyes, 2002; Keyes and Simoes, 2012).

2.3.1. Emotional well-being

Two aspects of emotional well-being were measured (Keyes and Simoes, 2012). First, a six-item validated positive affect scale (Crawford and Henry, 2004; Mroczek and Kolarz, 1998) was used to assess positive feelings (i.e., cheerful, in good spirits, happy, calm and peaceful, satisfied, full of life) over the past 30 days. Response options ranged from one (all the time) to five (none of the time). When appropriate, responses were reverse coded so higher scores reflect greater positive feeling. In our analytic sample, 98% of the participants had valid data on all scale items, and another 1.68% had data on at least half of the scale items (i.e., three out of the six items). For participants with data on at least half of the scale items, missing data were imputed with the mean value of the completed items (Graham, 2009); those with missing data on more than half of the scale items were considered as missing on positive feelings. An overall positive affect score ($\alpha = 0.72$) was calculated by summing responses across items. Second, a single question ("how would you rate your life overall these days") was used to assess life satisfaction on a scale from zero (worst possible life overall) to 10 (best possible life overall). An overall emotional well-being score ($\alpha = 0.72$) was calculated by summing the standardized positive affect and life satisfaction scores (i.e., the two scores were assessed with different scales, so they were both standardized at mean = 0, standard deviation [SD] = 1 before summing).

2.3.2. Psychological well-being

Psychological well-being was assessed with Ryff's validated 18-item scale (Ryff, 1989; Ryff and Keyes, 1995). The scale measured six dimensions of subjective well-being including self-acceptance (e.g., "I like most parts of my personality"), positive relations with others (e.g., "People would describe me as a giving person, willing to share my time with others"), personal growth (e.g., "For me, life has been a continuous process of learning, changing and growth"), purpose in life (e.g., "Some people wander aimlessly through life, but I am not one of them"), environmental mastery (e.g., "In general, I feel I am in charge of the situation in which I live") and autonomy (e.g., "I judge myself by what I think is important, not by the values of what others think is important"). Response categories ranged from one (strongly agree) to seven (strongly disagree). When appropriate, responses were reverse coded such that higher scores reflect greater well-being. In our analytic sample, over 99% of the participants had data on all scale items, and another 0.4% of the participants had data on two out of the three items across scales. Following the MIDUS coding book, for participants with missing data on one scale item, missing data were imputed with the mean value of the completed items on that scale (Graham, 2009); those with missing data on more than one scale item were considered as missing on that scale. An overall psychological well-being score ($\alpha = 0.80$) was created by summing scores across all six subscales.

2.3.3. Social well-being

Social well-being was measured with Keyes' validated 15-item scale (Keyes and Shapiro, 2004; Keyes, 1998). The scale assessed five dimensions of social functioning including social acceptance (e.g., "I believe that people are kind"), social actualization (e.g., "The world is becoming a better place for everyone"), social contribution (e.g., "I have something valuable to give to the world"), social coherence (e.g., "The world is too complex for me", reverse coded) and social

integration (e.g., "My community is a source of comfort"). Response categories ranged from one (strongly agree) to seven (strongly disagree). Responses were reverse coded when appropriate, such that higher scores reflect greater well-being. In our analytic sample, 98% of the participants had data on all scale items, and another 0.5% of the participants had data on at least half of the scale items (e.g., two out of the three items). Following the MIDUS coding book, for participants with missing data on less than half of the scale items, missing data were imputed with the mean value of the completed items on that scale (Graham, 2009); those with missing data on more than half of the items were considered as missing on that scale. An overall social well-being score ($\alpha = 0.74$) was calculated by summing scores across all five subscales.

2.3.4. Flourishing

Our primary outcome was a continuous measure of flourishing. Specifically, the emotional, psychological, and social well-being scores were first standardized ($M = 0$, $SD = 1$) because they were assessed with different scales. An overall flourishing score was then created by summing the standardized emotional, psychological, and social well-being scores (see Table S3 for the distribution of the flourishing score and its components and subdomains before standardization). As a sensitivity analysis, a dichotomized measure of flourishing was created following Keyes' criteria (Keyes, 2002; Keyes and Simoes, 2012): to be considered as flourishing, participants need to show high levels (i.e., top tertile) of emotional well-being on at least one of the two subscales (i.e., positive affect or life satisfaction) as well as high levels (i.e., top tertile) of psychological and social well-being on at least six of the eleven subscales (e.g., self-acceptance, social integration). As a second sensitivity analysis, to better capture functioning across all subdomains, we also created a count measure of flourishing that summed the number of subscales on which the participant had a score in the top tertile, ranging from zero to 13. Considering potential limitations of using researcher-determined thresholds (e.g., top tertile split) in creating the dichotomized and the count measure (Hone et al., 2014; Keyes, 2007), the continuous measure of flourishing, was taken as the primary outcome, which may provide a broader picture of well-being on a continuum.

