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Family Versus Intimate Partners: Estimating Who Matters More for Health in a 20-Year Longitudinal Study

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This study tested the extent to which the emotional climate (positive and negative relationship quality) in family relationships and intimate partnerships are each uniquely linked to specific domains of aging health outcomes, over and above the impact of earlier health. Data included partnered participants who completed all three waves of the Midlife Development in the United States (MIDUS). We used measures of family and intimate partner strain and support, at MIDUS 1, 2, and 3, and estimated the effects of each on subsequent morbidity and health appraisal (i.e., 10 and 20 years later). Autoregressive cross-lagged paths were modeled using maximum likelihood estimation with robust standard errors. Family strain was associated with later health in both the morbidity, $\chi^2(35) = 411.01$, $p < .001$; root mean square error of approximation (RMSEA) = .062, comparative fit index (CFI) = .952; standardized root-mean-square residual (SRMR) = .034 and health appraisal, $\chi^2(35) = 376.80$, $p < .001$; RMSEA = .058, CFI = .956; SRMR = .032 models. Morbidity and health appraisal also predicted later family emotional climate, reciprocally. Intimate partner emotional climate-health pathways were nonsignificant at each wave, in both models. Results are novel and may be the first to indicate the quality of family relationships are a more powerful predictor of aging health than the quality of intimate partnerships. Findings implicate the health of adults should be considered in the systemic context of families.

Keywords: aging, biopsychosocial, couples, family relations, health

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Relationship quality is an impactful and meaningful predictor of physical health (Stanton, Selcuk, Farrell, Slatcher, & Ong, 2019). Negative family relationships are linked to poor self-rated health (Widmer, Girardin, & Ludwig, 2018), morbidity (Priest, Roberson, & Woods, 2019), and mortality (Bulanda, Brown, & Yamashita, 2016). Positive and supportive family relationships are associated with longevity (Shor, Roelfs, & Yogev, 2013), quality of life, and improved health outcomes (Holt-Lunstad, Smith, & Layton, 2010; Robles, Slatcher, Trombello, & McGinn, 2014). However, researchers infrequently capture the positivity and negativity of close relationships, and often examine the impacts of individual relationships at the expense of comprehensively estimating the quality of multiple relationship types (Rook, 2015). Comprehensively capturing variations in the quality of unique types of relationships, and delineating their impact on health across adult development, are important next steps for families and health research (Farrell & Simpson, 2017).

Valence of Relationship Quality

Although close family relationships are known to impact, and be impacted by, physical health, less is known about the nuanced quality of these relationships. In other words, some adults are embedded in primarily stressful family relationships which lack support, or in primarily supportive relationships lacking strain. However, many adults are located in relationships where the quality is less binary. For example, a person may be in a close family relationship that has high levels of support and high levels of strain. Prior research highlights that positivity and negativity frequently co-occur in close relationships, and that these two aspects of relationship quality are unique constructs (Mattson, Rogge, Johnson, Davidson, & Fincham, 2013; Rook, 2015;

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Uchino, Holt-Lunstad, Uno, & Flinders, 2001). However, most research examines either negativity or the positive impact of support and relationship satisfaction (Pietromonaco, Uchino, & Dunkel Schetter, 2013); fewer studies investigate a more nuanced conceptualization of close relationship quality (Smith, 2019; Uchino et al., 2013). Overall, studies that include multifactorial measures of relationship quality are best able to predict health outcomes (Holt-Lunstad, Robles, & Sbarra, 2017; Holt-Lunstad et al., 2010).

Types of Close Family Relationships

The preponderance of research on close relationships and health focuses on the intimate partner relationship, often marriage, as the sole measure of adults' relationship networks (Carr & Springer, 2010; Shor et al., 2013). Research has repeatedly found support for the impact of marital quality on health (Kiecolt-Glaser & Wilson, 2017), including health behaviors, morbidity (e.g., Roberson, Shorter, Woods, & Priest, 2018), and mortality (Robles et al., 2014). The fixation in the literature on intimate partnerships is substantiated by researchers' statements that marriage is the focal relationship of adulthood (e.g., Donoho, Crimmins, & Seeman, 2013; Kiecolt-Glaser & Newton, 2001; Umberson, Crosnoe, & Reczek, 2010).

However, although intimate partnerships are critical to understanding the impacts of adults' close relationship networks, this myopic approach fails to reflect alternate research supporting the importance of family relationships (e.g., Priest et al., 2015; Shor et al., 2013; Woods & Denton, 2014). Family relationships are often more intense than other social relationships, with great closeness and longevity (Weihs, Fisher, & Baird, 2002). Adults' longitudinal embeddedness in their nonmarital family relationships (i.e., parents, siblings, children) may provide potentially greater opportunity for family stress to contribute to the pathogenesis of illness over time. Further, family relationships, other than intimate partners, may be especially critical for aging adults, for whom a shrinking social network may impact the support they receive, and the intensity of the conflict they experience (Rook & Charles, 2017). Lastly, prior research has demonstrated a stronger effect of family relationships on adult health than intimate partnerships on health (e.g., Priest et al., 2015; Priest, Parker, & Woods, 2018).

