Resilience and Stress in Romantic Relationships in the United States During the COVID-19 Pandemic

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Abstract: We measure the perceived effect of the COVID-19 pandemic on romantic relationships in the United States. We contrast Family Stress theories emphasizing potential harms of the pandemic with Family Resilience Theory suggesting that crises can lead couples to build meaning and strengthen their relationships. We examine closed-ended and open-ended questions about relationship responses to the pandemic from the How Couples Meet and Stay Together surveys from 2017, 2020 and 2022. We analyze potential correlates of relationship outcomes including education, children at home, gender, time spent together and pre-pandemic relationship quality. Subjects were three times as likely to describe pandemic relationship benefits compared to harms. Couples in high quality relationships were especially resilient to pandemic stresses, and derived benefits from more time together. Couples made meaning out of the pandemic and used the normalcy of their domestic situations to make a common front against an external threat.

Introduction

A Global pandemic of a deadly pathogen which can be spread inadvertently between people in close contact has the potential to be a great stressor on relationships between intimate partners. Before vaccines against COVID-19 were first available in late 2020, Americans were mostly in the dark about exactly how the novel coronavirus spread, how to prevent illness, or when economic life and social life would return to normal.

We examine how adults in romantic relationships in the United States responded to the COVID-19 pandemic at two different stages of the pandemic. Period one, September of 2020 was the high-mortality and high-disruption pre-vaccine stage of the pandemic, with schools mostly closed to in-person learning, mask mandates in place, and an average of 790 COVID-19 deaths per day in the UNITED STATES (across August and September, 2020). Period two, March and April of 2022 was the lower-mortality, post-vaccine, mostly back-to-normal stage of the pandemic with 376 COVID-19 deaths per day, schools open to in-person learning, and mandatory state-level mask mandates eliminated (Centers for Disease Control and Prevention 2022a; 2022b).

Scholars studying the effect of the coronavirus pandemic on romantic relationships have reasonably focused on the potential for the many stresses of the pandemic to degrade relationships, following theories of Family Stress (Eleuteri and Terzitta 2021, Pietromonaco and Overall 2021, Schmid et al. 2021). The scholarly

focus on Family Stress was especially strong in the pre-vaccine, higher-mortality, and more disruptive early stages of the pandemic.

Whereas Family Stress Theory predicts external stresses taking a toll on relationship quality, Family Resilience Theory (Walsh 2003; Walsh 2020) predicts that external crises and disasters can raise relationship quality by creating new opportunities for solidarity between partners. In the early stages of the COVID-19 pandemic schools and workplaces were closed, opportunities for travel were limited, and families were forced to be home together. Being home together gave families whose relationships were already in good working order an opportunity to grow, share and build a united front against the pandemic. As one 29-year-old survey subject wrote about the effect of the pandemic on their marriage, "We've had so much more time to spend with each other! Love is spelled T-I-M-E."

We contribute to the literature on Family Stress and Family Resilience in several ways. First, we use nationally representative longitudinal data from three time points: 2017, 2020, and 2022, allowing for control of pre-pandemic relationship quality. Having two waves of data from different stages of the pandemic makes it possible to distinguish short term from longer term pandemic outcomes. Second, the COVID-19 pandemic represented a genuine crisis that affected almost everyone, and therefore presents a valuable natural experiment to test Family Stress and Family Resilience theories. Third, we examine both positive and negative relationship impacts of the pandemic, and we theorize both the causes of resilience and the causes of Family Stress, following Bruining et al (2021).

Fourth, we take advantage of both closed-ended and open-ended questions on pandemic relationship effects. Patterson (2002) explicitly called for inclusion of qualitative data to enhance understanding of how family resilience operates because the process through which family resilience is supposed to work is the most difficult aspect of Family Resilience Theory to study.

Family Stress Theory

American communities went into lockdowns of various intensity to reduce the spread of COVID-19 beginning on March 19, 2020. Between March 2020 and April 2020, lockdowns raised the United States unemployment rate from 4.4 percent to 14.8 percent, the largest monthly spike and the highest monthly unemployment rate recorded by the U.S. Bureau of Labor Statistics (2021) since the Bureau began recording monthly unemployment data in 1948. Job loss is a paradigmatic life stressor that decreases household income, negatively affects peoples' sense of self-esteem and mastery, and leads to increases in depression (Pearlin et al. 1981). Family Stress Theory argues that stresses in the environment take a toll on individual health and well-being (Link and Phelan 1995; Pearlin et al. 1981) and take a toll on the quality of primary relationships as well (Hill 1949; Conger, Conger and Martin 2010; Boss, Bryant and Mancini 2017).

Despite the initial economic shock of lockdowns and unemployment in March and April of 2020, a robust variety of United States federal and state interventions were put in place, beginning with the $2.2 Trillion CARES act (Coronavirus Aid, Relief, and Economic Security) signed into law on March 27, 2020. CARES was the

largest single stimulus package in U.S. history. Federal intervention pumped cash directly to taxpayers, increased unemployment insurance, made loans to businesses to keep workers on payroll, and made cash transfers to states and local governments. As a result of robust government aid, the United States poverty rate *declined* during the first chaotic months of the COVID-19 pandemic (Han, Meyer and Sullivan 2020), blunting the economic impact of the pandemic on families in the United States.

In the Family Stress perspective, new environmental shocks will exploit any pre-existing inequality. Karney and Bradbury's (1995) Vulnerability-Stress-Adaptation model of marital stability leans heavily on the potentially negative consequences for relationship quality of external stresses magnifying pre-existing vulnerabilities (see also Pietromonaco and Overall 2021). The lower satisfaction of wives compared to husbands in different-sex marriages is a marital vulnerability well established in the pre-pandemic literature and has been evidenced both in the ethnographic study of marriages (Hochschild and Machung 1989) and in the greater tendency of wives than husbands to want and to file for divorce (Rosenfeld 2018; Sayer et al. 2011). Because of the pre-existing gender fault line within different-sex marriages, it was natural for researchers working in the Family Stress perspective to predict that the COVID-19 pandemic would worsen the gender divide in different-sex marriages and lead to worse pandemic effects on relationship satisfaction for wives and mothers compared to husbands and fathers. The closure of schools to in-person instruction in 2020 displaced school children to the home, increased domestic labor and may have increased the gendered housework divide.

Studies of the disparate relationship impacts of the pandemic on men's and women's relationship satisfaction have yielded mixed results. Waddell et al. (2021) found some women who did more housework than their partners during the pandemic had worsened relationship satisfaction. Perelli-Harris, Chao, and Berrington (2023) found no consistent evidence of gendered pandemic relationship effects. Consistent with the expectations of Family Stress Theory, Collins et al (2021) found that remote schooling in the pandemic 2020-21 school year took a heavier toll on mothers' than fathers' labor force participation rates in the United States, presumably because mothers were taking on extra work at home.

In the first days of the pandemic, before data on outcomes were available, scholars (although sometimes acknowledging the possibilities of family resilience) emphasized the potential of the pandemic to cause family dysfunction such as domestic abuse, child abuse, mental health crises, violence, loss of individual autonomy, and suicide (Settersten et al. 2020, Peterman et al 2020; Pietromonaco and Overall 2021; Feeney and Fitzgerald 2022). Prime, Wade, and Brown (2020) discussed the possibility of the pandemic leading to cascading negative outcomes for children and for couples. Despite Family Stress-related warnings that sheltering in place during the coronavirus pandemic would lead to an increase in suicides (Gunnell et al. 2020; Reger, Stanley, and Joiner 2020), initial data suggest that the suicide rate in the United States *decreased* in 2020 (Ahmad and Anderson 2021).