2.4. Secondary outcome assessment

2.4.1. Mental health problems

The Composite International Diagnostic Interview Short Form (CIDI-SF) (Kessler et al., 1998) was used to assess major depression and generalized anxiety disorder over the past year. The CIDI-SF was validated against physician diagnosis based on the full CIDI in prior work, and showed excellent diagnostic sensitivity and specificity. For instance, the overall concordance between CIDI-SF and the full CIDI is 93.2% on classifications of major depression and 99.6% on classifications of generalized anxiety disorder (Kessler et al., 1999).

2.4.2. Adverse health behaviors

Participants reported whether they ever used marijuana or any other substance (cocaine, hallucinogens, or heroin) on their own over the past 12 months (yes, no) (Turiano et al., 2012). They also reported their current height (in inches) and weight (in pounds) based on which the body mass index (BMI, kg/m^2) was calculated. A subgroup of respondents ($N = 1255$) participated in a biomarker project at phase II (Dienberg Love et al., 2010). The self-reported BMI was validated against measured BMI among the biomarker project participants, and showed high concordance ($r = 0.92$). $\text{BMI} \geq 25 \text{ kg}/\text{m}^2$ was defined as overweight or obese, and $< 25 \text{ kg}/\text{m}^2$ as normal weight (World Health Organization, 1995). Participants who reported smoking cigarettes regularly now or in the past were considered as current or former smoker (Boehm et al., 2016). Those who reported ever having five or more drinks on the same occasion over past month were considered as

heavy drinkers (Cutler and Lleras-Muney, 2010).

2.5. Covariates assessment

2.5.1. Demographic characteristics

Demographic covariates include participant age (in years), gender (male, female), race (White, Black, others), nativity (born in the United States, born outside the United States), parents' nativity (parents were born in the United States, born outside the United States), and the number of siblings (used as a continuous variable), all measured at phase I.

2.5.2. Childhood family environment factors

All childhood familial characteristics were assessed at phase I unless otherwise specified. Participants' childhood socioeconomic status (SES) was measured with three indicators: the highest level of education attained by parents (less than high school, high school, some college, college or more), whether their family was on welfare for six months or more during their years of growing up (yes, no), and their self-rated financial levels in childhood compared to the average family (on a scale from one to seven). The three childhood SES indicators were included in models as separate variables. Participants also reported whether they lived with both biological parents until they were 16 years (yes, no). Residence area during childhood was also queried (rural, small town, medium-sized town, suburbs, city, moved around). A single question was used to assess childhood residential stability ("How many times during your childhood did you move to a totally new neighborhood or town?"). Those who moved less than three times were considered as having residential stability (yes, no) (Bures, 2003). Respondents also reported whether their mother and father were smokers (yes, no), and whether they lived with alcoholics when growing up (yes, no, recalled at phase II). In addition, a single question was used to assess childhood family religiousness: "How important was religion in your home when you were growing up?". Those who reported the highest level of importance were considered as being raised in a religious family (yes, no).

2.6. Statistical analyses

Statistical analyses were performed in SAS 9.4. We considered several descriptive analyses. Analysis of variance tests and chi-square tests were first used to examine the correlation between participant characteristics and tertiles of parental warmth. We also used a generalized estimating equation model (GEE, with Poisson distribution) to regress the top tertile of parental warmth on all covariates simultaneously, adjusting for clustering by sibling status. We also explored the cross-sectional sociodemographic distribution of flourishing by regressing the dichotomized flourishing indicator on a number of adulthood characteristics simultaneously (see supplemental materials for details).