Research must move toward investigating the effects of both types of close relationships (e.g., family and intimate partners) longitudinally to tease out their differential impacts across the life course (Farrell & Simpson, 2017). A multidimensional conceptualization of close relationships in adulthood is especially important for aging adults, who trim the number of relationships in their social network over time, experience greater positivity in their close relationships (English & Carstensen, 2014), and put more effort into enhancing their close relationships by actively working to lessen conflict (Rook & Charles, 2017).

Present Study

Estimating the unique effects of family and intimate partner relationships across the life course persists as a gap in the literature, as does simultaneous consideration of both negative and positive relationship qualities (Farrell & Simpson, 2017). We posit that family emotional climate, comprehensively defined as support and strain in intimate partner and other family relationships, affects aging health outcomes. The purpose of the present study is to determine the extent to which the emotional climate in intimate partnerships and family relationships are each uniquely linked to specific domains of aging health outcomes, including morbidity and health appraisal, over and above the impact of earlier health. Specific to the two domains of aging health we investigate, we will test the following a priori hypotheses in two separate models, using cross-lagged path analysis:

1. A negative family emotional climate (i.e., greater family strain and less family support) and a negative intimate partner emotional climate (i.e., greater intimate partner strain and less intimate partner support) are both predictive of worse morbidity.

2. A negative family emotional climate (i.e., greater family strain and less family support) and a negative intimate partner emotional climate (i.e., greater intimate partner strain and less intimate partner support) are both predictive of worse health appraisal.

Given previous studies demonstrating stronger effects of nonmarital family on adult health (Priest et al., 2015, 2018), we predict a greater effect of family emotional climate on aging health outcomes, as compared with intimate partner emotional climate.

Method

Sample

Our sample includes adults who participated in all three waves of the Midlife Development in the U.S. (MIDUS). MIDUS is a nationally representative survey of adults in the U.S. with the aim of examining the contribution of psychosocial factors to aging and longitudinal trajectories of mental and physical health (Brim et al., 2018; Ryff, Almeida, Ayanian, Binkley, et al., 2019; Ryff, Almeida, Ayanian, Carr, et al., 2017). The initial wave of MIDUS was collected between 1995 and 1996, and included 7,108 participants (M age = 46.38, SD = 13.0; 51.1% female) who were recruited using national, random-digit-dialing and oversampling in five metropolitan areas (Brim et al., 2018). Inclusion criteria included noninstitutionalized, English-speaking adults, 25 to 74 years of age chosen via operable telephone banks in the contiguous United States. Participants completed initial telephone interviews (response rate of 70%) and lengthy self-administered questionnaires by mail (response rate 86.3%), with an overall response rate of 60.8%. MIDUS 2 was a follow-up of the original MIDUS sample, collected in 2004–2006 (Ryff, Almeida, Ayanian, Carr, et al., 2017), and included 4,963 (or, 69.8%) of the initial MIDUS 1 participants (M age = 55.43, SD = 12.45; 53.3% female). A third wave of data collection was recently completed, during 2013–2014; MIDUS 3 respondents included 3,294 (M age = 63.64, SD = 11.35; 54.9% female) of the original MIDUS 1 sample (i.e., 46.3%), which equaled 66.4% of MIDUS 2 participants (Ryff, Almeida, Ayanian, Binkley, et al., 2019).

Of the three-wave participants (N = 3,294), we removed 491 participants with missing intimate partner emotional climate measures at each wave, as well as one participant with missing family

emotional climate measures at each wave, for a sample of 2,802 MIDUS participants who responded to each of the three waves (39.4% of the initial MIDUS 1 sample). The purpose of removing these individuals from the present analyses was to avoid estimating relational quality for participants for whom there was no available data. As this study used deidentified, publicly available, secondary data, institutional review board approval was not required.

Measures

Each of the measures included in the present analyses was completed at all three timepoints. Descriptive statistics for each measure are presented in Table 1.

Family emotional climate. We used two measures of the quality of family relationships to estimate the specific effects of family strain and family support on health. MIDUS researchers used mean imputation to handle missing data for both scales, such that scale scores were calculated for each participant with a minimum of one valid item response (Ryff, Almeida, Ayanian, Binkley, et al., 2019).

Family strain. The family strain measure (Walen & Lachman, 2000) includes four items, including "Not including your spouse or partner, how often do members of your family make too many demands on you?," "How often do they criticize you?," "How often do they let you down when you are counting on them?," and, "How often do they get on your nerves?" Participants responded using a scale of 1 (*often*) to 4 (*never*); responses were recoded such that higher scores indicate greater family strain. Scale scores were calculated using an average of participants' item responses.