Drotning et al (2022), working in the Family Stress paradigm found that family violence had increased in the United States during the pandemic but that rates of family violence during the COVID-19 pandemic were nevertheless low: 1.8 percent of subjects experienced physical violence, and 5.6 percent were subjected to verbal

abuse. Drotning et al's findings suggest that two assertions can both be true: First, family violence may have increased during the pandemic; Second, any increase in family violence would have affected a small minority of couples.

Schmid et al (2021) used longitudinal data from Germany and found that partnered adults reported lower relationship satisfaction in Germany in 2020 compared to pre-pandemic reports from the same respondents. Relationship quality is, however, known to decline over relationship duration (Kurdek 1999; Vaillant and Vaillant 1993; VanLaningham, Johnson, and Amato 2001). Schmid et al examined relationship duration as a potential confounder in their appendices, but these analyses left unclear how much of the observed decline in relationship satisfaction was due to the typical effects of relationship duration, and how much was due to the pandemic.

Helland et al (2021) studied pandemic relationship responses in a sample of Norwegian couples who had been in couples' therapy or family counseling prior to the pandemic, a classic vulnerable population for whom Family Stress Theory predicts negative responses to the pandemic. Helland et al found that although the Norwegian couples reported higher parenting stress during a lockdown in March to May 2020, the couples in lockdown also reported *fewer* mental health problems, *less* verbal aggression, and *fewer* instances of forcing children into the middle of parental disputes. Helland et al's conclusion expressed surprise that, contra the predictions of Family Stress Theory, their subjects had not experienced an increase in destructive behaviors.

Vigl et al (2022) used a Family Stress framework to analyze data on relationship quality in April and May of 2020 in 67 countries, compared to retrospective recollections from before the pandemic. They found that cohabiting couples had unchanged relationship quality (on average) during the early days of the pandemic, whereas non-cohabiting couples suffered declines in relationship quality due to isolation from their partners.

Immigrant workers, lower educated workers, and the so-called essential workers mostly lacked the flexibility to work from home during the pandemic and were more subject to workplace stress as a result (Reid, Ronda-Perez, and Schenker 2020). The pandemic further heightened the disadvantages of precarious work that blue collar and service workers were already experiencing before the pandemic (Schneider and Harknett 2019). Family Stress Theory predicts that lower educated workers will have experienced greater stress (and worse relationship outcomes) during the pandemic because of less workplace safety and less flexibility.

Stress theories and Family Stress framings predominate in scholarship about the COVID-19 pandemic's effect on individuals and on relationships (Settersten et al. 2020; Pietromonaco and Overall 2021; Eleuteri and Terzitta 2021; Waddell et al. 2021; Schmid et al. 2021; Feeney and Fitzgerald 2022). The evidence, however, does not uniformly support stress theory's prediction of negative relationship outcomes during the pandemic.

Family Resilience Theory

Family Resilience Theory (Walsh 2003, Walsh 2016, Walsh 2020) offers explanations for why a crisis can result in stronger bonds and healthier romantic unions. Family Resilience Theory builds on positive relationship paradigms (DeFrain and Asay 2007, Fincham and Beach 2010), and attempts to reframe research on relationships with a focus on strengths and assets rather than the usual focus (predominant in Family Stress Theory and most other family research paradigms) on family deficits, dysfunctions, and pathologies.

Family Resilience Theory co-evolved with Family Stress Theory, as an effort to explain why some individuals have had neutral or positive outcomes in situations where negative outcomes were expected (McCubbin 2001, p. 6; Boss et al 2017; Lietz 2013; Patterson 2002; Rutter 1999). Because Family Stress Theory and Family Resilience Theory co-evolved, it is common for research in the Family Stress paradigm to incorporate some elements of Family Resilience, and vice versa. The differences between Family Stress and Family Resilience approaches to empirical questions often devolve to differences of framing and emphasis.

Family Resilience in Disaster Research

Drabek (1986) surveyed a broad literature on human responses to disasters and found that cooperation consistently emerged in response to external disasters such as fires and earthquakes. Where public officials expected to find looting and disorder, they more often found collaboration and solidarity. Even after the most devastating loss from natural disasters, studies have long found that bonds are strengthened, and familial solidarity increased (Taylor 1977; Henry, Tolan, and Gorman-Smith 2004; Aldrich and Meyer 2015). The sociological literature on disasters finds that positive social outcomes emerge much more frequently in crises than the public or academic scholarship expect.

The sociological disaster literature as surveyed by Drabek (1986) and as critiqued by Hausen (2021) neglects to examine pandemics such as the immensely deadly Spanish influenza pandemic of 1918-1919. The well-studied disasters (fires, earthquakes, tornadoes, and hurricanes) are short term events, with identifiable end points. It is not obvious that the kinds of upsurges in social solidarity observed in short term disasters would apply to disasters such as the COVID-19 pandemic which had lingered on for two years by April 2022 and had killed a million Americans and millions more people world-wide.

Family Resilience: Adaptability, Meaning Making, and Relationship Quality

In Walsh's (2003, 2016, 2020) influential description of Family Resilience Theory, one key task of families in a crisis is mutual meaning making. The theory predicts that high-functioning couples will tend to form a common perspective about the risks of an external threat, and about the household rules necessary to confront that threat. During the pandemic, couples living together were forced to either have a joint policy towards masking, social distancing (and later, vaccination), or else the

discordant views of the partners would be a potential source of conflict. When couples' views of how to respond to an external threat were in alignment, the external threat would (according to Family Resilience Theory) provide an opportunity for increased solidarity between partners and growth in the relationship.

In Family Resilience Theory, the quality of a couple's relationship determines their ability to respond to a crisis (Ungar 2013, Walsh 2016). Family Stress theorists are also interested in relationship quality, especially to the extent that Family Stress Theory incorporates some version of resilience theory (Boss et al. 2017, Pietromonaco and Overall 2021, Karney and Bradbury 1995, Patterson 2002). Relationship quality, however, is *particularly* relevant for Family Resilience Theory. Family Resilience scholars have been especially interested in the beneficial qualities of honesty, trust, faithfulness, sense of humor, compassion, and shared values that make families adaptable enough to resist psychological damage in the face of an external threat (DeFrain and Asay 2007).

The Pandemic's Effect on Time Together

According to Family Resilience Theory, the first task of well-functioning families during a crisis is to normalize and contextualize distress (Walsh 2003). The coronavirus pandemic forced adults with coresidential partners to spend more time at home with their partners. Being together at home was the one social situation that was most normal and thereby distinguishes the COVID-19 pandemic from other historical crises such as wars that have separated men from their wives (Hill 1949). For high-functioning couples, more time together during the pandemic may have provided a platform to build a common and mutually reinforcing joint policy about masking and social distancing, and a resetting of expectations around housework and childcare.

