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Marriages in Their Socioecological Contexts: The Effects of Social Networks and Neighborhoods on Marital Outcomes

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The Effects of Social Networks and Neighborhoods on Marital Outcomes

A dissertation submitted in partial satisfaction of the

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in Psychology

by

Benjamin Bryce Haggerty

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ABSTRACT OF THE DISSERTATION

Marriages in Their Socioecological Contexts:

The Effects of Social Networks and Neighborhoods on Marital Outcomes

by

Benjamin Bryce Haggerty

Doctor of Philosophy in Psychology

University of California, Los Angeles, 2024

Professor Benjamin R. Karney, Chair

Feeling connected to others, particularly our intimate partners, is closely tied to physical and mental health. Despite network theories predicting that intimate relationships influence our other social connections, and theories of intimate relationships predicting that connections to others should influence intimate partnerships, these two are rarely studied together. This dissertation demonstrates that these elements should be studied as interconnected entities influencing each other. Drawing on a variety of theoretical viewpoints and methodologies, this work consists of four interconnected chapters aimed at enhancing our understanding of how the social context impacts intimate bonds. The first chapter uses the new Social Ties and Intimate Relationships (STAIR) framework to review and synthesize research on the influence of networks on couple dynamics. I use this framework to organize a literature review of 140 peer-reviewed papers, highlighting methodological strengths and weaknesses, summarizing what scholars know about

the influence of social networks on intimate relationships and vice versa, and suggesting future research directions. The second chapter addresses the impact of COVID-19 on social networks by documenting significant declines in both face-to-face and virtual interactions among a sample of mostly non-White couples living with lower incomes from before the pandemic through its first 18 months. The findings indicate that while affluent couples maintained more network relationships, especially virtually, the pandemic reduced social connections for most people even after the introduction of vaccines and the easing of distancing mandates. The third chapter addresses the finding that, although income is a known predictor of divorce, its correlation with marital satisfaction is weak. This study shows that the capacity to meet financial obligations is a more substantial predictor of marital satisfaction. Additionally, I find that the influence of financial status on satisfaction depends on how couples' social connections are doing financially as well as how couples' own income has changed over time. The final chapter examines whether moving homes affects couples' relationships. The analyses of this multi-study project based on interviews with nearly 700 couples during the early years of marriage suggest that moving is a normative transition that most couples navigate successfully without long-term damage to marital satisfaction.

The dissertation of Benjamin Bryce Haggerty is approved.

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University of California, Los Angeles

2024

To my girlfriend and family for being there every step of the way.

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General Introduction

Feeling connected to others is critical to well-being (Baumeister & Leary, 1995). Maintaining positive social connections predicts lower stress and higher life satisfaction (Fuller-Iglesias, 2015) as well as fewer depressive symptoms (Erzen & Çikrikci, 2018). In addition to its robust association with mental health, those who are better connected also experience better physical health. People who have more numerous, stronger close relationships tend to get better sleep and engage in better physical health practices than those with weaker social networks (Segrin & Passalacqua, 2010). Partly as a consequence, greater social connectedness predicts a lower risk of mortality (Holt-Lunstad et al., 2010), whereas lonelier people have lower well-being and worse physical health (Kearns et al., 2015).

Yet not all social connections have an equal influence on people's quality of life. Among the diverse relationships that comprise our social networks, our intimate relationships receive more time, energy, and resources than others. Moreover, intimate relationships are nearly universal, present in cultures around the globe (Jankowiak & Fischer, 1992). Married couples spend around four hours per day with each other, tending to their household, raising a family, and participating in joint activities and hobbies (Fein, 2009). Marriage is particularly strongly associated with health, that is, being married to a happier spouse is associated with a significantly lower mortality risk (Stavrova, 2019) and relationship quality is closely tied to satisfaction with life overall (Celen-Demirtas & Tezer, 2012; Kamp Dush et al., 2008). More so than friends and family, intimate relationships exert a strong influence over our behaviors, helping us achieve our goals through direct motivation, support, and joint goal-pursuit (Jakubiak & Feeney, 2016; Meltzer et al., 2012).

Understanding intimate relationships must account for the fact that those relationships form and develop within a web of other social connections. And yet, social networks are usually studied separately from intimate partnerships. Major theories and models in the social sciences tend to consider the two separately. The ABC-X model, for example, has guided a significant amount of scholarly work on intimacy. Reuben Hill (1949) developed this model in the wake of World War II to describe how the stresses of war, and the physical separation of spouses that came with it, strengthened some families but pulled others apart. Despite one of the components of this model being resources that are available to couples during times of stress, only recently have scholars using this framework considered that social network support outside the couple might be one of those resources (Rosino, 2016). Similarly, the Vulnerability-Stress-Adaptation (VSA) model (Karney & Bradbury, 1995) proposes that external stress makes *adaptive processes* – like positive communication and attributions – difficult to maintain (Pasch & Sullivan, 2017; Williamson et al., 2013). This association is particularly strong when individuals within a couple have preexisting and enduring vulnerabilities – such as higher negative affectivity (Hanzal & Segrin, 2009) or more parental discord in their family of origin (Hardy et al., 2015). When vulnerable couples face stressful circumstances and their adaptive processes falter, they are susceptible to sustained declines in satisfaction and relationship dissolution (Bodenmann et al., 2007). Although the VSA model has guided decades of relationship science, social network resources have been overlooked as sources of stress or support.

On the other hand, theories and models that prioritize social networks generally do not recognize the unique role of intimate partnerships within the network. Urie Bronfenbrenner's socioecological model (Bronfenbrenner, 1979), for example, originally described childhood development, but now guides work on health and well-being across the lifespan (Kilanowski,

2017). An individual is situated in the center of a concentric circle, with each layer representing a slightly more distal force that could affect physical and emotional well-being. Just outside the couple in the *microsystem* are friends and family. A step beyond is the *mesosystem*, which recognizes cultural, religious, and neighborhood effects. At the most removed level, the *macrosystem*, are historical forces and global social and economic factors. Intimate partnerships could conceivably fit as a component in the microsystem or as the focal unit of analysis, the center of the concentric circle, but scholars have rarely made these connections. The convoy model (Antonucci et al., 2014) examines how social relationships form, develop, and either persist or break apart across the lifespan. The model has guided work on diverse groups, from children and adolescents (Levitt, 2005) to older adults (Fuller et al., 2020), but scholarship on how intimate relationships form alongside these other network relationships is noticeably absent.

The goal of this dissertation is to examine intimate relationships and social networks not in their own separate spheres, but as integrated relationships that develop together and influence one another. To pursue this goal the dissertation consists of four related projects that utilize a diversity of theoretical viewpoints and methodologies to advance our understanding of how a bond between two individuals is affected by relationships outside those two individuals. The first project describes what we know about how social networks impact intimate relationships and addresses pressing future directions. The following three projects address three of these pressing future directions, examining how COVID-19 stripped couples of valuable social resources, how couples make social and temporal comparisons when evaluating their relationships, and how leaving behind one neighborhood for a new one could be adaptive or maladaptive during a vulnerable period of marriage.

As mentioned above, there is no framework that integrates intimate relationships and the social networks in which they develop. As a consequence, scholars lack a clear way to summarize the research that exists at the intersection of the two and have little guidance on future directions. The first chapter in this dissertation addresses this issue by proposing the Social Ties and Intimate Relationships (STAIR) framework and then using the framework to organize and synthesize research on how real-world social networks impact couples' relationships. Using a literature review of 140 peer-reviewed published papers that included associations between aspects of social networks and relationships, I first highlight methodological strengths and weaknesses in past research. Next, I use the STAIR framework to organize this literature and, lastly, use the framework to suggest future research directions.

The first chapter's review will highlight that social network resources are valuable for couples. Thus, we should be keen to understand how COVID-19 affected social network interactions. And yet, despite a rise in loneliness which has raised concerns about the social impact of lockdowns and distancing mandates, the effects of the pandemic on social networks have been studied only indirectly. The second chapter in this dissertation addresses these effects directly using five waves of detailed social network interviews conducted before and during the first 18 months of the pandemic in a sample especially vulnerable to contracting the virus, mostly non-White couples (243 husbands and 250 wives) recruited from lower-income neighborhoods. I document nearly 50% declines in face-to-face interactions and nearly 40% declines in virtual interactions, with little recovery over the first 18 months of the pandemic. Compared to less affluent couples, those with higher incomes maintained more of their network relationships, especially when virtual interactions were taken into account. These results suggest that policy makers and public health officials should consider not only the physical health implications of

this pandemic and future ones, but the likely social consequences of preventing disease transmission.

The third chapter in this dissertation addresses a longstanding complication in the association between financial status and relationship outcomes. Although income is a strong predictor of divorce (Burgess et al., 2003; Karney et al., 2022; Nunley & Seals, 2010), with divorce rates higher among those living with lower incomes, the zero-order correlation between income and relationship satisfaction tends to be weak. In the chapter, I propose two reasons this may be true. First, the capacity to pay for goods or bills, that is, to meet financial obligations, may be a better predictor of marital satisfaction. Second, the meaning of income may be shaped by both the social context (i.e., how one is doing financially compared to those around them) and the temporal context (i.e., how one's income has changed over time). Results support the first hypothesis, showing that husbands and wives who experienced greater levels of financial difficulties tended to be less satisfied in their marriages and income was not significantly associated with marital satisfaction. The temporal and social contexts moderated the effect of income on marital satisfaction in a few ways. Generally, the effect of income on marital satisfaction was strongest for couples who were in the middle of their social networks financially and who experienced moderate (i.e., about average) increases in income over time. These results suggest that measuring only raw income is likely to obscure real differences between couples, and that prior studies have likely underestimated the true role of financial status in couples' lives.

The fourth chapter questions whether moving homes is harmful for couples' relationships. Multiple stressful transitions, such as transitioning to parenthood and beginning careers (Chait Barnett et al., 2003; Schulz et al., 2006), characterize the early years of marriage, which is a time sensitive to declines in satisfaction and divorce (Cherlin, 2010; Williamson &

Lavner, 2020). Couples also frequently move around the time of marriage and moving is highly stressful, evoking anxiety and feelings of loneliness (Oishi et al., 2012; Oishi & Schimmack, 2010). Three perspectives make competing predictions about whether the stress of moving should damage a couple's feelings about their relationship. First, the *family stress* perspective (Conger et al., 1999; Karney & Bradbury, 1995) predicts that the stress of moving should, on average, make intimacy hard to maintain as couples struggle to make positive appraisals (Pasch & Sullivan, 2017) and support each other effectively (Williamson et al., 2013). The *normative* perspective, however, notes that moving is a typical and practical transition for young couples (Coulter et al., 2016), and thus may not be particularly damaging to the relationship long-term. The *life-course* perspective takes a middle ground, highlighting that the effect of moving on couples should depend on couples' *motivation* to move, the *outcome* of a move, and the *resources* available to the couple (Coulter et al., 2016; Rossi, 1955). Using two samples of nearly 700 total couples interviewed multiple times over several years during the early years of marriage and a multi-method approach consisting of self-report data, behavioral data, and data from the US Census, I find that, apart from a few instances, moving has no effect on couples' satisfaction and this does not depend on the motivation, outcome, or resources. These results suggest that moving may indeed be a normative transition that couples tend to navigate well in the early years of marriage.

Together, the chapters of this dissertation aim to address a critical gap in the study of intimate relationships and social networks: that they have primarily been studied independently even though they should affect one another significantly. The STAIR framework proposes, and the following three studies support, that the social context surrounding a couple is frequently changing and is associated with the success of an intimate partnership.

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Chapter 1:

The Ties that Bond: Intimate Relationships in the Context of Social Networks

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Abstract

Intimate relationships are more likely to thrive when embedded in positive environments, free from financial stressors or threats of physical harm. Couples may also be protected by a supportive social network of family, friends, and coworkers, given that the number and quality of social connections is associated with better individual physical and mental well-being. The overarching aim of this study is to provide a framework that organizes our current knowledge of how social networks influence intimate relationships and highlights gaps in our understanding. Towards this aim, we first introduce the STAIR framework which describes how couples' social networks may develop over time, provide resources to couples, and influence relationship outcomes. Second, based on a literature review of 140 published research articles examining the association between social networks and relationship outcomes, we then identify methodological strengths and weaknesses in prior work and recommend new approaches. Third, we use the STAIR framework to organize past research. Finally, we describe potential areas of future research as well as clinical and policy implications.

The Ties that Bond: Intimate Relationships in the Context of Social Networks

The success or failure of intimate relationships is powerfully associated with the environments in which they take place. When a relationship forms in an environment that contains sufficient material resources, financial stability, and freedom from physical threats, those relationships tend to be more satisfying and long-lasting (Conger & Conger, 2008; Randall & Bodenmann, 2009). When couples must cope with financial strain, threats of violence or discrimination, or other demands that require coping and adaptation, their relationships tend to be less satisfying and more likely to dissolve (Bradbury et al., 2000; Karney et al., 2005).

Among the elements in the environment of intimate couples, the social context may be especially important. Multiple lines of evidence converge to suggest that interpersonal relationships contribute strongly to individual well-being and physical health. Positive connections to friends, family, and co-workers are generally associated with lower stress, decreased depressive symptoms, and higher life satisfaction (Fuller-Iglesias, 2015). Even brief interactions with strangers and acquaintances can temporarily boost emotional well-being (Sandstrom & Dunn, 2014; Van Lange & Columbus, 2021). In contrast, lonely people, and those with fewer or less supportive connections, have lower well-being and worse health outcomes (Kearns et al., 2015).

In light of these established effects, it is likely that a couples' social context affects relationship well-being as well. Indeed, most couples are surrounded by a web of additional relationships, including family members, friends, co-workers, and acquaintances. These other relationships comprise a couple's *social network,* i.e., the collection of individuals with whom the partners regularly interact, and the pattern of associations among those individuals (McDermott et al., 2013). There are good reasons to expect that the nature and quality of

partners' relationships with their social networks should predict the quality and stability of partners' relationships with each other (Haggerty et al., 2022). For example, having more people to rely on outside of the relationship may help couples cope better with stress within the relationship and thereby experience more positive relationship outcomes (Beach et al., 1986; Bryant & Conger, 1999; Ermer & Proulx, 2020). Alternatively, a couple's social network can place demands on couples that interfere with the relationship. For example, partners who have worse relationships with their in-laws have worse relationships with their spouse (Bryant et al., 2001). Acknowledging these lines of influence suggests that understanding the development and quality of intimate partnerships may require examining not only the relationship between the partners, but also the nature of the relationships between each partner and the rest of their social networks.

What is it about social networks that may shape couples' experiences of their intimate relationships? Throughout this paper, we consider three elements of social networks with the potential to influence a couple. The first element is *composition*, i.e., the types of relationships partners have with people in the network. Composition is a term which encompasses several facets of the network, including: 1) relationship type (e.g., number/proportion of friends, family, co-workers), 2) relationship status of network members, and 3) relationship quality with network members. For example, the more friends within spouses' networks, the less likely their marriage is to end in divorce (Booth et al., 1991). Partners who have higher quality relationships with their family members tend to report greater relationship satisfaction (Reczek et al., 2010).

The second element is the *resources* that the network can provide to the couple, such as social support or alternatives to the current relationship. For example, couples who perceive an availability of emotional and tangible support from their networks report greater relationship

satisfaction and longer relationships on average (Hogerbrugge et al., 2013). In contrast, couples who live in neighborhoods containing greater numbers of available alternative partners tend to divorce at higher rates (South & Lloyd, 1995).

The third element is the *structure* of the network, that is, the pattern of interconnections among network members. For example, networks that are denser (i.e., more of the network members have relationships with one another) may be better equipped to coordinate and transfer support to partners in times of need. Indeed, couples whose social networks are more dense do report higher relationship satisfaction on average (Cotton et al., 1993).

Existing theories from a variety of disciplines acknowledge these elements and describe how they may affect couples. For example, the well-known convoy model of social relationships (Antonucci et al., 2014) addresses how groups ("convoys") of friends, family, and others develop around an individual over the life span. The model predicts that individual well-being should be higher to the extent that an individual's network is supportive and does not create conflict with the individual, an idea that has been extended to research on intimate relationships (Santos & Levitt, 2007; Taylor et al., 2012). The model also recognizes that networks evolve over time (Antonucci et al., 2011), with individuals entering and exiting the network, particularly around major life transitions (e.g., graduation, marriage, retirement).

Models of intimate relationships have also acknowledged the social context that surrounds couples, usually as part of a larger emphasis on the way couples' environments facilitate or constrain their efforts at relationship maintenance. For example, the Vulnerability-Stress-Adaptation (VSA) model (Karney & Bradbury, 1995) has been used to demonstrate that social isolation is associated with poor relationship outcomes (Schreiber & Georgia Salivar, 2021), and that emotional support from network members can moderate the effect of stressful

circumstances on relationship satisfaction and divorce (Schiltz & Van Hecke, 2021). The ABC-X model (Hill, 1949) also considers how a family's social circumstances affect their responses to crises. Scholars have invoked this model to show, for example, that couples who have a child with a disability tend to view the situation as more manageable and report greater individual well-being when they have supportive social ties outside of their intimate partnership (e.g., Pozo et al., 2014). In sum, existing models have recognized that elements of the network such as composition and resources are likely to affect intimate relationships, and that networks change over time.

Yet, although existing models of intimate relationships and families acknowledge the social networks that surround couples, there remain several important considerations that existing models have overlooked. First, theories and models that focus on the effects of social networks on intimate relationships have yet to recognize that partners in a couple have joint contacts (e.g., mutual friends, in-laws) as well as their own separate network members, creating the basis for a *duocentric network* (Kennedy et al., 2015). The number of mutual network members is likely to affect how partners receive support and having many overlapping ties may serve as a glue keeping partners together (Orbuch et al., 2013). Second, networks may provide many possible resources to couples beyond social support, including approval, time, and normative information (Etcheverry et al., 2008; Etcheverry, Le, & Hoffman, 2013; Jin & Oh, 2010) that have rarely been acknowledged as alternative pathways through which social contexts may affect intimate partnerships. Third, whereas the structure of the network plays a prominent role in applications of social network theory to other domains (e.g., health, Burgette et al., 2021; Kuo et al., 2021), the role of network structure in shaping the effects of networks on intimate

relationships and the flow of network resources to and from couples has rarely been acknowledged.

Developing a comprehensive framework that addresses these oversights is timely and important, for several reasons. First, the last several decades have witnessed a decline in network participation (Putnam, 2000). Factors such as suburbanization, longer commuting times, and, more recently, online involvement have reduced the time that couples and families spend socializing with extended family and friends. Evaluating the consequences of these changes requires research that describes the ways that social networks can constrain or facilitate healthy relationships. Second, the spread of social media and growth of online dating has highlighted the intersection between relationship science and network science. Nearly 40% of different-sex couples and 65% of same-sex couples who met in 2017 did so online, almost double the rate ten years earlier (Rosenfeld et al., 2019). Couples who meet online are likely to begin their relationship with few mutual friendships, or none at all, which may affect how networks are able to support intimate partners. Third, the world is still feeling the unprecedented social consequences of the COVID-19 pandemic. Initial reports suggest that the quarantines and social distancing that were required during the pandemic resulted in damage to supportive relationships that did not immediately recover even when restrictions on socializing were lifted (Haggerty, Kennedy, et al., 2023). A clear framework for understanding how social networks affect couples should guide research on the effects of these changes on couples and families. Finally, the past decade has seen the development of sophisticated new technologies and analytic tools for assessing and describing social networks. For example, new technologies allow easier social network data collection (e.g., computer-aided interviewing software, such as EgoWeb; Kennedy et al., 2018), and easier social network data analysis (e.g., Gephi, Bastian et al., 2009; or

UCINET, Borgatti et al., 2002). The recent availability of these techniques offers new opportunities to assess and quantify couples' social contexts. In sum, even as couples are meeting in (relatively) new ways that are likely to shape how their joint networks form, social participation as a whole in the United States has shifted in the last few decades and especially since the COVID-19 pandemic. With new methods for studying social networks, now is an ideal time to focus on examining their impact on intimate relationships.

In light of the changes in couples' social network interactions in recent years, and the lack of a comprehensive model of how social networks affect intimate relationships, the overarching goals of this article are to provide a framework for organizing research on social networks and couples and then to use that framework to review the existing literature and identify noteworthy gaps and priorities for future research. In pursuit of this goal, the remainder of this paper is organized as follows. The first section presents our framework, which integrates social network models and models of intimate relationships to describe paths of mutual influence between couples and the other people with whom they regularly interact. The second section identifies several methodological limitations of the existing research on social networks and couples and recommends new approaches for overcoming these limitations. The third section uses the framework as a guide to review and summarize the existing literature that has examined the effects of social network qualities on the outcomes of intimate relationships. The final section draws upon this literature review to develop an agenda for future research on couples and their social networks.

In the review that follows, we have emphasized research on real-world social networks rather than online ones. People generally maintain face-to-face interactions with their online contacts, indicating that online and offline networks are similar in their composition (Dunbar,

2016; Jo et al., 2014). We incorporated findings on online networks only as they affect these offline networks.

With respect to language, social network research has developed multiple elaborate terminologies, and throughout this paper, we deliberately refrain from using most of them. Instead, we have tried to use language that is more readily understood by lay readers and relationship scholars. For example, social network scientists frequently describe individuals in the network as "nodes" or "alters." In this paper, we will refer to individuals as "partners," "spouses," and "social network members." Social network researchers often describe the link between two people in a network as an "edge." Here we will refer to the link between any two people as a "relationship." Network scientists refer to the number of members within a social network as its "degree." We will refer to this as the "size" of the network. As we encounter social network terms that are not easily replaceable, particularly in the network structure discussion, we will define them as they arise.

Section I: The Social Ties and Intimate Relationships Framework

To organize research on the effects of social networks on intimate relationships, an effective framework must incorporate the three elements of networks we discussed earlier: *composition*, *resources*, and *structure*. Drawing from the convoy model, the framework must also acknowledge that couples and the networks that surround them evolve over time. In addition, the framework should encompass all of the ways that social networks have been shown to affect relationship outcomes (e.g., providing and demanding support, constraining how couples spend time, offering or withholding approval). Finally, the framework should include aspects of social networks that prior theories have overlooked, such as the duocentric nature of couples' networks, and the fact that couples are as likely to shape their networks as they are to be shaped by them.

The Social Ties and Intimate Relationships (STAIR) framework, displayed in Figure 1-1, meets these requirements.

Partners Have Their Own Social Networks

The framework assumes, first, that each partner in an intimate relationship is surrounded by a social network that has a composition and structure, depicted on the left side of the figure (Roberts & Dunbar, 2011). These individual networks are likely to affect one another (Path G). For example, as an intimate relationship becomes more committed, Partner B may come to include Partner A's best friend in their own individual network (Kalmijn, 2003).

Partners' Networks Combine to Form a Duocentric Network

The framework assumes that individual partners' (or *egocentric*) networks merge to form a duocentric network, which we see through Path H in the figure (Kennedy et al., 2015). The egocentric network surrounds a single partner; the duocentric network consists of both partners, their individual networks, and the relationships connecting their networks. Some of the partners' social connections will be shared (e.g., shared friends, in-laws), whereas others will be unique to a single partner (e.g., a husband's friend who does not interact with the wife), but all of partners' relationships with network members, shared and unshared, are considered part of the duocentric network surrounding the couple.

Partners' Own Networks Affect Relationship Outcomes

The STAIR framework assumes that network composition and structure affect couple outcomes such as satisfaction, stability, and dissolution, depicted in Path A. Several facets of individual social network composition and structure may be associated with relationship outcomes. For example, different types of relationships (e.g., friend, family, coworker, acquaintance) may offer unique resources to an intimate partner. Having a close coworker may

reduce work-family conflict (Grandey et al., 2005; Kosny et al., 2013; Sias, 2005), having close friends could provide emotional support (Demir, 2010; Proulx et al., 2009), and counting family members among one's close social network could offer additional child-rearing support (Rodrigo et al., 2007). The quality of these network relationships may also have important implications for maintaining intimacy. For example, stress outside the relationship (e.g., from work or conflict with in-laws) can make it difficult for intimate partners to communicate effectively and warmly with one another (Neff & Karney, 2009; Sandi, 2013), but high quality network relationships may buffer couples from the effects of that stress.

Beyond the type and quality of relationships that partners maintain, the *relationship status* of the network members themselves might also influence couple outcomes. For example, married people may have more married network members or divorced people may have more divorced network members. Scholars (e.g., see Kalmijn & Vermunt, 2007) have proposed that people are likely to have network members of similar relationship status because they tend to be similar in age, but it is also possible that as individuals make relationship transitions, the prevalence of those transitions within the network may raise the salience of such transitions as available life options. For example, when one network member gets married, others within the network may be inspired to do the same. Recent work suggests that, over as small a timeframe as the first 18 months of marriage, the proportion of married people in a newly married couple's network increases significantly (Haggerty, Du, et al., 2023). Additionally, environments that people select may foster network similarity across the network as, for example, couples may move from a city center to a suburban area after they marry (Clark, 2013), where they are surrounded by more married couples than before.

In addition to the composition of the network affecting couples' outcomes, Path A indicates that the structure of couples' networks might also affect their outcomes. Network theorists have long proposed that the way network members are connected to one another influences the flow of information through the network and how quickly that information is communicated across network members (Borgatti et al., 2024). In the case of relationship partners who are in need of a job or childcare, partners may gather recommendations from friends or friends of friends more quickly and easily in a tightly connected network than in a more loosely connected one. Indeed, when more network members know one another (i.e., when networks are more dense), they tend to be better at transmitting information between network members because the path between any two people in the network is generally shorter than in a less dense network (Scott & Carrington, 2014). This may facilitate network members transferring resources and support to one another and generally creates a sense of group cohesion that is lacking in less dense networks (Luarn & Chiu, 2016; Sohn, 2009). Along these lines, the Bott hypothesis (Bott, 1957) posits that couples who have denser networks, because they rely more on their networks for emotional and instrumental support and less on their spouse, will display greater marital role segregation (e.g., non-overlapping division of labor, less shared leisure time). Network theorists have also remarked that people benefit from having access to *weak ties*, acquaintances with whom one interacts infrequently and who are not necessarily connected to one's close friends and family (Granovetter, 1973), but who may be connected to an entirely different set of people who have access to information that one's strong ties do not. Thus, intimate partners may benefit from networks composed of a close, dense group of friends and family to provide support as well as weak ties to provide access to unique information.

Partners' Duocentric Networks Affect Relationship Outcomes

The STAIR framework posits that a couple's duocentric network may influence relationship outcomes, as shown in Path C (Julien & Markman, 1991). Couples have varying degrees of *network overlap*, i.e., the proportion of network members that *both* partners know and interact with, within their duocentric networks (Kalmijn, 2003). According to Rusbult's (1980) investment model, shared relationships may act as barriers to leaving the relationship. Connections to in-laws and mutual friends, for example, may be lost if a married couple divorces. Thus, to preserve these other relationships, some spouses may remain in relationships they might otherwise leave. The composition of the duocentric network may also be important when considering how the network acts upon relationship outcomes. For example, Partner A may include their own cousin in their social network, but Partner B does not include that cousin-in-law in their own network. For partners who have greater familial values, it may be a sign of a poor relationship if their relationship partner does not include that cousin-in-law or other family members in their own network (Chang & Fu, 2022).

Networks Provide Resources Which Can Help or Harm Couples

The STAIR framework assumes that networks affect relationships because they provide resources, like support, approval, or even alternatives to the relationship, to the partners (e.g., Haseli et al., 2019; Widmer et al., 2004). The composition and structure of the egocentric and duocentric networks should influence the types of resources that the network can provide (Paths I and J, respectively). For example, when couples have their first child, they tend to spend less time and energy on their friends, which results in a lower availability of social support (Bost et al., 2002). These resources then have a direct influence on relationship outcomes, as seen in Path E. As the literature review later will show, some of these resources have been well-studied. For example, a large body of literature shows that when partners perceive their networks to be

emotionally supportive, they tend to be more satisfied in their intimate relationships (e.g., Blair & Holmberg, 2008; Proulx et al., 2009). Similarly, believing that network members approve of one's intimate relationship may serve to enhance that relationship. For example, when network members approve of the relationship, they may treat the partners as a couple, rather than as individuals, by inviting them as a pair on outings. According to a social interactionist perspective this can, in turn, strengthen partners' views that they are in a committed intimate partnership (Etcheverry et al., 2008; Lewis, 1973). Additionally, balance theory predicts that when an individual's network members (particularly those they regard highly) treat their partner positively, that individual may be more likely to see their partner as somebody deserving of liking and affection as well (Heider, 1946; Sprecher & Felmlee, 1992). Social networks might also provide access to potential alternative romantic partners (Haseli et al., 2019). Social exchange theory (e.g., Thibaut & Kelley, 1959) predicts that partners should be less dependent on their current relationship to the extent that they believe they have access to available, attractive alternative partners, and thus will be more likely to exit the relationship (Johnson & Rusbult, 1989; Miller, 1997).