Family support. The family support measure (Walen & Lachman, 2000) includes four items, including, "Not including your spouse or partner, how much do members of your family really care about you?", "How much do they understand the way you feel about things?", "How much can you rely on them for help if you have a serious problem?", and "How much can you open up to them if you need to talk about your worries?" Participants rated responses on a scale of 1 (*a lot*) to 4 (*not at all*). MIDUS researchers reverse coded these values such that higher scores indicate greater family support (e.g., Brim et al., 2018). Scale scores for this measure utilized a mean of participants' responses to each family support item.

Intimate partner emotional climate. We use two measures, one estimating intimate partner strain and a second measuring intimate partner support, to assess respondents' intimate partner emotional climate. Both of these measures were completed solely by participants who reported being married or cohabiting. Further, as with the family emotional climate measures, MIDUS researchers used mean imputation to handle missing data for both intimate partner emotional climate measures (Ryff, Almeida, Ayanian, Binkley, et al., 2019).

Intimate partner strain. The intimate partner strain measure (Walen & Lachman, 2000) includes six items, including four that match the family strain measure, above (i.e., items assessing demanding and criticizing, as well as letting the participant down and getting on their nerves). The additional two items ask, "How often does [your spouse or partner] argue with you?" and "How often does he or she make you feel tense?" Responses used a scale of 1 (*often*) to 4 (*never*) and were recoded; higher scores indicate greater intimate partner strain. Participants' responses were averaged to calculate an intimate partner strain score.

Intimate partner support. The intimate partner support measure (Walen & Lachman, 2000) also includes six items, with four that reflect the content of the family support measure (i.e., asking how much the respondent's spouse or partner cares about them, understands how they feel, can be relied on for help, and can be opened up to regarding worries). Two additional items ask, "How much does [your spouse or partner] appreciate you?" and "How much can you relax and be yourself around him or her?" Participants answered on a scale from 1 (*a lot*) to 4 (*not at all*). Responses were reverse coded, such that higher scores represent greater partner support. Similar to each of the relational measures described above, the intimate partner support scale score was calculated using an average of participants' item responses.

Table 1
Participant Reports of Family Emotional Climate and Intimate Partner Emotional Climate: Correlations and Descriptive Statistics (N = 2,802)

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. T1 Family strain	—											
2. T1 Family support	−.402**	—										
3. T1 Intimate partner strain	.296**	−.178**	—									
4. T1 Intimate partner support	−.191**	.261**	−.658**	—								
5. T2 Family strain	.509**	−.222**	.263**	−.177**	—							
6. T2 Family support	−.232**	.492**	−.143**	.199**	−.344**	—						
7. T2 Intimate partner strain	.258**	−.140**	.576**	−.385**	.346**	−.203**	—					
8. T2 Intimate partner support	−.169**	.196**	−.394**	.523**	−.202**	.285**	−.647**	—				
9. T3 Family strain	.425**	−.214**	.244**	−.143**	.504**	−.223**	.264**	−.102**	—			
10. T3 Family support	−.208**	.405**	−.140**	.201**	−.231**	.506**	−.150**	.182**	−.378**	—		
11. T3 Intimate partner strain	.004	−.016	.083**	−.074**	.017	−.001	.026	−.041	.027	−.045	—	
12. T3 Intimate partner support	−.163**	.162**	−.309**	.409**	−.141**	.190**	−.455**	.555**	−.151**	.232**	−.025	—
M	2.11	1.54	2.22	1.40	2.05	1.45	2.15	1.37	1.95	1.47	2.10	1.36
SD	.58	.59	.60	.55	.59	.57	.60	.53	.63	.57	.63	.54
Cronbach's α	.78	.82	.87	.91	.79	.83	.87	.90	.80	.82	.88	.91

Note. T1 = Time 1; T2 = Time 2; T3 = Time 3.
** $p < .001$.

Aging health outcomes. We include two domains of aging health outcomes, specifically morbidity and health appraisal. These dependent variables were selected to capture the breadth of aging health, including one objective (morbidity) and one subjective (health appraisal) measure reported at each MIDUS wave. Thus, we are able to test how family and intimate partner emotional climate contribute to a wide range of significant health outcomes.

Morbidity. Morbidity will be measured using participants' total number of chronic conditions experienced in the past 12 months (out of a total 29 assessed at each MIDUS wave, e.g., headaches, backaches, stomach trouble, stroke). This count variable has been validated and used in multiple prior studies examining MIDUS participants' health (e.g., Andersson, 2016; Elliot, Turiano, Infurna, Lachman, & Chapman, 2018; Ourada & Walker, 2014; Yamaguchi, Kim, Oshio, & Akutsu, 2017). Morbidity is included as the aging outcome variable in our first model. In the present sample, the number of chronic conditions ranged from 0–17 ($M = 2.13$, $SD = 2.19$), 0–24 ($M = 2.15$, $SD = 2.16$), and 0–29 ($M = 2.68$, $SD = 2.48$) at Times 1 through 3, respectively.

Health appraisal. Participants were asked at each MIDUS wave to rate their overall health on a scale from 1 (*excellent*) to 5 (*poor*), such that higher scores reflect worse self-rated health. Scores at MIDUS 1 were originally scaled such that higher scores reflected better health; therefore, this item was recoded accordingly. Health appraisal is included as the aging outcome variable in our second model. In the present sample, mean health appraisal scores were 2.29 ($SD = .90$), 2.31 ($SD = .93$), and 2.55 ($SD = 1.03$) at Times 1 through 3, respectively.