Married couples of working ages in the United States were finding time together increasingly scarce in the pre-pandemic era, and the lack of time together was a common complaint (Bianchi, Robinson and Milkie 2006: Table 5.6, Figure 7.2). For couples in high quality relationships whose time together was previously constrained, the pandemic (with its sudden shifts to work from home and the closures of public spaces) created new opportunities for togetherness with attendant possibilities of relationship growth. For couples whose relationships were already dysfunctional, more time together combined with external stress had the potential to deepen disagreements and spur unhappiness. Following Family Resilience Theory, pandemic relationship outcomes would be expected to be net positive especially in higher quality relationships.

The literature on how spending more time together affects couple relationship quality is equivocal because spending time together under normal circumstances is endogenous. Couples who get along well and enjoy the same activities find ways to spend more time together, whereas couples who squabble would be expected to find more activities to do apart (Guldner and Swensen 1995). The COVID-19 pandemic was a rare natural experiment in 2020 wherein coresident couples were spending more time together whether they had intended to or not. The COVID-19

pandemic is therefore an important opportunity to understand the effect of time spent together on individual subjective perceptions of relationship quality.

Empirical Tests Consistent with Family Resilience in the COVID-19 Pandemic

In the early days of the COVID-19 pandemic, before large survey data of pandemic impacts was available, scholars attuned to a Family Resilience Framework asked researchers to look for positive as well as negative relationship outcomes during the pandemic (Walsh 2020; Bruining et al 2021). Bruining et al (2021: 1139) pointed out that first reports from a lockdown in the Netherlands showed that "certain patients and families seemed to thrive on the novel situation and context."

Eales et al's (2021) study of parents in one Midwestern city in May and June of 2020 found that though the COVID-19 pandemic created a host of new family stresses, there was also strong evidence of family resilience arising from reports of more family time together. Williamson's (2020) study of 654 U.S. adults across three waves from December, 2019 to April, 2020 found no average change in relationship satisfaction, and a modest improvement in relationship attributions, that is a decrease during the pandemic in blaming their partners or attributing selfish motives to partners.

Walsh and Stevenson (2021) surveyed 209 men in the United States who have sex with men in July-September of 2020, and found that their study subjects were about twice as likely to have reported that the pandemic had improved rather than worsened their relationships. Fifty-three of Walsh and Stevenson's male subjects reported that the pandemic had made them *more* invested in the relationship, compared to only one subject who reported being less invested in the relationship's success. Walsh and Stevenson's online survey included an open-ended question about relationship response to the pandemic. The small set of answers they reported to the open-ended question featured the relationship benefits of more time together with partners.

Perelli-Harris et al (2023) used the Family Stress literature to frame their research into couples' response to the COVID-19 pandemic, but they found results more consistent with Family Resilience. Of the 5,792 partnered adults surveyed in the United Kingdom in April-June of 2020 (from the nationally representative UK Household Longitudinal Study), 19.1 percent reported that their relationships were *better* than before the pandemic, compared to only 8.4 percent who reported that their relationships were worse.

Hypotheses

Hypothesis 1: Family Stress Theory predicts that partnered adults will report predominantly negative effects of the coronavirus pandemic on their primary romantic relationships. We test this hypothesis with bivariate and multivariable tests of closed-ended questions and descriptive analysis of open-ended questions.

Corollary 1a: In their open-ended answers about pandemic effects on their relationships, subjects will emphasize stress, disputes, and disagreements with their partner.

Corollary 1b: Women in heterosexual unions will report substantially worse effects of the pandemic compared to men in heterosexual unions, net of other predictors of relationship quality.

Corollary 1c: Parents and especially mothers of young children will have had worse relationship responses to the pandemic, net of other factors.

Corollary 1d: Respondents with less than the BA degree will have experienced more relationship stress during the pandemic, net of other factors.

Corollary 1e: In the post-vaccine and lower-mortality stage of the pandemic, we expect the correlates of Family Stress to be less predictive of relationship outcomes, net of other factors.

Hypothesis 2: Family Resilience Theory predicts that couples will experience more positive than negative effects of the pandemic, including more cases of improved compared to degraded relationship quality. We test this hypothesis with bivariate and multivariable analysis of closed-ended questions and with descriptive analysis of open-ended text answers.

Corollary 2a: In their open-ended answers about how the pandemic has affected their relationships, partnered adults will describe opportunities for solidarity, a common approach to external threats, and will provide evidence of the kind of mutual meaning making that Family Resilience Theory predicts.

Corollary 2b: The power of couple resilience during the pandemic will depend on having had a strong and healthy relationship before the pandemic, net of other predictors.

Corollary 2c: Subjects who report that the pandemic increased the time they were able to spend with their partner will have especially positive relationship experiences of the pandemic, as long as relationship quality was strong to begin with. We supplement bivariate and multivariable analyses with propensity score matching to probe for a causal effect of more time together on better relationship outcomes.

Corollary 2d: In the post-vaccine and lower-mortality stage of the pandemic we expect the correlates of family resilience to be less predictive of relationship response, net of other factors.

Data and Methods

We use the How Couples Meet and Stay Together 2017 survey, a dataset of 3,510 adults (minimum age of 18) and the follow-up surveys fielded in September of 2020 with 2,107 subjects and in March and April of 2022, with 1,722 subjects (hereafter HCMST; Rosenfeld, Thomas and Hausen 2023). HCMST 2017-2022 data, documentation, and a replication package for Tables 1-6 are available at https://data.stanford.edu/hcmst2017.

HCMST surveys were Internet surveys, conducted by survey firm Ipsos, using subjects who were regular survey subjects in an established panel known as the KnowledgePanel (which was formerly part of Knowledge Networks). Panelists

Table 1: Sample sizes and relevant subsets of 3 HCMST waves

	2017	2020	2022
Surveyed subjects	3,510	2,107	1,722
Minimum age	18	21	23
Response rate	60%	87%	83%
# of partnered subjects	2,862	1,634	1,337
# of partnered subjects with relationships intact at least as far back as wave 1, 2017	2,862	1,488	1,096
# of partnered subjects who answered the open-ended question about pandemic effects on their relationship	N/A	1,385	1,104
# of partnered subjects who answered the open-ended question about pandemic effects on their relationship and whose relationship was intact back to 2017	N/A	1,263	905

were scientifically recruited into this invitation-only panel via postal mailings to a random selection of residential addresses. To ensure that non-Internet households were included, Ipsos provided a tablet and ISP (Internet Service Provider) connection to those who needed them. Because of this probability-based sampling approach, KnowledgePanel findings can be reported with a margin of sampling error and projected to the general population.

The quality of representative Internet surveys such as the KnowledgePanel has been shown to equal or exceed the quality of the best representative phone surveys (Chang and Krosnick 2009, Fricker et al. 2005). Response rate was 60 percent in HCMST 2017. By 2020, 1,079 of the original 3,510 HCMST 2017 subjects had withdrawn or been retired from the KnowledgePanel, as part of the regular cycle of turnover in panel participation. The response rate was 2,107/2,431=87 percent for HCMST 2020 for the 2,431 subjects remaining in the panel. For HCMST 2022, there were 2,073 subjects remaining in the panel and response rate was 1,722/2,073=83 percent, see Table 1.

Multiplying the HCMST 2017 response rate by the rate at which subjects answered initial requests to join the KnowledgePanel in the years before 2017, and the rate at which subjects completed their initial demographic surveys to enter the KnowledgePanel (Callegaro and DiSogra 2008), the cumulative response rate can be calculated as 11 percent for HCMST 2017 (American Association for Public Opinion Research 2011). Self-identified lesbian, gay, and bisexual (LGB) respondents were oversampled in HCMST 2017 and therefore remained oversampled in HCMST 2020 and 2022.