Some resources, such as time, have received less scholarly attention. Free time is a valuable resource. Although Americans on average have about five hours of free time per day to spend in leisure activities, physical activity, attending religious gatherings, and socializing (Sturm & Cohen, 2019), the average person over 15 years of age spends less than 40 minutes per day socializing with others outside of the household (U.S. Bureau of Labor Statistics, 2019). Thus, among all the activities that people spend doing with the free time they have, they typically give only a small slice to other people. When people invest more of their time socializing with coworkers (Endrejat et al., 2018), family (Farakhan et al., 1984; Rapoport, 2019), friends

(Helliwell & Wang, 2014), and romantic partners (Hudson et al., 2020), they tend to experience higher life satisfaction and well-being. Spending time with others might enhance intimate relationships by relieving stress and negative emotions (Donohoe et al., 2020; Kikusui et al., 2006), improving executive functioning skills (Sharifian et al., 2020), or reducing sensitivity to rejection (Masten et al., 2010), which may be beneficial for interacting with intimate partners (Horne et al., 2020). Additionally, spending time with others allows relationship partners to receive support and approval, both important resources for couples (Reczek et al., 2010; Sprecher & Felmlee, 1992). Also receiving less scholarly attention is the idea that networks can transmit and reinforce values and norms about relationships. The attitudes and beliefs of a social network can inform the types of people with whom we associate most and with whom it is acceptable to associate (French et al., 2012; McPherson et al., 2001; Vargas & Loveland, 2011). This is likely to impact each stage of an intimate relationship from selecting an intimate partner to, potentially, dissolving a relationship.

Relationship Outcomes Affect Networks and the Resources They Provide

The model accounts for bidirectional influence between couples and their social networks. The framework acknowledges that couples may not just be passive members of their networks, but active in shaping their networks by selecting friends, investing in some relationships, and withdrawing from others (e.g., Bryant & Conger, 1999). Because much of this research has been cross-sectional and correlational, the existing literature supports conclusions about associations more strongly than conclusions about directions of influence. In Figure 1-1, Path B shows that relationship outcomes can influence the individual partners' networks. As intimate relationships strengthen, deteriorate, or break apart, partners are likely to strengthen or break apart relationships with network members as well, altering the composition of their

networks (Diamond et al., 2010; Sprecher, 1999). For example, the dyadic withdrawal hypothesis (Johnson & Leslie, 1982) says that as couples become more involved with one another, they may become less involved with their networks, particularly their friendships (Fischer et al., 1989). Path D shows that outcomes similarly affect the duocentric network. For example, when married couples divorce, mutual friends and former in-laws tend to get divided as network members maintain contact with only one of the two partners (Albeck & Kaydar, 2002). Relationship outcomes are also likely to influence network resources (Path F) with partners in more committed relationships, for example, perceiving greater approval for their relationship from friends and family (Cox et al., 1997; Dailey et al., 2015). Lastly, the framework assumes that both couples and their social networks change and influence each other over time (Antonucci et al., 2014).

Conclusion

To summarize, the STAIR framework explains that social networks that support the couple can facilitate intimacy, whereas networks that create conflict can constrain intimacy (Santos & Levitt, 2007). Networks can change over time, particularly as couples become more committed to one another (Johnson & Leslie, 1982), and the composition of the network is associated with relationship outcomes.

The framework integrates several ideas that have not formerly been studied or prioritized in relationship research. First, while previous models have not addressed the duocentric nature of couples' networks, the STAIR framework explicitly acknowledges this. The composition and structure of the duocentric network may influence and be influenced by relationship commitment, with shared friends and in-laws forming over time and providing unique resources (e.g., couples jointly, rather than separately, spending time with friends) to the couple. Second,

although scholars have provided a significant amount of evidence showing that supportive networks are associated with better relationships (e.g., Blair & Holmberg, 2008), there are other resources that networks provide to couples which models have not incorporated. The STAIR framework makes these clear, indicating that networks can provide approval, time, norms and values, and relationship alternatives in addition to support. Lastly, the framework highlights network structure. In other social and behavioral sciences, scholars have demonstrated that network structure plays an important role in facilitating information and resources from one person to another (Burgette et al., 2021), and so we might expect the same to be true for couples and their friends, family, and coworkers. In the next section we will address methodological strengths and weakness in the social networks and intimate relationships literature before we subsequently use the STAIR framework to organize our review of the existing empirical literature examining these hypotheses.

Section II: Methodological Considerations in Research on Social Networks and Intimate Relationships

The following review pursued two specific aims. The first aim was to evaluate the methodological strengths and weaknesses of research on couples and their social networks. Studying couples and their social networks presents unique methodological challenges. Couples are ever-changing, as are social networks. A couple's satisfaction fluctuates, they move in together, and have children, all while friends and in-laws move in and out of the network (Joiner et al., 2023; Kennedy et al., 2015). Networks are large (Hill & Dunbar, 2003) and so interviews must be intensive to capture the breadth of people's social connections. Thus, studying intimate relationships and their networks well requires longitudinal, dyadic, and detailed data. The second aim of the review was to use the STAIR framework as an organizational tool, taking relevant

findings and sorting them along the different paths of the framework. By the end of the review, our goal was to evaluate which paths have been supported by research, which have been refuted, and which have been overlooked.

How We Conducted This Review

The scope of our review was relatively broad. We searched for studies that examined measures of social network characteristics and related them to measures of relationship characteristics. To identify these studies, we gathered social network terms from the models and theories listed above (e.g., "structure" and "composition"), popular books and journal articles on social network analysis (Wasserman & Faust, 1994), and added to the list during the course of the literature review. We searched PsychInfo and Google Scholar using combinations of the following keywords*: social network, social network size, social network density, social network overlap, social network composition, social network structure, social network quality, social network support, social network approval, family, friendships, coworkers, work* and *marriage, dating, newlywed, couples, intimate relationship, romantic relationship, divorce, breakup, marital stability, relationship stability, marital status, relationship status, marital satisfaction, relationship satisfaction, marital quality,* and *relationship quality.* We also searched the reference lists of numerous review articles and book chapters.

After a team of three trained research assistants conducted these keyword searches, they read abstracts and marked them as potentially relevant articles if 1) they appeared to study intimate relationships (e.g., they mentioned dating, cohabiting, marriage, divorce) and 2) included some information about social networks (e.g., network size, support, composition). This initial search yielded a preliminary list of 226 papers published in peer-reviewed journals. The research assistants then read each of the 226 papers fully. Articles were included in our review if

they met four criteria. First, the paper must have included an assessment of individuals' social networks and their relationship outcomes (e.g., relationship satisfaction, relationship quality, dissolution). Second, it must have been in English. Third, it must have been peer-reviewed. We included journal articles and book chapters, but not doctoral dissertations. Fourth, we incorporated findings about online networks only as they affect offline networks. For example, one study showed that the frequency of online blogging predicted feelings of connectedness to extended family members, which in turn affected social support and marital satisfaction (McDaniel et al., 2012). People have met around 90% of their online contacts in-person, indicating that online and offline networks are similar in their composition (Rosen et al., 2010).

When a research assistant marked that a paper did not meet these four criteria, it was fully reviewed by one of this paper's authors. We removed 6 papers that were not in English, 57 papers that did not include relevant measures of social networks or relationship outcomes, and 23 that included both but did not report the association between them. This yielded a final sample of 140 papers, including 141 independent samples (some papers had more than one sample, and some papers utilized the same sample). Each paper could contain more than one unique finding, that is, any statistical association between variables of interest. For example, one study found that higher friend support was related to higher marital satisfaction and, separately, higher parental support was related to higher marital satisfaction (Demir, 2010). In total we documented 367 unique findings. Papers that are not cited in the main text are denoted by asterisks in the References section.

Evaluating Methods in Research on Social Networks and Intimate Relationships

Any conclusions we might draw from studies examining intimate relationships in the context of social networks must be evaluated in the context of the prevalent methods used to

study these issues. Therefore, before reviewing relevant findings, we first reviewed the literature's sample characteristics and network assessments. For each study, we recorded the sample size, the number of network members that respondents were asked to identify, sample characteristics (e.g., university vs. community sample), whether individuals or dyads were included, the network variable of interest (see Figure 1-2), the study design (e.g., cross-sectional or longitudinal), and the direction of effects (i.e., network predicts relationship, relationship predicts network, or cross-sectional association).

Sample Characteristics

Approximately 82% of the 141 independent studies recruited sample sizes of more than 100 people. Studies with fewer participants are more likely subject to Type I and Type II errors compared to highly powered studies (Ioannidis, 2005; Ioannidis, 2008; Sterne et al., 2001).

Additionally, 57% of studies utilized representative samples, generally meaning heterogeneous, non-university samples. This is a particularly strong number in an age of concern about the representativeness of university and online samples (Anderson et al., 2018). Studying college students may be useful for understanding network phenomena that are pertinent to that life stage (e.g., peer relationship approval), but social networks may serve different functions in relatively understudied populations. For example, research on Black families has suggested that social resources may be especially relevant when economic resources are limited (Broman, 1996; Scott & Black, 1989). Examining these hypotheses can only be tested appropriately in diverse samples.

Less than one-half (43%) of the studies specified the relationship stage (e.g., dating, cohabiting, married) of their participants. Network composition, structure, and resources are likely to influence relationships to differing degrees at different stages of relationship

commitment and commitment may influence how couples actively shape their networks, choosing to spend time with some network members and not with others. The fact that most studies we identified address non-university samples offers ample opportunity to study diverse stages.

We found that 31% of studies included reports from both members of the couple. Only by studying both partners' social networks can researchers glean information about the couple's duocentric network (such as network overlap), as well as the couple's shared experiences of the relationship. Studies that include reports from only one member of a couple can still provide valuable insights about that person's perception of their partner's thoughts and behavior, but this may not always substitute for direct reports from that partner. For example, having negative relationships with in-laws may be detrimental to one's own relationship satisfaction, but without asking directly we may not understand how this impacts the relationship satisfaction of the partner who witnesses the conflict between their family and romantic partner (i.e., balance theory; Heider, 1958).

In sum, most of the findings linking social networks and relationship outcomes come from samples of adequate size. While many studies utilize representative samples and specify relationship stage, a sizeable number do not. Therefore, scholars should exercise caution when generalizing results about a specific relationship stage (e.g., dating couples) to the population, as there may be few studies that both examine that relationship stage *and* utilize a representative sample. Lacking studies that collect data from both members of a couple also limits researchers' abilities to make claims about the interaction between partners' social networks, i.e., the duocentric network (Kennedy et al., 2015).

Network Characteristics

Scholars have commented that people's social networks are quite large (Hill & Dunbar, 2003) and change over time (Wrzus et al., 2013). Thus, network interviews of intimate partners should be detailed in their scope (e.g., assessing many network members, gathering detailed information about those network members, and interviewing network members if possible), longitudinal, and dyadic, just as measures of couples' relationships should be (Kennedy et al., 2015). We next summarize five network interview characteristics.

More than one-half of the studies we identified (57%) relied on global network assessments, in which interviewers asked respondents to answer general questions about their network (or parts of their network), rather than identifying and describing individual network members. For example, the National Social Life, Health, and Aging Project includes two items about how often participants can rely on and confide in family members (Stokes & Moorman, 2018). Such global measures can be used to assess the general availability of social support, or perceptions of approval from the network overall or from particular groups in the network, such as family versus friends. However, these reports may be driven by participants' global feelings of well-being at that time and they may be less conducive to testing hypotheses regarding more specific network information. Moreover, purely global assessments cannot be used to describe aspects of network composition, such as age, gender, or educational attainment. The other 43% of studies asked respondents to list individuals in their social network and answer questions about each person listed, such as whether or not they provide support to the spouse (c.f., Kalmijn & Vermunt, 2007; Kennedy et al., 2015). These interviews allow researchers to calculate precise estimates of network characteristics (e.g., the proportion of friends vs. family in the network) and conduct subgroup analyses (e.g., whether approval from family is more important than approval from friends).

We found that 77% of studies included network assessments of fewer than five network members. Larger network assessments are necessary to capture the breadth of people's social connections, as studies on human network size have documented that the average network is quite large (e.g., 150 network members; Hill & Dunbar, 2003). Assessing a wider range of network members also makes it possible to derive measures of network structure. Prior research has documented that at least 20 network members are needed to calculate reliable estimates of network structure (Golinelli et al., 2010; McCarty et al., 2007).

Only 24% of research has evaluated some form of network structure. Attention has only been directed toward social network size, overlap, and density, but other aspects that may be particularly relevant to the transfer of resources, such as an individual's importance in connecting other network members (e.g., betweenness or eigenvector centrality) or measures of network grouping (e.g., cliques, clusters, or components), have been left to other social sciences. One reason for this is that it is difficult to collect the necessary data (i.e., detailed network interviews) to compute structural variables (Golinelli et al., 2010; McCarty et al., 2007).

Of the studies in this review, 91% have relied on reports from partners exclusively rather than contacting the network members as well. There are two techniques used by the other 9% of studies which have contacted network members. First, some studies utilize a *sociocentric* network approach, in which researchers attempt to create a web of connections among an entire socially defined group such as a town, school, or workplace (McDermott et al., 2013; Udry & Hall, 1965). Using this approach, researchers are able to assess structural measures more precisely than in egocentric network analyses by determining the ties among each member in the group (Vacca, 2020). Additionally, researchers can look beyond a single degree of separation (e.g., friends of friends; McDermott et al., 2013) to determine how behaviors (such as divorce)

spread throughout a network. A second approach for contacting network members is to ask a relationship partner's network members about the focal intimate relationship. This differs from the sociocentric approach because the goal is not to develop a web of ties among each network member in a group, but to have network members give their own opinions about a person's relationship. This approach (Loving, 2006) can eliminate biases and inaccuracies from relationship partners. For example, rather than asking Partner A whether a network member knows Partner B, researchers occasionally ask the network members themselves whether they know Partner B (Kim & Stiff, 1991). Additionally, particularly in studies of larger social networks, people may not know the marital status, parental status, income, age, or educational status of some of their network members, information that would be much more accurate coming from the network members themselves.

We found that 72% of prior research has utilized cross-sectional designs. These designs have provided a wealth of research on the association between network variables and static outcomes, such as satisfaction or relationship status at a particular time. Yet, relationships are dynamic, fluctuating through highs and lows over time (Karney & Bradbury, 1995) and prior work has documented significant declines in marital satisfaction over the first years of marriage (e.g., Kurdek, 1999). Just as relationships change over time, so too do social networks. Longitudinal research on social networks has documented that there is significant turnover in network composition over time, especially through important life transitions, such as into or out of marriage, or parenthood (Wellman et al., 1997). Longitudinal research will allow scholars to ascertain the degree to which aspects of the network are predicting the course of the relationship and the relationship is predicting the composition and structure of the network.

Conclusion

This review shows that studies of intimate relationships and social networks are generally highly powered (i.e., large sample sizes) and mostly assess one but not both members of a couple. Just under half specify the relationship stage of participants and slightly more than half are from what we consider non-convenience and heterogeneous samples. Therefore, when we review the literature in the coming section, it may be difficult to draw firm conclusions on some understudied populations, particular relationship stages (especially those much less studied such as engaged or widowed people), and especially cross-spouse effects that require data from both couple members.

Intensive network interviews undoubtedly consume more time and resources than asking partners general questions about their network as a whole. This was reflected in the methodological review. Network research has predominantly been based on global network assessments, assessed fewer than five network members, relied almost exclusively on intimate partner reports rather than network member reports, computed only compositional and not structural measures, and utilized cross-sectional rather than longitudinal designs. Some of these issues are related. For example, using global measures and assessing fewer than five network members makes structural calculations implausible. Therefore, drawing conclusions about network structure from existing research is constrained to the few studies that assessed many network members and calculated structural variables. Causal claims about network effects on couples or vice versa should also be tempered by the relatively limited number (less than 30%) of studies using longitudinal designs.

Section III: Review of Social Networks and Intimate Relationships Research

With these methodological strengths and limitations in mind, in the next section we organize and review the existing literature on social networks and intimate relationships using

the STAIR framework to identify which paths have received support and which have yet to be studied.

Direct Associations Between Qualities of Partners' Egocentric Networks and Relationship Outcomes (Path A)

The STAIR framework predicts that the composition and structure of partners' social networks will be directly associated with their relationship outcomes. We begin our review by describing prior work showing how couple outcomes are affected by the 1) type of relationships within the network, 2) relationship status of network members, 3) quality of relationships with network members, and 4) structure of relationships among network members. In the review that follows, we will indeed see that the existing literature is consistent with the prediction that network composition is important for couples, but there is little work addressing the role of network structure.

Relationship Type

For couples, prior research consistently shows that a greater number of friends in the network is associated with lower rates of divorce (Booth et al., 1991; McDermott et al., 2013). Prior research on family has been less consistent. More of wives' own or husbands' family members in her network is associated with her own increased relationship satisfaction (Cotton et al., 1993; Gordon & Downing, 1978), but more of her siblings in the network is associated with less marital integration (i.e., less shared leisure time, less joint decision-making, and greater division of household labor; Gordon & Downing, 1978). These results indicate that, although siblings are a key source of support in adulthood (Cicirelli, 1991), they may occasionally compete for time with the other relationship partner to the detriment of the relationship. Although it is possible that partners with siblings approach relationship maintenance differently

than partners without siblings, this is unlikely given that individuals with and without siblings are quite similar in their personality and social skills (Riggio, 1999; Stronge et al., 2019). Among Black couples, only a husband's closeness to his own family is associated with greater satisfaction for husbands and wives, not a wife's closeness (Timmer et al., 1996). In sum, friends and family have different effects on relationship outcomes. It appears that the more friends in the network, the better the relationship. This makes sense because friend relationships are typically positive and would be eliminated if not. However, the effects of family in the network are sometimes positive and sometimes negative, perhaps because we have less choice about who our family members are. Some family members may be positive and supportive, whereas others are negative and draining. Additionally, establishing a new family of in-laws and simultaneously retaining the family of origin is a difficult balance, made more difficult as partners try to fit into their in-laws' previously established routines and norms, often without those routines and norms being explicitly communicated (Prentice, 2008; Williamson et al., 2013). Women, in particular, face greater difficulties connecting to their in-laws as traditional gender norms dictate that they remain close to their family of origin (Fiori et al., 2020).

Relationship Status

Beyond relationship type, researchers have found that the relationship status (e.g., single, dating, married, divorced) of network members themselves is associated with a couple's experience of their own relationship. A large literature on the intergenerational transmission of divorce generally concludes that those with divorced parents (either from childhood or adulthood) report having less satisfying relationships (Timmer et al., 1996; Timmer & Veroff, 2000) and are more likely to divorce themselves (Booth et al., 1991; Orbuch et al., 2013). Children of divorced parents may learn maladaptive interpersonal behaviors (e.g., aggression,

ineffective problem solving) and display less positive affect, which can make maintaining a satisfying intimate relationship more difficult in adulthood (Amato, 1996; Fincham & Beach, 1999; Story et al., 2004). Those with divorced siblings are more likely to be divorced (Hogerbrugge et al., 2013). Those with divorced friends (Booth et al., 1991; Hogerbrugge et al., 2013; McDermott et al., 2013) or even divorced friends of friends (McDermott et al., 2013) are also more likely to divorce themselves. Moreover, the general rate of divorce in one's local community has also been associated with greater likelihood of divorce (Hogerbrugge et al., 2013; South, 2001). Additionally, married people are more likely to have other married people in their network (Kalmijn & Vermunt, 2007), single people are more likely to have other single people (Kalmijn & Vermunt, 2007), and divorced people are more likely to have other divorced (Albeck & Kaydar, 2002; Kalmijn & Vermunt, 2007), single (Albeck & Kaydar, 2002), or widowed people in their network (Kalmijn & Vermunt, 2007). Although this work has largely been cross-sectional and so the direction of effects is unclear, it appears that the relationship status of network members is consistently associated with an individual's relationship status.

Relationship Quality

Prior research has demonstrated that couples who have poorer relationships with their network tend to have lower quality intimate relationships. For example, higher conflict between couples and their own family is associated with greater marital strain (Reczek et al., 2010) and lower relationship satisfaction (Pittman & Lloyd, 1988; Taylor et al., 2012). Conflict with in-laws (Bryant et al., 2001) and stress from family and friends (Neff & Karney, 2004) are associated with faster declines in satisfaction. Likewise, partners who report experiencing less discord with their network (Bryant et al., 2001; McDaniel et al., 2012; Walker et al., 2013) and have more positive feelings toward their partner's network (Bryant & Conger, 1999; Parks et al.,

1983) are more satisfied in their intimate relationships. Moreover, couples in which both partners experience frequent positive contact with both their friends and family report higher relationship satisfaction and lower likelihood of relationship dissolution (Widmer et al., 2004; Widmer et al., 2009). Lesbian and gay couples who feel more comfortable being "out" with their networks also report greater relationship satisfaction (Caron & Ulin, 1997; Jordan & Deluty, 2000). Those who describe more negative relationships with their own and their partner's families (Bertoni & Bodenmann, 2010; Julien et al., 2000), on the other hand, report being more dissatisfied in their intimate relationships. Additionally, when couples experience other stressors (e.g., work), those with more persistent strains from network relationships are more likely to break up (Røsand et al., 2014). Across these studies, higher quality network relationships are consistently positively associated with the quality and stability of romantic relationships.

Structural Measures (e.g., Density)

Very little research has examined how aspects of social network structure are associated with relationship outcomes, despite network structure being an important topic of research in other disciplines (e.g., health, Burgette et al., 2021; Kuo et al., 2021). We focus on the one measure that has received the most attention, network density. Regarding social networks and intimate relationships, Cotton et al. (1993) found that wives' network density was positively associated with her own marital satisfaction, but there was no corresponding association among husbands. Another study documented a non-significant association between network density and relationship satisfaction across the sample overall, but a significant positive association among just the young wives in the sample (Rogler & Procidano, 1986), whereas another found a significant negative association that became nonsignificant after controlling for the overlap between partners' networks (Hansen et al., 1991). These results highlight that density and

network overlap are related concepts and, as we will explore later, overlap may be a more important facet of couples' networks for maintaining intimacy. Additionally, density may be more influential for wives' relationships, perhaps because women are more likely to seek support from their networks (Day & Livingstone, 2003; Liebler & Sandefur, 2002) and denser networks may be better equipped to transmit that support. This could be especially salient in the early years of marriage when couples undergo multiple stressful transitions, including starting families and changing jobs (Chait Barnett et al., 2003; Kluwer, 2010). Studies testing the Bott hypothesis generally document a nonsignificant association between network density and marital role segregation (i.e., non-overlapping division of household labor; Gordon & Downing, 1978; Udry & Hall, 1965). This may be for the same reason that density is generally weakly related to marital quality: Density may be more important for young couples and particularly important for wives. Indeed, one subsequent study found a very small, but positive association between the density of family ties in the network and marital role segregation in a sample of younger and middle-aged (median age of 39) wives (Hill, 1988). In conclusion, the effects of network density on relationship outcomes are varied, with some evidence perhaps showing that density is more important for women's perception of the relationship than for men.

Conclusion

The STAIR framework predicted that network composition, i.e., the characteristics of the people within the network, and network structure would be associated with relationship outcomes. After reviewing one of the most thoroughly researched paths of the framework, it is clear that composition matters greatly for several reasons. First, couples tend to do better when they are surrounded by many friends, but family relationships are sometimes helpful and sometimes impede intimacy. Second, and relatedly, this conclusion is bolstered by work showing

that network quality, particularly the quality of family and in-law relationships (e.g., Reczek et al., 2010), is consistently associated with relationship outcomes. Whereas partners can switch out friends if they create conflict, they cannot do so with family. Third, several studies demonstrate that network members' relationship status is associated with the success of couple's relationships. Although there seems to be a clear directionality from the network to the relationship for some of these effects (e.g., the intergenerational transmission of divorce), other work is plagued by third variable problems that have yet to be resolved. For example, are divorcees convincing (implicitly or explicitly) their network members to divorce themselves, or is this merely an effect of age?

Is network structure as impactful as composition? The short answer is we do not know yet. The structure of a network may facilitate the flow of resources from the network to the couple, but the only structural variable that has received any significant attention is density, which has shown only inconsistent and weak effects. This may be partly because studying structure is difficult and few have undertaken this taxing research. In the next section, we will turn this path around and examine how relationship outcomes may shape the composition and structure of the network.

Direct Associations Between Relationship Outcomes and Qualities of Partners' Egocentric Networks (Path B)

As partners become more committed, not only do they spend more time with one another (necessarily reducing their time available for others), but they also fulfill the roles that their networks used to fulfill (e.g., as sources of support, Eastwick et al., 2018; Feeney, 2004). Indeed, getting married increases the number of family in the network (Gerstel, 1988), but reduces the number of friends (Fischer et al., 1989; Haggerty, Du, et al., 2023; Johnson & Leslie, 1982).

Additionally, breaking up with a partner may also affect network composition by breaking ties with in-laws or generating new friendships. Research has demonstrated that following break-up and divorce, women are more likely to sustain contact with family than with friends and other relationships (Leslie & Grady, 1985). Qualitative work has shown that women have difficulty generating new friendships after divorce, but men develop more friendships out of the marriage than they did in the marriage (Gerstel, 1988), although one quantitative study found that divorcees report fewer friends generally, regardless of gender (McDermott et al., 2013). There may also be a short-term increase in acquaintances as people look for ways to socialize outside of their relationship. And, in fact, one study found that the number of professionals and clergy in separated women's networks increased in the first 6 months following separation, but decreased 6 months later (Nelson, 1995). The same study found that separated women also reported more conflict with network members than married women (Nelson, 1995). One study on relationship satisfaction predicting network structure supports the idea that stronger relationships lead to bigger networks (Hansen et al., 1991), perhaps because partners include more of their partner's network in their own network. Thus, as relationships become more committed, partners appear to prioritize maintaining relationships with family and building relationships with in-laws, while sacrificing friendships. When intimate relationships end, individuals remain in contact with their own family, but maintaining and generating friendships may be difficult.

With regard to differences in network structure at different relationship stages, some studies report that divorce leads to very close-knit networks with higher density (Leslie & Grady, 1985; McDermott et al., 2013) and that this density only continues to grow the longer one has been divorced (Leslie & Grady, 1985). These findings are consistent with the composition

findings discussed earlier in which divorcees tend to maintain contact with family but lose touch with friends following divorce (Leslie & Grady, 1985; McDermott et al., 2013), given that family networks are likely to be dense because family members typically know one another. Other scholars have found that divorce leads to high turnover in networks (Gerstel, 1988), greater loneliness and isolation (Ge et al., 2017), and a decrease in contact with mutual friends (i.e., friends that both spouses knew during the marriage) in conjunction with an increase in contact with exclusive friends (e.g., wives spend more time with friends that they knew but husbands did not; Albeck & Kaydar, 2002). All this evidence is again consistent with spouses losing touch with some friends (particularly mutual friends) following divorce, but maintaining contact with family, in turn leading to dense networks. Another study documented that changes in marital status, regardless of the direction (i.e., divorce to marriage, or marriage to divorce) predict significant turnover in the network 10 years later, and therefore lower density (Wellman et al., 1997). There have been a few studies on the effects of marital transitions on overall network size. Married spouses report having smaller networks compared to those only dating (Johnson & Leslie, 1982), but larger networks than those in remarriages (Kurdek, 1989). Regarding dissolution, one study showed that separated spouses report having more people leave their network in the first couple of years following separation, and thus smaller networks (Nelson, 1995). This may be due to former mutual friends (friendships shared by the husband and wife) leaving the network following separation or divorce, but friendship network size may then increase several years after divorce when individuals rebuild their networks (Albeck & Kaydar, 2002).

Conclusion

The STAIR framework predicts that as couples become more committed to one another, the composition and structure of their network will change. This prediction has been supported in a few specific ways. Scholarly work lends support to the dyadic withdrawal hypothesis, finding that friendships tend to dwindle when couples move from one relationship stage to the next (Johnson & Leslie, 1982). However, as we saw earlier, there are other components of composition (quality and relationship status) and these phenomena have not received much attention as dependent variables. In terms of structure, most of this work has examined the transition to divorce, and there is a general consensus that divorce or separation leads to more dense networks as mutual friends are lost and networks temporarily become smaller and more family-centric. So far, we have reviewed the literature on egocentric network effects. In the next section, we explore how the properties of the duocentric network are associated with relationship outcomes.

Direct Associations Between Qualities of Partners' Duocentric Networks and Relationship Outcomes (Path C)

Studying duocentric networks can be challenging because it requires that both partners in a couple report on their social network. In light of this challenge, many scholars have asked partners to report on their *perceptions* of network overlap, a subjective measure in which one member of a couple is asked to estimate how many social connections they share with their partner, often on a Likert-type scale. Hogerbrugge et al. (2013), for example, asked participants: "Are your friends mostly your own friends or mostly friends shared with your partner?" The other, more difficult, approach is to measure *actual* network overlap, i.e., either by asking both partners to list their network members and then checking these lists for crossover, or by asking one partner to list their network members and then asking the other to describe their relationship

to each person on the list (Kim & Stiff, 1991). Global sentiment toward the relationship and recent events (e.g., a fight) may be more likely to bias *perceived* overlap than *actual* overlap (Wiederman, 2004).

Consistent with this idea, prior research has found that more perceived shared friends (Booth et al., 1991; Hogerbrugge et al., 2013; White & Booth, 1991), more perceived family overlap (Hogerbrugge et al., 2013), greater perceived closeness to in-laws (Orbuch et al., 2013; Timmer & Veroff, 2000) and greater perceived overall network overlap (White & Booth, 1991) are all associated with lower likelihood of divorce. The one study examining actual network overlap and relationship stability documented that divorce rates were lowest in endogamous societies (i.e., societies where partners meet and marry within the community and therefore have greater spousal network overlap; Ackerman, 1963). Greater network overlap across spouses may also be associated with higher relationship satisfaction. More satisfied spouses may invest more in shared social relationships, but shared social relationships may also increase partners' sense of "coupleness" (Emery et al., 2021) and, in turn, satisfaction. Indeed, greater perceived (Barton et al., 2014) and actual (Cotton et al., 1993; Julien & Markman, 1991; Kearns & Leonard, 2004; Kim & Stiff, 1991; Stein et al., 1992) network overlap are associated with higher marital satisfaction. Research comparing the networks of Black and White couples similarly indicates that greater perceived closeness between wives and her husband's family is associated with higher levels of relationship satisfaction for both husbands and wives cross-sectionally (Timmer et al., 1996) and less steep declines in satisfaction over the first three years of marriage (Timmer & Veroff, 2000) among Black (but not White) couples. Fiori et al. (2017) found that greater contact by the wife with her own family, without her husband, is associated with lower relationship satisfaction than relationships in which there is contact with both families.