Potential confounding variables. We controlled for Time 1 age, sex, and education, factors known to impact ratings of relationship quality and health (e.g., Liao, McMunn, Mejia, & Brunner, 2018; Shor et al., 2013; Uchino et al., 2001), and estimated their effects on each family emotional climate, intimate partner emotional climate, and aging health outcome variable, in both models. Education was dichotomized to represent either (1) graduated high school or less or (2) some college or more.

Analyses

Preliminary analyses. We first examined correlations (see Table 1) and variance inflation factors (VIF), as needed (i.e., for measures that were strongly correlated), for the four family and intimate partner emotional climate measures to assess for potential multicollinearity. VIF was calculated using linear regression, and the acceptable range was considered between 1.00 and 2.50 (Allison, 2012b; Montgomery, Peck, & Vining, 2012).

Hypothesis testing. We used cross-lagged path analysis to test the directionality of effect. Cross-lagged path analysis infers the direction of effect between two variables by controlling for cross-sectional and autocorrelations (results presented in Table S1 in the online supplemental material) while examining the direction and magnitude of the cross-lagged association (see Table 2). In other words, we first structured our model such that each variable was predicted by itself, as well as by the other four variables, at the prior time point. Further, as other researchers have noted, cross-lagged models often have poor fit because direct effects are not estimated between Time 1 and Time 3 (Young, Furman, & Laursen, 2011). Therefore, we also estimated the autoregressive effects of each variable at Time 1 on itself at Time 3 (see Table S1 in the online supplemental material). Last, we regressed each Time 2 and Time 3 variable on to each of our control variables (i.e., age, sex, and education) in both models (see Table S1 in the online supplemental material).

We estimated our two cross-lagged models with Mplus (Version 8.2; Muthén & Muthén, 2017), using maximum likelihood estimation with robust standard errors, a method for accommodating missing data that has advantages over multiple imputation and Bayesian approaches (Allison, 2012a). This method uses all available data to calculate maximum likelihood parameter estimates with standard errors that are robust to non-normality and nonindependence of the data. To evaluate model fit, three fit statistics were used: the root mean square error of approximation (RMSEA), the comparative fit index (CFI), and the standardized root-mean-square residual (SRMR). When evaluating model fit, models that fit the data well typically have an RMSEA less than .10 (indicating minimal departure of the hypothesized model from close fit), CFI greater than .90 (indicating the fit of the hypothesized model is at least 90% better than the fit of baseline model), and SRMR less than .10 (reflecting minimal difference between the predicted and observed correlations; Kline, 2016).

Though researchers frequently utilize a chi-square test to estimate model fit (where a small, nonsignificant chi-square statistic indicates the hypothesized model does not significantly differ from patterns in the data), chi-square is highly sensitive to large sample sizes (Kline, 2016). Given the current sample size, it is highly probable that chi-square tests of model fit will produce a large, significant chi-square; therefore, we report chi-square but do not use this test to determine good-fitting models.

Results

Sample Demographics

The present sample of 2,802 MIDUS participants was, at MIDUS 1, an average 45.34 years old ($SD = 11.33$), 47% female, and 91.3% White (2.8% Black/African American, 1.3% Other race; <1% Native American/Alaska Native, Asian/Pacific Islander, and Multiracial, each). In addition, 40% of participants reported having a college degree or higher level of education (29% reported some college, 25% were high school graduates, and 6.2% reported less than a high school education or GED), and 68% reported current employment (additionally, 11% self-reported as homemaker, 9% currently retired, 2.8% students, 2% unemployed/seeking employment). Lastly, participants' median household income (including wages, pension, and social security/other government assistance) at MIDUS 1 was \$67,500 ($M = \$87{,}146.71$, $SD = \$64{,}939.87$).

Regarding close family relationships, the majority of participants (83.6%) reported being currently married, for an average of 24.38 years ($SD = 12.28$); those who reported currently cohabiting had done so for an average of 3.97 years ($SD = 4.24$). The majority (80.5%) also reported having had children at MIDUS 1, with an average of 2.03 biological children ($SD = 1.51$). Further, 81.2% of the present sample reported living with both of their biological parents until at least the age of 16; 57.3% of those who reported not having done so was due to their parents having separated or divorced. Most participants (65.4%) reported their

Table 2
Standardized Coefficients and Significance Levels for Cross-Lagged Pathways of the Morbidity and Health Appraisal Models (Standard Errors in Parentheses; N = 2,787)