Weights were applied in each wave to match Current Population Survey (CPS) demographics, to account for the oversampling of LGB respondents, and to account for panel attrition between waves. Table 1 in the online supplement shows that weighted data from HCMST 2020 matches the CPS averages from September, 2020 not only in the areas where the HCMST data are weighted to match the CPS (gender, age, income, education, region, race and ethnicity) but also the CPS and HCMST are reasonably close in marital status (59.2 percent married in CPS compared to 53.5 percent in HCMST), cohabitation status (8.1 percent in CPS, 8.4 percent in HCMST) and mean number of children under age 13 per household (0.43 compared to 0.33).

Because the attrition between HCMST waves was mostly due to the ordinary panel maintenance process of withdrawals and retirements from the KnowledgePanel, attrition was orthogonal to the subjects studied here. Accounting for attrition with weights (McGuigan et al. 1997) makes no substantive difference to the results (see online supplement Table 3).

Partnered respondents in 2020 and 2022 answered a closed-ended question about how the pandemic had affected their primary romantic relationship "How has the coronavirus (also known as COVID-19) pandemic affected your relationship to [partner_name]?" The closed-ended question was followed by an open-ended question "How and why has the coronavirus (also known as COVID-19) pandemic affected your relationship to [partner_name]? Please write as much detail as you can. We want to understand your story!" There were 1,385 open-ended answers from partnered HCMST 2020 subjects about how the coronavirus pandemic affected their relationship, and 1,104 open-ended answers from 2022.

Open-ended questions provide a broader range of answers and lack the 'leading the witness' aspect of closed-ended survey questions. When experiences vary widely and when the reasons for the answers are interesting as well, open-ended questions have important advantages (Weisberg, Krosnick, and Bowen 1996). Subjects were in position to know how the pandemic affected their primary romantic relationships. Asking subjects to describe the effects of the pandemic in their own words had advantages over trying to infer the effects from the changes over time in variables that did not address the pandemic directly.

Codes for the open text answers to "how did the pandemic affect your relationship" were built up inductively by Sonia Hausen reading the responses closely to identify the most important and relevant themes (Thomas 2006). Difficult or category-spanning cases were discussed between Hausen and HCMST PI Michael Rosenfeld. Consolidation of codes or introduction of new codes required Hausen to edit the rubric and recode the answers from the beginning. Once Hausen settled on a rubric of 25 codes, Rosenfeld used the rubric to independently code a subset of cases. Interrater reliability Kappas across the 25 codes averaged 0.93. According to Landis and Koch (1977), Kappas of greater than 0.81 constitute nearly perfect agreement. Only agreement on COVID attitudes between partners had an interrater reliability lower than 0.81 (at 0.67). Answers to the same question from 2022 were coded using the rubric developed for 2020, by Rosenfeld and Casey Christmas. The mean number of codes per answer was 2.14 in 2020 and 1.9 in 2022. The average answer length was 27 words in 2020, and 24 words in 2022.

Table 2: Stability and improvement in romantic relationship satisfaction during the pandemic

	a) All partnered adults	b) All partnered adults	c) Women with male partners	d) Men with female partners	e) Living with children <13	f) NOT living with children <13	g) Subjects with BA	h) Subjects without BA
Survey year	2022	2020	2020	2020	2020	2020	2020	2020
How has the pandemic affected your relationship (pct)								
Relationship is Better	18.7	17.5	16.8	17.8	14.5	18.4	20.9	15.5
No Change	75.4	77.2	77.4	77.6	76.8	77.3	73.4	79.4
Worse	5.9	5.3	5.8	4.6	8.7	4.3	5.7	5.2
Total	100	100	100	100	100	100	100	100
N	1,328	1,629	712	799	281	1,348	731	898

Source: weighted data (accounting for attrition) from HCMST 2020 and 2022, partnered respondents. No significant difference by survey year (columns a and b; $\chi^2= 1.3$ on 2 df, P=0.53) or by respondent gender (comparison of columns c and d is $\chi^2= 1.2$ on 2 df, P=0.56). Living with children did have a significant effect, the comparison of columns e and f had $\chi^2= 12.3$ on 2 df, P<0.01. The difference between columns g and h was $\chi^2= 8.2$ on 2 df, P<0.05.

Among the codes developed from open-ended question is "more time together," which means the subject reports that they and their primary partner spent more time together during the pandemic than before. This is a subjective measure; the HCMST surveys have no systematic measures of time use.

We test our hypotheses and corollaries first with bivariate tests using the closed-ended questions on pandemic effects on relationships, and then with multivariable ordinal logistic regression predicting the same outcomes (Long and Freese 2001). To test the potentially causal effect of spending more time together on the pandemic effects on relationships, we add a propensity score matching analysis (Morgan and Winship 2015). We follow with a descriptive analysis of the most common codes derived from the open-ended questions.

Results

The Pandemic's Effect on Relationship Quality, Closed-ended question

Table 2 shows the responses to the three-category closed-ended question, "How has the coronavirus pandemic affected your relationship to [partner_name]? "No change" was the modal answer, at 75.4 percent in 2022 and 77.2 percent in 2020, see columns a and b. The distribution of answers to this question was not significantly different in 2020 and 2022. In this section we focus on the 2020 data.

Among partnered subjects in 2020 who thought that the coronavirus had impacted their relationship, three times more (17.5 percent) thought that the pandemic lockdown had made their relationships better compared to the 5.3 percent who reported that the pandemic had made their relationships worse, supporting the Family Resilience Theory (Hypothesis 2). The results reported in Table 2 are similar to the results reported in Perelli-Harris et al (2023) for partnered adults in the UK in April-June of 2020, where 19.1 percent of subjects reported that their relationship was better than before the pandemic, 72.5 percent reported no change, and 8.4 percent reported that their relationship was worse than before the pandemic.

Women and men in heterosexual unions (columns c and d of Table 2) had similar (not statistically distinguishable) responses. Although relationship satisfaction has historically been higher for men than women in heterosexual marriages and this gendered marital satisfaction gap is present in the HCMST data as well as other sources (Rosenfeld 2018), Table 2 shows that the subjective effect of the pandemic on heterosexual relationships did not vary significantly by gender. The lack of a gender effect in Table 2 indicates a lack of support for Corollary 1b, one of the key corollaries of the Family Stress Theory as applied to the pandemic.

Table 2 (column e) shows that partnered adults who were living with at least one child under the age of 13 in September 2020 were more likely (8.7 percent) to say that the pandemic had worsened their relationship with their partner, compared to only 4.3 percent of partnered adults not living with young children who reported the same (column f). More parents reported that their relationship had gotten better during the pandemic (14.5 percent) compared to worse (8.7 percent). The association between small children at home and worse responses to the pandemic is modest evidence in support of a stress theory perspective, see Corollary 1c. On the other hand, the fact that parents were more likely to say that the pandemic improved rather than worsened their relationship also shows some support for Family Resilience Theory. We explore gender interactions with parenthood below in our multivariable models.