Conclusion

According to the STAIR framework, although partners' egocentric networks shape the duocentric network, a couple's duocentric network should uniquely affect how they maintain their relationship. Thus far, this notion has been supported in one way: Greater network overlap, particularly with one another's family, is associated with better relationships. Interacting with in-laws may foster interdependence (Kelley et al., 1983), whereas maintaining separate networks could indicate a lack of commitment in the relationship (Kearns & Leonard, 2004). However, studying duocentric networks, especially conducting network interviews for both partners in a couple rather than assessing *perceptions* of each other's networks, is difficult work that few have undertaken. When we reviewed egocentric network research, we saw that network quality, relationship status of network members, and structure all, to varying degrees, were associated with relationship outcomes. The STAIR framework predicts that these facets of the duocentric network will be similarly important.

Direct Associations Between Relationship Outcomes and Qualities of Partners' Duocentric Networks (Path D)

Research shows that those who divorce frequently lose access to shared network members (Albeck & Kaydar, 2002). Within an existing relationship, commitment and satisfaction may be associated with duocentric network composition and structure as couples who are happier and more committed could be more invested in shared friends and in-laws. Indeed, newlywed couples with higher relationship satisfaction report higher family member and friend overlap a year after marriage and higher family member overlap (not friend overlap) two years after marriage compared to couples with lower relationship satisfaction (Kearns & Leonard, 2004). As the stage of the relationship progresses, partners perceive more network

overlap (Kalmijn, 2003; Kalmijn & Bernasco, 2001; Milardo, 1982; White & Booth, 1991), whereas those with deteriorating relationships perceive less overlap (Milardo, 1982).

Conclusion

These results add some complexity to the dyadic withdrawal hypothesis (Johnson & Leslie, 1982). Whereas the original hypothesis predicts that couples should invest more in their own relationship than their social network relationships (particularly those with friends) as their commitment grows, it may actually be that partners are investing in shared friendships, and particularly in-law relationships, but investing less energy in relationships they do not share with their partner. Although we cannot draw causal conclusions from this work, it appears that committed partners expend more effort to develop and maintain shared network relationships whereas less committed partners do not. Future work might refine this explanation by examining how intimate relationship commitment shapes the strategies that partners, and the potential shared network members, use to form and maintain these contacts. For example, some early work on this topic shows that parents-in-law of more satisfied partners make more personal disclosures to the unrelated spouse and it may be that the unrelated spouse makes more personal disclosures to the in-laws, increasing feelings of closeness (Morr Serewicz, 2008). The STAIR framework also predicts that relationship outcomes should similarly influence the quality and relationship status of duocentric network relationships. For example, more satisfied partners spend more shared leisure time together (Johnson et al., 2006; Wilson & Novak, 2021) and so may be spending more time with other couples. As we saw in the egocentric network review, the proportion of married people in spouses' networks increases over the first 18 months of marriage (Haggerty, Du, et al., 2023), raising the possibility that couples' duocentric networks, and

particularly those of satisfied couples, may fill with other people in intimate partnerships themselves.

Effects of Social Network Resources on Relationship Outcomes (Path E)

So far, the review has focused on main effects of network composition and structure on relationship outcomes and vice versa. Now, we turn to research on mechanisms and mediators. Why are social networks so important? The STAIR framework points out that these networks provide resources to couples that can make maintaining intimacy easier (e.g., support, approval) or more difficult (alternatives to the relationship). This path is perhaps the most well-supported within the framework, and we will examine the five resources that have received the most scholarly attention.

Support

We define support broadly, as any tangible (e.g., food, money) or intangible (e.g., emotional support, affection) resources that network members can provide to relationship partners. Scholars have spent considerable energy assessing how the two partners within a couple support one another (Cutrona, 1996; Taylor, 2011), but less on the effects of social network member support on relationship outcomes. That being said, social network support has received more attention than any other subject in our review (see Figure 1-2). Scholars have studied the effects of two types of support on relationships. The first is through direct relationship support, that is, when network members assist with an issue pertaining to the relationship. For example, some studies assess which network members were mobilized in the last year to discuss problems in the marriage (e.g., Julien et al., 1994). The second way that researchers have studied support is by measuring indirect relationship support, in which network members provide help that is not aimed at relationship issues directly but rather in other domains (e.g., childcare or transportation)

that might make it easier for a couple to maintain a relationship. For example, Hogerbrugge et al. (2013) asked respondents whether network members had helped with practical matters or household chores, support not necessarily related to the relationship. Indirect relationship support may relieve individual partners' stress or obligations, which in turn frees couples to focus on maintaining their relationship (Randall & Bodenmann, 2009). Additionally, most of the support literature examines *perceived* support, i.e., believing that one could rely on the network for support *if necessary*. This contrasts with *received* support, that is, actually getting support from the network. The support literature has consistently documented that, in general, perceived support, whether direct or indirect, is related to positive relationship outcomes. Researchers have consistently documented significant positive cross-sectional and longitudinal associations between relationship satisfaction levels and perceived direct relationship support from friends (Blair & Holmberg, 2008; Demir, 2010; Pittman & Lloyd, 1988; Proulx et al., 2009; Rodriguez et al., 2016), family (Blood, 1969; Bryan et al., 2001; Demir, 2010; Leiter & Durup, 1996; Reczek et al., 2010; Taylor et al., 2012), and the network as a whole (Andres, 2014; Barton et al., 2014; Blair & Holmberg, 2008; Cotten et al., 2003; Cotton et al., 1993; Holmberg & Blair, 2016; Jin & Oh, 2010; Jordan & Deluty, 2000; Julien & Markman, 1991; McDaniel et al., 2012; Sprecher & Felmlee, 1992; Voydanoff, 2005). Other studies have documented that higher cross-sectional and longitudinal relationship satisfaction are similarly associated with greater perceived indirect relationship support from friends (Demir, 2010; Pittman & Lloyd, 1988), family (Blood, 1969; Demir, 2010; Leiter & Durup, 1996; Reczek et al., 2010; Stokes & Moorman, 2018; Taylor et al., 2012), the partner's network (Dainton, 2015; Goodwin, 2003), and the network as a whole (Andres, 2014; Barton et al., 2014; Cotten et al., 2003; Cotton et al., 1993; Holmberg & Blair, 2016; Jordan & Deluty, 2000; Julien & Markman, 1991; McDaniel et al., 2012; Voydanoff,

2005). In experimental paradigms, dating couples assigned to interact with another couple reported feeling more positively toward the other couple and closer to their own partner at the end of the laboratory session and one month later after discussing deep, non-relationship-related personal issues (e.g., “Do you feel your childhood was happier than most other people's?”) than when they had just engaged in small talk (Slatcher, 2010). In a similar lab task, couples matched with another couple that was highly responsive to their non-relationship-related disclosures felt greater relationship satisfaction after the task (Welker et al., 2014). Thus, perceived support that is directed at the relationship or to non-relationship issues both serve to enhance intimate relationships. Only one study to date has examined social network support as a predictor of *changes* in relationship satisfaction, and it showed mixed results. More perceived support from one’s father predicted slower rates of decline in marital satisfaction over 8 years, however there was no significant effect of one’s mother’s support on changes in marital satisfaction over time (Reczek et al., 2010).

Having support available when needed is clearly beneficial for intimate relationships. However, *receiving* support from one’s most trusted confidants, close friends and family, might be an indication that there is a serious problem in the relationship. Satisfied couples are, in fact, less likely than dissatisfied couples to receive support, especially from friends (Julien & Markman, 1991; Levitt et al., 1986). When one relationship partner does not perceive their partner as supportive, more family and friend support is associated with lower relationship satisfaction (Helms et al., 2003; Hirsch & Rapkin, 1986; Proulx et al., 2004). Additionally, relationship break-ups are more likely among those who report greater support from a close friend (Hogerbrugge et al., 2013; Jensen & Rauer, 2014, 2016) or parent (Hogerbrugge et al.,

2013), presumably because those in unstable relationships are most likely to seek support from those closest to them.

Together, these findings highlight that perceiving support is an important network resource, one that is associated with a strong relationship cross-sectionally and longitudinally. The benefits of perceiving support for issues outside of the relationship are documented in the literature as much as support specifically for the relationship. Vulnerable couples, however, are those that actually *receive* support, particularly from close others.

Approval

Scholars frequently study *perceived* network approval by asking respondents 1) whether they think that their network members believe the relationship is worth pursuing further or 2) the degree to which their network members respect or like the other relationship partner (e.g., Brooks & Ogolsky, 2017). Only a few studies measured *actual* network approval by asking individuals whether they approve of another person's relationship (e.g., Etcheverry et al., 2008).

The few studies on actual network approval find that greater approval from family and friends is associated with higher relationship satisfaction (Dailey et al., 2015; Julien et al., 1994) and greater relationship stability (Etcheverry et al., 2008). Research on perceived network approval corroborates these findings, showing that greater approval is associated with higher relationship satisfaction (Barton et al., 2014; Bryant & Conger, 1999; Busby et al., 2015; Caron & Ulin, 1997; Lehmiller & Agnew, 2007; Lewis, 1973; MacDonald et al., 2012; Parks et al., 1983; Sinclair et al., 2015; Sinclair et al., 2014; Sprecher & Felmlee, 1992; Wright & Sinclair, 2012), greater commitment (Cox et al., 1997; Lehmiller & Agnew, 2007), and greater relationship stability (Etcheverry & Agnew, 2004; Felmlee et al., 1990; Lehmiller & Agnew, 2007; Lewis, 1973; Sprecher & Felmlee, 1992, 2000). Similarly, approval from a partner's family

and friends is associated with greater relationship satisfaction (Parks et al., 1983). Likewise, those who experience more disapproval from their network experience faster relationship satisfaction declines (Johnson & Milardo, 1984) and greater likelihood of a break-up (Widmer et al., 2009). Contrary to this evidence, Driscoll et al. (1972) found that greater self-reported (by the spouse) interference from parents (e.g., do not accept the spouse, try to make the spouse look bad) was associated with greater love and commitment over time, which they dubbed the "Romeo & Juliet Effect." Several issues with the recruitment process and procedure may have contributed to this finding (Driscoll, 2014; Wright et al., 2014), and the decades of research since have supported a positive association between network approval and relationship outcomes.

Time Spent Together

Unlike support and approval, studies have documented conflicting associations between the amount of time spent with the network and relationship outcomes. For example, research indicates that greater time spent with the network overall is associated with higher relationship satisfaction (Beach et al., 1986), as is spending more time with family (Pittman & Lloyd, 1988) and having family in the neighborhood (Blood, 1969). Additionally, husbands are more satisfied the more time they spend with their own father (Burger & Milardo, 1995). However, in an experimental paradigm, being assigned to spend time with another, previously unknown, couple did not impact participants' reports of relationship satisfaction (Welker et al., 2014). Thus, it may be that spending time with *known* network members is beneficial. However, even this has its limits. For example, more interactions with the network without the spouse (Julien & Markman, 1991), and greater network involvement (i.e., greater time and support; Jin & Oh, 2010), may be associated with lower relationship satisfaction. Wives and husbands are less satisfied with the relationship the more time that wives spend with their own mother and brothers-in-law, and

husbands are less satisfied when their wives spend more time with friends and they themselves spend more time with their father-in-law (Burger & Milardo, 1995). These findings do not speak to cause and effect and the presence of conflicting findings, with some showing more time spent is good for relationships and others showing more time spent is bad, raises the possibility that there are boundary conditions defining when and for whom spending time with the network is beneficial. The negative effects, for example, may partly be due to a perceived threat to the relationship and thus may be more likely among couples already experiencing lower relationship quality or partners high in jealousy (Attridge, 2013). Spending time with others is time not spent with the partner strengthening the relationship. Investing time in others could even be a result of a deteriorating relationship; for example, spouses may spend more time with their friends to receive the support that they are not receiving from the relationship (Hogerbrugge et al., 2013). Together, these results imply that interactions with the network may promote positive relationship outcomes, but perhaps only when those interactions do not interfere with time with the spouse, and only when those encounters are with known network members. We can draw a parallel to the support findings here, where receiving support from the network as a whole is associated with positive relationship outcomes (e.g., Barton et al., 2014), but receiving support from close others such as best friends and parents may be indicative of issues in the relationship (Hogerbrugge et al., 2013; Jensen & Rauer, 2014, 2016).

Alternatives to the Intimate Relationship

Cross-sectional studies show that high quality romantic alternatives are associated with lower relationship satisfaction (Etcheverry, Le, Wu, et al., 2013; Lehmiller & Agnew, 2007; Scinta & Gable, 2007). Indeed, one study found that relationship dissolution is more likely among partners with a greater number of available alternative partners (Etcheverry, Le, &

Hoffman, 2013). How committed an individual believes their partner is to the relationship may exacerbate these effects. For example, when individuals believe their partner is less committed to the relationship than they are, that individual is more likely to feel jealous of their partner's alternatives to the relationship, which is likely to influence relationship satisfaction and stability (Gomillion et al., 2014). This indicates that intimate relationships may deteriorate even when partners *want* to remain in a relationship but perceive a valid threat.

Values and Norms

Insomuch as social networks are likely to reflect our own beliefs and values, potential romantic partners are also likely to share our own beliefs and values. Both assortative mating strategies and the principle of homophily suggest that people will be attracted to potential mates who are similar to them, in terms of physical attributes as well as attitudes and beliefs (Byrne, 1971; Furman & Simon, 2008; Newcomb, 1961). The characteristics of network members and their relationships likely will impact the degree to which one finds it acceptable to maintain a similar relationship. For example, the prevalence of different-race or LGBTQ+ relationships in one's network may affect the degree to which one finds it acceptable to maintain a different-race or LGBTQ+ relationship themselves. Another way in which cultural norms are just beginning to impact relationships is through the acceptance of dating apps as a means of relationship formation (Rosenfeld et al., 2019). As acceptance of this medium continues to increase, a recent poll suggested that nearly 50% of U.S. individuals between ages 18 and 29 have used a dating app to find an intimate partner (Vogels, 2020). The availability of dating apps may lead to relationships that begin with no mutual friends, whereas communities that encourage arranged marriages may produce relationships that begin with almost entirely overlapping networks.

Conclusion

At first glance, the effects of network resources on couple outcomes may not seem very complicated. The happier couples should be the ones that have supportive, approving friends and family who spend ample time with the couple without interfering with their intimacy. Some of this is true: Perceiving ones network as approving (Etcheverry et al., 2008; Sprecher & Felmlee, 1992) and supportive (Reczek et al., 2010) seems to be associated with higher relationship satisfaction. However, as scholars such as Etcheverry et al. (2008) point out, perceiving approval (which is what most work has focused on, as opposed to actual approval as reported by the network members themselves) and support is quite different than actually asking the network for support or spending time with network members. Indeed, seeking support (Julien & Markman, 1991) and spending time with others (e.g., Burger & Milardo, 1995) are not unequivocally associated with better relationships. This complication suggests that scholars move beyond cross-sectional and global measures of network properties towards longitudinal and detailed network studies that will allow us to examine cause-and-effect more closely.

Effects of Relationship Outcomes on Social Network Resources (Path F)

Relationship stage and commitment tend to be associated with network approval. At greater levels of relationship commitment (Cox et al., 1997), and later stages of relationships (i.e., engagement and marriage compared to dating), partners report more approval from their friends and family (Dailey et al., 2015; Sprecher & Felmlee, 2000) and expend more effort to win over parents (Leslie et al., 1986), despite expressing less interest in approval from friends and more distant family members (Johnson & Leslie, 1982). Studies examining reports from network members in observational and experimental designs similarly report approval from the network is greater when the network members believe the partner's relationship is satisfying (Etcheverry, Le, & Hoffman, 2013). Relationship commitment has also been associated with

network interference, which occurs when network members hinder the relationship (purposely or not) by criticizing the other relationship partner or reducing the amount of time that partners have to spend with one another. A few studies have described this association as curvilinear, such that couples with high or low levels of intimacy have less network interference (Johnson & Milardo, 1984; Knobloch & Donovan-Kicken, 2006) than couples with moderate intimacy. This may be because very uncommitted relationships are more likely to break up and the most committed relationships are unlikely to break up, regardless of whether the network interferes. Together these findings suggest that better relationships have more approving and supportive networks.

Conclusion

There has been very little work demonstrating how relationship outcomes influence social network resources. The few studies we identified show that couples tend to perceive greater approval and less network interference as they become more committed to their intimate partnerships. Future work might focus on the mechanisms of this process: Are couples simply removing unsupportive, disapproving friends and family from their network as the relationship progresses, or are they actively attempting to win over these individuals? Once again, this work would benefit from longitudinal, detailed social network interviews. Work in this path has also almost entirely ignored other resources such as romantic alternatives and time. For example, couples in more committed relationships tend to see potential romantic alternatives as less attractive (Park & Park, 2021; Simpson et al., 1990). Does this mean that couples might also shape their networks to include less attractive alternatives as commitment increases? There is a great deal of work to be done on how couples select, prioritize, and remove network members.

Section IV: Conclusion And Future Directions

Intimate relationships dominate people's time spent socializing with others (Fein, 2009) and the quality of those intimate relationships strongly predicts life satisfaction and physical health (Antonucci et al., 2001; Stavrova, 2019). And yet, almost inevitably, partners are surrounded by more than just one another. They see coworkers on the job, friends on the weekends, and family for Sunday dinners. These connections are similarly important for our individual health (Fuller-Iglesias, 2015), but are they important for the health of intimate relationships? Theories of social networks (e.g., Antonucci et al., 2014) and of intimate relationships (e.g., Hill, 1949) suggest that couples should do better surrounded by a supportive, approving network filled with mutual friends and in-laws compared to a network that is demanding or unavailable when partners need them most (Haggerty et al., 2022). Using the STAIR framework as a guide, our review supported this hypothesis, showing that couples experience different relationship outcomes depending on the networks that surround them. Couples tend to be more satisfied and in more stable relationships to the extent that their networks are filled with a diversity of friends and family (Cotton et al., 1993; McDermott et al., 2013) and those network members support the partners when needed (Proulx et al., 2009), approve of their relationship (Lehmiller & Agnew, 2007), and connect with both partners rather than just one (Hogerbrugge et al., 2013). Intimate partners that are happier with one another and more committed to the relationship tend to also develop networks containing more shared family and friendships (Kalmijn, 2003) and more network members who approve of the relationship (Sprecher & Felmlee, 2000). Now that we see how much we *do* know about social networks' impacts on intimate relationships, we turn to what we do not know.

Factors Influencing How Joint Networks Develop

When intimate partners invite each other into their social networks, creating new shared friendships and in-law relationships, they typically experience better relationship outcomes (Hogerbrugge et al., 2013). Our review did not address Paths G and H in the STAIR framework because how and when couples form these joint contacts is unclear. The ways that partners merge their social networks may have different implications for their relationships with each other and with their network members. First, a relationship partner's closeness to their own family may affect the degree to which they form relationships with their partner's family. Partners who are very close to their own family may receive enough support that they find it less necessary to become close to their partner's family. New mothers who have greater contact with their own parents, for example, are less likely to receive emotional support from their in-laws (Chong et al., 2017). Second, traditional gender roles suggest that women may tend to become closer to their male partner's family than vice versa (Kahn & Antonucci, 1980; Stein, 1992). For husbands, forming in-law relationships may not be as much of a developmental process that occurs throughout the relationship, but rather is tied to specific events that necessitate greater contact with the partner's family, such as the transition to parenthood (Danielsbacka et al., 2015). Third, spouses may be particularly likely to incorporate same-sex in-laws into their networks. Prior research has shown, for example, that spouses find socializing with same-sex in-laws to be more important than socializing with different-sex in-laws and that same-sex in-law relationships are more likely to persist after divorce than different-sex in-law relationships (Goetting, 1990). Thus, the gender composition of each partner's network is likely to affect how joint contacts form. For example, if both spouses in a different-sex marriage have sisters but no brothers, the wife may be very connected to her husband's family, but the husband may be less connected to the wife's family. Because the wife is embedded in her husband's family, this may act as a barrier

to leaving the relationship (Rusbult, 1980) because breaking up the intimate relationship would also likely break apart these network connections. Lastly, racial/ethnic identity might influence joint network development. Hispanic and Black American individuals consistently rate family relationships to be more important (i.e., higher *familism*) than do White Americans (Campos et al., 2014; Gaines Jr, 2014), and so we might expect that there would be differences in the extent to which spouses of different racial/ethnic backgrounds include their partner's family in their own network. Hispanic and Black American spouses, for example, offer more resources (time or money) to their aging in-laws than do White Americans (Shuey & Hardy, 2003). Although network overlap is generally associated with higher relationship satisfaction and lower risk of divorce (Barton et al., 2014; Hogerbrugge et al., 2013), the nature of those shared relationships likely matters. Shared network members that draw resources from the couple (e.g., by asking for time or money) may strain couples' relationships. This raises the possibility that it is not only *being* connected to a partner's friends or family that matters, but that the quality of those joint relationships matters as well.

Defining the Joint Network

The field has not reached a consensus about what aspects of the joint network matter most for couples. The fact that spouses provide time or money to their in-laws, or include their partner's friends on a list of people they know, does not mean that they have positive relationships with those network members or that partners agree on how connected they are to each other's family and friends. In fact, husbands and wives frequently disagree on how much time they spend with each other's family and sometimes disagree on how close they are to each other's family (Fiori et al., 2020). That is, a husband may report that they are very close to their wife's family, but the wife may report that their husband is not close to her family. In this

scenario, Fiori et al. (2020) found that 72% of these couples divorced over a 16-year period, much higher than if the spouses agreed on closeness. Thus, researchers should be mindful of how they define joint networks. Beyond the fact that both partners listed a network member as a friend or family member, the quality of those contacts and the resources that they provide are likely to affect couples.

Individual Differences in the Availability of Network Resources

The STAIR framework assumes that networks provide resources such as time, support, or approval to couples and that composition and structure are likely to affect the degree to which these resources are available. Because friends, family, coworkers, and weaker ties provide different things to couples (Haggerty et al., 2022), it may be the couples who maintain a diversity of network connections that are able to access more resources. However, characteristics of the partners and their relationship may shape how networks provide resources (i.e., Paths I and J). For example, partners in same-sex relationships or other diverse relationship types may receive less support from a family-centric network than a friend-centric network. In fact, one study found that the majority of LGBTQ+ adolescents received disapproval from their family after coming out (Roe, 2017). However, the effect of approval on relationship outcomes may differ between those in same-sex and different-sex relationships. For those in same-sex relationships, they may find that network disapproval is centered on the relationship type (i.e., a same-sex relationship) as opposed to the specific relationship partner. No alternative partner would garner approval from certain network members because the relationship would still be a same-sex relationship. For this reason, those in same-sex or diverse relationship types may place less importance on network disapproval (Blair & Pukall, 2015), weakening the effect of approval on relationship satisfaction and stability. Thus, the way that partners in same-sex relationships form and maintain

their networks, the resources they receive from those networks, and how those resources impact their intimacy may be quite different from different-sex relationships.

Addressing Methodological Issues Raises New Research Questions

Our review revealed several methodological shortcomings of social network and intimate relationships studies, and addressing those methodological issues would allow researchers to better understand the associations between social networks and intimate relationships. Addressing the lack of network structure data may be the most fruitful in generating new research. Other fields recognize the importance of network structure. For example, epidemiological studies show that the structural position of network members infected with a disease greatly affects disease spread, with those who serve as bridges between disparate groups of people (e.g., they belong to many communities or organizations) being more influential than those who simply know the most people (Salathé & Jones, 2010). Structure is associated with health behaviors with, for example, adolescents in less dense networks and who are more isolated from other classmates being more likely to smoke cigarettes, drink alcohol, and use marijuana (Ennett et al., 2006; Gallupe & Bouchard, 2015). In business settings, employees who connect disparate groups of workers are more likely to detect and develop good ideas as well as score higher on a number of performance metrics (Burt, 2004; Burt et al., 2013). These studies raise the possibility that social network structure will have implications for relationship outcomes. Measures of *centrality* may be particularly interesting to investigate in the context of intimate relationships. *Degree centrality* describes how many individuals a person is connected to, and *betweenness centrality* describes how many unconnected people an individual connects (e.g., Person A and Person C do not know each other, but both know Person B; Rodrigues, 2019). Some individuals are more central in couples' networks, and these individuals are best equipped

to disseminate information quickly to a large amount of people (i.e., degree centrality) or bridge gaps between network members (i.e., betweenness centrality). It is possible that these individuals influence couples' relationships to a greater extent than less central network members. For example, does a network with a highly disapproving and high degree network member outweigh the benefits of an otherwise approving network? Structure may also affect other mechanisms of network influence, such as access to alternatives or the strength of values and norms from close and peripheral network members.

Another methodological issue is that networks change over time (Antonucci et al., 2014; Wrzus et al., 2013) and yet we know little about how they change. The STAIR framework relies on the assumption that networks change over time, for example that partners' individual networks can form joint networks as relationships progress (Milardo, 1982). Scholars are aware, for example, that friendships tend to diminish in number and that family connections tend to remain stable (Wrzus et al., 2013). Some recent work has started to refine these conclusions, showing that the proportion of married and financially stable network members tends to increase during the newlywed years, as does overall network relationship quality (Haggerty, Du, et al., 2023). Much of the work that has examined network change is focused on major transitions like marriage or divorce (Albeck & Kaydar, 2002), but ignores the many years that couples spend without drastic, network-altering events. Are networks stable during these times or are there development changes that tend to occur, ones not accompanied by a major transition?

Do Partners Actively Shape Their Social Networks?

Whether during major transitions or periods of relative stability, it is unclear the extent to which intimate partners *actively alter* their social networks, consciously adding or dropping friends, family members, and acquaintances, or whether these are developmental changes that

occur whether couples intend them or not. Surely, some events in the course of an intimate relationship necessitate network changes, such as when a couple moves from one state to another (Viry, 2012) and loses contact with former neighbors. There is some support for the dyadic withdrawal hypothesis (Johnson & Leslie, 1982), that couples tend to reduce interactions with friends as their relationships progress, but perhaps maintain connection with family. How does this pruning process work? Intimate partners are aware that disapproving network members influence their relationships (Felmlee, 2001), so partners may be particularly likely to cut ties with disapproving friends or family members when they are motivated to remain in their intimate relationship (e.g., after having children). Whether this is true and whether it is a conscious or nonconscious process is an open question. Another prediction is that intimate partners should seek to maintain connection with network members who themselves are well-connected. For example, network members who know many of the partner's other social connections can relay information about other network members who have been dropped from the network. This is particularly valuable later in the relationship when partners become more selective with their friendships (Johnson & Leslie, 1982). However, people vary in their ability to accurately report on the structural properties of their network (Casciaro, 1998), raising the possibility that this is more of a nonconscious than conscious process.

Clinical and Policy Implications

Partners' ability to actively alter their networks may have implications for future clinical interventions which attempt to influence couples' networks. This is not meant to be a review of couples' therapy methods, but suffice it to say that many couples' therapies are focused on ameliorating negative behavioral patterns (e.g., the Gottman Method; Gottman & Gottman, 2008) or bolstering couples' feelings of security and attachment (e.g., emotionally focused

therapy; Wiebe & Johnson, 2016). No clinical intervention that we know of treats external relationships as targets of intervention. Practitioners may consider supporting couples by, first, helping them understand which network members approve or disapprove of their relationship and why. If a network member is disapproving, but their concerns are not important to the couple, it may be possible to cut ties with them. Second, couples may be able to leverage the network as an additional source of support, beyond the partners themselves. Third, practitioners could identify ways for couples to equitably integrate their networks. If shared friends and family members predominantly originate from one partner's individual network, the couple might benefit from jointly spending time with the other partner's network members.

Policy initiatives with the goal of strengthening intimate relationships may similarly benefit from directly targeting couples' networks. Couples are likely to have an easier time maintaining their relationship when they have adequate social as well as economic resources (Conger & Conger, 2008; Karney & Bradbury, 1995), and our review showed that couples do better when surrounded by supportive networks. Some recent initiatives that target social contexts of couples and families have shown promise. For example, UpTogether (formerly the Family Independence Initiative) provides lower socioeconomic status families with tools to build their social networks as well as monthly stipends (U.S. Department of Health & Human Services, 2020, n.d.). Families enrolled in this program are asked to engage with their local communities by offering babysitting services, shoveling snow, or providing other informal services, and receive the same in return. Additionally, they are connected with UpTogether families in other parts of the country who may have access to information or resources that they do not have. Families enrolled in this program have expanded their social networks and

increased their incomes significantly, which may make it easier for couples to maintain their relationships (U.S. Department of Health & Human Services, n.d.).