Multiple GEE models (with normal distribution) were used to model the continuous scores of flourishing and its three components (emotional, psychological, and social well-being) as the dependent variables and with the continuous score of parental warmth (standardized at $M = 0$, $SD = 1$ for easier interpretation) as the independent variable in separate models, while adjusting for clustering by sibling status. We standardized ($M = 0$, $SD = 1$) all continuous outcomes so that effect estimates could be compared across outcomes. We also reanalyzed the models with the dichotomized indicator of flourishing (with Poisson distribution) and the count measure of flourishing (with normal distribution, standardized) as the dependent variable separately. All models controlled for demographic characteristics and a wide range of childhood family environment factors. To examine whether the association between parental warmth and flourishing, if any, was specific to particular subdomain of flourishing, we reanalyzed the primary sets of models with each of the 13 subdomains comprising emotional, psychological, or social well-being as the dependent variable in separate models. In secondary analyses, we examined the associations between

parental warmth and an array of mental health problems and adverse health behavior outcomes. A similar modeling strategy as the primary analysis was used to regress each outcome on parental warmth in separate models. Bonferroni correction was used to correct for multiple testing. We also reanalyzed the models using tertiles of the parental warmth score as the independent variable as a sensitivity analysis.

We examined maternal and paternal warmth separately across outcomes. Specifically, the primary sets of models were reanalyzed with maternal warmth and paternal warmth as the independent variable in separate models and also simultaneously in one model.

2.7. Missing data

In the analytic sample ($N = 3929$), 10 participants had missing data on parental warmth, 250 had missing data on one or more covariates, and the number with missing data on outcome variables ranged from zero to 158 individuals, depending on the outcome. Complete-case analysis would result in a loss of 9.0% ($n = 353$) of the respondents for analyses on flourishing (Table S4 compares baseline characteristics of participants with complete data for analyses on flourishing and participants with missing data), and up to 10.6% ($n = 418$) loss for analyses on other outcomes. Therefore, we used a multivariate normal multiple imputation procedure to impute missing data on all variables. Multiple imputation often provides more accurate estimates than other methods of handling missing data (Sterne et al., 2009). Specifically, we included all variables used in this study (i.e., the exposure variable, outcome variables and all covariates) in the imputation procedure, and created five imputed datasets. We present results with multiple imputation for all analyses, and also report results of the complete-case analysis as a sensitivity analysis.

3. Results

3.1. Descriptive analyses

Participants were mostly White and slightly higher percentage female, with a mean baseline age of 47.4 years ($SD = 12.4$) (Table 1). Around 22.2% of participants met criteria for the dichotomized flourishing measure at phase II. Correlations between the three components of flourishing (emotion, psychosocial, social well-being) ranged from 0.42 to 0.61. Correlations between the 13 subdomains ranged from 0.12 to 0.57 (Table S5). Correlation of the dichotomized flourishing indicator with depression and anxiety was -0.13 and -0.06 (both $p < 0.001$). Table 1 shows participant characteristics across tertiles of parental warmth. When parental warmth was regressed on all covariates simultaneously, greater childhood family religiousness was the strongest predictor of high parental warmth (Table S6).

3.2. Parental warmth and flourishing in mid-life

Parental warmth was positively associated with the continuous score of composite flourishing ($B = 0.21$, 95% $CI = 0.18, 0.25$, Table 2). Analyses with the dichotomized indicator of flourishing ($RR = 1.34$, 95% $CI = 1.25, 1.45$) and the count measure ($B = 0.18$, 95% $CI = 0.15, 0.22$) of flourishing yielded similar results. A similar pattern was found when individual components of flourishing, namely emotional, psychological, and social well-being, and the subdomains that comprise these components were considered separately (Table 2). Notably, the association with parental warmth did not seem specific to any particular component of flourishing or any subdomain that comprises the components. Only for purpose in life and social coherence did the associations with parental warmth not pass the $p < 0.05$ threshold after correction for multiple testing. Sensitivity analyses with tertiled parental warmth (Table S7) and the complete-case analysis (Table S8) yielded similar results. When maternal and paternal warmth were examined separately, each was positively associated with the composite

Table 1
Distribution of participant characteristics by recalled parental warmth ($N = 3929$).