Table 2 shows that partnered subjects with bachelor's degrees were more likely than partnered subjects without BAs (columns g and h) to say that their relationship had improved during the pandemic, and this educational gradient supports Family Stress Theory and Corollary 1d. Adults raising young children and people who did not have the BA degree faced additional stressors during the pandemic and those additional stressors were reflected in their romantic relationships. Even for subjects who had additional stressors (young children at home or less than a BA), however, 'no change' was by far the most popular answer and 'relationship is better' was a

Table 3: Stability and improvement in romantic relationship satisfaction during the pandemic (continued): for intact couples in 2020

	i) Relationship that were 'Excellent' in 2017	j) Relationships that were 'Good' in 2017	k) Relationships that were 'fair' to 'very poor' in 2017	l) Report more time with partner	m) did NOT report more time w partner
How has the pandemic affected your relationship (pct)					
Relationship is Better	20.5	11.8	6.7	40.9	8.5
No Change	77.2	77.8	79.5	52.2	85.9
Worse	2.3	10.4	13.8	7.0	5.6
Total	100	100	100	100	100
N	971	424	87	393	870

Source: weighted data (accounting for attrition) from HCMST 2020, partnered respondents. Intact means relationship intact since 2017 or longer. The difference between columns i, j, and k was χ^2= 70.0 on 4 df, P <0.001. The difference between columns l and m was χ^2= 177.8 on 2 df, P<0.001. For the partnered subjects with intact relationships from 2017 to 2020, N= 971+424+87=1482. Among the 1482 respondents with intact relationships, 870+393=1263 answered the open-ended question from which the variable "more time with partner" was derived.

far more common answer than 'relationship is worse,' providing some support to Family Resilience Theory and Hypothesis 2.

Table 3 is a continuation of Table 2 for subjects in 2020 who were continuously partnered with the same partner since 2017 or earlier. Columns i-k of Table 3 show that 2017 relationship quality was strongly associated with pandemic relationship response in 2020. For adults who had the same partner in 2017 and who rated that relationship as 'excellent' in 2017, 20.5 percent reported that their relationship was better as a result of the pandemic, and only 2.3 percent reported that the pandemic had made their relationship worse.

The relatively small number (87 out of 1,482) of adults who reported that relationship quality was fair, poor, or very poor in 2017 and who were still in a relationship with that partner in 2020 were more likely to report that the pandemic had made their relationship worse (13.8 percent) rather than better (6.7 percent). The powerful influence of pre-pandemic relationship quality on relationship response to the pandemic is consistent with Family Resilience Theory and Corollary 2b.

Columns l and m of Table 3 show that respondents who reported spending more time with their partners were dramatically more likely to report that the pandemic

improved their relationship (40.9 percent) compared to worsening their relationship (7.0 percent). Among respondents who did not mention spending more time with their partner, 8.5 percent reported improved relationships compared to 5.6 percent who reported worsened relationships.

Online supplement Table 4 shows results from an alternate analysis, comparing average scores in the 5-category relationship quality variable in HCMST 2017, 2020, and 2022 for subjects who had the same partner in all three waves. The key limitation of this alternate approach is that most survey subjects rated their relationship 'excellent' (the highest category) in 2017, and for these couples there was no room for improvement on this 5-point scale. An analysis that relied solely on the 5-point relationship quality scale would miss most of the relationship resilience that is revealed in the pandemic-specific survey questions. Online supplement Table 4 shows that, consistent with prior literature (Kurdek 1999; VanLaningham et al. 2001) self-reported relationship quality declined in HCMST panels at a modest but steady rate over the course of relationship duration from 2009-2013, 2017-2020, and 2017-2022, regardless of the pandemic. In the following sections we return to analysis of survey questions that were specific to the effects of the pandemic.

Multivariable Predictors of Pandemic Relationship Effects

Table 4 presents weighted ordered logit regressions predicting the three-category responses to the 'how has the pandemic affected your relationship' question, with responses 'relationship is better,' 'no change,' and 'relationship is worse.' The first two columns include all HCMST 2020 partnered respondents, whereas columns 3-5 include only the HCMST 2020 partnered respondents who were partnered with the same partners in 2017 (allowing the inclusion of 2017 relationship quality as a predictor of 2020 pandemic relationship response). Columns 4 and 5 add the predictor "spent more time together" from the open-ended 2020 question about pandemic relationship effects, and so include only subjects who answered the open-ended question.

Table 4's results are generally consistent with the bivariate results from Tables 2 and 3. Relationship quality in 2017 was a strong predictor of 2020 pandemic relationship response, consistent with Family Resilience Theory and Corollary 2b. Subjects who rated their relationships as 'excellent' in 2017 were dramatically more likely to see the pandemic as an opportunity for relationship growth and improvement in 2020.

Living with young children was modestly associated with a greater likelihood of reporting that the pandemic made their relationship worse in 2020 (models 1, 2, 4, and 5), and having the BA degree (models 1-3) was modestly associated with an increased likelihood of reporting that the pandemic made their relationship better in 2020, consistent with Family Stress Theory and corollaries 1c and 1d.

Model 3 of Table 4 accounts for the interaction of female respondents × number of children. In Model 3, both the interaction term (-0.12) and the number of children term (-0.12) are rendered insignificant, and the direct effect of respondent being female is also insignificant at -0.06). Corollary 1c of the Family Stress Theory predicted that mothers with small children in the household would have their

Table 4: Predictors of better effects of the pandemic on romantic relationships in 2020 and 2022, coefficients from weighted ordered logit regression (SE)

	1	2	3	4	5	6
Relationships included:	all	all	intact	intact	intact	intact
Outcome Year	2020	2020	2020	2020	2020	2022
number of children in HH <13	-0.14* (0.06)	-0.19* (0.076)	-0.12 (0.13)	-0.17* (0.08)	-0.17* (0.08)	
Subj educ BA+ (ref <HS)	0.25* (0.12)	0.52* (0.26)	0.59* (0.28)			
2017 Relationship Quality (ref Excellent)						
Good	N/A	N/A	-0.91† (0.16)	-1.02† (0.17)	-0.66† (0.20)	-0.23 (0.18)
Fair- very poor	N/A	N/A	-1.36† (0.29)	-1.39† (0.32)	-0.75 (0.39)	-0.19 (0.37)
Spent more time together				1.69† (0.16)	2.04† (0.18)	1.55† (0.18)
Spent more time × Relationship Good					-1.14† (0.37)	
Spent more time × Rel Fair- very Poor					-2.25† (0.73)	
Log income		-0.11 (0.08)	-0.18* (0.09)	-0.27† (0.08)	-0.29† (0.084)	
Female		-0.13 (0.13)	-0.06 (0.15)			
Female× # of children			-0.12 (0.15)			
Same-sex		-0.33 (0.61)	0.05 (0.72)			
Female × Same-sex	1.07* (0.53)	1.43 (0.82)	1.02 (0.98)			
Live with partner		0.07 (0.24)	-0.28 (0.36)			
N	1,578	1,578	1,436	1,262	1,262	903
Chisquare	12.7 (3 df)	33.4 (19 df)	80.7 (22 df)	176 (5 df)	194 (7 df)	79.5 (3 df)

* P<0.05; †P<0.01; two tailed tests. Source: weighted (and attrition-adjusted) data from HCMST 2017, 2020, and 2022. Outcome variable ranges from 1 (worse relationship) to 3 (better relationship). Intact relationships were intact since 2017. Non-significant contrasts not shown in M2 and M3: 4 degrees of freedom (df) for race, 2 df for renter status, 2 df for age and age-squared, 2 df for HS and Some college, 1 df for marriage, 1 df for relationship duration. Models 4 and 5 lose 174 subjects due to missing answers in the open-ended question from which 'spent more time together' was derived. Model 6 has lower N as the 2022 wave had fewer responses compared to 2020, and 99 subjects' relationships ended between 2020 and 2022.

relationships especially negatively affected by the pandemic (more so than fathers).[1] The insignificance of the female× children term in Model 3 does not support Corollary 1c. Six percent of fathers in Model 3 and 8.1 percent of mothers reported that the pandemic made their relationships worse (taking all of Model 3's other predictors into account). This difference in relationship effect of the pandemic between fathers and mothers was not statistically significant. A power calculation shows that generating a 90 percent power to find this difference of means to be significant at the 0.05 level would require a sample size approximately 23 times larger than the sample collected.