Parameter estimate	Morbidity model			Health appraisal model		
	Standardized	*p*	95% CI	Standardized	*p*	95% CI
Time 1 → Time 2						
Fam Strain → Fam Support	−.034 (.022)	.126	[−.078, .010]	−.038 (.023)	.089	[−.082, .006]
Fam Strain → IP Strain	.087 (.021)	.000	[.045, .128]	.087 (.021)	.000	[.046, .122]
Fam Strain → IP Support	−.016 (.022)	.472	[−.060, .028]	−.017 (.022)	.458	[−.060, .027]
Fam Strain → Health	.055 (.020)	.006	[.015, .094]	.049 (.020)	.012	[.011, .088]
Fam Support → Fam Strain	−.011 (.022)	.637	[−.054, .033]	−.009 (.022)	.682	[−.053, .035]
Fam Support → IP Strain	.009 (.022)	.664	[−.033, .052]	.011 (.022)	.616	[−.032, .054]
Fam Support → IP Support	.059 (.024)	.013	[.013, .106]	.058 (.024)	.015	[.011, .105]
Fam Support → Health	−.037 (.022)	.093	[−.079, .006]	−.024 (.020)	.232	[−.064, .015]
IP Strain → Fam Strain	.114 (.027)	.000	[.061, .167]	.117 (.027)	.000	[.063, .170]
IP Strain → Fam Support	.009 (.026)	.713	[−.041, .059]	.008 (.026)	.754	[−.042, .058]
IP Strain → IP Support	−.080 (.027)	.003	[−.134, −.026]	−.079 (.027)	.004	[−.113, −.025]
IP Strain → Health	.023 (.026)	.376	[−.028, .075]	−.013 (.024)	.595	[−.062, .031]
IP Support → Fam Strain	.004 (.028)	.881	[−.051, .060]	.004 (.029)	.895	[−.052, .060]
IP Support → Fam Support	.082 (.028)	.004	[.027, .137]	.082 (.028)	.004	[.027, .137]]
IP Support → IP Strain	−.032 (.031)	.303	[−.093, .029]	−.034 (.031)	.272	[−.094, .027]
IP Support → Health	.027 (.025)	.278	[−.022, .076]	−.045 (.025)	.069	[−.093, .004]
Health → Fam Strain	.077 (.020)	.000	[.038, .116]	.048 (.018)	.008	[.013, .083]
Health → Fam Support	−.078 (.024)	.001	[−.126, −.031]	−.059 (.019)	.002	[−.069, −.022]
Health → IP Strain	.025 (.020)	.207	[−.014, .063]	.029 (.018)	.115	[−.007, .065]
Health → IP Support	−.006 (.022)	.768	[−.049, .036]	−.013 (.019)	.467	[−.050, .023]
Time 2 → Time 3						
Fam Strain → Fam Support	−.065 (.024)	.006	[−.111, −.018]	−.066 (.023)	.005	[−.112, −.202]
Fam Strain → IP Strain	.006 (.024)	.790	[−.041, .054]	.007 (.024)	.757	[−.040, .055]
Fam Strain → IP Support	.041 (.024)	.090	[−.006, .088]	.038 (.024)	.115	[−.009, .085]
Fam Strain → Health	.041 (.019)	.034	[.003, .079]	.058 (.020)	.003	[.020, .096]
Fam Support → Fam Strain	−.052 (.023)	.022	[−.097, −.008]	−.053 (.023)	.020	[−.098, −.008]
Fam Support → IP Strain	.012 (.024)	.622	[−.036, .059]	.012 (.024)	.608	[−.035, .060]
Fam Support → IP Support	.044 (.024)	.069	[−.003, .092]	.048 (.024)	.055	[−.001, .097]
Fam Support → Health	.022 (.018)	.226	[−.014, .058]	−.047 (.019)	.013	[−.084, −.010]
IP Strain → Fam Strain	.164 (.028)	.000	[.110, .218]	.164 (.028)	.000	[.110, .218]
IP Strain → Fam Support	.013 (.029)	.669	[−.045, .070]	.009 (.029)	.768	[−.049, .066]
IP Strain → IP Support	−.151 (.029)	.000	[−.208, −.093]	−.154 (.029)	.000	[−.212, −.096]
IP Strain → Health	.034 (.025)	.169	[−.014, .082]	−.013 (.024)	.595	[−.059, .034]
IP Support → Fam Strain	.126 (.028)	.000	[.071, .182]	.126 (.028)	.000	[.070, .182]
IP Support → Fam Support	.051 (.032)	.107	[−.011, .113]	.047 (.032)	.137	[−.015, .110]
IP Support → IP Strain	.017 (.033)	.611	[−.047, .081]	.016 (.033)	.622	[−.048, .080]
IP Support → Health	.021 (.025)	.406	[−.028, .069]	−.010 (.023)	.668	[−.055, .035]
Health → Fam Strain	.007 (.021)	.745	[−.035, .049]	−.005 (.019)	.802	[−.043, .033]
Health → Fam Support	−.067 (.023)	.003	[−.112, −.023]	−.071 (.021)	.001	[−.111, −.030]
Health → IP Strain	−.008 (.022)	.709	[−.051, .034]	−.002 (.022)	.918	[−.045, .041]
Health → IP Support	−.055 (.022)	.014	[−.099, −.011]	−.037 (.019)	.054	[−.075, .001]

Note. CI = bias-corrected confidence interval; Fam = family; IP = intimate partner; Health = aging health outcome (i.e., morbidity, or, health appraisal).

mother was still alive at MIDUS 1, while 45.4% reported their father was still alive. Last, 94.3% of participants reported they had at least 1 sibling (M = 3.42, SD = 2.50, range 0–21; one outlier of 49 siblings removed).