General Conclusion

Questions regarding social networks and the risks of isolation are not new, and scholars have long wondered whether the types of connections that people hold and the ways that they socialize could be associated with the quality of their lives and relationships. A century and a half ago, Ferdinand Tönnies discussed how urbanization had fundamentally changed the way people socialized with one another (Stafford, 1995; Tönnies, 1887). Drawing a distinction between *gemeinschaft* ("community": emotional, informal, social) and *gesellschaft* ("society": colder, emotionless, urban), he questioned whether contemporary social shifts would affect families' connections with friends, family, and neighbors. Over the proceeding 140 years, scholars continued to track trends in social connection and isolation, leading Robert Putnam to document at the turn of the last century that Americans were less involved in almost every form of social connection, from talking with one's neighbors to participating in the local bowling league, than in years past (Putnam, 2000). Today, because of increased awareness about these social shifts and their mental and physical health implications (Holt-Lunstad et al., 2015; Holt-Lunstad et al., 2010), the U.S. Surgeon General's Office released a report on the dangers of isolation and, in a constructive move, outlined a six-pillar plan to increase connectivity (Office of the Surgeon General, 2023). Thus, understanding the current state of knowledge and future research directions regarding the effects of social connection on our most important, intimate relationships, is more critical than ever before (Haggerty et al., 2022). Using the STAIR framework as a guide, we have shown that there has been great progress in answering some of scholars' questions. With the framework, we can make further progress, from addressing how

joint networks develop to the role of network structure in facilitating support, for example. In doing so, we may continue to learn that the course of intimate relationships is determined not only by the two people who comprise a couple, but also by the many connections that exist in their social networks.

Figure 1-1

The Social Ties and Intimate Relationships (STAIR) Framework

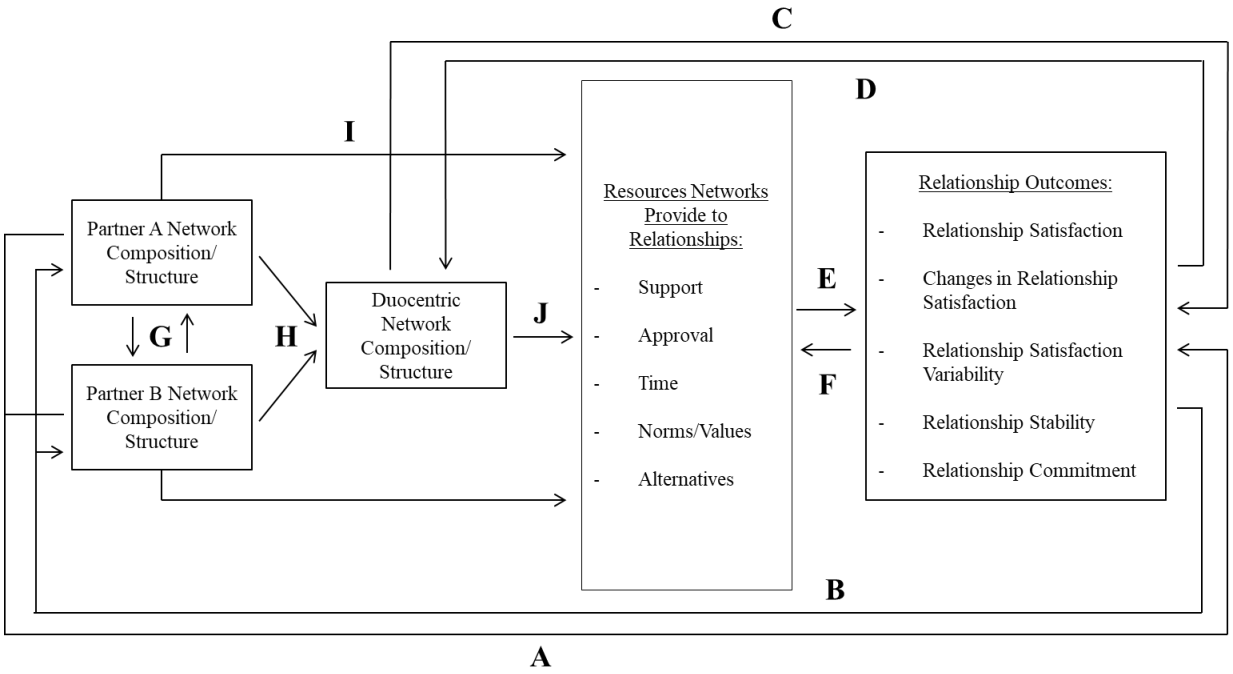
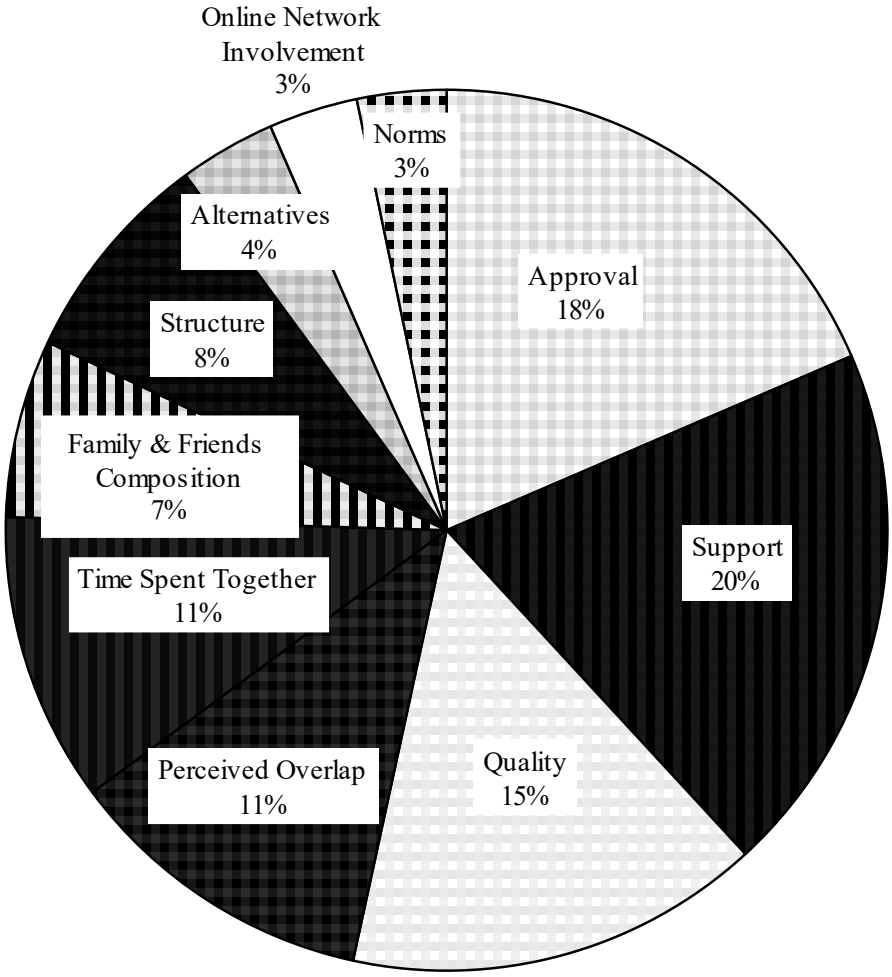


Figure 1-2

Categorizing Research on Social Networks and Relationships by Topic



Note. These mechanisms of influence in research on social networks and relationships originate from the 367 findings included in the 141 independent studies identified in prior literature.

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Chapter 2:

Lasting Declines in Couples' Social Network Interactions in the First Years of COVID

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Abstract

Since the onset of COVID-19, a rise in loneliness has raised concerns about the social impact of lockdowns and distancing mandates. Yet, to date, effects of the pandemic on social networks have been studied only indirectly. To evaluate how the pandemic affected social networks, the current analyses analyzed five waves of detailed social network interviews conducted before and during the first 18 months of the pandemic in a sample especially vulnerable to contracting the virus: mostly non-White couples (243 husbands and 250 wives) recruited from lower-income neighborhoods. Pre-COVID interviews asked spouses to name 24 individuals with whom they interact regularly. Post-COVID interviews indicated nearly 50% declines in face-to-face interactions and nearly 40% declines in virtual interactions, with little recovery over the first 18 months of the pandemic. Compared to less affluent couples, those with higher incomes maintained more of their network relationships, especially when virtual interactions were taken into account.

Lasting Declines in Couples' Social Network Interactions in the First Years of COVID

After COVID-19 prompted lockdowns around the world, health officials expressed concerns about a "parallel pandemic" of social isolation (Mucci et al., 2020). Many worried that efforts to contain the virus (e.g., through social distancing and avoiding public gatherings) were separating people from their support networks at the very time when those networks were most needed (e.g., Donnelly et al., 2020). Meta-analytic findings now confirm that feelings of isolation and loneliness have indeed increased since the onset of the pandemic (Ernst et al., 2022), with mothers of young children among the populations especially affected (Weissbourd et al., 2021). By themselves, these feelings warrant concern, as the adverse health implications of loneliness are well-established (Holt-Lunstad et al., 2015). The fact that mental health suffered more in areas that imposed stricter lockdowns and distancing guidelines (Knox et al., 2022) is consistent with the idea that rises in loneliness and emotional distress are due at least in part to COVID mitigation efforts.

Why might people feel lonely and isolated as a result of COVID-19? One possibility is that distancing guidelines and restrictions on social gatherings inflicted lasting damage on people's social networks (Goolsbee et al., 2020). Early in the pandemic, strict injunctions to avoid social gatherings interrupted routines that would otherwise bring people into regular contact with close friends and family (Philpot et al., 2021; Usher et al., 2020). The transition to remote work further limited opportunities for social interaction, with remote workers reporting more loneliness than those continuing to work in person (Borgatti et al., 2022). With over 1,000,000 deaths from the virus recorded to date (Centers for Disease Control and Prevention, 2022), many people also lost network members to the virus—losses disproportionately experienced in lower-income communities and by people of color (Alcendor, 2020; Khanijahani

et al., 2021). Together these trends suggest that the onset of the pandemic may be associated with lasting reductions in the size of people's social networks (Bierman et al., 2021).

It remains possible, however, that COVID-19 increased feelings of isolation and loneliness without affecting social interactions. For example, even if distancing guidelines restricted face-to-face interactions, people may have compensated by increasing the frequency of their virtual interactions (e.g., through text, Facetime, Zoom), thus maintaining or even expanding the size of their social networks. Indeed, government entities and public health organizations made virtual connection a centerpiece of their COVID-19 guidance, recommending that people take advantage of burgeoning video-call technology to schedule virtual gatherings with friends and family (Almeda et al., 2021). Unfortunately, people do not receive the same support from virtual connections that they receive from in-person interactions, leaving them feeling lonely even after communicating virtually (Geirdal et al., 2021; van der Velden et al., 2021). Thus, paradoxically, an increase in *virtual* interactions could account for the rise in loneliness even if *overall* interactions within one's social network remained constant.

A third possibility is that social networks shrank during the initial stages of the pandemic, but then recovered once vaccines became available and the most stringent restrictions were lifted. As some scholars have noted, lasting damage to people's social networks is "not inevitable nor necessarily enduring, since social networks are also adaptive and responsive to change" (Long et al., 2022, p. 129). Some research on loneliness is consistent with this possibility, finding that, after its initial rise in the first year of the pandemic (Ernst et al., 2022), feelings of loneliness may have begun to subside (Ray & Shebib, 2022).

A primary aim of this study is to determine whether efforts to contain COVID-19 affected people's interactions with their social network members, thereby testing competing explanations

for documented increases in subjective experiences of isolation and loneliness. To date, researchers have not had access to the data necessary to address this issue, i.e., multi-wave assessments of social networks collected before and after the onset of the pandemic. The current study fills this gap by drawing upon five waves of social network interviews (two prior and three during the pandemic) collected from a diverse sample of mostly non-White couples (250 wives and 243 husbands) living in lower-income neighborhoods. Situating our study here allows us to focus directly and explicitly on the communities (Truong & Asare, 2021) and racial/ethnic groups (Khanijahani et al., 2021) suffering disproportionately from COVID-19. At each of these five assessments, we calculated measures of individuals' face-to-face network size (i.e., how many people, out of 24 total network members named, participants saw face-to-face in about the last nine months), virtual network size (i.e., how many of the 24 they interacted with virtually in the last nine months), and face-to-face or virtual network size (i.e., how many of the 24 they interacted with face-to-face or virtually in the last nine months). Using participants' most recent of the two interviews prior to COVID-19 as an indicator of their "pre-COVID" network, in addition to the three assessments during COVID, we assessed how these three network types changed from pre-COVID across the three COVID intervals (i.e., COVID 1-3). Participants were asked about the same 24 network members at each of the four intervals. Additionally, we calculated these network sizes for each of three subgroups: family, friends, and coworkers, to assess whether individuals maintained some relationship types more than others.

A second aim of this study is to look beyond average changes in social networks in an effort to identify segments of the population that are particularly hard-hit by the pandemic. We do this in two ways. First, we test the prediction that constriction in social networks will be especially acute among those with lower incomes and fewer resources. Towards this aim, we

tested three individual difference moderators of network change: in-person worker status (i.e., in-person worker vs. non-in-person worker), racial/ethnic identification (i.e., Latinx, Black, or White), and income. Given that lower-income and minoritized individuals have limited access to the high-speed internet and virtual communications needed to compensate for a lack of in-person contact (Millett et al., 2020; Yearby & Mohapatra, 2020), we expect greater reduction in their social networks compared to those of relatively affluent individuals sampled within these same communities. Second, because qualities of individuals' entire networks may shape how those networks respond to the pandemic-related restrictions, we test the prediction that networks in which fewer members know each other (i.e., less-dense networks) will experience more instability because less-dense networks have more weak ties that can be easily shed (Zhou et al., 2009).

Method

Sampling

The original sampling procedure of this longitudinal study, dating back to 2009, was designed to yield first-married newlywed couples in which both partners were of the same race/ethnicity (i.e., Latinx, Black, or White), living in neighborhoods with a high proportion of low-income residents in Los Angeles County. Recently married couples were identified through names and addresses on marriage license applications filed during 2009, obtained from the Los Angeles County Recorder's Office. Because sample recruitment occurred when same-sex marriage was illegal in the state, all couples were mixed-gender. Addresses were matched with census data to identify applicants living in census block groups wherein the median household income was no more than 160% of the 1999 federal poverty level for a 4-person family. Names on the licenses were then weighted using data from a Bayesian Census Surname Combination,

which integrates census and surname information to produce a multinomial probability of membership in each of four racial/ethnic categories. Couples were chosen using probabilities proportionate to the ratio of target prevalences to the population prevalences, weighted by the couple's average estimated probability of being Latinx, Black, or White. Couples were screened to ensure that they were married, that neither partner had been previously married, and that both spouses identified as Latinx, Black, or White. A total of 3,793 couples were identified through addresses listed on their marriage licenses. Of those, 2,049 could not be reached and 1,522 (40%) responded to a mailing and agreed to be screened for eligibility. Of those, 824 couples were screened as eligible, and 658 (80%) of those couples agreed to participate in the study. A final baseline sample of 431 couples completed the initial assessment of this longitudinal study within the data collection window.

Procedure

Between 2009 and 2014, couples were interviewed five times at approximately nine-month intervals. Couples were then recontacted for a sixth interview in 2018-2019, which began a series of five more interviews between 2018 and 2022. The data examined here were obtained during these latter five interviews, aside from some demographic information gathered at the beginning of the longitudinal study (e.g., racial/ethnic identification). Because the first two of these interviews were conducted mostly prior to the COVID-19 pandemic in the United States, we refer to these as “pre-COVID 1” and “pre-COVID 2” while the latter three interviews are “COVID 1,” “COVID 2,” and “COVID 3.”

At the pre-COVID 1 assessment, which took place between June 2018 and April 2019, two trained interviewers visited couples in their homes. The interviewers took spouses to separate areas to obtain informed consent and verbally administer the individual interviews,

which were divided into two parts. The first was a standard interview from which we derive all demographic information. The second part was a detailed social network interview. Participants were asked to name 25 network members (starting with their spouse) with whom they had any form of contact during the past year. Although social networks are larger when considering the number of weak ties and acquaintances that people maintain, 25 network members sufficiently captures individuals' most meaningful relationships (Hill & Dunbar, 2003; Kennedy et al., 2015). Spouses answered several questions about each individual they named. At the pre-COVID 2 wave, which occurred between July 2019 and May 2020, interviews were again conducted in-person until March 14th, 2020, after which interviews were conducted over the phone. During this wave, spouses were asked again to name 25 network members with whom they had any form of contact during the past year. This list could include or exclude network members listed at pre-COVID 1. On March 19th, 2020, California (where most couples in the study lived) declared a mandatory stay-at-home order. Forty husbands and 41 wives were interviewed after March 19th, 2020 during the pre-COVID 2 wave. Our analyses asked spouses to recall their interactions with others over the *past year*, so most of that time was prior to March 19th. Thus, we included spouses who were interviewed after March 19th during the pre-COVID 2 assessment. For the purpose of the present analyses, we used social network data from a spouse's *most recent* of the pre-COVID 1 and pre-COVID 2 interviews, i.e., pre-COVID 2 if available or pre-COVID 1 if pre-COVID 2 was not available. We refer to these data as coming from the spouse's "pre-COVID interview." The pre-COVID 2 assessment was the most recent pre-COVID assessment for 92% of husbands and 91% of wives. The pre-COVID interview sample size was 243 husbands and 250 wives.

A timeline of important events during the COVID-19 pandemic in conjunction with dates of the COVID assessments is provided in the online supplemental materials (Haggerty, 2023): https://osf.io/vef8t/. At the COVID 1 interview, conducted entirely via telephone from July 2020-January 2021, spouses were not asked to name a new list of 25 network members. Instead, they were asked a series of questions about the people they listed during their most recent pre-COVID assessment, items that were relevant to understanding how these relationships changed across the transition into the COVID-19 pandemic. Despite the uncertainty and turmoil of the pandemic, retention was high. The COVID 1 sample size was 200 husbands and 210 wives (82% and 84% of the pre-COVID sample size, respectively). At the COVID 2 (March-September 2021) and COVID 3 (November 2021-March 2022) assessments, spouses were provided with the same 25 names they had provided prior to the pandemic and asked the same questions about each name on that list. The COVID 2 sample size was 204 husbands and 212 wives (84% and 85% of the pre-COVID sample size, respectively). The COVID 3 sample size was 201 husbands and 199 wives (83% and 80% of the pre-COVID sample size, respectively). We assessed whether those who dropped out after their pre-COVID assessment (N=42 husbands, N=51 wives) differed from those who completed their COVID 3 assessment (N=201 husbands, N=199 wives) on 12 measures of network size as well as income and network density. Of these 28 tests across the two spouses, we found only one significant difference: Wives who completed the study saw more of their friends in-person pre-COVID compared to those who dropped out, $t(248) = 2.2$, $p = .03$.

At the first COVID interview, 80% of participating couples were living in Los Angeles County and therefore subject to the same mandates and guidelines. Of the remaining households, all but one resided within the United States. Our sample size did not allow for direct comparisons

between couples living in different regions. All procedures were approved by the RAND Corporation institutional review board.

Participants

The final sample consisted of 243 husbands and 250 wives from 251 households who provided data for at least one timepoint. At the pre-COVID assessment, wives ranged in age from 28 to 49 years old (M = 37.0, SD = 4.9) and husbands ranged in age from 28 to 61 years old (M = 38.7, SD = 5.6). The majority of wives (91%) and husbands (85%) reported receiving a high school diploma or greater. Approximately 41% of wives and 34% of husbands reported a college degree or higher education. The median household income at the pre-COVID assessment was $96,000 ($SD$ = $101,175). As part of the study inclusion criteria, spouses were required to identify as Latinx, Black, or White and both spouses in a couple had to identify as the same race/ethnicity. Of the 243 husbands, 80% identified as Latinx, 12% identified as White, and 8% as Black. These proportions were identical for the 250 wives. At the pre-COVID interview, 91% of husbands and wives had children.

Measures

Pre-COVID Network Sizes

At pre-COVID 1 and 2, spouses were asked the following questions about each network member they named: "In the past year, how often have you had face-to-face contact with [NAME]?" If the spouse answered "A few times a year" or a more frequent response, that network member was coded as "1." If the participant did not see the network member at least a few times a year, that network member was coded "0." We selected this threshold of "a few times a year" because interviews were generally about nine months apart. Thus, if a spouse saw a network member at least a few times a year, it is highly likely they had seen that network

member since the last interview. We then added the number of network members coded "1" to create a measure of *face-to-face network size* for each participant prior to the pandemic.

A second question asked: "In the past year, how often have you had contact with [NAME] over the phone, via emails, text messages, video chat, social media, etc.?" The response options were the same as for the face-to-face question. The same procedure was used to derive a measure of *virtual network size* before the pandemic.

To create a measure of the size of the total interactive network (i.e., the people with whom respondents had face-to-face *or* virtual interactions), a network member was coded "1" if they were contacted either in-person or virtually at least "a few times a year." Adding the number of network members contacted virtually or in-person for each spouse gives a measure of the *total interactive network size*.

Respondents categorized each network member into one of four types of relationships: family, friend, coworker, or other. Categories were not mutually exclusive; however, participants gave over 97% of network members only one categorization. When two or more relationships were listed, we reclassified the network member as family if one of the categories was family, friend if one of the categories was friend but not family, followed by coworker and, lastly, other. For each of the three networks (i.e., face-to-face, virtual, and total), we estimated the size of three subnetworks: one for family, one for friends, and one for coworkers. A further 8% of husbands' and 10% of wives' network members were "other" relationships. These data were not analyzed due to the relatively small number of people who fit that categorization and because the disparate relationships within that category (e.g., neighbors, service providers, unspecified other types) make it difficult to draw conclusions about how and why this category might have changed over time.

COVID Assessments Network Size

At COVID 1, spouses were asked the following question about each network member: "What kind of contact have you had with this person since March 19th?" At COVID 2 and 3, spouses were asked: "What kind of contact have you had with this person since the last time we spoke with you in [fill month and year from prior assessment]?" The response options at COVID 1-3 were: "No contact at all," "In-person, less than 6 feet away," "In-person, 6 feet away or more," "Virtual, with video," and "Virtual, without video (phone, email, text, social media)." For face-to-face networks, a network member was coded "1" if they were seen in-person, regardless of whether it was six feet away or not. For virtual networks, a network member was coded "1" if they were contacted virtually, either with or without video. By adding the number of network members coded "1," we derived separate estimates of *face-to-face network size* and *virtual network size*. The response options were not mutually exclusive, meaning the same individual could be a part of the face-to-face and virtual network. Like the pre-COVID assessments, we derived a measure of the *total interactive network size* by coding a network member "1" if they were contacted either in-person or virtually for each spouse. Additionally, we calculated family, friend, and coworker subnetwork sizes for the face-to-face, virtual, and total networks, as was done for the pre-COVID assessments.

In-Person Worker Status

At their pre-COVID interview, 94% of husbands and 73% of wives indicated that they were employed outside their home. In the first COVID interview, participants were asked: "Since the stay-at-home order began on March 19th, how many hours a week have you worked outside your home on average?" If the respondent worked outside the home for at least 1 hour per week, they were classified as an in-person worker. At the COVID 1 assessment, 145 husbands (73%)

and 101 wives (48%) were classified as in-person workers. The COVID 1 in-person worker status was used as a moderator in our analyses.

Social Network Density

During the pre-COVID social network interview, but not during the COVID interviews, participants were asked the following question for each pair of network members on their list: "Have [NAME] and [NAME] had contact in the past year or so?" To calculate network density, we divided the number of pairwise connections among network members by the total *possible* number of pairwise connections. A network density value of 1 would indicate that every person that the spouse listed had been in contact with every other person on their list in the past year or so, whereas a value of 0 indicates a sparse network in which network members were not in contact with each other. The mean network density was .38 (*SD* = .19) for husbands and .46 (*SD* = .24) for wives.

Income

Spouses reported their average monthly income. The values for husbands and wives were added and multiplied by 12 to compute a yearly household income measure. Household income at COVID 1 was used as a moderator in our analyses. The median income was $90,000 (*SD* = $75,875) at COVID 1.

Analytic Plan

To account for the interdependence between husbands' and wives' responses, we conducted multilevel modeling using Restricted Estimation Maximum Likelihood to estimate random effects in SPSS Version 27 using the MIXED procedure (Corbeil & Searle, 1976). We generated graphs from R Version 3.6.2. The two-intercept approach models data from both spouses, providing separate husband and wife intercepts and slopes and accounting for the

covariance between husbands' and wives' responses (Planalp et al., 2017; Raudenbush et al., 1995). Although we did not have any a priori predictions regarding gender differences, whenever the pattern of significant results was different for husbands and wives, we used an interaction approach (see Planalp et al., 2017) to test whether husbands' and wives' parameters were significantly different from one another. For both approaches, time (i.e., pre-COVID, COVID 1, COVID 2, COVID 3) is nested within spouse within couple, but this is equivalent to a two-level model with time and individual nested within couple (Raudenbush et al., 1995). The two-intercept approach, within-couple equation is as follows:

$$y_{idt} = b_{1d}(Husband_{id}) + b_{2d}(Wife_{id}) + b_{3d}(Time1_{idt} * Husband_{id}) + b_{4d}(Time1_{idt} * Wife_{id}) + b_{5d}(Time2_{idt} * Husband_{id}) + b_{6d}(Time2_{idt} * Wife_{id}) + e_{idt}$$

We estimated a piecewise growth model (see Shadish et al., 2002; Zvoch, 2016) across the four timepoints with a knot placed at COVID 1 by coding *Time1* (-1 0 0 0) and *Time2* (0 0 1 2). Thus, the b_{1d} and b_{2d} coefficients represent intercepts for husbands and wives, respectively. The coefficients b_{3d} and b_{4d} represent the change in social network size from pre-COVID to COVID 1 for husbands and wives, respectively, while the b_{5d} and b_{6d} coefficients describe the linear change in network size from COVID 1 through COVID 3 for husbands and wives, respectively. The between-couple, level-2 equation is as follows:

$$b_{1d} = b_{10} + \zeta_{1d}$$

$$b_{2d} = b_{20} + \zeta_{2d}$$

$$b_{3d} = b_{30}$$

$$b_{4d} = b_{40}$$

$$b_{5d} = b_{50}$$

$$b_{6d} = b_{60}$$

Here, we see that the level-1 coefficients are not further explained by covariates, but the between-couple residual terms, ζ_{1d} and ζ_{2d}, capture between-dyad variation in husband and wife intercepts, respectively. The subsequent slopes were fixed across dyads as models run with random slopes faced nonconvergence issues. When there are not enough degrees of freedom to estimate between-couple variance, fixed slopes are used for model identification (Planalp et al., 2017). The four moderators (i.e., COVID 1 in-person worker status, race/ethnicity, COVID 1 income, and density) were all measured at the between-dyad level. For race/ethnicity, we created three dummy codes (one each for White, Latinx, and Black) and ran one model in which Latinx was the reference group and one model in which Black was the reference group. This allowed us to test all three pairwise comparisons. When moderators were included in the model, the level-1 equation stayed the same but the level-2 equation became (using in-person worker status as an example):

$$b_{1d} = b_{10} + b_{11}(InWork_d) + \zeta_{1d}$$

$$b_{2d} = b_{20} + b_{21}(InWork_d) + \zeta_{2d}$$

$$b_{3d} = b_{30} + b_{31}(InWork_d)$$

$$b_{4d} = b_{40} + b_{41}(InWork_d)$$

$$b_{5d} = b_{50} + b_{51}(InWork_d)$$

$$b_{6d} = b_{60} + b_{61}(InWork_d)$$

The six coefficients are each further explained by in-person worker status. The b_{31} coefficient, for example, describes how much the change in social network size from pre-COVID to COVID 1 differs for a husband who worked in-person versus one who did not work in-person at the COVID 1 assessment.

There were 12 dependent variables in this study: For each of the total, family, friend and coworker networks, we calculated a face-to-face, virtual, and face-to-face *or* virtual network size. Supplemental materials (Haggerty, 2023), including question text, syntax, data file, tables, and codebook are available online: https://osf.io/vef8t/. These analyses were not preregistered.

Results

Did Social Networks Shrink After the Onset of the Pandemic?

Compared to before the pandemic, husbands reported seeing 11.3 fewer people face-to-face on average at the first COVID assessment (b = -11.3, t = -32.7, p < .01), while wives reported seeing 10.9 fewer people on average (b = -10.9, t = -33.9, p < .01), a decline of 47% and 46%, respectively (see Figure 2-1 and Table 2-1). The change for husbands was not significantly different from the change for wives (b = 0.4, t = 1.0, p = .34). From COVID 1-3, husbands' face-to-face interactive network size increased by 0.9 people (b = 0.9, t = 4.8, p < .01) and wives' network size increased by 1.2 people (b = 1.2, t = 6.7, p < .01). These increases were also not significantly different from one another (b = 0.3, t = 1.2, p = .22). Although this was a statistically significant recovery for both spouses, 18 months after the onset of the pandemic, the average face-to-face interactive network size remained down by 40% for husbands and 36% for wives compared to pre-pandemic levels.

Although government agencies encouraged people with internet access to compensate for the mandated constraints on face-to-face interactions by increasing virtual interactions, virtual social networks also experienced lasting declines during the first year of the pandemic (see Figure 2-2). From pre-COVID to COVID 1, husbands' average virtual network size decreased by 9.4 people (b = -9.4, t = -19.9, p < .01) and wives' average virtual network size decreased by 7.5 people (b = -7.5, t = -16.4, p < .01), declines of 39% and 32%, respectively. Husbands' declines

in virtual network size were significantly greater than that of wives (b = 1.9, t = 3.5, p < .01). Neither husbands' nor wives' virtual networks recovered significantly between COVID 1 and COVID 3 (husbands: b = -0.4, t = -1.4, p = .17; wives: b = -0.3, t = -1.1, p = .27). By 18 months after the beginning of the pandemic, average virtual network size was down 42% for husbands and 34% for wives.