Table 4 shows relationship duration, race, age, homeowner status, gender (for people in heterosexual unions), and same-sex couplehood for men were all insignificant predictors of subjective pandemic effects on 2020 pandemic relationship response.[2] Online supplement Table 7 shows non-significance for the same predictors' associations with 2022 pandemic relationship response.

Model 1 of Table 4 shows that women in lesbian partnerships reported better pandemic relationship effects than others, though the association was just marginally statistically significant. There were only 35 women partnered with women in HCMST 2020, with 12 reporting improved relationships compared to one who reported a worsened relationship. Because of the small sample size of partnered lesbians in HCMST 2020 we are hesitant to draw conclusions about their distinctiveness. The reasons that were offered by the partnered lesbians as to why their relationship had been positively affected by the pandemic were much the same as the reasons offered by others, for instance: spending more time together. One 44-year-old woman in a 14-year relationship, married to a woman and who rated her relationship as "excellent" in 2017 wrote,

> "We got to spend more time together and I got to do more home duties and cook and be home. I work 2 jobs and my main job is basically second shift and her job is first shift. We finally got to be together and go to bed together every night for over 3 months… We now realize how much we want to spend time together and enjoy ourselves together."

Spending more time together with partners and prior relationship quality were the two most important predictors of positive response to the pandemic. Model 4 shows a highly significant (Z-score of 10.5) log odds coefficient of 1.69 for better relationship effect of the pandemic for subjects who reported spending more time together with their partners. In Model 5, when time spent together with partners was interacted with prior relationship quality, we found that subjects who rated their relationships as fair, poor, or very poor in 2017 enjoyed no relationship quality benefits from spending more time with their partners; 2.04-2.25= -0.21. Models 4 and 5 support Corollary 2c (on the benefits of time together for pandemic relationship outcomes), and thereby bolster the Family Resilience Hypothesis.[3]

In Model 6 of Table 4 we show that the only predictor of relationship outcomes that was consistent in 2020 and 2022 was more time spent with partner, predicting significantly better relationship satisfaction at both stages of the pandemic. As predicted by corollaries 1e and 2d, most factors associated with relationship response to the pandemic in 2020 were muted by 2022. See Table 7 in the online supplement for further exploration of predictors of 2022 relationship outcomes.

Table 5: Propensity Score Estimates of the causal effect of spending more time with partner on better relationship outcome in 2020 (SE)

2017 relationship quality	All	Excellent	Good	Fair to Very Poor
Average Treatment Effect (ATE)	0.304†	0.379†	0.184*	-0.045
	(0.035)	(0.039)	(0.074)	(0.12)
Average Treatment Effect on the Treated (ATT)	0.307†	0.374†	0.192*	-0.083
	(0.033)	(0.036)	(0.077)	(0.17)
N	1,226	820	340	66

* $P<0.05$; †$P<0.01$; two tailed tests.

Source: HCMST 2020 subjects with intact relationships from 2017. Outcome variable ranges from 1 (worse relationship) to 3 (better relationship). Analysis excludes subjects living apart from their partners. Variables used to predict spending more time with partner during the pandemic: Subject has BA degree and log household income (all columns), 2017 relationship quality (for column 1 only).

Propensity Score Analysis of the Effect of More Time Together

Table 4's results showed a strong association between spending more time together with partners during the pandemic and positive 2020 relationship response to the pandemic. Here we use a different method, propensity score matching, to focus on the potential causal relationship between spending more time with partner and better relationship response to the pandemic.[4] Because the pandemic was an exogenous shock necessitating many coresident couples to spend more time together at home whether they wanted to or not, we can view 'more time spent together' as a natural experiment. Table 5 shows propensity score estimates of the causal effect of more time together on the subject's report of better response to the pandemic (for couples intact since 2017), using the three-category closed-ended question from 2020 as the outcome.

The fact that estimates for ATE (Average Treatment Effect) and ATT (Average Treatment effect on the Treated) are indistinguishable supports a causal explanation as the treatment (spending more time together) appears randomly distributed.[5] In a randomized control trial, ATT and ATE would be equivalent (Morgan and Winship 2015). Table 5 also supports the heterogeneous treatment effect we observed in Table 4: the effect of spending more time with the partner was moderated by prior relationship quality. Subjects who rated their relationship quality as excellent in 2017 saw a profoundly positive relationship return to spending more time together during the pandemic in 2020. Subjects who rated their relationship quality as fair to very poor in 2017 saw no return at all to spending more time together in 2020.

Table 5 supports two key corollaries associated with Family Resilience Theory. First, Corollary 2b predicted that resilience during the pandemic would depend on prior relationship quality. Second, Corollary 2c predicted that spending more

time together during the pandemic would be associated with better relationship experiences of the pandemic, for couples who had strong relationships before the pandemic.

Qualitative Measures of Effects of the Pandemic on Relationships

To understand the processes through which family resilience may work, we turn to analysis of the open-ended qualitative answers. Table 6 shows the weighted percentages of the top 24 codes that were derived from the answers to the open-ended question about "how and why has the coronavirus pandemic affected your relationship?" in 2020 and in 2022. More than half of the answers had some form of "no impact" as their answer. Thirty percent of respondents in 2020 and 28 percent of respondents in 2022 described spending more time with their partners during the pandemic. In 2020, 19.6 percent of subjects and in 2022 18.6 percent of subjects expressly described improvements in their relationships. For these top four most-frequently coded responses, there were no significant differences in the frequency of the codes between 2020 and 2022 for subjects consistently partnered with the same partner.

The fifth most common code found in 2020 answers, expressions of resilience, adaptation and adjustment, was significantly more common in 2020 (15.0 percent) compared to 2022 (8.9 percent). The decline in reports of adaptation and adjustment is consistent with Corollary 2d, that the effects of family resilience would be less salient as the pandemic receded and life returned to a semblance of normalcy. It was also much more common for subjects in 2020 to mention agreement with their partner about pandemic health and safety measures, 13.9 percent compared to 8.3 percent in 2022.

Note that the decline from 2020 to 2022 in *mentions* of agreement about pandemic health and safety in an open-ended question about the pandemic's effect on their relationship does not mean that there was less agreement about the pandemic between partners in 2022, but only that agreement with partners about pandemic safety was less salient to relationship experience in 2022 compared to 2020. In a separate closed-ended question in HCMST 2022, 97 percent of partnered adults wrote that they and their partners either were in complete agreement (68 percent) about what measures to take to stay safe during the pandemic, or else they mostly agreed (29 percent).