	Full sample $n = 3929$	Parental Warmth			p -value
		Bottom tertile $n = 1288$	Middle tertile $n = 1439$	Top tertile $n = 1192$	
Age (range: 24–75), mean (SD)	47.4 (12.4)	47.0 (11.7)	46.9 (12.2)	48.4 (13.4)	0.005
Male, %	44.5	40.4	46.8	46.2	0.001
White, %	93.5	93.7	94.9	91.6	< 0.001
Born in US, %	95.8	95.3	96.2	96.0	0.43
Mother born in US, %	90.6	90.5	90.8	90.9	0.93
Father born in US, %	90.0	90.4	90.4	89.3	0.57
Lived with biological parents, %	80.8	73.0	84.2	85.2	< 0.001
Number of siblings (range: 0–5), mean (SD)	3.1 (1.6)	3.2 (1.5)	3.1 (1.5)	2.9 (1.6)	< 0.001
Highest parental education, %					< 0.001
Less than high school	25.8	29.0	23.4	25.0	
High school	36.1	37.9	35.1	35.4	
Some college	15.7	14.9	15.5	16.9	
College or more	22.4	18.3	26.0	22.7	
Family on welfare or ADC, %	5.7	9.5	4.8	2.6	< 0.001
Subjective SES (range: 1–7), mean (SD)	4.0 (1.3)	3.7 (1.4)	4.1 (1.2)	4.3 (1.2)	< 0.001
Area where raised, %					0.007
Rural	24.6	20.9	24.7	28.3	
Small town	25.9	26.0	26.0	25.5	
Medium-sized town	11.8	12.9	11.5	11.0	
Suburbs	15.6	16.2	16.6	13.9	
City	18.0	19.0	17.0	18.0	
Moved around	4.2	5.0	4.2	3.3	
Residential stability in childhood, %	74.8	69.9	75.1	80.0	< 0.001
Mom was smoker	30.4	33.6	30.5	26.8	0.001
Dad was smoker, %	60.2	60.8	61.8	57.4	0.06
Lived with alcoholic during childhood, %	19.9	30.9	17.5	16.8	< 0.001
Importance of religion in family, %					< 0.001
Very important	45.2	32.6	45.3	58.5	
Somewhat important	35.2	36.9	37.3	30.8	
Not very important	15.4	22.8	14.1	9.1	
Not at all important	4.3	7.8	3.3	1.7	

Note: Percentages refer to the proportion of individuals within each parental warmth category with that characteristic. p values comes from χ^2 or analysis of variance tests.

flourishing score and the individual components of flourishing (Tables S9–S11).

3.3. Parental warmth, mental health problems, and adverse health behaviors in mid-life

Parental warmth was also inversely associated with the likelihood of drug use (other than marijuana) and current or former smoking (Table 3). The sensitivity analysis with tertiled parental warmth (Table S7) and the complete-case analysis (Table S8) yielded similar results, except that the association with depression remained $p < 0.05$ even after correction for multiple testing. When maternal and paternal warmth were considered separately, maternal warmth had stronger inverse associations with depression and smoking compared to paternal warmth, whereas paternal warmth was more strongly associated with substance use compared to maternal warmth (Tables S9–S11).

Considering the cross-sectional sociodemographic distribution of flourishing, greater adulthood SES (greater educational attainment, household income, and higher occupational class), frequent religious service attendance, older age, female gender, Black race, and being married was each correlated with higher likelihood of flourishing (See Tables S12 and S13, and supplemental materials for further discussion).

4. Discussion

This study suggests that parental warmth may contribute to promoting and maintaining offspring well-being as characterized by multi-component measures of flourishing in mid-life. The association did not seem specific to any particular component of flourishing or any sub-domain comprising the components, suggesting parental warmth may contribute to effective functioning across various aspects of well-being

and also protect against several adverse mental and behavioral outcomes.

Findings of this study are consistent with prior evidence suggesting parental warmth is positively associated with individual aspects of subjective well-being and is inversely associated with mental health problems (Chang et al., 2003; Chen et al., 2000; Enns et al., 2002; Huppert et al., 2010; McLeod et al., 2007). This study expanded prior work by showing parental warmth has relatively strong longitudinal associations both with composite measures of flourishing and across the various flourishing subdomains in mid-life. The associations remained robust after adjusting for a wide range of childhood familial characteristics including some aspects of adverse childhood experiences (e.g., parental abuse, substance misuse within household), which adds to the evidence that positive family relationships are more than the mere absence of family malfunctioning. Contrary to our expectation, there was little association of parental warmth with some behavioral outcomes such as heavy drinking, which contrasts with prior results in younger samples (Labrie and Sessoms, 2012; Ryan et al., 2010). The difference in results might be attributed to differences in the measurements, or it may relate to more precise estimates due to larger sample sizes, or the effects may only be evident earlier in life. It is also possible that early life serves as a sensitive period for affective and cognitive development, whereas behavioral patterns are more likely reshaped by later life experiences such as education and newly established social relationships (e.g., peers, partners) (Karvonen et al., 1999; Steinberg, 2005).