Participants missing at Time 2 and Time 3 did not differ in morbidity count (i.e., the number of chronic illnesses) at Time 1 (Time 2 missing: $t[2,736] = .19$, $p = .85$; Time 3 missing: $t[2,736] = 1.28$, $p = .20$). Further, participant attrition was not associated with Time 1 health appraisal scores for participants missing at either Time 2, $t[2,794] = -.62$, $p = .54$ or Time 3, $t[2,794] = -.77$, $p = .44$. However, missingness at Time 2 was linked to two demographic control variables, age, $t[2,797] = 4.64$, $p < .001$ and gender, $\chi^2(1) = 11.28$, $p < .001$, but not education, $\chi^2(1) = .12$, $p = .72$. Missingness at Time 3 was only linked to age, $t[2,797] = 9.48$, $p < .001$, and not gender, $\chi^2(1) = .21$, $p = .65$ nor education, $\chi^2(1) = .00$, $p = .99$. Thus, data are missing at random, and the selected control variables are necessary in each model.

Preliminary Analyses

Whereas many of the family and intimate partner emotional climate measures were correlated, at each timepoint, they did not approach 1.00 (see Table 1). However, to ensure correlations that exceeded .60 did not present a concern, we calculated the VIF for each. Thus, intimate partner support was regressed on intimate partner strain at Time 1 and at Time 2. The VIF for each were 1.00, well within the acceptable range. To verify these issues did not inflate over time, intimate partner support and strain at Time 1 and intimate partner support at Time 2 were regressed on intimate

partner strain at Time 2. The VIF were 2.00, 1.73, and 1.38, respectively, within the range of 2.50 (Allison, 2012b).

Morbidity

Results of our first model, testing longitudinal pathways from family emotional climate and intimate partner emotional climate to morbidity, demonstrated good fit, $\chi^2(35) = 411.013$, $p < .001$; RMSEA = .062, CFI = .952; SRMR = .034; Figure 1. As hypothesized, greater family strain at Times 1 and 2 was predictive of a greater number of chronic health conditions at Times 2 and 3, respectively (see Table 2). However, we did not find evidence for the impact of either family support or intimate partner relationship climate on morbidity, at either Time 2 or Time 3. Conversely, Time 1 morbidity predicted worse Time 2 family emotional climate (i.e., greater strain, and less support), whereas greater Time 2 morbidity was associated with decreased family support and intimate partner support at Time 3.

Health Appraisal

Results of our second model, with health appraisal as the dependent variable, demonstrated good fit, $\chi^2(35) = 376.80$, $p < .001$; RMSEA = .058, CFI = .956; SRMR = .032; Figure 2. Similar to our morbidity findings, greater family strain at Time 1 is associated with worse health appraisal at Time 2; this effect is replicated between Time 2 family strain and Time 3 health appraisal (see Table 2). However, unlike our first model, greater family support at Time 2 is associated with improved health appraisal at Time 3. Additionally, these relationships appear reciprocal, such that worse Time 1 health appraisal predicts greater family strain and less family support at Time 2, whereas worse Time 2 health appraisal is associated with decreased family support at Time 3. Contrary to our hypotheses, intimate partner emotional climate did not impact health appraisal at either Time 2 or Time 3.

Discussion

In the present study, we found a robust impact of family emotional climate on both morbidity and health appraisal over the 20-year span of midlife. Specifically, greater family strain was associated with a greater number of chronic conditions, and worse health appraisal, 10 years' later (at both Times 2 and 3). We also found reciprocal impacts of each aging outcome on the quality of family relationships, such that worse health predicted a decline in later family emotional climate. Using a cross-lagged approach means we found these effects over and above the predictive effects of earlier aging outcomes on later aging (and, earlier family relationships on the quality of later family relationships), while controlling for age, sex, and education.

Contrary to a great deal of literature that specifies the impact of intimate partner relationships on physical health (e.g., Robles et al., 2014), we failed to find support for this aspect of our models. While we hypothesized a stronger effect of families on health given prior research findings (Priest et al., 2015, 2018), we predicted intimate partnerships would also have a significant, if weaker, effect. However, there were no significant effects of intimate partner relationships on either health outcome.