Benefits of a United Front

The sharing (with the partner) of attitudes toward the pandemic, that is having a similar view of the importance of masking and social distancing and other precautions, was reported by 13.9 percent of open-ended responses in 2020, compared to only 2.6 percent who reported having different attitudes. Having a united family front with respect to the pandemic helped to make couplehood a shield against the pandemic, as the Family Resilience Framework predicts (Walsh 2003). Some couples used the united front as a way to show love by looking out for their partner's health.

Table 6: The codes identified in open-ended answers to the question, "How and why has the coronavirus pandemic affected your relationship?"

Code	Proportion with this code in 2020	Proportion with this code in 2022	Significance of the difference 2020-2022 (intact couples)
No Impact	**0.526**	**0.532**	
More time together with partner	**0.301**	**0.283**	
Relationship is better	**0.196**	**0.186**	
Hardships of all kinds	**0.153**	**0.176**	
We are resilient; we adapt and adjust	**0.150**	**0.089**	†
We share COVID attitude	**0.139**	**0.083**	†
We value each other and depend on each other more	0.092	0.090	
Subject works from home	0.069	0.066	
Partner works from home	0.065	0.064	
More family time (including w coresident children)	0.061	0.037	†
Retired	0.050	0.040	
See friends less	0.054	0.021	†
Essential or more work	0.038	0.025	
Less interaction with partner	0.034	0.015	†
Subject and partner have different COVID attitude	0.026	0.031	
See noncoresident family less	0.026	0.014	*
Work less	0.024	0.029	
COVID is a hoax	0.020	0.025	
See noncoresident family	0.020	0.007	*
See friends	0.012	0.006	
Subject is a caregiver to grandchildren	0.009	0.001	
Partner had COVID	0.004	0.023	†
Subject had COVID	0.003	0.023	†
Subject moved residences	0.001	0.001	

* $P<0.05$; †$P<0.01$; two tailed tests.
Source: weighted data from HCMST for 1,263 partnered subjects in 2020; 905 partnered subjects in 2022, all subjects with relationships formed on or before 2017. Significance test includes only the subjects who had the same partner in both 2020 and 2022.

A married 63-year-old man wrote, "We are in a bubble together. We have given up the outside world to keep each other safe. You see I love [wife's name] so much. Been that way for 47 years. So just the two of us now and I'm OK with it."

and,

A 66-year-old man married to a woman wrote, "We are spending almost 100 percent of our time together in our house. So it's a good thing that we are in pretty much total agreement in terms of housekeeping, respecting boundaries, and risk tolerance."

and,

A 60-year-old man married to a woman wrote, "COVID-19 has prompted a great deal of upheaval; I think our relationship strength is derived from keeping each other sheltered from chaos as well as venturing into lifestyle changes with mutual encouragement to adapt to our new environment. In many ways, COVID-19 has brought back the experiences of our first year of marriage."

All quoted answers are from 2020 unless otherwise noted. Couples made meaning in the pandemic and built solidarity between themselves by forming a united front against the pandemic, whether the united front had practical health benefits or was only symbolic. All three of the above respondents, like the great majority of 2020 and 2022 respondents, reported that their relationship had undergone "no change" during the pandemic on the closed-ended question. The pandemic did not have to *improve* existing romantic relationships for the relationships to serve as a source of solidarity. The normalcy of healthy relationships was by itself a shield against the unknown.

The open-ended question revealed a much wider prevalence of potentially positive responses than did the closed-ended question. Although 17.5 percent of HCMST 2020 subjects answered the closed-ended question by indicating that their relationship had improved during the pandemic, 479/1263= 38 percent of subjects gave an answer to the open-ended question that included at least one code for solidarity with their partner (including relationship is better, relationship is adapting and adjusting, share COVID attitude, partner and subject depend on each other more), not including the code for spending more time with the partner. Of these 479 answers with at least one element consistent with Family Resilience Theory, 86/479=18 percent of the answers *also* had at least one more negative code consistent with Family Stress Theory (general hardships, different COVID attitude, less interaction with partner). Many subjects experienced both stress and resilience. Positive experiences were more detectable in the open-ended (38 percent) than in the closed-ended question (17.5 percent). The complex interplay between stress and resilience was detectable especially through the open-ended question (see also Eales et al. 2021).

For some more politically conservative couples in 2020, the agreement on family policy toward COVID-19 included shared opposition to (and solidarity building around) what subjects saw as the over-cautious public health advice,

A 37-year-old man recently married to a woman (both Republicans) wrote, "...We have the same thoughts on how the response to COVID is blown out of proportion and is all political."

and,

A 48- year-old woman married to a man (both Republicans) wrote, "We both think the pandemic is way overblown and the country was shut down for no real reason. We understand how each other is thinking, especially about the China virus."

Regardless of the political orientation of the subject and their partner, the pandemic created an opportunity for couples to have a united front against either the danger of the pandemic itself or (less commonly) against the perceived unfairness and overreaction of politicians and public health officials. The way that couples described forming a united front against the pandemic (or against public health mandates) is consistent with the predictions of Family Resilience Theory, and therefore supports Corollary 2a.

Once vaccines became widely available, the HCMST 2022 data show a high degree of vaccination concordance between partners. In a 4- category question (from not vaccinated against COVID-19 at all, to fully vaccinated and boosted) correlation between partners was 0.70. For couples formed during the pandemic, especially after vaccines became available, agreement on vaccination was important. One 70-year-old woman partnered with a woman she met in late 2021, wrote in HCMST 2022 "It [vaccination] was one of the things that brought us together because I was instrumental in getting her vaccinated."

If the couple did not always agree on how to approach the pandemic lockdown (2.6 percent of responses in 2020), the disagreements could give rise to an insoluble relationship divide, as illustrated by these two answers:

A 65-year-old married woman wrote, "We were in a northern area where the new daily cases were zero. He continued however to be extremely anxious and paranoid, not wanting to add to our bubble... and this causes extreme tension between us."

and,

A 22-year-old female in an 8-year, non-cohabiting relationship wrote, "A big wedge has been driven between us on how exactly to handle the virus. I want to wear a mask, gloves, limit exposure as much as humanly possible, I wipe down surfaces and use hand sanitizer. He thinks I'm being, in his words, 'ridiculous and paranoid.' If it weren't for store policy he would probably never wear a mask. He doesn't think it is a concern and is always quoting data on how non-lethal it is. That's why I've seen him once in the past 7 months."

Once vaccines became available, vaccination discordance (though unusual) became a potential source of conflict. One 74-year-old woman married to a man wrote in 2022, "We are not on the same page as far as COVID is concerned. I have had all my shots and he refuses to get vaccinated. This causes some arguments."

A 58-year-old man in a same-sex relationship wrote "Mask mandates, vaccine mandates are things he has railed against but are important to me. This is a major point of conflict between us."

Spending More Time Together:

Some subjects answered by indicating that the pandemic had not affected them at all, before admitting that they spent more time together and that the relationship had improved in some ways: A 65-year-old man married to a woman wrote, "Has not affected, if anything it has made it stronger since we spend more time with each other." This falls under a category of answers where the first reaction was "no impact," and the immediate second reaction from the same subject was to describe an impact, often a positive one.