If spouses were primarily interacting with network members through *both* face-to-face and virtual contact prior to the pandemic, but only one modality after the pandemic began, then their total (i.e., face-to-face or virtual) interactive networks might have remained stable even though face-to-face and virtual interactive networks both shrank. However, even when we allowed for such shifts by considering network members with whom spouses had face-to-face or virtual contact, we continued to observe substantial and lasting declines in the total interactive network after the onset of the pandemic. These declines were not as drastic as they were in the separate face-to-face or virtual networks: From pre-COVID to COVID 1, husbands had virtual or face-to-face interactions with 6.3 fewer people (b = -6.3, t = -19.2, p < .01) and wives with 5.4 fewer people on average (b = -5.4, t = -19.7, p < .01), a decline of 27% and 23%, respectively (see Figure 2-3). Again, the decrease for husbands was significantly greater than the decrease for wives (b = 0.9, t = 2.4, p = .02). After these initial losses, husbands' total interactive networks experienced no significant recovery between COVID 1 and COVID 3 (b = 0.1, t = 0.4, p = .72). Wives' total networks recovered only slightly from COVID 1 to COVID 3 (b = 0.4, t = 2.6, p < .01), but this change was not significantly different than the change that husbands experienced (b = 0.3, t = 1.6, p = .12). Thus, 18 months into the pandemic, husbands' average total interactive network size was still 26% lower and wives' average total interactive network size was 20% lower than pre-pandemic levels.

A possible reason for these declines is that deaths due to COVID-19 removed people from the network. At COVID 1, spouses indicated that only 3.2% of all network members had contracted the virus, and over the following two data collection periods spouses spontaneously reported 0.6% of their network members had died from COVID-19. Thus, deaths from COVID were not nearly frequent enough within this sample to account for the declines in network relationships observed here.

Which Relationships Were Most Affected by Shrinking Social Networks?

When lockdowns and social distancing measures were imposed, we might have expected that more distal relationships (e.g., coworkers) would shrink more than closer relationships (e.g., friends and family). In fact, Table 2-1 reveals significant and lasting declines for husbands and wives within all subnetworks.

As the table reveals, face-to-face interactions with spouses' family, friend, and co-worker subnetworks each shrank significantly from pre-COVID to COVID 1. In terms of gender differences, wives experienced larger decreases in their family subnetwork size (b = -1.0, t = -3.9, $p < .01$), but husbands experienced larger decreases in both the friend (b = 0.6, t = 2.1, p = .04) and coworker (b = 1.1, t = 5.5, $p < .01$) subnetworks. For husbands and for wives, the family subnetwork recovered slightly from COVID 1 to COVID 3 (husbands: b = 0.5, t = 4.9, $p < .01$; wives: b = 0.6, t = 4.6, $p < .01$), but even with those recoveries, husbands and wives, who on average saw 89% and 86% of their families face-to-face pre-COVID, saw only 64% and 63% of their families face-to-face by COVID 3. Face-to-face interactions with the friend subnetwork followed a similar pattern, recovering significantly from COVID 1 to COVID 3 for husbands and wives (husbands: b = 0.4, t = 2.7, $p < .01$; wives: b = 0.4, t = 3.5, $p < .01$), but not reaching pre-COVID levels. Wives on average saw 85% of their friends face-to-face before COVID, but only

41% in-person by COVID 3, while husbands on average saw 87% of their friends face-to-face before COVID but only 41% in person by COVID 3. Face-to-face interactions with the coworker subnetwork did not recover from COVID 1 to COVID 3 for either husbands ($b = 0.0$, $t = 0.4$, $p = .69$) or wives ($b = 0.1$, $t = 1.7$, $p = .09$). By 18 months into the pandemic, husbands and wives were both interacting with about 50% fewer coworkers on average compared to pre-COVID.

For husbands and wives, virtual interactions also declined on average for all three subnetworks from pre-COVID to COVID 1 and did not rebound significantly over the subsequent assessments. Husbands experienced greater declines than wives from pre-COVID to COVID 1 in both the friend ($b = 1.0$, $t = 3.6$, $p < .01$) and coworker ($b = 1.2$, $t = 6.2$, $p < .01$) subnetworks. Both spouses had pre-COVID virtual interactions with 83-88% of each of their three subnetworks, but this had declined to 36-55% by 18 months into the pandemic. In other words, consistent with the findings for the overall network, spouses were not increasing their virtual contact with family, friends, or coworkers to compensate for the decline in face-to-face contact in each of these subnetworks.

Considering network members contacted through face-to-face *or* virtual interactions, Table 2-1 shows that all three subnetworks declined significantly from pre-COVID to COVID 1 for husbands and wives, with the only indication of recovery coming from wives' family interactions between COVID 1 and COVID 3 ($b = 0.4$, $t = 4.3$, $p < .01$). Wives experienced steeper declines than husbands in face-to-face *or* virtual interactions with family from pre-COVID to COVID 1 ($b = -0.6$, $t = -3.2$, $p < .01$), but recovered more quickly during COVID ($b = 0.2$, $t = 2.2$, $p = .03$). Husbands, however, experienced larger declines from pre-COVID to COVID 1 for both the friend ($b = 0.8$, $t = 3.4$, $p < .01$) and coworker ($b = 0.8$, $t = 4.8$, $p < .01$) subnetworks. Prior to COVID, husbands and wives interacted with 97% of their family in-person

or virtually; by COVID 3, this average had declined to 85% for husbands and 87% for wives. Prior to COVID, husbands and wives interacted with friend and coworker subnetworks at similarly high rates (97-98%), but the average declines in these subnetworks were much larger. By 18 months into the pandemic, husbands were interacting face-to-face or virtually with only 65% of their friends and 63% of their coworkers on average, and wives were interacting with 73% of their friends and 63% of their coworkers on average.

Whose Social Networks Shrank the Most?

In-Person Workers vs. Non-In-Person Workers

Table 2-2 displays how in-person workers and non-in-person workers differed in total network size change. Unsurprisingly, compared with non-in-person workers, in-person workers experienced less drastic decreases in face-to-face network size compared with non-in-person workers (husbands: $b = 2.3$, $t = 3.0$, $p < .01$; wives: $b = 1.7$, $t = 2.6$, $p = .01$), although there were no differences in recovery between COVID 1 and COVID 3. Perhaps because they had maintained more of their face-to-face interactions, husbands who worked in-person experienced larger decreases in their virtual network size from pre-COVID to COVID 1 ($b = -2.4$, $t = -2.3$, $p = .02$). Wives who worked in-person experienced a larger decrease in virtual network size across COVID 1 to COVID 3 than those who did not work in-person ($b = -1.4$, $t = -2.8$, $p < .01$). With respect to the total interactive network (face-to-face *or* virtual interactions), wives who worked in-person had smaller decreases from pre-COVID to COVID 1 ($b = 2.2$, $t = 3.9$, $p < .01$), but larger decreases from COVID 1 to COVID 3 ($b = -1.0$, $t = -3.4$, $p < .01$). There were no significant group differences in the total interactive network for husbands.

Racial/Ethnic Differences

As Table 2-2 reveals, the pandemic had significantly different effects on the social networks of Latinx, Black, and White spouses. With respect to face-to-face interactions for husbands, there were no significant differences among racial/ethnic groups in the immediate effects of the pandemic on social networks, but there were significant differences in recovery. Over the 18 months of the pandemic that we studied, White husbands' face-to-face networks had recovered significantly more than those of Black husbands ($b = 2.7$, $t = 3.1$, $p < .01$) and Latinx husbands ($b = 1.7$, $t = 2.9$, $p < .01$). For wives, racial/ethnic differences were evident at the outset of the pandemic. White wives had significantly less drastic declines in their face-to-face network size than Black wives ($b = 3.1$, $t = 2.0$, $p = .04$), and Latinx wives similarly experienced less drastic declines in face-to-face network size than Black wives ($b = -2.7$, $t = -2.2$, $p = .03$).

With respect to virtual interactions, Table 2-2 reveals only that White husbands experienced smaller decreases in virtual network size from pre-COVID to COVID 1 compared to Latinx husbands ($b = 3.7$, $t = 2.5$, $p = .01$). There were no differences in virtual network size recovery from COVID 1 to COVID 3 for either husbands or wives.

With respect to the total interactive network (face-to-face *or* virtual), there were no differences in network size change between Black and Latinx husbands or wives, but the total networks of White husbands did not decrease as drastically as those of Latinx husbands from pre-COVID to COVID 1 ($b = 2.1$, $t = 2.0$, $p = .04$), and the same was true for White wives ($b = 2.1$, $t = 2.3$, $p = .02$). Additionally, White wives experienced significantly smaller decreases in total network size from pre-COVID to COVID 1 compared to Black wives ($b = 2.7$, $t = 2.0$, $p = .04$). There were no differences in face-to-face *or* virtual network size recovery from COVID 1 to COVID 3 for husbands or wives. Consistent across these findings in all three network types is

that White spouses experienced significantly smaller declines and greater recovery in network size than Latinx and Black spouses.

Income

As Table 2-2 reveals, income was a robust predictor of the recovery of the face-to-face network. Husbands and wives with greater income had significantly larger increases in face-to-face network size from COVID 1 to COVID 3 (husbands: $b = 0.5$, $t = 2.2$, $p = .03$; wives: $b = 0.6$, $t = 2.6$, $p < .01$). Consistent with the idea that individuals with higher incomes have greater access to technologies facilitating virtual interactions, higher income spouses had smaller decreases in their virtual network size from pre-COVID to COVID 1 (husbands: $b = 1.4$, $t = 2.3$, $p = .02$; wives: $b = 1.3$, $t = 2.0$, $p = .04$). With respect to the total interactive network (face-to-face *or* virtual), higher income generally predicted smaller declines in network size from pre-COVID to COVID 1 for both husbands and wives (husbands: $b = 1.3$, $t = 2.9$, $p < .01$; wives: $b = 2.0$, $t = 5.5$, $p < .01$).

Density

Table 2-2 reveals that there were no significant effects of density on total network size. Additional tables provided in the online supplement, however, show that density was a strong predictor within subnetworks. Generally, higher density networks were associated with larger decreases in family interactions and smaller decreases in friend interactions. For example, wives with 10% denser pre-COVID networks experienced larger declines in family network size from pre-COVID to COVID 1 by approximately 0.4 family members face-to-face ($b = -3.6$, $t = -4.0$, $p < .01$) and 0.3 family members virtually ($b = -2.8$, $t = -2.5$, $p = .01$), but smaller declines in friend network size from pre-COVID to COVID 1 by approximately 0.5 friends face-to-face ($b = 4.7$, $t = 5.7$, $p < .01$) and 0.2 friends virtually ($b = 2.2$, $t = 2.7$, $p < .01$). Husbands with denser

networks, like wives, also had steeper decreases in family virtual network size from pre-COVID to COVID 1 (b = -5.2, t = -3.7, p < .01), but greater recovery from COVID 1-3 (b = 1.7, t = 2.3, p = .02).

Discussion

During the initial spread of COVID-19, social distancing mandates and lockdowns aimed to limit face-to-face interactions within social networks. To evaluate the effects of these policies, the current analyses drew upon multiple waves of social network interviews conducted before and throughout the first 18 months of the pandemic within a population at disproportionate risk of suffering the effects of the virus – primarily non-White couples with school-age children recruited from lower-income communities (Khanijahani et al., 2021; Truong & Asare, 2021). Whereas spouses regularly interacted with almost all of their network members in-person prior to the pandemic, during the first months of the pandemic, when restrictions on socializing were at their peak, they interacted with less than 50% of those individuals.

Further analyses refined this picture in several ways. First, networks did not recover fully, even 18 months later when the most severe restrictions were lifted and the first vaccines had become available. Second, technology compensated for the loss of in-person interactions only partially: Virtual interactions also declined overall, and total interactive networks defined by face-to-face or virtual interactions still experienced lasting (if smaller) declines. Third, these declines were not confined to distal relationships: Coworkers, friends, and family subnetworks all contracted significantly. Thus, relationships that were regular parts of couples' interactive social networks were put on hold in the immediate onset of the pandemic, and most of those relationships remained on hold 18 months later. The well-documented rise in loneliness therefore cannot be understood as a response to stress or anxiety (e.g., Werner et al., 2021) but rather

corresponds with an actual decline in social network relationships during the pandemic (Knox et al., 2022).

What happened to those lost relationships? One explanation for shrinking social networks in the first years of the pandemic is that efforts to avoid spreading or contracting the virus inhibited the central behaviors through which relationships are sustained. Interdependence theory has long proposed that maintaining relationships, particularly close relationships, requires regular interactions over sustained periods of time (Kelley et al., 1983). When circumstances (e.g., long distance) inhibit or prevent those interactions, partners report expending greater effort (Belus et al., 2019), and experiencing more stress (Du Bois et al., 2016) and greater uncertainty (Sahlstein, 2006). It is not hard to imagine that some relationships, forced by lockdowns and social distancing guidelines to confront these same challenges during the pandemic, did not survive. In this way, the COVID-19 pandemic may have accelerated trends toward less and less social interaction that began years prior to the pandemic. Compared to the 20th century, people in the first decades of the 21st century were already maintaining smaller networks of close relationships than they once did (McPherson et al., 2006; Putnam, 2000), despite the boom in virtual technologies in part designed to replace or supplement in-person interactions. Our results suggest that when partners are only able to communicate virtually because of a restriction in face-to-face interactions, relationships may wither or cease, likely in part because people do not experience the same support via virtual interactions that they experience during in-person interactions (Geirdal et al., 2021; Holtzman et al., 2017; van der Velden et al., 2021).

A second possible source of disruption is the growing political divide in the United States (Abramowitz & McCoy, 2019). During this pandemic, attitudes towards vaccinations, masking, and social distancing have become topics of emotional disagreement in many areas (Bruine de

Bruin et al., 2020; Gollust et al., 2020). Given limited opportunities to maintain any relationships during this time, people may have invested in network members with more similar beliefs (McPherson et al., 2001), and let network members who expressed disagreement fall away. Given that conservative-leaning areas in the United States were significantly less likely to practice social distancing than liberal-leaning areas (Gollwitzer et al., 2020), future work could address how the network change processes documented here vary by political orientation.

The social costs of COVID did not fall equally on everyone. Couples who worked outside the home experienced smaller initial declines in their face-to-face networks, presumably because the demands of work and social obligation left them less able to avoid social interactions than couples who worked remotely. Those with denser (i.e., more interconnected) pre-pandemic networks had a more difficult time maintaining connection with family but wives with denser networks lost fewer friends. People have reported being particularly fearful of infecting family members with COVID-19 (Luttik et al., 2020; Sloan et al., 2021), so those with tight-knit networks in which the virus could easily spread may have been even more likely to stay away from family. Demographic variables also made a difference. Even within a sample exclusively recruited from lower-income communities, couples with higher incomes maintained more of their relationships throughout the pandemic than less affluent couples, especially when virtual interactions were taken into account. This suggests that sustaining relationships may have been supported by access to technologies facilitating virtual contact (e.g., high speed wireless internet), which are less available to less affluent families (Catalano et al., 2021). Finally, racial/ethnic identification accounted partly for differences in the initial effects of the pandemic on network size and in rates of recovery, such that the networks of White spouses decreased less drastically and recovered more than networks of Black or Latinx spouses. The fact that less

affluent and non-White groups, who were at greatest risk of contracting COVID in the early years of this pandemic (Khanijahani et al., 2021), also experienced the most sustained contraction of their social networks in this sample suggests that social distancing might have been an insufficient strategy for preventing the virus in these groups, and highlights the need to examine unique mechanisms of transmission in different populations (Wong & Li, 2020). One possible explanation is that less affluent and non-White groups are also those most likely to experience overcrowded housing conditions, which may facilitate the spread of COVID even when interactions outside the home are constrained (Ghosh et al., 2021; Mejia et al., 2022, October 19).

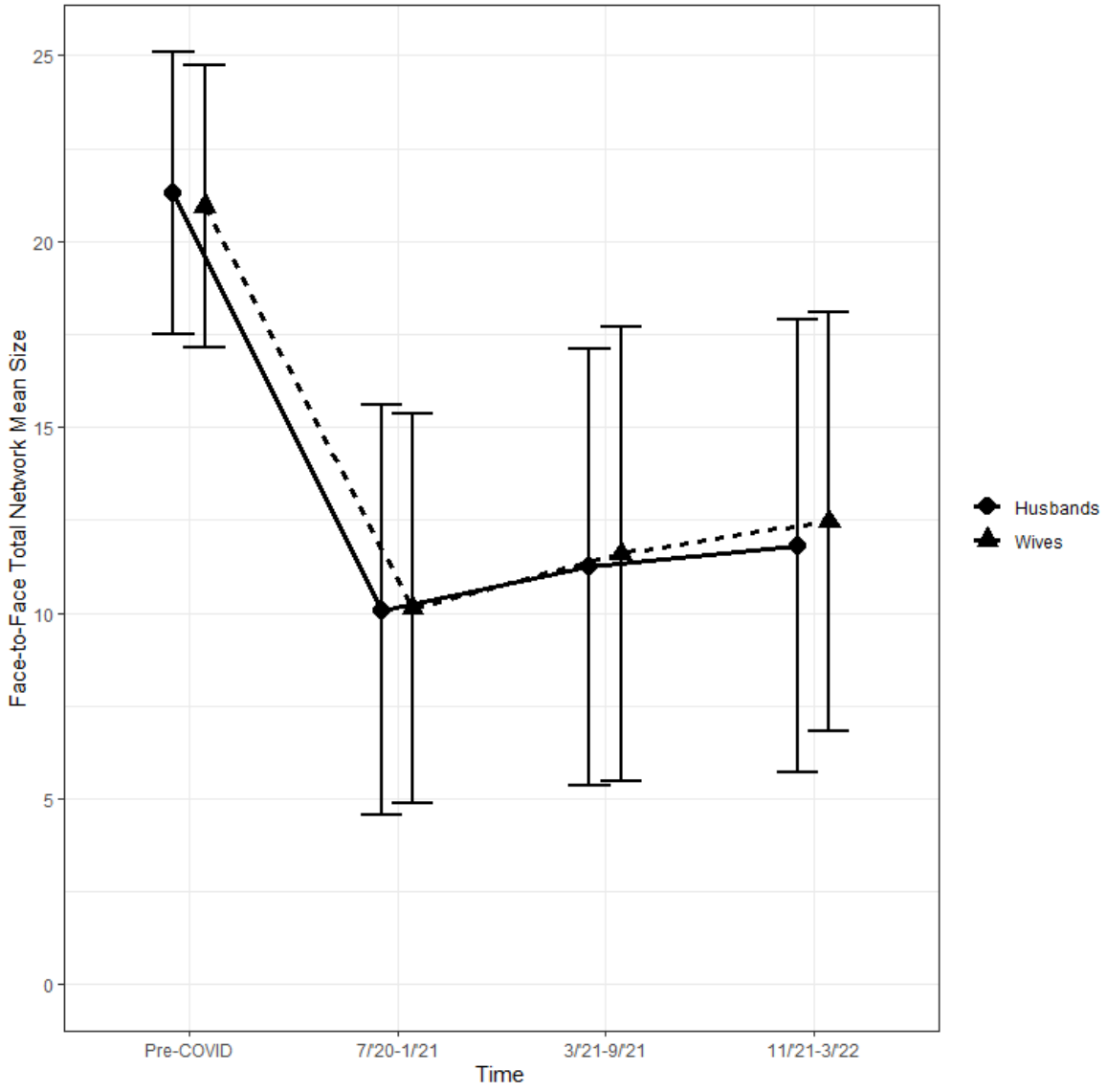
Despite widespread interest in the social costs of COVID (Ernst et al., 2022), this is the first study to describe changes in social interactions using detailed interviews collected before and during the early years of the pandemic. Although longitudinal data lend confidence that the patterns reported here are free from retrospective biases, it should be noted that all interviews were collected from mixed-gender married couples recruited from lower-income neighborhoods in Los Angeles County. By virtue of their age and marital status, these couples were likely to have had stronger social networks at the outset of the pandemic than unmarried couples, individuals without partners, or older adults (Acock & Hurlbert, 1993; Wrzus et al., 2013). Were this research to be replicated in these other groups, observed declines in social network interactions may be even steeper. Additionally, despite the advantages of more than 18 months of COVID-19 data, the pandemic continues. Thus, we cannot rule out the possibility that social network size has recovered or may still recover to its pre-pandemic levels over time.

As the COVID pandemic continues, and as health officials plan for future pandemics, these findings highlight a tension between the goal of preventing virus transmission and the need

to preserve social relationships, especially in vulnerable or underserved populations under stress. One suggestion for managing this tension has been to impose even more severe restrictions on social life, in hopes that the faster a virus is contained, the sooner normal interactions can resume (Coccia, 2021). Yet our findings suggest that the costs of these restrictions manifest quickly, and then persist even after the most severe restrictions are lifted. Thus, these results support public health strategies that balance the requirements of preventing transmission with the requirements of maintaining connection, e.g., facilitating access to virtual technologies for vulnerable populations, creating safer public transport systems, public spaces, and working conditions, and promoting the use of masking (Michie & West, 2021). Ultimately, recovery from this pandemic and prevention of the next one may require social solutions as much as medical ones.

Figure 2-1

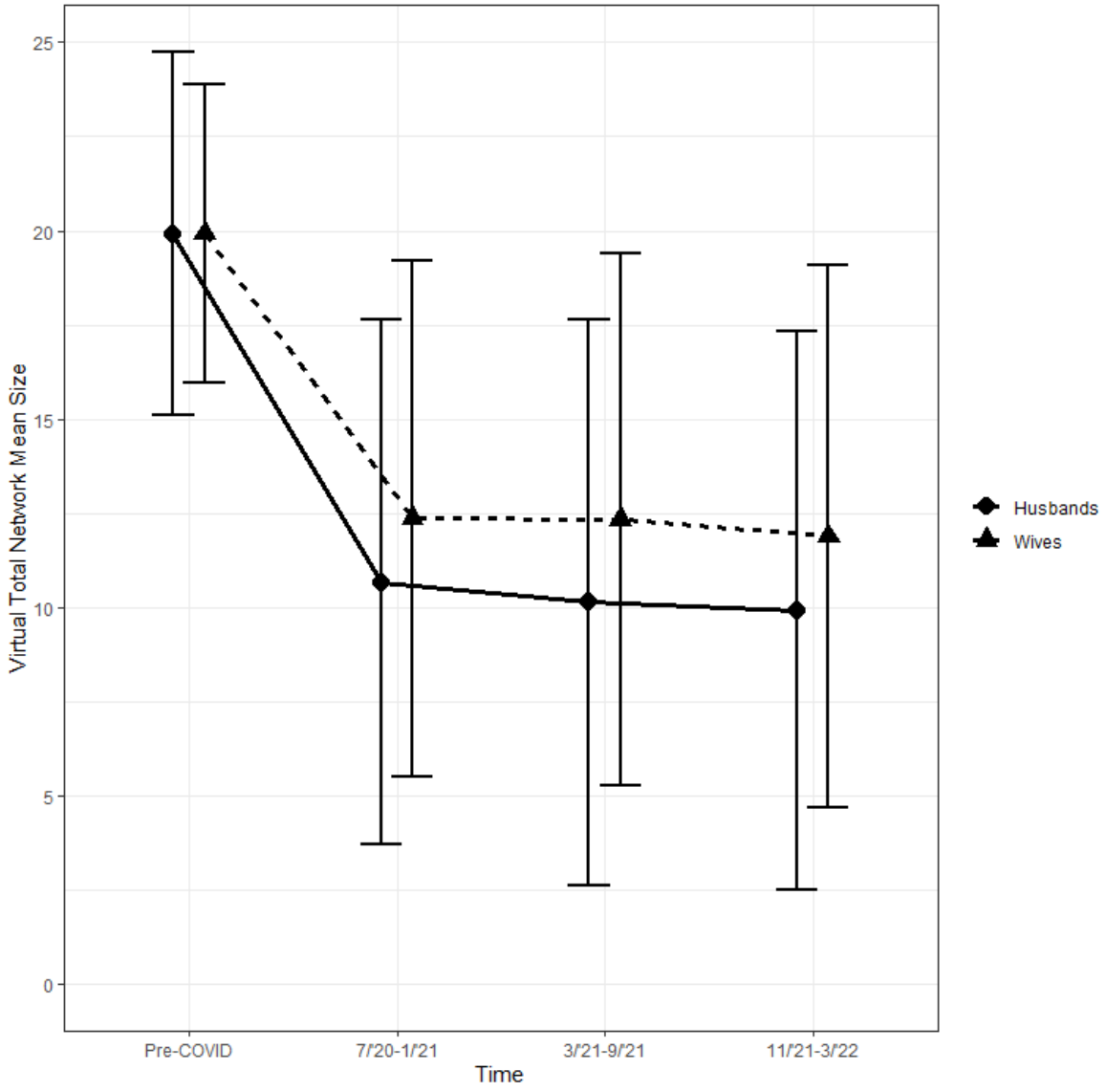
Change in Face-to-Face Network Size of Total Network



Note. Mean face-to-face total network size decreased from pre-COVID to COVID 1 for husbands and wives and recovered only slightly over the next 1.5 years. Bars represent +/- 1 standard deviation from the mean.

Figure 2-2

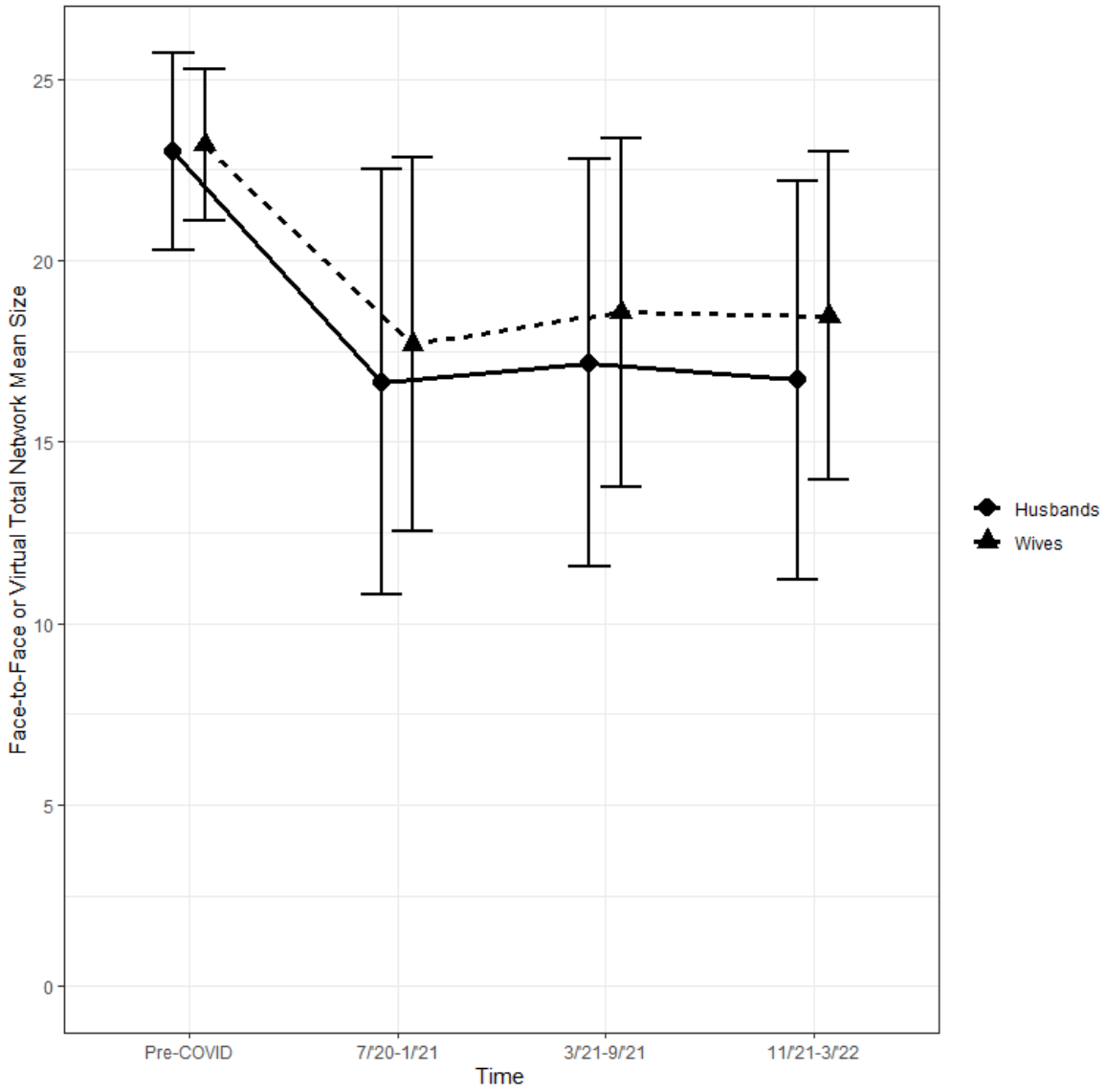
Change in Virtual Network Size of Total Network



Note. Mean virtual total network size decreased from pre-COVID to COVID 1 for husbands and wives and did not recover over the next 1.5 years. Bars represent +/- 1 standard deviation from the mean.

Figure 2-3

Change in Face-to-Face or Virtual Network Size of Total Network



Note. Mean face-to-face or virtual total network size decreased from pre-COVID to COVID 1 for husbands and wives and did not recover to pre-pandemic levels. Bars represent +/- 1 standard deviation from the mean.