Parental warmth may have an even broader influence on well-being that was not fully captured by the measures of flourishing in the present study. Parental warmth, or love, is arguably a multi-dimensional construct itself that includes not only affective, but also cognitive and behavioral components (Clough, 2006). For instance, the measure of

Table 2
Parental warmth and flourishing in mid-life (*N* = 3929).

	Parental warmth (standardized) <i>B</i> (95% <i>CI</i>)
Composite flourishing score (continuous)	0.21 (0.18, 0.25)***
<i>Emotional well-being</i>	0.21 (0.17, 0.24)***
Positive affect	0.19 (0.15, 0.23)***
Life satisfaction	0.18 (0.14, 0.21)***
<i>Psychological well-being</i>	0.19 (0.16, 0.23)***
Self-acceptance	0.21 (0.17, 0.24)***
Positive relations	0.23 (0.20, 0.27)***
Personal growth	0.09 (0.06, 0.13)***
Purpose in life	0.04 (0.01, 0.08)*
Environmental mastery	0.14 (0.10, 0.17)***
Autonomy	0.07 (0.04, 0.11)***
<i>Social well-being</i>	0.13 (0.10, 0.17)***
Social acceptance	0.10 (0.06, 0.13)***
Social actualization	0.08 (0.04, 0.11)***
Social contribution	0.10 (0.06, 0.14)***
Social coherence	0.03 (−0.01, 0.06)
Social integration	0.16 (0.12, 0.20)***

Note. The composite flourishing score and each of the flourishing components and subdomain outcomes were examined in separate models. Generalized estimating equations (with normal distribution and identity link) were used to estimate the mean change (*B*) in the standardized scores of flourishing (and its components and subdomains) with the change in parental warmth, adjusting for clustering by sibling status. All outcome variables were standardized (*M* = 0, *SD* = 1; all outcomes were continuous variables) to facilitate comparison of effect estimates across outcomes. All models adjusted for age, sex, race, nativity status, parents' nativity status, number of siblings, and other childhood family factors (including childhood family structure, family SES, area of residence, residential stability, parents' smoking status, lived with alcoholics and family religiousness). *B* = standardized beta.

p* < 0.05 before but not after Bonferroni correction; *p* < 0.01 before but not after Bonferroni correction; ****p* < 0.05 after Bonferroni correction (the *p* value cutoff for Bonferroni correction = 0.05/24 outcomes = 0.002).

Table 3
Parental warmth, mental health problems, and health behaviors in mid-life (*N* = 3929).

	Parental warmth (standardized) <i>OR/RR</i> (95% <i>CI</i>)
Mental health problems	
Depression	0.82 (0.72, 0.94)**
Anxiety	0.86 (0.65, 1.14)
Health behaviors	
Marijuana use	0.78 (0.66, 0.93)**
Any other drug use	0.83 (0.74, 0.93)***
Overweight or obese	0.99 (0.96, 1.01)
Current or former smoking	0.94 (0.90, 0.97)***
Heavy drinking	0.99 (0.91, 1.09)

Note. Each mental health and behavioral outcomes were examined in separate models. Generalized estimating equations were used to estimate *OR* for rare binary outcomes (with binomial distribution, rare outcome defined as prevalence < 10%) or *RR* for non-rare binary outcomes (with Poisson distribution, non-rare outcome defined as prevalence ≥ 10%). All models adjusted for age, sex, race, nativity status, parents' nativity status, number of siblings, and other childhood family factors (including childhood family structure, family SES, area of residence, residential stability, parents' smoking status, alcoholics in the family and family religiousness). *OR* = odds ratio; *RR* = risk ratio.

p* < 0.05 before but not after Bonferroni correction; *p* < 0.01 before but not after Bonferroni correction; ****p* < 0.05 after Bonferroni correction (the *p* value cutoff for Bonferroni correction = 0.05/24 outcomes = 0.002).

parental warmth in this study not only assessed parental affection, but also nurturance (e.g., “how much did your parents teach you about life”) and involvement (e.g., “how much time and attention did your mother/father give you when you needed it”). We may expect parental warmth, as a powerful force of love that takes many forms, to create a

life of enhanced well-being on a variety of positive outcomes such as greater subjective well-being, deepened relationships, self-actualization, and also character development and even self-transcendence (Benson and Scales, 2011; Clough, 2006; Lee et al., 2013; Ranson and Urichuk, 2008). A virtuous cycle may be set in motion by a warm and nurturing upbringing (though the children's developmental trajectory is still open to modification by experiences in later life), and some of the positive effects might even accumulate throughout life (Bretherton, 1992). The moral and spiritual aspects of well-being are arguably important components of flourishing, and perhaps even more so as individuals age (Bengtson et al., 2015; VanderWeele, 2017a). However, such aspects of well-being and the influences of parental warmth on them might not be captured in this study.