The second most popular answer (after "no impact") was variations on "we spend more time together," which was combined with a variety of other codes that were mostly positive with respect to relationship quality. One hundred and eighty-four respondents in 2020 wrote that they spent more time together and that as a result, their relationship had improved. For instance, a 67-year-old man married to a woman wrote, "It has brought us closer because we have had to be with just each other more," and a 34 year-old woman married to a man wrote, "We were forced to have honest, difficult conversations about our careers and lifestyle choices…" and a 67 year-old man married to a woman wrote, "We are staying home more and fixing dinner every night together… We are spending more time together than at any time in our 22 years together."

One common code correlated with spending more time together was "we depend more on each other," meaning the crisis had forced more interdependence between subject and partner, for instance:

> A 29-year-old man cohabiting with a woman wrote, "We were forced to spend more time together and we became even closer from it. I realized how much I could count on her for emotional support. The fact that we were able to stay together despite all the negative things happening in our lives and the world was reassuring."

Describing more time together as leading to more interdependence is a kind of answer that is consistent with Family Resilience Theory, and with corollaries 2a and 2c.

Conclusion

The rapidly growing empirical literature on couples under the COVID-19 pandemic has usually favored a Family Stress framework and predicted that the pandemic would weaken romantic relationships. In contrast to the widely applied Family Stress theories, we find more evidence supporting Family Resilience Theory (Walsh 2003; Walsh 2020). Many American couples made mutual meanings out of the pandemic in a way that they found comforting, consistent with the expectations of our Hypothesis 2 and Corollary 2a.

From September 2020 to March and April of 2022, positive responses to the pandemic ('relationship is better') were three times as common as negative responses ('relationship is worse'), consistent with results from the UK (Perelli-Harris et al 2023). The stable prominence of 'relationship is better' answers from 2020 to 2022 suggests that some relationship benefits gained during the pandemic might outlast the pandemic itself.

Americans who were living with children under 13 years of age and who had less than a BA degree were less likely (than non-parents and subjects with BAs) to report in 2020 that their relationships had improved during the pandemic. But even parents of young children and partnered adults without BAs were much more likely to report an improvement in relationship quality than a worsening of relationship quality due to the pandemic.

Some scholars working in the Family Stress Theory paradigm predicted that the pandemic would widen the gender gap in relationship satisfaction in different-sex relationships, but we find no evidence of this. Women and men offered answers that were not statistically distinguishable. Women raising young children did not report significantly worse relationship effects than did men raising young children in either 2020 or 2022. Calarco et al (2021) found that different-sex couples in the United States adapted to the pandemic most often by women taking on more childcare work and justifying this change to themselves and to their partners.

The strength and health of Americans' primary romantic relationships is the main contributor to the ability of Americans to cope with and to be resilient to the coronavirus pandemic. Strong relationships tend to survive whereas dysfunctional relationships usually end in break-ups in short order. Existing relationships, having survived exposure to the hazard of breakup are pre-selected for higher quality. Consistent with the high average relationship quality of longer term relationships, subjects usually associated the increased time spent with their partner during the pandemic with positive outcomes: more solidarity, greater teamwork in response to an external threat, adapting and adjusting to the crisis, and a sense of greater interdependence with their partners.

Because the COVID-19 pandemic was a partial natural experiment that pushed coresident couples into greater contact whether they planned to be together more or not, the pandemic was a unique opportunity to test the causal relationship between time spent together and relationship quality. Spending more time together with one's partner was the one predictor of positive relationship response that was consistent in 2020 and 2022. We describe the pandemic as a *partial* natural experiment because natural experiments are often less random than they appear to be (Rosenzweig and Wolpin 2000). Despite limitations, HCMST data provide new qualitative and quantitative support for an old sociological theory that more time spent together would benefit relationship quality, excluding the relative minority of couples who got along poorly to begin with.

Our analyses advance Family Resilience scholarship in three ways that Patterson (2002) identified as crucial. First, we use longitudinal data. Second, we take advantage of the natural experiment of the COVID-19 pandemic to study families experiencing significant risk. Third, we include qualitative methods at a nation-

ally representative scale, providing insight into the difficult-to-measure pathways through which family resilience operates.

The HCMST data have limitations. Only one adult from each romantic partnership was surveyed. HCMST surveys were fielded only twice during the pandemic. Our dependent variable, individuals' subjective views of the effect of the pandemic on their primary romantic relationship, excludes people without romantic partners. It is possible that the benefits of meaning making and solidarity that we found in couples might have been missing among single adults and children. The benefits that partnered adults experienced during the pandemic and which we describe herein were *relationship* benefits. How relationship adjustment to the pandemic might affect individual mental health and well-being is beyond the scope of this article.

Many of the dire early predictions about what could happen during the pandemic to people if they were locked up with their abusive or controlling romantic partners seem to have been predicated on an overestimation of the prevalence of dysfunctional relationships. Romantic relationships that are high quality have an enormous longevity advantage over lower quality relationships (Rosenfeld 2014). Even if individuals have more unsatisfying than satisfying relationships over the course of their lives, the longevity advantage of the satisfying relationships ensures that in any cross section the satisfying relationships will be more numerous. In Table 3, the relationships that were intact in 2020 and had been self-rated 'excellent' in 2017 outnumbered the relationships that had been rated 'fair,' 'poor', and 'very poor' combined by more than 10 to 1 (971 to 87). The high quality of most relationships is a key reason why more time spent with partners was most often converted into positive relationship growth, and why more couples had positive responses to the pandemic.

We are not overlooking the terrible mortality cost and the suffering that the coronavirus pandemic has caused. We simply argue that couplehood is an underappreciated reservoir of potential social defense against this pandemic and against any kind of external disaster, consistent with the predictions of Family Resilience scholarship.

Notes

1 Of the 124 mothers of young children who were included in Model 4, 122 were partnered with men and 2 were partnered with women.

2 The insignificance of the coefficients for living with partner in Table 3 (Models 2 and 4) needs to be viewed with caution, because of the high attrition of non-cohabiting relationships between 2017 and 2020. It was especially difficult to form new romantic unions from March to September of 2020 when bars and restaurants were mostly closed, vaccines for the novel coronavirus were not yet available, and masking was the expectation in most social interactions. Of the 242 subjects in non-cohabiting relationships in 2017 and re-surveyed in 2020, only 104 relationships remained intact. Of these 104 intact relationships, 57 had moved in together by 2020, so only 47 couples remained intact while living apart. From 2017 to 2020, the proportion of American adults in unmarried non-cohabiting unions fell from 11 percent to 8 percent, and the percentage of American

adults who were single rose from 19.8 percent to 23.6 percent (online supplement Table 5).

3 Interaction terms in logistic models are not uniform across predictors or across the range of outcomes (Ai and Norton 2003). We used Model 5 of Table 3 to generate the derivative (dy/dx) of pandemic relationship outcomes on spending more time with partner, evaluated at each level of 2017 relationship quality. We find that the derivative is significant for the contrast between good and excellent relationship quality for each outcome (see online supplement Table 6).

4 The small number of subjects who were partnered but living apart in 2020 were excluded from this analysis as they lacked the opportunity to spend more time together during the pandemic.

5 Online supplement Tables 8A and 8B show that the matching process underlying the propensity score analysis achieved good success in balancing the treatment group and the control group on the observed variables.

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