Table 2-1

Average Interactive Network Size Change Across Subnetworks and Network Types

	F2F Interactive Network Size		Virtual Interactive Network Size		F2F or Virtual Interactive Network Size	
Husbands	**Pre-COVID to COVID 1 (*b* (SE))**	**COVID 1-3 (*b* (SE))**	**Pre-COVID to COVID 1 (*b* (SE))**	**COVID 1-3 (*b* (SE))**	**Pre-COVID to COVID 1 (*b* (SE))**	**COVID 1-3 (*b* (SE))**
Total	**-11.3 (0.3)****	**0.9 (0.2)****	**-9.4 (0.5)****	-0.4 (0.3)	**-6.3 (0.3)****	0.1 (0.2)
Family Subnetwork	**-3.1 (0.2)****	**0.5 (0.1)****	**-3.4 (0.3)****	0.0 (0.1)	**-1.4 (0.1)****	0.1 (0.1)
Friend Subnetwork	**-4.8 (0.2)****	**0.4 (0.1)****	**-3.3 (0.2)****	**-0.3 (0.1)***	**-2.7 (0.2)****	0.0 (0.1)
Coworker Subnetwork	**-2.4 (0.2)****	0.0 (0.1)	**-1.9 (0.2)****	-0.1 (0.1)	**-1.4 (0.1)****	-0.1 (0.1)
Wives	**Pre-COVID to COVID 1 (*b* (SE))**	**COVID 1-3 (*b* (SE))**	**Pre-COVID to COVID 1 (*b* (SE))**	**COVID 1-3 (*b* (SE))**	**Pre-COVID to COVID 1 (*b* (SE))**	**COVID 1-3 (*b* (SE))**
Total	**-10.9 (0.3)****	**1.2 (0.2)****	**-7.5 (0.5)****	-0.3 (0.3)	**-5.4 (0.3)****	**0.4 (0.2)****
Family Subnetwork	**-4.0 (0.2)****	**0.6 (0.1)****	**-3.8 (0.3)****	-0.1 (0.2)	**-2.0 (0.2)****	**0.4 (0.1)****
Friend Subnetwork	**-4.2 (0.2)****	**0.4 (0.1)****	**-2.3 (0.2)****	-0.1 (0.1)	**-1.9 (0.1)****	0.0 (0.1)
Coworker Subnetwork	**-1.3 (0.1)****	0.1 (0.1)	**-0.7 (0.1)****	0.0 (0.1)	**-0.7 (0.1)****	0.0 (0.0)

Note. *$p < .05$; **$p < .01$. Bold values indicate statistically significant effects.

Table 2-2

Effects of Individual Differences on Total Interactive Network Sizes

	F2F Interactive Network Size		Virtual Interactive Network Size		F2F or Virtual Interactive Network Size	
Husbands	**Pre-COVID to COVID 1 (*b* (SE))**	**COVID 1-3 (*b* (SE))**	**Pre-COVID to COVID 1 (*b* (SE))**	**COVID 1-3 (*b* (SE))**	**Pre-COVID to COVID 1 (*b* (SE))**	**COVID 1-3 (*b* (SE))**
In-Person/Non-In-Person Worker Mean Difference	**2.3 (0.8)****	-0.7 (0.4)	**-2.4 (1.0)***	0.5 (0.5)	0.6 (0.7)	0.3 (0.4)
White/Black Mean Difference	0.0 (1.6)	**2.7 (0.9)****	3.0 (2.2)	-0.2 (1.2)	2.6 (1.5)	0.6 (0.8)
White/Latinx Mean Difference	-0.1 (1.1)	**1.7 (0.6)****	**3.7 (1.5)***	-0.1 (0.8)	**2.1 (1.0)***	0.5 (0.6)
Black/Latinx Mean Difference	-0.2 (1.3)	-1.0 (0.7)	0.7 (1.8)	0.0 (1.0)	-0.5 (1.2)	-0.1 (0.7)
Per $100,000 Income Mean Difference	0.4 (0.5)	**0.5 (0.2)***	**1.4 (0.6)***	-0.2 (0.3)	**1.3 (0.4)****	0.1 (0.2)
Density Mean Difference	2.4 (1.8)	-0.3 (1.0)	-1.6 (2.4)	2.2 (1.3)	3.3 (1.8)	0.5 (1.0)
Wives	**Pre-COVID to COVID 1 (*b* (SE))**	**COVID 1-3 (*b* (SE))**	**Pre-COVID to COVID 1 (*b* (SE))**	**COVID 1-3 (*b* (SE))**	**Pre-COVID to COVID 1 (*b* (SE))**	**COVID 1-3 (*b* (SE))**
In-Person/Non-In-Person Worker Mean Difference	**1.7 (0.6)***	-0.7 (0.4)	1.3 (0.9)	**-1.4 (0.5)****	**2.2 (0.5)****	**-1.0 (0.3)****
White/Black Mean Difference	**3.1 (1.5)***	1.3 (0.8)	0.6 (2.2)	0.6 (1.2)	**2.7 (1.3)***	0.1 (0.7)
White/Latinx Mean Difference	0.4 (1.0)	0.9 (0.6)	2.5 (1.5)	-0.4 (0.8)	**2.1 (0.9)***	-0.3 (0.5)
Black/Latinx Mean Difference	**-2.7 (1.2)***	-0.3 (0.7)	2.0 (1.8)	-1.0 (1.0)	-0.6 (1.1)	-0.4 (0.6)
Per $100,000 Income Mean Difference	0.6 (0.4)	**0.6 (0.2)****	**1.3 (0.6)***	-0.2 (0.3)	**2.0 (0.4)****	-0.3 (0.2)
Density Mean Difference	2.2 (1.3)	0.3 (0.7)	0.1 (1.8)	0.1 (1.0)	1.7 (1.1)	0.6 (0.6)

Note: *$p < .05$; **$p < .01$. Bold values indicate statistically significant effects.

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Chapter 3:

Social and Temporal Comparisons Moderate the Association Between Financial Status and Marital Satisfaction

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Abstract

Although income is strongly and consistently associated with divorce, there is little evidence that couples with lower incomes are less satisfied in their marriages. This study proposes two reasons this may be true. First, financial difficulties, such as the ability to pay bills, may be a better indicator of how satisfied couples are. Second, couples may use information about their financial standing relative to others (i.e., the social context) and information about how their income has changed over time (i.e., the temporal context) when evaluating their current financial situation. In a diverse sample of 431 couples interviewed 10 times over a 13-year period, I show that financial difficulties are a stronger and more consistent predictor of satisfaction than income. Additionally, wives' satisfaction is associated with financial comparisons to close others. The social and temporal contexts also moderate the association between income or financial difficulties and satisfaction. These results suggest that our current understanding of how couples' economic conditions influence marital satisfaction is an underestimate of the true role of finances in couples' lives.

Social and Temporal Comparisons Moderate the Association Between Financial Status and Marital Satisfaction

Divorce rates vary widely across levels of socioeconomic status (Burgess et al., 2003; Karney et al., 2022; Nunley & Seals, 2010). Whereas 23% of couples with higher incomes separate or divorce within the first 10 years of marriage, the risk for lower income couples is 42% (Bramlett & Mosher, 2002). Among women aged 33-44, those with less than a college degree are almost twice as likely to be divorced than those who have a college degree (Lundberg et al., 2016).

Living with a lower income may be associated with a higher risk of divorce for two reasons. First, consistent with family stress theories (e.g., Conger et al., 1999; Karney & Bradbury, 1995), divorce rates may be higher among couples living with lower incomes because financial stress interferes with spouses' ability to nurture and maintain their relationships. For example, couples with lower incomes can find it more difficult to obtain quality childcare (Dowsett et al., 2008), obtain medical care (Lusardi et al., 2015), and access transportation (Lee et al., 2017). Thus, poorer couples may be spending more time dealing with these stressors and less time with family; indeed, poorer individuals tend to spend less quality time with children (Guryan et al., 2008) and engage in less leisure time with their relationship partners (Tubbs et al., 2005).

Second, because providing economically is a central expectation in marriages, especially in lower-income marriages (Edin & Reed, 2005), a lower income might reflect poorly on a relationship partner (Li & Fung, 2011; Waller & McLanahan, 2005). Given the importance that partners place on one another's ability to provide, it is no surprise that couples argue about money frequently (Aniol & Synder, 1997; Williamson, Hanna, et al., 2013). Couples may draw a

parallel between financial responsibility and relationship stability (Gibson-Davis et al., 2005), such that a failure in the financial domain is a failure to fulfill an expected role, thereby becoming a basis for evaluating the relationship negatively. For example, in one study an engaged partner noted: "If we're married, your debt becomes my debt, too, and I hate having any debt. I trust you, but you haven't done a great job of paying this off" (Shapiro, 2007). In sum, there are multiple reasons that couples living with lower incomes may experience lower marital satisfaction, consistent with their higher rates of divorce.

The Elusive Income-Satisfaction Association

Do couples living with lower incomes in fact experience lower marital satisfaction on average? Despite the strong theoretical reasons to expect such an association, studies with large, racially diverse samples with sufficient variability in income to detect effects have found that the association between income and marital satisfaction is weak at best. For example, one study which utilized two large and nationally representative data sets found a marginally significant association between income and marital satisfaction in one sample and no significant association in the other (Hardie & Lucas, 2010). Additionally, in a diverse sample of 355 Black and White couples, Birditt et al. (2017) documented no significant association between household income and either husbands' or wives' marital satisfaction or conflict. In another sample of 431 couples, Cui and Donnellan (2009) found no significant association between income and marital satisfaction for husbands or wives. In a diverse sample of 2,341 individuals in a romantic relationship (74.9% married), Maisel and Karney (2012) found no direct correlation between household income and relationship satisfaction. Even though living with a lower income increases couples' exposure to stress (Rothwell & Han, 2010; Santiago et al., 2011), research to

date finds little evidence of the expected positive correlation between income and marital satisfaction.

Alternatives to Assessing Income

Given the strong and consistent associations between income and divorce, the failure to observe consistent associations between income and relationship satisfaction is puzzling. One explanation may be that self-reports of household income do not capture how couples experience their financial status. A more direct measure may be spouses' reports of their ability to pay for necessities or basic discretionary items (Falconier et al., 2019). Although higher income is related to a greater ability to meet financial obligations, couples at every income level nevertheless vary in their ability to pay for necessities (French & Vigne, 2019). Spouses' reports of their capacity to pay for goods and services are strongly associated with their likelihood of divorce. Indeed, couples who report more difficulties meeting their financial obligations are 80% more likely to get divorced than couples who report little to no difficulty (Kalmijn & Poortman, 2006; Poortman, 2005). Experiencing these difficulties, particularly over long periods of time, may indicate that partners are failing to fulfill the roles that partners expect one another to fulfill; reports of income alone do not provide this information. Additionally, experiencing financial difficulties may more directly address the stress that inhibits constructive problem-solving and warmth, reducing partners' capacity to communicate effectively (Falconier & Epstein, 2011a; Lau et al., 2019). Thus, even for two couples who earn the same income, the couple who has more trouble paying bills may argue more about money and may have fewer cognitive resources to communicate effectively (Falconier & Epstein, 2011a; Williamson, Karney, et al., 2013). We might expect, then, that financial difficulties are more consistently associated with marital

satisfaction than income levels, and several studies show this to be true (Archuleta et al., 2011; Kelley et al., 2018; Nguyen et al., 2021; Rauer et al., 2008).

Contexts Shape the Meaning of Income

A second explanation for why income is not more strongly associated with relationship satisfaction is that spouses may interpret a given level of income in multiple ways. An income level that is enough for one person may not be enough for another (DeLeire & Kalil, 2010; Powdthavee, 2010). Imagine three people who each have $100,000 incomes. One person may feel that this $100,000 reflects very poorly on themself (i.e., they believe they should be making more), one person is relatively neutral about the income, and one person feels that the $100,000 reflects very positively on themself (i.e., they are making more than expected). This applies not only to individuals but to couples, as relationship partners strongly evaluate current and potential household income when selecting into and maintaining marriages, particularly among women living with lower incomes (Edin, 2014; Gibson-Davis et al., 2005; Neff & Morgan, 2014). For the individual who started the marriage with little money and a single income, $100,000 through dual incomes may seem like a fortune and they might consider the marriage successful; conversely, an individual who was more fortunate to begin with and had loftier expectations may feel differently. Limited evidence suggests that this subjectivity extends beyond income to the ability to pay for bills and discretionary items, such that, for two couples, the same level of financial difficulty may reflect very poorly on the relationship for partners in one couple but less poorly on the relationship for partners in the other couple (Walker, 1996).

Social Comparisons and Income

Recognizing that the effects of income on relationship satisfaction may depend on how couples evaluate their incomes raises questions: How do couples evaluate their level of income?

How do they decide whether their financial status reflects well or poorly on their marriage? Festinger (1954) first noted that individuals evaluate themselves (their skill at a task, their personality, etc.) by comparing themselves to others, i.e., through *social comparisons*. This applies even to seemingly objective, quantifiable phenomena; as Festinger notes: "…one might find out how many seconds it takes a person to run a certain distance, but what does this mean with respect to his ability – is it adequate or not?" (p. 119). Just as knowing one's 40-yard dash time on its own is not enough to understand whether it is adequate, neither is knowing one's income. Several factors affect how likely it is that a social comparison will lead to emotional or behavioral reactions (Festinger, 1954). The more important the quality or ability that is being evaluated (e.g., a personal value vs. a weakly held belief) and the more relevant the group to which one is comparing (e.g., comparing basketball skills to professional players vs. friends), the stronger the behavioral and emotional response. For example, Festinger (1954) noted that people feel less confident about a formerly *strong* opinion when they learn that members of their *in-group* disagree with them. Since Festinger introduced his social comparison theory, researchers have specifically addressed these processes with respect to financial comparisons (Tang & Baker, 2016), showing that financial comparisons, particularly to relevant groups (e.g., close friends, coworkers), are strong predictors of emotions, life satisfaction, and physical health (Cheung & Lucas, 2016; Cundiff & Matthews, 2017; Smith & Huo, 2014).

Intimate partnerships are also evaluated through social comparisons. Prior research indicates that couples frequently compare their relationship to others and this comparison affects evaluations of the relationship (Rusbult et al., 2000). Morry et al. (2019), for example, noted that seeing other people in happy or unhappy relationships informs one's evaluation of their own relationship and partner. Seeing an unhappy couple that appears to be in a less satisfying

relationship than one's own indicates that one's own relationship partner is more fair-tempered and easier to get along with than the less satisfied partners. Experimental studies demonstrate that downward relationship comparison (i.e., to relationships with less positive attributes than one's own) is associated with an increase in relationship satisfaction, but comparisons to those in similar relationships is not (Buunk et al., 2001; Buunk & Ybema, 2003). Thus, consistent with the principles of social comparison theory (Festinger, 1954), when evaluating the state of their own finances, spouses should draw upon their knowledge of the economic conditions of the most relevant comparison group, i.e., members of their own social network. That is, there may be a *main effect* of financial social comparisons to relevant groups on marital satisfaction such that spouses who perceive themselves as doing better financially than their network should experience higher marital satisfaction.

To the extent that the meaning of spouses' current financial status depends on their relative standing within their social network, then social comparisons may also *moderate* the association between one's current financial situation (e.g., their income) and marital satisfaction. The more spouses perceive themselves to differ from the norm of their comparison group, the less relevant their objective level of a characteristic and the more relevant their relative standing is to evaluating the relationship (Buunk et al., 2001; Lockwood & Pinkus, 2013). The fact that spouses may perceive themselves to be better or worse off than their peers raises the possibility of a *curvilinear* interaction between economic conditions (e.g., income), financial social comparisons, and marital satisfaction. When one feels average financially compared to those around oneself, that comparison does not provide much information about the marriage. Rather, spouses should look to other information about their financial situation (e.g., income or financial difficulties) to evaluate how their marriage is doing. However, when doing much better *or* much

worse financially than those around oneself, levels of income or financial difficulties tell spouses less about how their marriage is doing. That is, at higher and lower levels of financial social comparisons, the association between income or financial difficulties and marital satisfaction may be weaker or even nonsignificant.

Temporal Comparisons and Income

To evaluate their financial status, spouses may draw upon more than comparisons with relevant peers. They may also compare their current status with their memories of their own status in the past, i.e., they may engage in temporal comparisons (Albert, 1977). Robert Easterlin (1974) observed that people tend to monitor how their finances change over time, and that their awareness of these changes affects their well-being over and above the effects of their absolute incomes. He noted: "If living levels increase generally, subjective living level norms rise. The individual whose income is unchanged will feel poorer, even though his or her objective circumstances are the same as before" (Easterlin, 1995, p. 36). There is some support for a *main effect* of changes in income on marital satisfaction. Rogers and DeBoer (2001) found that more positive changes in wives' income over an 8-year period were associated with greater marital satisfaction. However, this study only measured wives' income (not household income) and measured it at only two assessments. Additionally, since the 1980s when these data were collected, women's financial earning power has increased significantly, as has the proportion of dual-income families in the United States (Schwartz & Gonalons-Pons, 2016).

To the extent that the meaning spouses make of their current income depends on how their income has changed over time, then temporal comparisons may also *moderate* the association between current financial status and marital satisfaction, similar to what I described above for social comparisons. To the extent that the experience of income change influences

emotional and behavioral outcomes (Gardner & Oswald, 2007), a couple's current financial factors (e.g., income) may be less relevant for evaluating the relationship when their income has improved or worsened significantly. One study has provided some limited evidence for this hypothesis, showing that among couples whose financial prospects have *decreased*, even those that are financially stable lack confidence about the future (Boheim & Ermisch, 2001). Although absolute levels of income may not be as relevant for evaluating a marriage when income has changed drastically over time, spouses might use their current income to evaluate their marriage when income has changed at the same rate as those around them. Thus, when couples' incomes have changed by a moderate amount, it may be that those with more money are more satisfied with their marriage, i.e., a positive association between income and marital satisfaction (Dakin & Wampler, 2008).

I just described a curvilinear interaction involving changes in income, current income, and marital satisfaction. What happens when this interaction involves changes in income, *financial difficulties*, and marital satisfaction? First, we might expect the same curvilinear interaction: a weaker association between the capacity to pay for necessities and marital satisfaction when income has changed by greater or lesser amounts. It is possible that when income change is very high (i.e., financial situation has improved drastically), partners will possess the cognitive resources needed to avoid attributing financial difficulties to the relationship, and when income change is very low (i.e., financial situation has improved less than average/declined), financial difficulties are just one of many issues for the relationship and so may not be as relevant for evaluations of the marriage (Tesser & Beach, 1998). Thus, it may be only at moderate levels of income change or slightly below average that there is a negative association between financial difficulties and marital satisfaction.

Overview of the Current Study

Addressing how couples' social and temporal comparisons affect associations between their financial status and their marital satisfaction requires data on the financial status of spouses' social networks and longitudinal assessments of their income and marital satisfaction. By sampling from predominantly lower income neighborhoods, the current study collected such data from couples that varied widely in socioeconomic status (Roberts et al., 2020). Drawing upon a diverse sample of 431 husbands and wives interviewed 10 times over a 13-year period, I examined the following research questions and preregistered hypotheses:

1. *How is the objective measure of income and the capacity to pay for bills or other necessities related to marital satisfaction?* I hypothesize that income will be weakly positively associated with marital satisfaction, while difficulties paying bills will be negatively associated with marital satisfaction.
2. *Are economic social comparisons associated with marital satisfaction and do economic social comparisons moderate the effects of current financial factors on marital satisfaction?* I hypothesize that spouses who are doing better financially than relevant social network members will be more satisfied with their relationship. Additionally, the positive association between income and marital satisfaction (or negative association between difficulties paying for bills and satisfaction) will be stronger when couples are doing about average financially compared to those around them. Those associations will be weaker when couples are doing better or worse than those around them.
3. *Are prior changes in income associated with marital satisfaction and do changes in income moderate the effects of current financial factors on marital satisfaction?* I

hypothesize that spouses whose income has increased more in the past will be more satisfied with their relationship. Additionally, the positive association between income and marital satisfaction (or negative association between difficulties paying for bills and satisfaction) will be stronger when couples' incomes have increased by a normative amount. Those associations will be weaker when couples' incomes have increased more or less than the normative amount.

Method

Sampling

The sampling procedure was designed to yield first-married newlywed couples in which both partners were of the same race/ethnicity (i.e., Latinx, Black, or White), living in neighborhoods with a high proportion of low-income residents in Los Angeles County. Recently married couples were identified through names and addresses on marriage license applications filed during 2009, obtained from the Los Angeles County Recorder's Office. Addresses were matched with census data to identify applicants living in census block groups wherein the median household income was no more than 160% of the 1999 federal poverty level for a 4-person family. Names on the licenses were then weighted using data from a Bayesian Census Surname Combination, which integrates census and surname information to produce a multinomial probability of membership in each of four racial/ethnic categories. Couples were chosen using probabilities proportionate to the ratio of target prevalences to the population prevalences, weighted by the couple's average estimated probability of being Latinx, Black, or White. Couples were screened to ensure that they were married, that neither partner had been previously married, and that both spouses identified as Latinx, Black, or White. A total of 3,793 couples were identified through addresses listed on their marriage licenses. Of those, 2,049 could

not be reached and 1,522 (40%) responded to a mailing and agreed to be screened for eligibility. Of those, 824 couples were screened as eligible, and 658 (80%) of those couples agreed to participate in the study. A final baseline sample of 431 couples completed the initial assessment of this longitudinal study within the data collection window.

Participants

The baseline sample of this 10-wave longitudinal study consisted of 431 husbands and wives, but these analyses focus on 251 husbands and 259 wives from 260 couples that completed a Time 6 (approximately nine years into their marriage) or later interview, thus providing data on the main dependent variable, marital satisfaction. The 251 husbands and 259 wives who completed an interview at or after Time 6 did not differ significantly from those who did not on their age and baseline (i.e., Time 1) income, capacity to pay for bills and other items, and education. Husbands who completed the Time 6 interview also did not differ on baseline marital satisfaction from those who did not complete the Time 6 interview, although wives who completed the Time 6 interview were slightly more satisfied at baseline than those who did not complete the Time 6 interview, $t(277) = 2.55$, $p = .01$. At the Time 6 interview, wives ranged in age from 27 to 48 years old ($M = 35.8$, $SD = 4.8$) and husbands ranged in age from 27 to 60 years old ($M = 37.6$, $SD = 5.6$). Approximately 91% of wives and 89% of husbands reported receiving a high school diploma or greater, with 39% of wives and 34% of husbands receiving a college degree or higher education. Spouses were required to identify as Latinx, Black, or White during the screening process to be included in the study. Of the 259 wives, 80% identified as Latinx, 12% identified as White, and 8% identified as Black. The proportions were identical for husbands.

Procedure

Couples were interviewed five times between 2009-2014 at approximately 9-month intervals. In 2018-2019, couples were contacted for a sixth interview, which began a series of five more interviews between 2018-2022. Thus, couples who participated fully completed 10 interviews over a 14-year span.

Trained interviewers visited couples in their homes to verbally administer the interviews. They took spouses to separate areas, obtained informed consent, and conducted the interview in two parts. The first part was a standard interview from which I derive all non-social network information, including marital satisfaction, income, financial difficulties, and perceived social standing. The second part was a social network interview. Spouses were separately asked to name 25 network members (starting with their spouse) with whom they had any form of contact during the past year. Spouses then answered several questions about each of the 24 non-spouse individuals they named, including questions about the network members' financial standing.

Measures

Dependent Variable: Marital Satisfaction

Marital satisfaction was assessed at each interview with an 8-item scale. These analyses use the responses from Time 6 through the end of the study, Time 10. Five of the eight items asked the spouse how satisfied they were with a specific area of their relationship (e.g., "How satisfied are you with the way he/she contributes to household chores?"). Three items asked to what degree the spouse agreed with a statement about their relationship (e.g., "How much do you trust your partner?"). Individual measures were on 4- and 5-point scales. For these analyses, the 4-point scales were rescaled to 5-point scales by multiplying them by 1.25. The eight items were then averaged for each individual, creating a final composite measure with a possible range of

1.09-5.00. Higher scores indicated greater satisfaction with the marriage. Across assessments, Cronbach's alpha ranged from .78-.83 for wives and .81-.85 for husbands.

Financial Factors

The two variables below are meant to describe a couple's economic circumstances at a single time, specifically at Time 6 which is the first marital satisfaction measurement that I use in these analyses. Thus, these two financial factors are relevant for assessing cross-sectional associations with marital satisfaction and associations with changes in marital satisfaction.

Household Income. Spouses were separately asked to report their individual incomes at each assessment, and a household income measure was computed by adding spouses' reports of their individual incomes. At the Time 1 assessment, the median household income for the 259 couples who provided data was $52,000 (range: $2,500-$285,000). At Time 6, the median household income for the 242 couples who provided data was $88,500 (range: $14,000-$600,000). The household income measure will be based on an intercept (representing Time 6 income) calculated in the analytical models.

Financial Difficulties. At Time 6, spouses were asked 5 questions assessing the difficulty that couples had with primarily concrete financial tasks, such as paying for various bills and items (e.g., "During the past 9 months, how much difficulty did your household have paying bills?" and "Does your household have enough money to afford the kind of housing, food and clothing you feel you should have?"), each on a 0-3 scale (Angel et al., 2012). Individual items were averaged to create a composite measure with a possible range of 0-3. Cronbach's alpha of the 6 items was .74 for husbands and .76 for wives.

Social Comparison

Social Network Financial Standing. As part of the social network interview at Time 6, spouses were asked the following question about each of the 24 social network members they named: "Compared to you, how is [NAME] doing financially? Would you say [NAME] is doing worse than you, the same as you, or doing better than you?" Spouses also reported the type of relationship with each network member (e.g., friend, family member, coworker). Combining these two pieces of information, I calculated measures that captured the proportion of network members that the spouse was doing better or the same as financially in 1) the total network, 2) the friend subnetwork, and 3) the coworker subnetwork.

Perceived Social Standing. In addition to financial standing compared to specific network members, at the Time 6 interview spouses were also asked an adapted version of the MacArthur Scale of Subjective Social Status (Giatti et al., 2012), in which each spouse picked a rung on a ladder from 1-10 that best represented their social standing, where 1 represented the people in the United States with the lowest social standing and 10 represented the people with the highest social standing.

Analytic Plan

Analyses were conducted in Mplus Version 8.3. I used a latent variable modeling approach and allowed husbands' and wives' residuals to be correlated whenever possible to account for the interdependence between spouses' data. The analyses can be broken into four groups: 1) preliminary analyses, 2) main effects models, 3) social comparison models, and 4) temporal comparison models.

When predicting cross-sectional marital satisfaction and changes in satisfaction, I used data from Times 6-10. There are two reasons for this. First, the social comparisons were first measured at Time 6 and not at previous timepoints. This means, as described in more detail later,

I assessed how social comparisons at Time 6 were associated with marital satisfaction at Time 6 as well as subsequent changes in satisfaction from Times 6-10. Second, given that there were 10 timepoints and I was interested in how *prior* income changes are associated with *future* marital satisfaction changes in the temporal comparison models, I aimed to estimate those two changes (or "slopes") with similar numbers of assessments. By anchoring on Time 6, I was able to estimate changes in income with 6 assessments and subsequent changes in marital satisfaction with 5 assessments.

Preliminary Analyses

I first estimated an empty model to assess the proportion of within-couple versus between-couple variance in marital satisfaction from the sample of 260 couples. Then, a marital satisfaction growth analysis assessed the model-predicted Time 6 marital satisfaction (i.e., the intercept) and change in marital satisfaction from Times 6-10 (i.e., the slope) with no covariates for husbands and wives. As is true for this analysis and all others, husbands' and wives' intercepts and slopes were allowed to correlate with one another (both within and across spouses) to account for their covariance. Additionally, at each time point, husbands' and wives' marital satisfaction were allowed to correlate with each other (e.g., Time 6 husbands' marital satisfaction with Time 6 wives' marital satisfaction). The online supplement contains a path diagram for this analysis and every subsequent analysis, syntax for each analysis, data files, and a codebook: https://osf.io/dfpku/. I then ran an income growth analysis which estimated Time 6 income (i.e., the income intercept) and changes in income from Times 1-6 (i.e., the slope) with no covariates from the sample of 260 couples. As is true for every analysis in which I estimated income intercepts and slopes, intercepts and slopes were allowed to correlate with one another.

Main Effects of Couples' Financial Factors

The goals of the analytical models are summarized in Table 3-1. Model 1 assessed the cross-sectional association between income and marital satisfaction, as well as income and subsequent changes in marital satisfaction. To do so, I estimated income and income changes using the same procedure as described in the preliminary analyses, then regressed relationship marital satisfaction and satisfaction changes (as described in the preliminary analyses) on income. Figure 3-1 (also in the online supplement) shows the path diagram for Model 1. Model 2 was identical to Model 1 but substituted financial difficulties for income. I regressed marital satisfaction and satisfaction changes on financial difficulties, separately for husbands and wives, to assess how financial difficulties were associated cross-sectionally with marital satisfaction as well as with subsequent changes in satisfaction. Financial difficulties for husbands and wives were allowed to correlate in each model that included financial difficulties.

Social Comparison Models

Model 3 assessed the association between social comparison variables assessed at Time 6 and concurrent marital satisfaction as well as subsequent changes in marital satisfaction. I estimated marital satisfaction using the same procedure described previously, then regressed intercepts and slopes on social comparison variables. This same general model was run for a) the total network, b) the friend subnetwork, c) the coworker subnetwork, and d) the perceived social standing scale. These social comparison variables were never included in the same model, but I did correct for multiple comparisons across these four models with a Bonferroni correction of $\alpha = .05/4 = .0125$. Model 4 assessed whether the cross-sectional association between income and marital satisfaction, as well as the association between income and subsequent changes in marital satisfaction, depended on the level of the social comparison variable (i.e., a moderation hypothesis). Because I hypothesized a non-linear effect (i.e., the income-to-satisfaction

association would be stronger at high *and* low levels of the social comparison variable), I squared the social comparison variable to create a quadratic term. I then included this quadratic term in an interaction with income. I also included an interaction term between the social comparison variable (the lower order term, not the squared term) and income variable. When used in the same regression as the interaction with the squared term, the linear interaction term allowed the point at which the association between income and marital satisfaction reached its maximum or minimum (i.e., the inflection point) to be non-zero, but is not of substantive importance. This model was run four times (a-d) for the four social comparison variables, and I corrected for multiple comparisons with a Bonferroni correction. Lastly, Model 5 was the same as Model 4 but used financial difficulties instead of income.