Prior work on childhood antecedents of mental health has mostly taken a deficit-oriented approach. That is, much prior work has sought to identify childhood risk factors for mental health problems such as parental abuse and neglect (Hughes et al., 2017; Kessler et al., 2010). However, reducing risk factors of mental illness in high risk populations is different from promoting assets that lead to better mental health in the general population (Kobau et al., 2011), partly because the absence of mental illness does not necessarily imply the presence of mental health (Keyes, 2002) and that determinants of mental well-being and ill-being may be different (World Health Organization, 2009a). It might be hard to reverse mental health problems once they have developed, as evidenced by ongoing high rates of mental illness (Reeves et al., 2011). It may, sometimes, be more efficient to promote and maintain positive mental health before problems develop (Kobau et al., 2011). It may therefore be as important to study assets for promoting mental health, as it is to examine approaches to reducing mental illness. Results from this study suggest that parental warmth may be one such asset for promoting positive mental health and flourishing. Moreover, there is also evidence from prior studies suggesting parental warmth may serve as resilience resources to buffer against the toxic effects of adverse childhood experiences (Schofield et al., 2016). This study may also suggest the determinants traditionally considered in epidemiology as shaping health outcomes may not provide a complete picture of the factors that are highly influential. Parenting practice is certainly not often considered in most public health discussions, and yet its effects on numerous dimensions of well-being seem strong (Ranson and Urichuk, 2008). A more comprehensive approach to public health would arguably place greater emphasis on parental warmth, or love, as a powerful social determinant of health. Indeed theological traditions often consider love as a central part of well-being (Aquinas, 1274/1948; Catholic Church, 2000). It is perhaps then not surprising that the effects observed in this study are substantial.

4.1. Limitations

This study is subject to certain limitations. First, parental warmth and other childhood familial characteristics were retrospectively reported in participants' mid-life, which may be subject to recall bias. However, there is evidence suggesting that concerns about recalled childhood experiences may not be as substantial as previously thought (Reuben et al., 2016). Moreover, in the present study the null association between parental warmth and some behavioral outcomes, taken as negative-controls, suggests that not all of the observed association with the flourishing outcomes are due to recall bias. Second, although this study controlled for a number of childhood factors as potential confounders, there may still be residual confounding by factors for which information was not available such as parents' mental health. Finally, the MIDUS cohort was primarily White and did not comprise a nationally representative sample. Therefore, results of this study may not be generalizable to other populations.

4.2. Implications

Programs to improve parenting practices are available (Sanders, 2002, 2008). Such interventions have sought to increase positive parent-child interaction and reduce coercive parenting practices. There has also been suggestive evidence that such programs may be effective in reducing child emotional, mental and behavioral problems, and has demonstrated its potential to be scaled up to the population level (Prinz and Sanders, 2007; Sanders, 2002). In fact, there have been calls from the World Health Organization to implement large-scale parenting programs (World Health Organization, 2007, 2009b). This study suggests that such programs may also be useful for promoting positive mental health and well-being, and effects may persist into later life. Poor mental health is the single largest contributor of economic burden from non-communicable diseases, and improving mental health is a key part of the global health agenda (Bloom et al., 2011). The asset-based paradigm may provide an additional approach to understanding the full spectrum of well-being and its determinants, may provide a less stigmatizing approach to reducing mental illness, and may promote use of psychological screening and prevention services (Kobau et al., 2011).

5. Conclusions

This study adds to the evidence that parental warmth may be one health asset leading to better offspring functioning across multiple aspects of well-being. It also helps to strengthen the call for a public health focus on the importance of parenting for outcomes beyond childhood and well into adulthood, and may suggest the value of targeting parenting practices for prevention and intervention strategies to improve population health and well-being.

Conflicts of interest

None.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.socscimed.2018.10.026>.

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