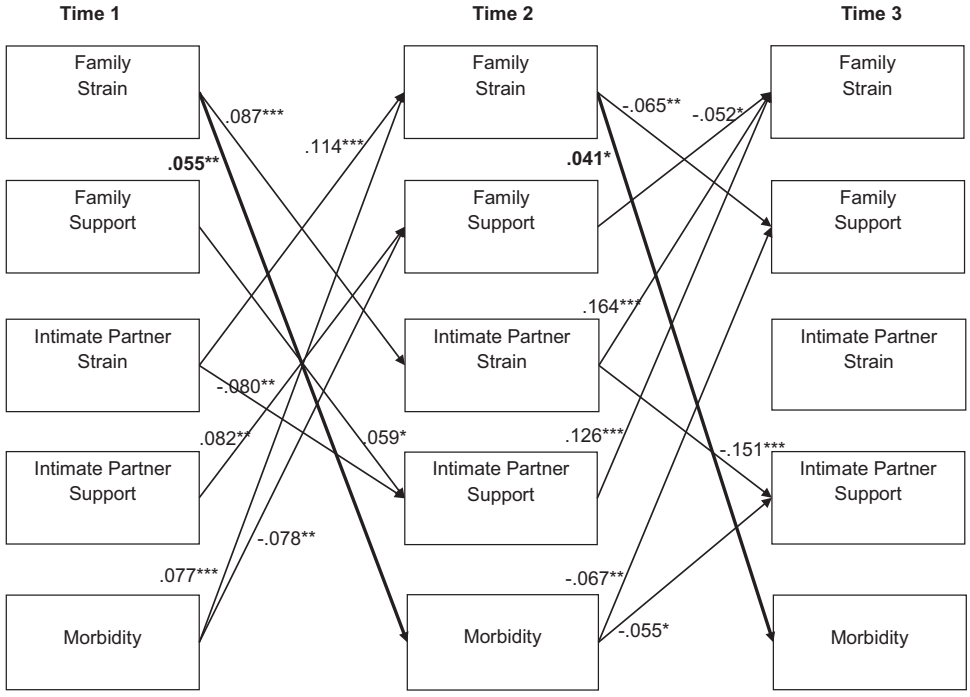

Figure 1. Morbidity model; $\chi^2(35) = 411.013$, $p < .001$; root mean square error of approximation = .062, comparative fit index = .952; standardized root-mean-square residual = .034. Hypothesized pathways in bold. Standardized path coefficients: * $p < .05$. ** $p < .01$. *** $p < .001$.

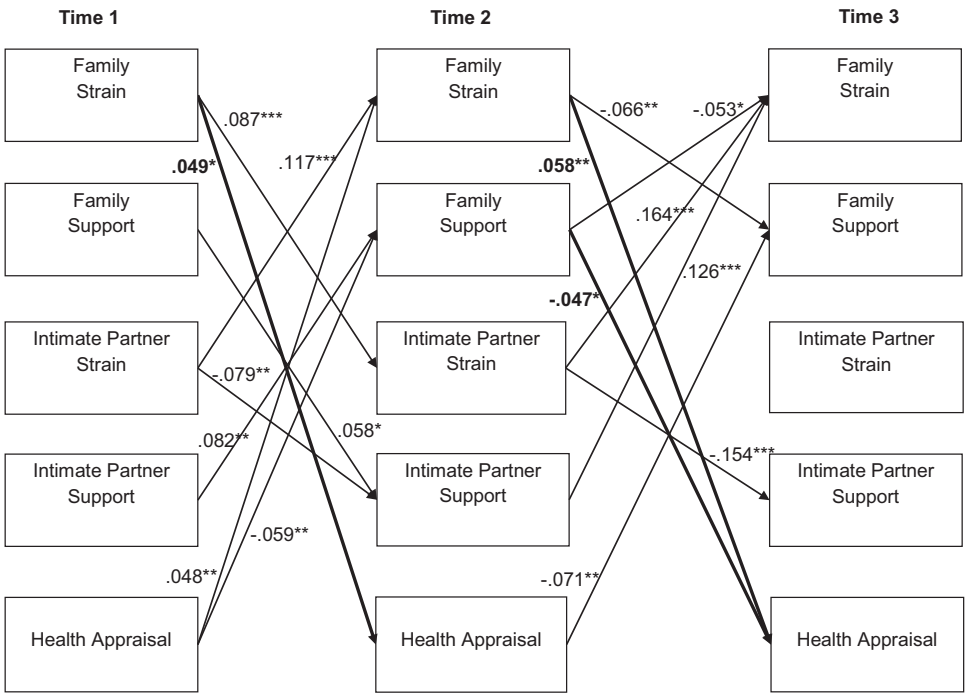

Figure 2. Health appraisal model; $\chi^2(35) = 376.80$, $p < .001$; root mean square error of approximation = .058, comparative fit index = .956; standardized root-mean-square residual = .032. Hypothesized pathways in bold. Standardized path coefficients: * $p < .05$. ** $p < .01$. *** $p < .001$.

The lack of significant associations between intimate partner emotional climate and later health could be occurring for a few reasons. It may be that nonintimate family relationships have a greater impact on health due to their longitudinal nature. The present sample was an average age of 45 years at baseline, and the vast majority had living parents and/or siblings (siblings are often the lengthiest bond any individual has during their life course; Antonucci & Wong, 2010); thus, their relationship with a spouse or intimate partner is unlikely to be longer than that of their family of origin. In other words, nonmarital family members are likely to share a longer history (with potential impacts beginning in childhood), and a future, as in parent-adult child relationships (Weihs et al., 2002). Therefore, the emotional intensity of these relationships may be greater, such that stronger effects on adult health outcomes are observed, compared with intimate partnerships (Priest et al., 2019).