Temporal Comparison Models

Model 6 assessed associations between income changes and Time 6 marital satisfaction as well as subsequent changes in marital satisfaction. I estimated income and prior income changes, then regressed the marital satisfaction intercept and satisfaction slope on the income change variable. Figure 3-2 shows a conceptual, figurative, example of this analysis. The two hypothetical participants have different income trajectories (the solid lines) and different subsequent marital satisfaction trajectories (the dotted lines). This analysis may show that income is associated with concurrent marital satisfaction or subsequent changes in satisfaction. It may also show that changes in income that a spouse experienced over the preceding years account for variance in marital satisfaction or in subsequent changes in satisfaction. Finally, there were two models that included interaction effects to assess how the association between income or financial difficulties and marital satisfaction varied as a function of how income had changed previously. Model 7 assessed whether prior income changes moderated the association

between income and marital satisfaction, as well as income and changes in satisfaction. To do this, I estimated income and income changes as well as marital satisfaction and satisfaction changes. Because I hypothesized a non-linear effect of income changes on the Time 6 income-to-satisfaction association, I computed a quadratic latent income slope term using the XWITH command in Mplus (Little et al., 2006; Muthén & Muthén, 2017), essentially multiplying the income change variable by itself. That quadratic term was further multiplied by the income variable, creating the focal interaction term. This interaction term allowed the association between income and marital satisfaction or satisfaction changes to vary non-linearly as a function of income change. For example, the income intercepts could be weakly associated with marital satisfaction when income change was high *or* low, but strongly associated when income change was moderate. I then regressed the marital satisfaction and satisfaction change variables on the interaction term, another interaction term using the lower-order income variable, as well as the income, income change, and squared income change variables. If the quadratic interaction term was significant, I used the LOOP function in Mplus (Muthén & Muthén, 2017) to visually inspect how the association between income and marital satisfaction (cross-sectional or change) varied as a function of income change. Model 8 was similar to Model 7, but the interaction was between income change and financial difficulties, and income was included as a control.

Results

Preliminary Analyses

Table 3-2 displays the results from the preliminary analyses. I first assessed variance in marital satisfaction at Time 6 (i.e., intercept variance). Both husbands and wives had considerable between-person variance (husbands, $b = 0.23$, $t = 8.16$, $p < .001$; wives, $b = 0.26$, $t = 8.33$, $p < .001$) relative to time-varying within-person marital satisfaction variance (husbands'

estimates ranged from 0.08-0.14, all $p < .001$; wives' estimates ranged from 0.11-0.18, all $p < .001$), justifying an investigation of between-person differences in marital satisfaction. Husbands' Time 6 intraclass correlation (ICC) indicated that 65.7% of the total variance in marital satisfaction (between- and within-person) was accounted for by between-husband differences. For wives, this value was a comparable 61.9%. On average, wives' marital satisfaction declined significantly from Times 6-10 ($b = -0.035$, $t = -2.869$, $p = .004$), but husbands' marital satisfaction did not, ($b = -0.02$, $t = -1.60$, $p = .109$). Both husbands and wives had significant variance in their marital satisfaction slopes (husbands, $b = 0.01$, $t = 2.13$, $p = .033$; wives, $b = 0.02$, $t = 3.19$, $p = .001$). On average, couples' household incomes increased significantly from Time 1-6 ($b = 4350$, $t = 11.80$, $p < .001$), but the between-couple variability in income slopes was not significant ($b = 990$, $t = 1.36$, $p = .174$).

Main Effects of Financial Factors: What Are the Associations Between Income/Financial Difficulties and Marital Satisfaction?

Consistent with previous work, I found inconsistent and small associations between income and marital satisfaction (Archuleta, 2013; Hardie & Lucas, 2010; Kamo, 1993). In Model 1, I assessed cross-sectional and longitudinal associations between Time 6 income and marital satisfaction (see Table 3-3). Income was not associated with husbands' or wives' marital satisfaction cross-sectionally and did not predict subsequent changes in marital satisfaction. My analyses revealed only one significant effect regarding changes in satisfaction overall, so I will refrain from mentioning satisfaction change effects until that point. Income and financial difficulties correlated at $r = .22$ and $r = .23$ for husbands and wives, respectively, a weak to moderate correlation that indicated that these two measures may have different associations with marital satisfaction. And, indeed, in Model 2, husbands and wives who experienced more

financial difficulties were less satisfied with their marriage at that time (husbands: b = -0.14, t = -2.25, p = .024; wives: b = -0.17, t = -2.55, p = .011).

Main Effects of Social Comparisons: How Are Financial Comparisons to Network Members Associated with Marital Satisfaction?

Husbands reported doing better than or the same as approximately 56% of their networks financially; for wives this figure was 59%. Thus, spouses generally felt that they were just above the middle of their own network financially. I predicted that social comparisons to relevant network members would be associated with marital satisfaction, such that spouses who felt they were doing better financially compared to their network would be more satisfied with their marriage (see Table 3-4, Models 3a-d). The hypothesis was partially supported, with results revealing that wives' assessments of their marriage, in particular, were related to their perceived relative social standing. Wives who perceived they were doing better than their total network financially tended to have higher marital satisfaction (b = 0.35, t = 2.51, p = .012). When I assessed spouses' perceived standing relative to subgroups within each spouse's network, comparisons to friends remained significant. Wives who were doing better than their friends financially were more satisfied with their marriage (b = 0.25, t = 2.15, p = .032), although this was slightly above the α-level of .0125 after correcting for multiple comparisons. No other subgroup comparison was significantly associated with marital satisfaction for wives or husbands. Lastly, wives' (but not husbands') more positive global feelings about their socioeconomic status relative to others in the United States (i.e., the PSS scale) was also associated with higher marital satisfaction (b = 0.05, t = 2.32, p = .020), although this association was not significant after the Bonferroni correction. I tested whether the significant cross-sectional effects for wives (total network, friends, and the PSS scale) were statistically different

from the husbands' nonsignificant effects, and none of the gender differences were significant. To test the robustness of the significant effects for wives, I ran subsequent analyses that controlled for cross-sectional income. Wives' total network comparisons were still associated with marital satisfaction cross-sectionally (b = 0.29, t = 1.96, p = .050), although this was not significant after applying the Bonferroni correction. In conclusion, when spouses are assessing feelings about their marriage, it appears that wives are responsive to the social context.

Social Comparison Moderation: Do Financial Comparisons to the Network Moderate the Association Between Income or Financial Difficulties and Marital Satisfaction?

I hypothesized that the association between financial factors (either income or financial difficulties) and marital satisfaction would be moderated by how people perceived they were doing financially relative to their network (see Table 3-4, Models 4 and 5). I predicted that the association between finances and marital satisfaction would be strongest when spouses thought they were about in the middle of their own network financially (when absolute levels are most informative), and weakest when partners perceived that they were doing much better or much worse than their network (when relative standing is most informative). All Model 4 results were nonsignificant, meaning financial comparisons to others did not moderate the effect of income on marital satisfaction. However, Model 5a (total social network comparisons) results showed that husbands' social comparisons did moderate the association between husbands' ratings of financial difficulties and their marital satisfaction at the same assessment (b = 2.72, t = 3.51, p < .001). Figure 3-3 shows that this effect was consistent with my hypothesis. The negative association between financial difficulties and marital satisfaction was stronger for husbands who were about in the middle of their own network financially (the vertical line) than for husbands who were doing worse or better than the average person in their network. Thus, it may be that

when the network is not informative for evaluating one's marriage for husbands, because they are about average financially relative to close others (Buunk et al., 2001), husbands more strongly rely on their feelings of financial difficulties when assessing their relationships. The figure also shows that, when husbands are doing much worse than their networks financially relative to close others, there is a positive association between financial difficulties and marital satisfaction. For wives, social comparisons did not moderate the cross-sectional association between financial difficulties and marital satisfaction.

Main Effects of Temporal Comparisons: Does the Way Income Changed Previously Predict Marital Satisfaction?

The temporal comparison models posit that prior changes in income should be associated with marital satisfaction, such that greater increases in income would be associated with higher marital satisfaction. Table 3-5 displays the results of the temporal comparison models. In Model 6, I did not find support for these hypotheses: The changes in income that spouses experienced prior to Time 6 were not associated with marital satisfaction at that assessment. A subsequent analysis controlling for Time 6 income did not change these results.

Temporal Comparison Interaction: Do Previous Changes in Income Moderate the Association Between Income/Financial Difficulties and Marital Satisfaction?

The null results in Model 6 do not preclude the possibility that prior changes in income affect how couples make meaning of their current financial circumstances. Specifically, I predicted that financial factors (either income or financial difficulties) would be less strongly associated with marital satisfaction to the extent that income had changed more drastically in the past. Those whose incomes had changed by a normative amount (compared to the rest of the sample) should see the strongest association between financial factors and marital satisfaction.

As Table 3-5 shows, income changes did moderate the cross-sectional association between income and marital satisfaction for both husbands (b = 0.08, t = 2.00, p = .046) and wives (b = 0.14, t = 6.75, p < .001). Figure 3-4 shows the cross-sectional association between income and marital satisfaction at different income change levels for husbands. The vertical line represents the average income change across the sample. As the figure reveals, for husbands, the cross-sectional association between income and marital satisfaction was more positive for those whose incomes had increased greatly (relative to the sample) in the past, contrary to my prediction that more change should weaken this cross-sectional association. Figure 3-5 shows that, for wives, the association between income and marital satisfaction is indeed stronger at more normative income change values (around the vertical line) than at moderately low and high income changes, but in the opposite direction as predicted. As the figure shows, around the average level of income change in the sample (the green line), there is a significant *negative* association between income and marital satisfaction. This implies that, for example, for wives whose incomes have changed by around $4,000 per assessment (the average), wives with less money (e.g., $50,000) were more satisfied than those with more money (e.g., $200,000). This was a surprising finding. However, it makes sense when reframed: Increasing the money she started with by 50% (~$24,000 over the six assessments) was associated with better evaluations of the relationship than increasing by only 15%. For couples at the lowest and highest levels of income change, the association between income change and Time 6 marital satisfaction was significantly positive.

In Model 8, I assessed how the association between financial difficulties and marital satisfaction differed at various levels of income change, controlling for level of income. One effect was significant, and it was the one satisfaction change effect. For husbands, the association

between financial difficulties and subsequent changes in marital satisfaction was moderated by prior income changes (b = 5.54, t = 2.44, p = .015). Looking at Figure 3-6, we see that financial difficulties were negatively associated with husbands' marital satisfaction changes just below the average income change value, meaning that greater financial difficulties were associated with less positive (or more negative) changes in marital satisfaction. The association between financial difficulties and marital satisfaction changes did not depend on prior income changes for wives, nor did the cross-sectional association between financial difficulties and marital satisfaction depend on prior income changes for husbands or wives.

Discussion

Although lower household income is consistently associated with higher rates of divorce (Burgess et al., 2003), household income has been inconsistently and at best only weakly related to marital satisfaction (Birditt et al., 2017; Hardie & Lucas, 2010), despite multiple theories of family stress that predict a stronger association (Conger & Conger, 2008; Karney & Bradbury, 1995). This study examined two potential explanations for the weaker than expected associations between household income and marital satisfaction. First, direct measures of income may not provide enough information about how couples are *experiencing* their financial status, i.e., whether couples are facing financial stress, such as difficulty paying bills or affording household items. Second, income and financial difficulties may take on different meanings depending on the social (Festinger, 1954; Rusbult et al., 2000) and temporal (Boheim & Ermisch, 2001; Easterlin, 1974) context surrounding a couple. That is, the implications of a couple's financial status for their evaluations of their marriage may depend on how the couple's financial status compares to that of their social network and on how their financial status has changed over time.

Marital Satisfaction Is More Strongly Associated with Financial Difficulties than Household Income

In this study, I measured concrete financial difficulties: the ability to pay for household bills, clothing, meals, and other necessities, as well as the capacity to spend money on discretionary items. Financial difficulties, and not income, were directly associated with marital satisfaction. Thus, what matters more for couples than how much money they make is what they are able to *do* with that money. When couples are able to meet their financial obligations of rent, food, and clothing, they have additional time and possibly additional money that they can spend maintaining their relationships (Moore & Henderson, 2018). Financial difficulties are, for example, more directly related than income to time pressures that keep couples apart. Couples who experience greater financial difficulties are more likely to hold multiple jobs, but income, controlling for difficulties, is not related to the likelihood of holding multiple jobs (Glavin, 2020). Additionally, when spouses experience financial stress, this stress can draw on cognitive resources, making it difficult to communicate effectively with one's partner (Lau et al., 2019; Williamson, Karney, et al., 2013). For example, in different-sex couples, women who experience greater financial difficulties tend to express more demands during conflict and their male partners tend to display greater withdrawal compared to couples experiencing fewer financial difficulties (Falconier & Epstein, 2011b). Thus, couples who experience financial difficulties may have less time to spend with one another and, when they are able to spend time together, that time may be characterized by less positive interactions than more financially stable couples. These results suggest that measuring only raw income is likely to obscure real differences between couples, and that measuring financial difficulties is an additional, and perhaps more effective, way to understand the role of financial status in couples' lives (Smith, 2004). Our

current understanding of the association between income and satisfaction (Birditt et al., 2017; Hardie & Lucas, 2010) is therefore likely an *underestimate* of the true role of financial status in couples' lives.

Social and Temporal Contexts and Relationship Evaluations

Social and temporal comparisons were directly associated with marital satisfaction and also moderated associations between couples' financial status and marital satisfaction. With respect to social comparisons, wives' ratings of their marital satisfaction were sensitive to how their financial status compared to the financial status of people within their social networks, such that they were more satisfied the higher their income relative to their peers. This is consistent with social comparison theory, which proposes that people are likely to have strong emotional or behavioral reactions if they differ on an important quality (finances) from relevant (friends, coworkers, etc.) others. Prior studies (e.g., Buunk et al., 2001; Morry et al., 2019) have shown people evaluate their intimate relationships more positively after comparing themselves to others in lower quality relationships. The current study highlights one domain - finances - that couples may use to inform that comparison. As predicted, for husbands who perceived their financial status to be about average compared to their network, more financial difficulties were associated with lower marital satisfaction, but this relationship was non-significant for husbands who perceived themselves to be doing much better or much worse than their peers. Scholars have noted that social comparisons are relevant for evaluating oneself to the extent that others are discrepant from oneself, but less relevant when doing the same as relevant comparison groups (Buunk et al., 2001; Lockwood & Pinkus, 2013).

With respect to temporal comparisons, there was no evidence that past changes in income were directly associated with current marital satisfaction. One possible reason for this is that we

derived our measure of income change from longitudinal assessments of household income rather than directly asking spouses about their perceptions of change over time. People's current circumstances typically influence their memory of past events and spouses' recall of past events in their relationship is similarly vulnerable to distortions (Frye & Karney, 2004). Thus, spouses may not be aware of how their income has changed over the course of the decade or more that we were assessing them. A perceived measure of income change may be more likely to be directly associated with relationship outcomes.

Although temporal comparisons of financial status were not directly associated with marital satisfaction, temporal comparisons did moderate associations between concurrent financial status and marital satisfaction. For husbands whose incomes had changed by nearly a normative amount for this sample, more financial difficulties were associated with more negative changes in satisfaction, as expected. However, when husbands' income had increased very little or very greatly compared to the average for this sample, income was not significantly associated with satisfaction. When their income has increased or decreased substantially over time, a couple's current financial difficulties appear to be less relevant for evaluating their relationship. For husbands whose income has not increased much or even decreased over the previous several years, even those with few financial difficulties may be relatively dissatisfied. Though they can pay the bills and put food on the table, husbands who perceive no financial improvements could nevertheless view the relationship as financially unsuccessful. And for husbands whose incomes have increased drastically, current financial difficulties may feel temporary (e.g., due to a major purchase) and not reflective of the success or failure of the relationship.

Results also showed that, for wives who experienced normative income increases for this sample, the cross-sectional association between income and satisfaction was *negative*. My

original hypothesis was that this association would be *positive*, such that, for those who had experienced a normative growth in income, higher income would be associated with higher satisfaction. What these results suggest, however, is that when couples experience normative growth in income, couples' current income may be a marker of the *proportion* of growth in their income. That is, when couples' incomes have changed by the same, moderate amount, it is those with less income currently who are more satisfied, because their income has increased by a greater proportion over time compared to couples with more income currently. As an illustration, consider two couples that both have household incomes that increase by $40,000 over five years. One couple starts at $40,000 in annual income and increases to $80,000 five years later (a 100% increase). The other couple starts at $200,000 in annual income and increases to $240,000 five years later (a 20% increase). Although both couples' household incomes have increased by the same amount, increasing one's income by 100% might have a substantial positive impact on one's lifestyle, more so than a 20% increase, and this 100% increase could reflect more positively on the relationship partner and the marriage (Mahadea & Rawat, 2008). These findings suggest once again that our current estimates of the association between financial status and marital satisfaction are likely an underestimate because income appears to be a stronger indicator of satisfaction for some people more than others, namely those who are financially average compared to their network and those whose incomes have increased by an average amount. Prior work, by overlooking these differences, may have unintentionally diluted the real effect of financial status on satisfaction.

These results raise the question of why income changes and social network comparisons matter for couples. The ideal standards model suggests that couples enter relationships with ideals, or expectations, of what a relationship will offer them (Fletcher & Simpson, 2000). Prior

work indicates that relationship partners maintain expectations that marriage will be a source of financial stability and partners will provide economic resources for one another (Li & Fung, 2011; Waller & McLanahan, 2005). The results of the current study suggest that perceptions of relative social status and changes in income over time may shape spouses' expectations of their current income. When couples are in the middle of their social networks or their income change is about average relative to others, then these comparisons provide little useful data about whether couples are financially successful, and so spouses have stronger expectations of their current income. When couples are doing much better or worse than those around them, or their income has increased or decreased substantially over time, this may communicate that the marriage is succeeding or failing financially. In such situations, the comparison, rather than raw income, may be a more important basis for evaluating the relationship and current income holds less significance.

Clinical and Policy Implications

In light of these results, policymakers designing interventions and programs to increase couples' socioeconomic status should be aware of potential unintended consequences. The intent of programs that move couples living with lower incomes into higher income areas, for example, is to connect couples to jobs and social connections that they may not be able to acquire elsewhere, as well as to provide children with higher quality schooling and safer neighborhoods to explore (Leventhal & Brooks-Gunn, 2003). Planting couples living with lower incomes in wealthier neighborhoods, however, may not have a simple effect on marital satisfaction. The current results suggest that spouses, and particularly wives, use the financial status of their peers to evaluate their own marriages. When a couple's peers are suddenly far wealthier than they are, this comparison may reflect negatively on the marriage. Indeed, when the U.S. Department of

Housing and Urban Development's Moving to Opportunity program randomly assigned some individuals living with lower incomes in high-poverty neighborhoods to move to lower-poverty neighborhoods, this intervention generated positive outcomes for young children, but there is no evidence that it improved emotional and behavioral outcomes of older children and adults (Chetty et al., 2016). The program includes a housing stipend, but without a significant increase in income, it risks making people with lower incomes feel poorer than their neighborhood peers, and, consequently, less satisfied in their marriage. On the other hand, interventions or policies designed to increase couples' incomes directly (Karney et al., 2022) are likely an effective strategy to protect couples' marriages because couples appear sensitive to changes in their income, over and above their absolute level of income. When couples increase their incomes substantially, their current income (even if relatively low) and their current financial difficulties (even if they have many) appear less likely to affect spouses' appraisals of the quality of the relationship.

Strengths and Limitations

Confidence in these results is bolstered by a number of strengths in the design and methods in this study. First, this study was longitudinal, spanning 13 years, allowing for multi-year measures of both income and relationship change. Second, the financial difficulties measure captured *specific* and *concrete* tasks, such as paying for bills and other necessities. This differs from some financial *strain* measures that ask respondents to report how they feel about their financial situation, which could share significant method variance with reports of marital satisfaction (Paulhus & Vazire, 2007; Sánchez-Álvarez et al., 2016). Third, the in-depth measure of social network financial comparisons circumvented biases associated with global measures of network properties (i.e., how one's network is doing as a whole), particularly that global reports

are likely conflated with how satisfied spouses are in their relationship (Lyubomirsky, 2001). The breadth of the social network interview also allowed for subgroup analyses of two of the most relevant comparison groups: friends and coworkers (Pham-Kanter, 2009; Reh et al., 2018).

Nevertheless, there were also some limitations. First, all participants were in different-sex couples. Social network dynamics for same-sex couples may be distinct from those for different-sex couples, with same-sex partners' networks usually being comprised of a greater proportion of friends (Blair & Holmberg, 2008; Blair & Pukall, 2015; Holmberg & Blair, 2016). Financial comparisons may be particularly salient for those in same-sex couples, as friends are likely of similar age and in similar occupations (McPherson et al., 2001). Additionally, the financial benefits of marriage and financial expectations among partners may operate differently in same-sex marriages, making it difficult to generalize the temporal comparison results to same-sex partners (Martell & Nash, 2020; Weisshaar, 2014). Second, although I could use income changes to *predict* cross-sectional and future changes in satisfaction, as well as social comparisons to *predict* future changes in satisfaction, these data did not allow for causal inferences (Hamaker et al., 2020).

Conclusion

Financial status matters greatly for people's mental health (Lorant et al., 2003; Twenge & Campbell, 2002), physical health (Muscatell et al., 2020), the quality of their friendships and family relationships (Piotrowska et al., 2015), and their likelihood of divorce (Bramlett & Mosher, 2002). This work has shown that, when it comes to understanding how finances affect couples' abilities to maintain their relationships, financial status is not adequately captured by one number. Only by going beyond this one value can we discern whether a couple's income is enough, whether it allows a family to pay their rent or their medical bills or put food on the table.

Understanding how couples navigate their financial ups and downs will require considering not only a couples' income, but their financial difficulties, standing within their social network, how their financial status has changed over time, and even their financial goals and expectations.

Table 3-1

Description of Analytical Models

Model	Independent Variable(s)	Model Goals
	Financial Factors Main Effects Models	
Model 1	• Time 6 Income	• Time 6 income association with Time 6 MS • Time 6 income association with MS changes
Model 2	• Time 6 FD	• Time 6 FS association with Time 6 MS • Time 6 FS association with MS changes
	Social Comparison Models	
Model 3a-d	• Network variable (each entered separately in a-d)	• Network variable association with Time 6 MS • Network variable association with MS changes
Model 4a-d	• Network variable (each entered separately in a-d) • Time 6 Income	• Whether network variable moderates effect of Time 6 Income on Time 6 MS • Whether network variable moderates effect of Time 6 Income on MS changes
Model 5a-d	• Network variable (each entered separately in a-d) • Time 6 FD	• Whether network variable moderates effect of Time 6 FD on Time 6 MS • Whether network variable moderates effect of Time 6 FD on MS changes
	Temporal Comparison Models	
Model 6	• Income changes	• Income changes association with Time 6 MS • Income changes association with MS changes
Model 7	• Time 6 Income • Income changes	• Whether income changes moderate effect of Time 6 Income on Time 6 MS • Whether income changes moderate effect of Time 6 Income on MS changes
Model 8	• Time 6 FD • Time 6 Income • Income changes	• Whether income changes moderate effect of Time 6 FD on Time 6 MS, controlling for Time 6 income • Whether income changes moderate effect of Time 6 FD on MS changes, controlling for Time 6 Income

Note. MS = Marital Satisfaction; MS changes = Times 1-6 MS changes; FD = Financial Difficulties; Income changes = Times 1-6 income changes

Table 3-2

Preliminary Models Results

Predictor	Estimate	*SE*	*p*
Satisfaction intercepts			
Means			
Husband satisfaction intercept	**4.35**	**0.03**	**<.001**
Wife satisfaction intercept	**4.23**	**0.03**	**<.001**
Random effects			
Husband between-person intercept variance	**0.23**	**0.03**	**<.001**
Wife between-person intercept variance	**0.26**	**0.03**	**<.001**
Satisfaction slopes			
Means			
Husband satisfaction slope	-0.02	0.01	.109
Wife satisfaction slope	**-0.04**	**0.01**	**.004**
Random effects			
Husband between-person slope variance	**0.01**	**0.00**	**.033**
Wife between-person slope variance	**0.02**	**0.01**	**.001**
Income intercept and slope			
Means			
Income intercept	**97,300**	**4,420**	**<.001**
Income slope	**4,350**	**370**	**<.001**
Random effects			
Income intercept variance	**366,110**	**84,830**	**<.001**
Income slope variance	990	730	.174

Note. Bold values indicate statistically significant effects.

Table 3-3

Main Effects of Couples' Financial Factors

	Husband Satisfaction Intercept		Wife Satisfaction Intercept		Husband Satisfaction Slope		Wife Satisfaction Slope	
Predictor	**Beta (SE)**	***p*-value**	**Beta (SE)**	***p*-value**	**Beta (SE)**	***p*-value**	**Beta (SE)**	***p*-value**
Model 1								
Income Intercept	0.00 (0.01)	.457	0.01 (0.01)	.300	0.00 (0.00)	.749	0.00 (0.00)	.389
Model 2								
Financial Difficulties	**-0.14 (0.06)**	**.024**	**-0.17 (0.07)**	**.011**	-0.03 (0.02)	.096	0.00 (0.02)	.917

Note. Bold values indicate statistically significant effects.

Table 3-4

Social Comparison Models Results

	Husband Satisfaction Intercept		Wife Satisfaction Intercept		Husband Satisfaction Slope		Wife Satisfaction Slope	
Predictor	**Beta (SE)**	***p*-value**	**Beta (SE)**	***p*-value**	**Beta (SE)**	***p*-value**	**Beta (SE)**	***p*-value**
Model 3 (a-d)								
a: Total Network	0.11 (0.12)	.384	**0.35 (0.14)**	**.012**	0.03 (0.04)	.502	0.00 (0.05)	.921
b: Friend Network	0.08 (0.10)	.391	**0.25 (0.11)**	**.032**	0.02 (0.03)	.492	-0.04 (0.04)	.293
c: Coworker Network	0.00 (0.10)	.986	0.07 (0.11)	.507	0.01 (0.03)	.685	0.01 (0.04)	.750
d: PSS	0.00 (0.02)	.893	**0.05 (0.02)**	**.020**	0.00 (0.01)	.798	0.00 (0.01)	.732
Model 4 (a-d)								
a: Income Intercept X Total Network	-0.01 (0.05)	.835	0.06 (0.11)	.616	0.01 (0.02)	.603	0.04 (0.03)	.157
b: Income Intercept X Friend Network	0.01 (0.05)	.766	0.00 (0.06)	.971	0.02 (0.02)	.304	0.02 (0.02)	.148
c: Income Intercept X Coworker Network	-0.01 (.06)	.888	-0.02 (0.07)	.757	0.00 (0.02)	.917	0.04 (0.02)	.108
d: Income Intercept X PSS	0.00 (0.00)	.355	0.00 (0.00)	.198	0.00 (0.00)	.143	0.00 (0.00)	.654
Model 5 (a-d)								
a: Financial Difficulties X Total Network	**2.72 (0.78)**	**.000**	-0.30 (1.03)	.772	-0.06 (0.25)	.796	-0.49 (0.30)	.101
b: Financial Difficulties X Friend Network	1.03 (0.61)	.094	-0.19 (0.61)	.751	-0.29 (0.19)	.118	-0.35 (0.27)	.191
c: Financial Difficulties X Coworker Network	-0.01 (0.86)	.988	0.82 (1.08)	.448	-0.21 (0.25)	.398	-0.34 (0.27)	.204
d: Financial Difficulties X PSS	-0.01 (0.01)	.365	-0.03 (0.02)	.099	0.00 (0.00)	.973	0.01 (0.01)	.253

Note. Bold values indicate statistically significant effects.

Table 3-5

Temporal Comparison Models Results

	Husband Satisfaction Intercept		Wife Satisfaction Intercept		Husband Satisfaction Slope		Wife Satisfaction Slope	
Predictor	**Beta (SE)**	***p*-value**	**Beta (SE)**	***p*-value**	**Beta (SE)**	***p*-value**	**Beta (SE)**	***p*-value**
Model 6								
Income Slope	-0.20 (0.15)	.196	0.23 (0.13)	.088	0.02 (0.04)	.643	-0.03 (0.05)	.563
Model 7								
Income Intercept X Income Slope	**0.08 (0.04)**	**.046**	**0.14 (0.02)**	**<.001**	-0.01 (0.02)	.524	-0.02 (0.01)	.074
Model 8								
Financial Difficulties X Income Slope	-2.92 (5.82)	.616	0.64 (4.24)	.879	**5.54 (2.28)**	**.015**	0.80 (1.85)	.667

Note. Bold values indicate statistically significant effects.