Overall, we suggest that these findings indicate the power of the quality of family relationships on aging health, and vice versa. The two variables demonstrated intertwining effects over time, for morbidity and health appraisal. In accordance with a broader literature that is increasingly highlighting the interconnections between families and health (Carr & Springer, 2010; Pietromonaco & Collins, 2017; Smith, 2019), we assert that the health of adults should always be considered in the systemic context of families. This reflects a biopsychosocial approach to understanding processes of aging and provides insight into the specific pathways by which close relationships and health cyclically impact one another, over time.

Limitations and Future Research

The present project is the first, to our knowledge, to investigate the longitudinal effects of both support and strain in family and intimate partner relationships on aging health, thus providing an innovative and significant advantage over research literature to date. However, limitations inherent to this study provide opportunities for future research studies to explore further.

First, whereas we estimated two models, incorporating morbidity and health appraisal as measures of aging outcomes, we did not account for mortality. More specifically, we included participants who successfully completed all three waves of MIDUS, indicating the strain of their family relationships did not predict an increased risk of mortality during the scope of the study. Alternate research has demonstrated a powerful impact of the quality of close relationships and longevity (e.g., Lawrence, Rogers, Zajacova, & Wadsworth, 2019). Additional research teasing out longitudinal pathways from close relationships to differing degrees of disease risk, and the progression of symptom occurrence to disease incidence and mortality, is a potential next step. These tests should examine how the present results, positing a link between family and morbidity, are clinically relevant, exploring health care costs and quality of life outcomes, in addition to mortality risk.

Second, we did not account for marital loss (i.e., separation, divorce, widowhood). It is possible that some participants completed the intimate partner emotional climate measures considering unique partners at each time point, which could lessen

found impacts of these relationships on health. Prior research demonstrates the vast majority of the MIDUS sample remains continually married throughout all three waves, and found few effects of marital loss on health (e.g., Woods, Priest, Kuhn, & Signs, 2019; Woods, Roberson, & Priest, 2019), but this remains a potential impact on the present study. Future research investigating the quality of family and intimate partner relationships on health over time could additionally incorporate measures of family structure and transition in order to further capture the complexity of family over the life span.

Third, despite our use of comprehensive family measures that specified describing the quality of family relationships other than the spouse/intimate partner relationship, the family support and strain measures did not further define "family," nor require participants to document who they considered when completing the measure. Recent research highlights that who adults consider when completing a family measure alters results (Priest et al., 2019). Therefore, additional research teasing out the differential effects of unique types of family relationships will be important to more fully inform our understanding of how families affect aging health.

Last, MIDUS is limited in the diversity of its sample, as participants are mostly White, and married, with higher education experience. Further research is needed to test the hypothesized pathways with broader samples to examine the generalizability of the present findings.

Clinical Implications

Family based interventions for adult health are implicated from the results of this study. However, this approach is regularly provided for children and their families, far less so for adults. There is a broad assumption that family based intervention is an approach to support patients at the extreme ends of the life span: for children, where we observe the effects of parents and siblings, and for older adults, with limited cognitive capacity and family caregivers (Shields, Finley, Chawla, & Meadors, 2012; Weihs et al., 2002). Moreover, the focus in health care is typically on individual patient motivation for self-care, rather than on family-oriented care (Dunbar, Clark, Quinn, Gary, & Kaslow, 2008). However, the present study highlights the reciprocal effects that strained and unsupportive family relationships have on health, and vice versa, for a wide range of midlife. This indicates family-based interventions for adult health are likely appropriate, and necessary. Moreover, we failed to find significant effects of the intimate partner relationship on health. Therefore, intervening in adult health, and adult relationships, requires clinical consideration of family relationships, other than an individual's spouse/partner. Actively inviting adult clients' family members, including parents, siblings, or adult children, may be a meaningful addition to usual care.

Given the reciprocal effects of families and health found presently, we recommend that clinical providers attend to two effects: the effects of strained family relationships on aging health, and the effects of aging health on the quality of family relationships. Interventions in the first arena can include psychoeducation specific to the long-term ramifications of unhealthy family relationships left unchecked. Additionally, regular assessment of physical health, including individual family members' health appraisal, may be helpful in assessing the concurrent effects of strained relationships on health, and preventing worse health outcomes as possible. For adults who already have a chronic condition, a negative family emotional climate serves to increase morbidity, thereby worsening the health of already ill individuals. Conversely, supportive family members may serve to improve the self-management of adults with health conditions, and should therefore be considered as part of family based interventions for specific diseases, for which there is growing support (Hartmann, Bäzner, Wild, Eisler, & Herzog, 2010; Martire, Lustig, Schulz, Miller, & Helgeson, 2004).

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