Figure 3-1

Model 1 Path Diagram

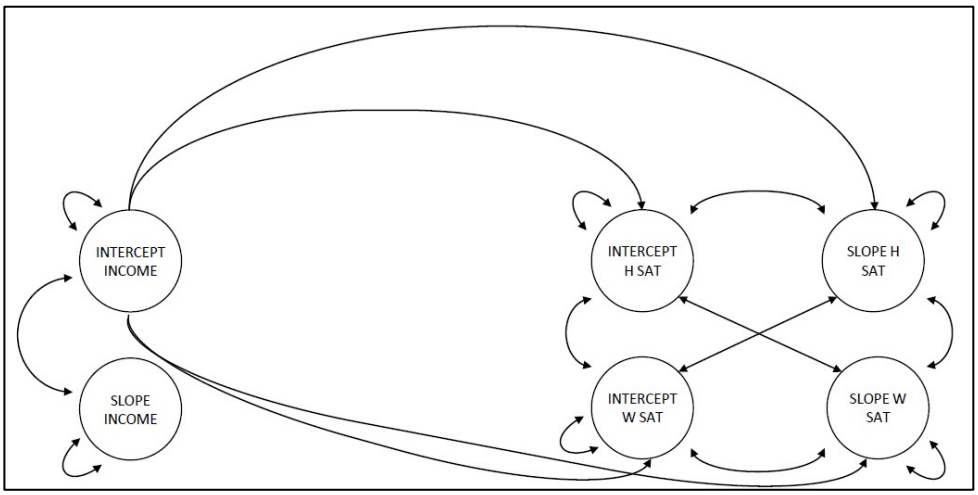
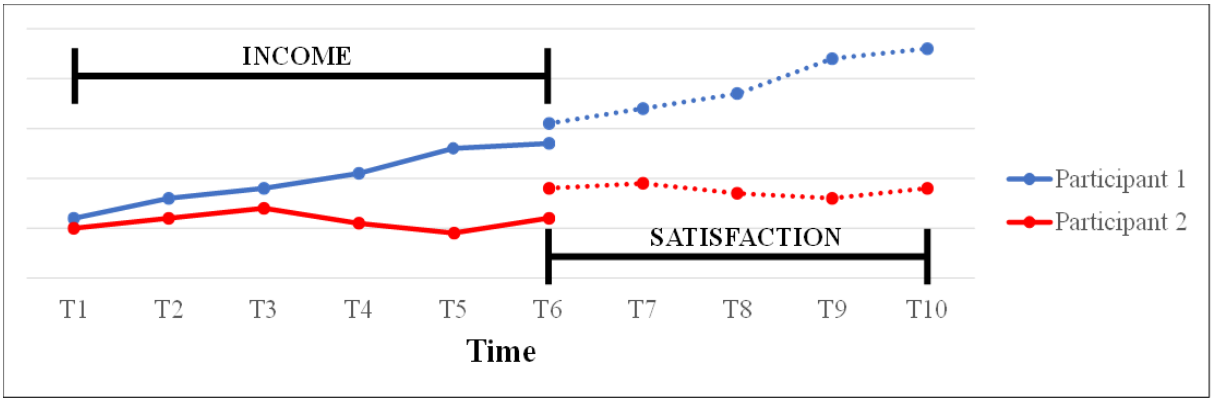


Figure 3-2

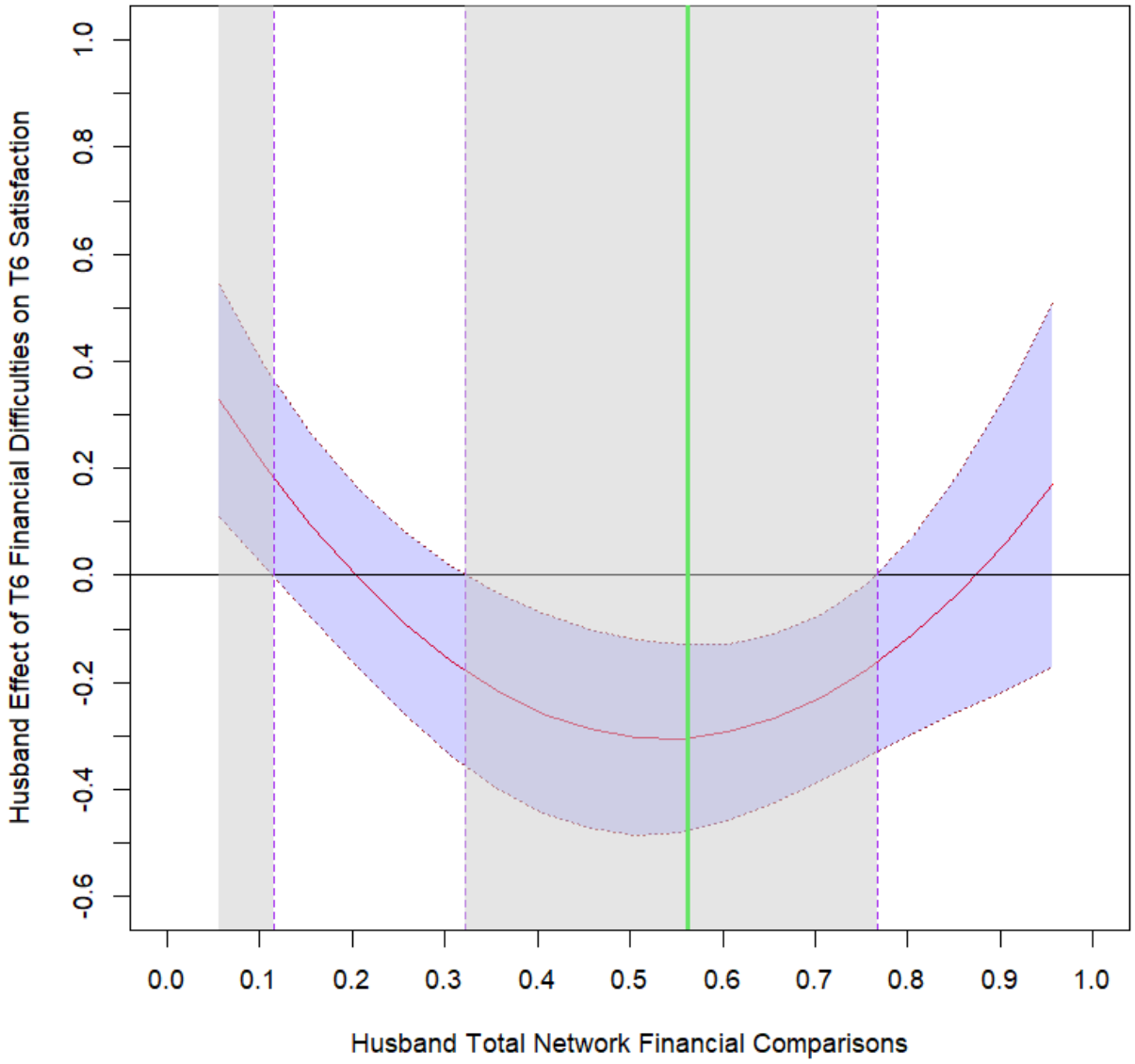
Illustration of Income Change Effect on Satisfaction



Note. Diagram is for illustration only; not real data.

Figure 3-3

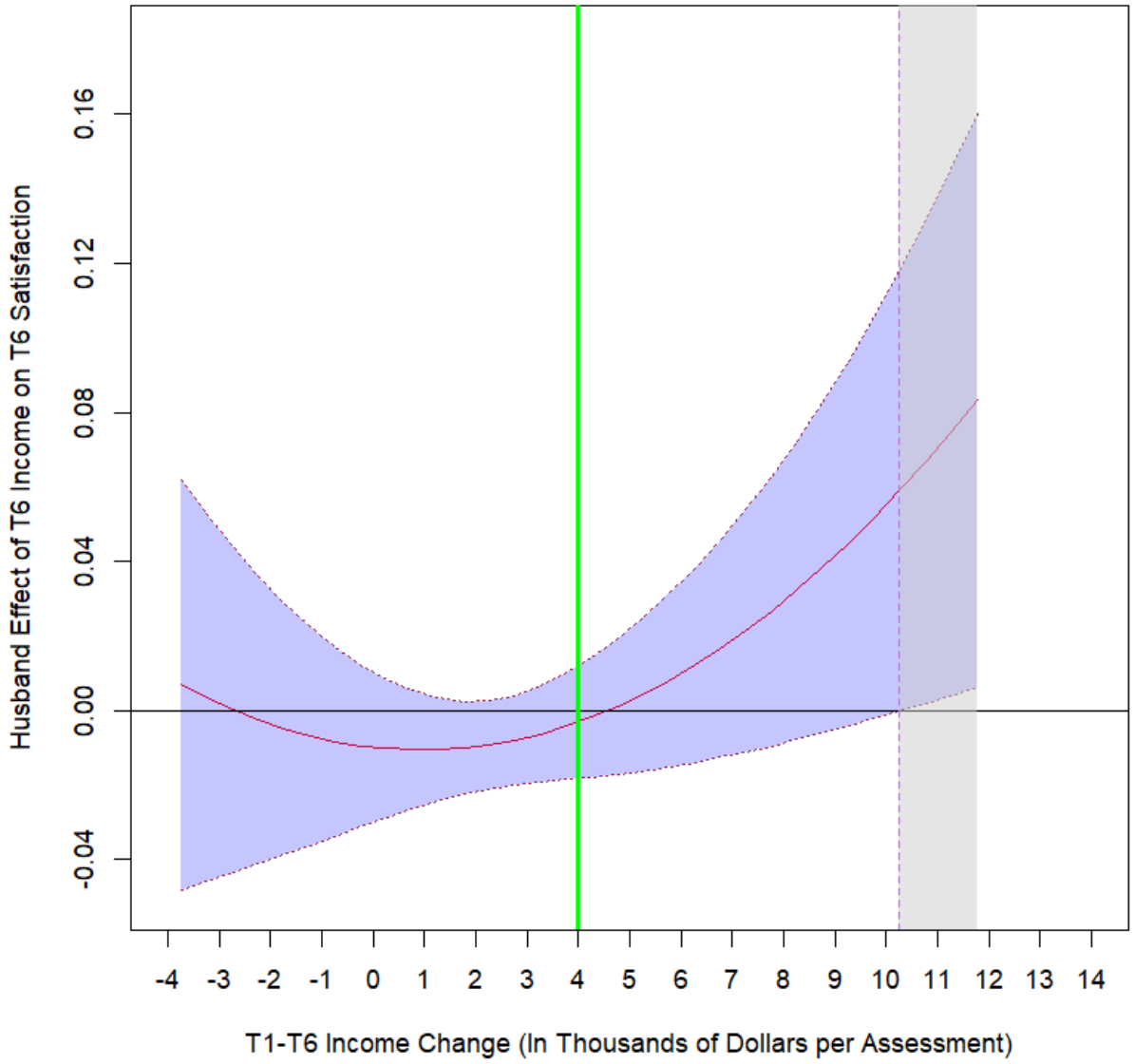
Husband Total Network Comparisons Moderate the Difficulties-Satisfaction Association



Note. Red solid line represents estimated effect, with blue shaded area representing confidence bands. Grey shaded areas are regions of significance. Solid vertical line is the sample average level of total financial comparisons variable.

Figure 3-4

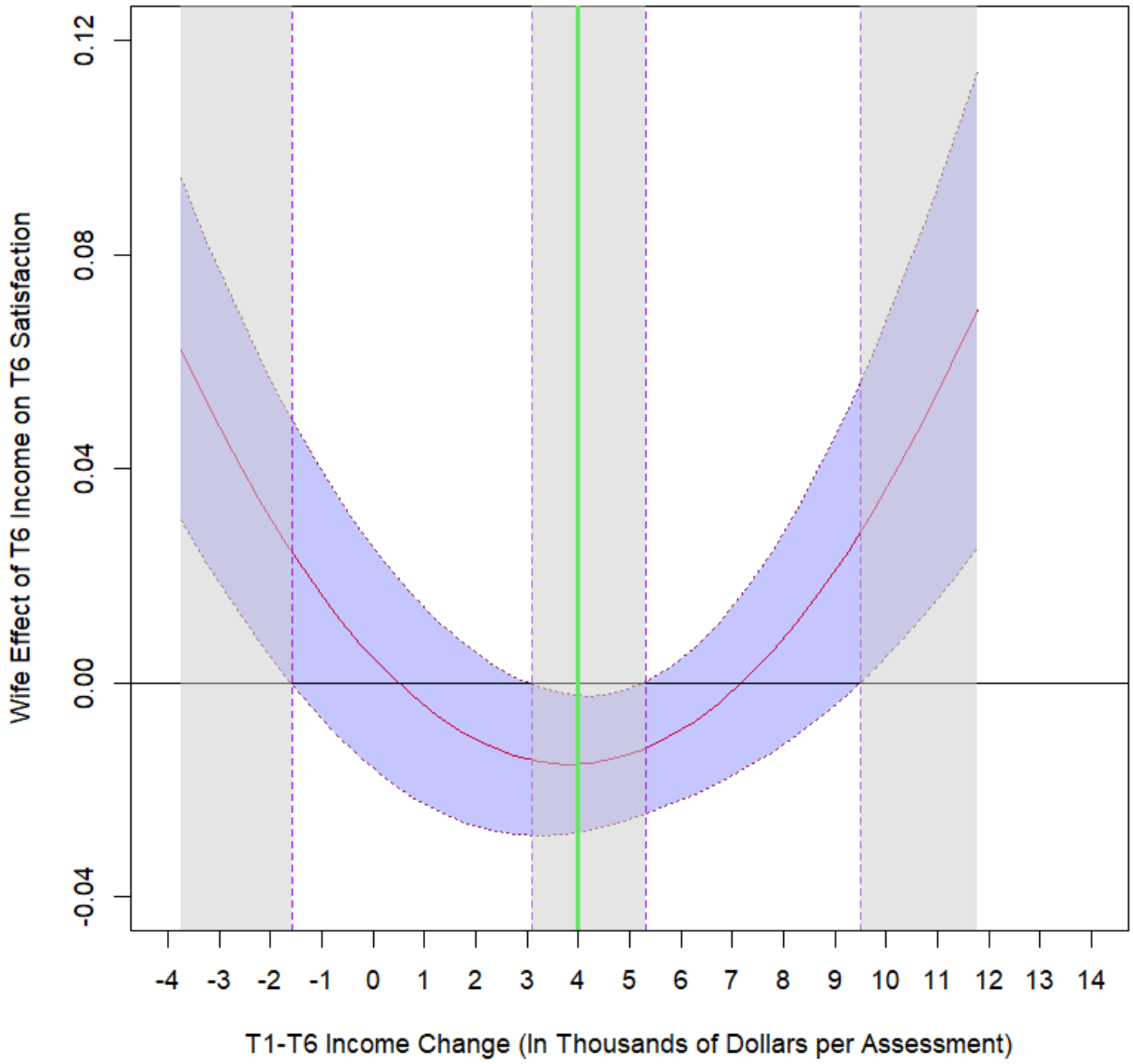
Husband Income Change Moderates the Income-Satisfaction Association



Note. Red solid line represents estimated effect, with blue shaded area representing confidence bands. Grey shaded areas are regions of significance. Solid vertical line is the sample average level of income change variable.

Figure 3-5

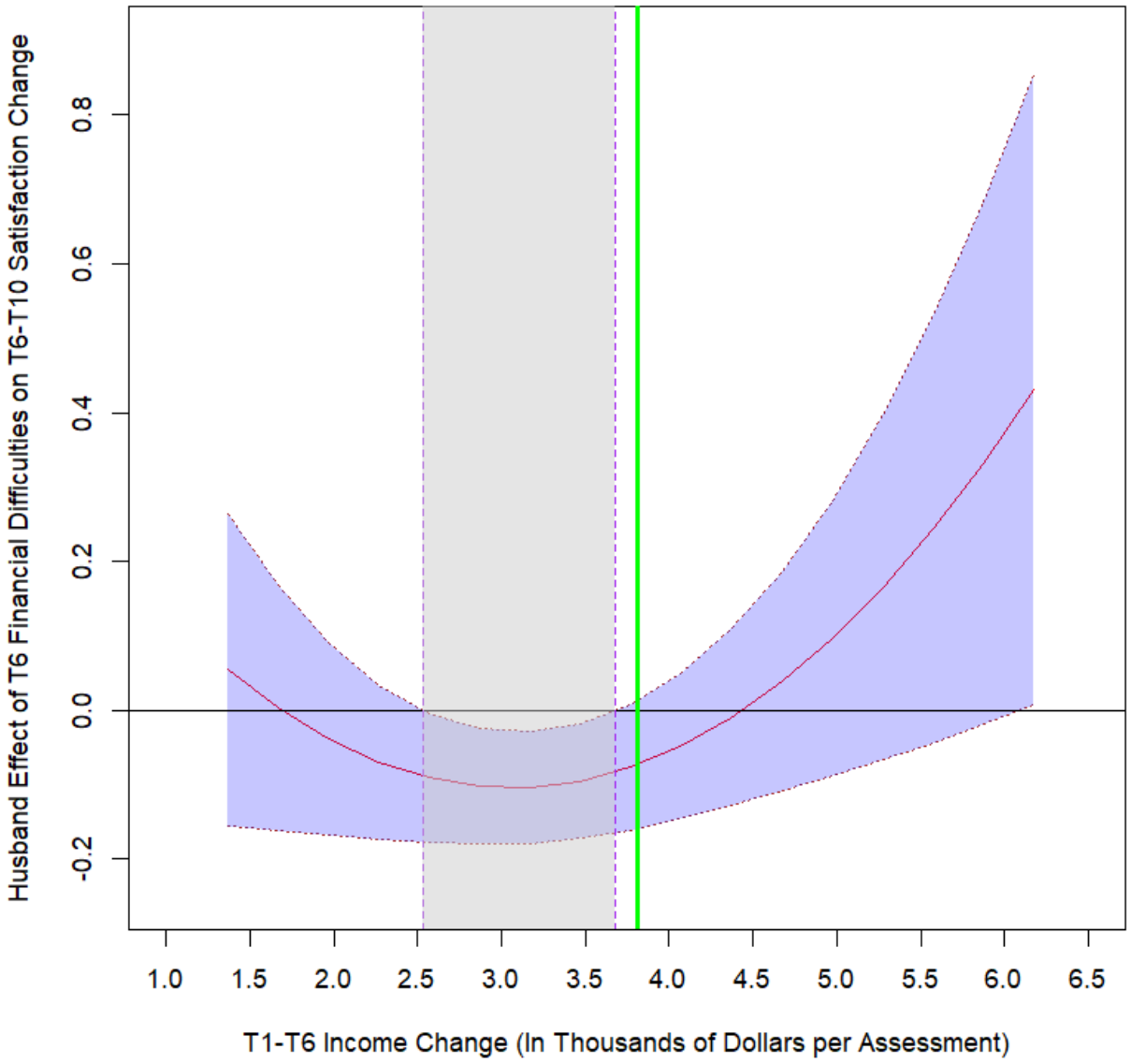
Wife Income Change Moderates the Income-Satisfaction Association



Note. Red solid line represents estimated effect, with blue shaded area representing confidence bands. Grey shaded areas are regions of significance. Solid vertical line is the sample average level of income change variable.

Figure 3-6

Husband Income Change Moderates the Difficulties-Satisfaction Slopes Association



Note. Red solid line represents estimated effect, with blue shaded area representing confidence bands. Grey shaded areas are regions of significance. Solid vertical line is the sample average level of income change variable.

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Chapter 4:

Residential Moves in the Early Years of Marriage: Stressor or Normative Transition?

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Abstract

Young married couples frequently undertake the stressful transition of moving homes during a time that they also frequently experience declines in satisfaction. Three perspectives offer competing predictions about whether moving is associated with marital satisfaction. Family stress theories predict that couples may struggle to maintain their intimacy during these emotionally and financially taxing transitions, whereas the normative stress perspective predicts that moving should not be associated with satisfaction because moving is a common and predictable experience, particularly for newlyweds. The life-course perspective suggests the effect of moving on satisfaction will depend on the motivations to move, outcomes of the move, and resources available to couples. Drawing upon two samples of nearly 700 total couples interviewed multiple times over several years during the early years of marriage and a multi-method approach consisting of self-report data, behavioral data, and data from the US Census, a set of preregistered analyses showed that moving had no effect on couples' satisfaction and, apart from a few instances, this did not depend on other factors. These results suggest that moving may indeed be a normative transition that couples tend to navigate well in the early years of marriage.

Residential Moves in the Early Years of Marriage: Stressor or Normative Transition?

In the early years of marriage, multiple transitions test young couples' relationships. Couples start families, finish school, change jobs, purchase homes, and establish long-term careers (Chait Barnett et al., 2003; Kluwer, 2010). Their social lives change as well, as they gradually spend less time with friends and more time with family and in-laws (Haggerty et al., 2023). As they undergo these shifts, couples develop habits of negotiating conflict and providing support that endure throughout the marriage (Leonard & Roberts, 1998) and have continuing effects on relationship quality. Thus, although the transition into marriage is an exciting time in people's lives (Zimmermann & Easterlin, 2006), demands commonly associated with this transition make early marriage a particularly vulnerable period in an intimate relationship. Indeed, on average, satisfaction declines significantly in the early years of marriage (Joiner et al., 2023; Williamson & Lavner, 2020) and about 20% of couples divorce within their first five years of marriage (Cherlin, 2010).

Among the transitions that characterize this period of married life, one of the most frequent is also consistently rated as one of the most stressful: moving to a new residence. Changing homes is a common experience in the United States (Cheung & Wong, 2022), with the average individual moving 12 times in their lifetime (United States Census Bureau, 2021). Around 40 million Americans move each year (Frost, 2020), with most of those moves occurring in early adulthood. Although moving is common, it is not easy. Among workers with families who relocated for their job, for example, 75% described moving as at least somewhat stressful and 40% said that it was very or extremely stressful (Munton, 1990). In turn, moving at least temporarily reduces overall well-being (Magdol, 2002). The frequency of residential moves in young adulthood and the prevalence of declines in marital satisfaction in the early years of

marriage raise the possibility that the stress of moving may account for some of these declines in couples that change residences. Three theoretical perspectives offer competing predictions about possible associations among residential moves and marital satisfaction.

The Family Stress Perspective

To the extent that moving to a new residence undermines individual well-being, it is reasonable to expect that moving might also harm the development of intimate partnerships. Indeed, family stress theories (e.g., Conger et al., 1999; Karney & Bradbury, 1995) posit that stressful experiences and circumstances constrain couples' ability to maintain positive relationships. The ABC-X model (Hill, 1949), for example, proposes that when couples experience a stressor, it will make the relationship more difficult to maintain to the extent that 1) the stressor is extreme, 2) couples lack resources to help overcome the stressor, and 3) they perceive the stressor to be a problem rather than a challenge to be overcome.

Moving meets all three of these criteria. First, the physical act of moving is time-consuming and requires effortful planning (Bartlett, 1997; Power, 2022). Whether moving to one's dream home or simply moving for work, few people enjoy the process of packing up and changing homes. Second, although social support is one of the most valuable resources that people rely on to mitigate stress (Taylor, 2011), moving often involves leaving prominent sources of social support behind. Indeed, when they are about to move, people anticipate loneliness (Oishi et al., 2012) and, as individuals move farther away, moving can impair relationships with supportive social ties like family and friends. In part due to the difficulties of maintaining social ties across moves, frequent moving in childhood is associated with lower well-being in adulthood (Oishi & Schimmack, 2010). Third, rather than believing that moving is a manageable event, the mere thought of moving often evokes anxiety and uncertainty (Oishi & Talhelm, 2012)

and people worry that they do not know what their life will look like in their new home (Wang, 2022). When we combine these three facets, it appears that moving to a new residence puts newlyweds, who are already traversing a vulnerable stretch of their relationship, at further risk for prolonged relationship difficulties.

The Normative Stress Perspective

A second perspective suggests that moving to a new residence may not be particularly harmful for couples because it is a *normative transition*. The premise of this perspective is that, in contrast to unexpected and abrupt, non-normative transitions (e.g., natural disasters, illnesses), predictable transitions (e.g., a planned pregnancy, graduating from college) create fewer long-term negative psychological effects (McCubbin & Figley, 1983; McCubbin et al., 1980; Menaghan, 1983). For many couples, moving may be a normative transition because, around the time of marriage, couples may require new space for their growing family (Buckle, 2017; Coulter et al., 2016; Dieleman, 2001). This perspective has its origins in Peter Rossi's seminal 1955 work "Why families move: A study in the social psychology of urban residential mobility," in which Rossi and colleagues followed 924 Philadelphia households for a year (Rossi, 1955). The researchers attempted to predict, from baseline data, who would move to a new residence and who would remain in place by the next interview. They found that attitudes, values, and social connections had no bearing on whether people moved. Rather, the process was entirely determined by household size and composition combined with housing conditions. When families no longer "fit" in their current residence, they moved.

Research supports the suggestion that planned, normative transitions have fewer long-term negative psychological effects than unexpected, uncontrollable stressors. When young adults move away from their childhood homes to attend college, for example, their stress

subsides relatively quickly, and students who have planned better for the transition experience the least prolonged stress (Fisher, 1994; Pancer et al., 2000). During the transition to parenthood, many couples do not experience permanent declines in relationship quality, and some even view their relationship more positively after having a child (Belsky & Kelly, 1994; ter Kuile et al., 2021). One recent investigation found that, although having and raising a child is stressful, around 80% of couples maintained at least moderately high levels of satisfaction across the transition to parenthood (Leonhardt et al., 2022). When pregnancy is planned (i.e., predictable), couples' relationships fared better than when the pregnancy was unplanned (Kluwer, 2010; Lawrence et al., 2008). Beyond the newlywed years, couples tend to sustain their intimacy through other potentially stressful transitions as well, such as children beginning school or leaving home as young adults (Menaghan, 1982; Menaghan, 1983). Thus, when partners can plan for a potentially stressful event, even couples with less adaptive communication and support skills may be able to minimize the impact of that event.

Couples, as opposed to individuals, may be especially protected from the potential long-term negative psychological consequences of moving because partners who move together have each other to rely on for support. Intimate relationships are consistently rated as people's most important relationship, strongly correlated with overall satisfaction with life (Carr et al., 2014). Even though other social ties may be lost in the process of moving, partners should be less stressed if they undertake that move with a supportive partner. In fact, although moving tends to reduce trust in strangers (Yuan et al., 2021), it motivates people to seek familiar objects and this may extend to familiar others like intimate partners (Oishi et al., 2012). One recent investigation in Turkey partially tested this hypothesis and found that more residentially mobile participants confided in their spouse more frequently and reported that their spouse was a greater source of

security and safety than less residentially mobile individuals (Yilmaz et al., 2022). Thus, although moving may be temporarily stressful for couples, this perspective suggests that experiencing that stress may not be damaging to couples' relationships, because it is a normative part of the early years of marriage.

The Life-Course Perspective

The normative perspective assumes that people generally move for one reason, i.e., to relieve the stresses of the current living situation, and that people who are *motivated* to move typically are *able* to move (Rossi, 1955). For these reasons, moving may be ultimately beneficial even if it is stressful in the short term. Yet scholars have criticized the normative perspective for its "simple, straightforward relationship between residential satisfaction, mobility intentions and actual moving behavior" (Lu, 1999, p. 467). The premise of the life-course perspective, in contrast, is that people move, or stay, for a variety of reasons. Family transitions (e.g., childbirth) and residential issues (e.g., housing prices) push people to find new places to live (Coulter et al., 2016; Rérat, 2020). As couples merge incomes and begin careers, they may outgrow their neighborhoods financially, motivating them to move to more affluent areas (Coulton et al., 2012). And as families grow and couples expect more privacy and space, those who live with extended family or friends should also be motivated to better their housing situation (Coulton et al., 2012). Within couples, partners may not always agree on when and where to move (Coulter et al., 2012). This perspective highlights that moving can vary in difficulty for couples, depending on 1) the motivation to move, 2) the outcome of the move (e.g., whether it relieves prior housing stress), and 3) the resources that people have available to them when they move. When stress is extreme, relationships may suffer, but when the stress is limited to only the

temporary inconveniences of packing, moving, and finding new routines and social groups, relationships may be better protected (Dieleman, 2001).

From this perspective, couples' relationships are at greatest risk when they live in conditions that do not match their needs or desires. Couples who find themselves in cramped conditions or undesirable neighborhoods experience greater stress (Clark & Huang, 2003), a higher likelihood of adverse mental health outcomes (Cutrona et al., 2006), and have difficulty accumulating social and financial capital (Thomas et al., 2018), all of which makes relationships difficult to maintain (e.g., Karney & Bradbury, 1995). When spouses live with other people outside their immediate family, such as extended family or friends, they may struggle to maintain intimacy with little privacy or have difficulty communicating effectively when others are constantly nearby (Coulter & Thomas, 2019). Thus, living with others may motivate couples to seek better living conditions. Similarly, couples may be motivated to move from less affluent neighborhoods to more affluent neighborhoods when they are able (i.e., when they are doing better economically than those around them), as neighborhood socioeconomic status has a notable impact on child development and academic achievement (Leventhal & Brooks-Gunn, 2014). The life-course perspective posits that there are at least two ways that residential mobility, or a lack thereof, may put couples in undesirable conditions. First, couples who *should* be motivated to move, (e.g., newlyweds, young couples expecting children, more affluent families living in less affluent neighborhoods), may not be *able* to move. Some couples are simply stuck where they live (Coulter, 2013; Coulter et al., 2016) because they do not have the funds to relocate or because they are caring for an aging or sick family member, for example. Feeling stuck in place is becoming increasingly common in the United States, with the proportion of residents claiming they live places they no longer wish to live increasing by 50% since the 1970s

(Buttrick & Oishi, 2021). Thus, the simplistic notion that people move when they want to may be increasingly outdated. Second, couples who are *not motivated* to move may do so anyways, often ending up in worse conditions. People do not move just because they need to find a bigger home to fit their growing family or downsize post-retirement, but also because they were kicked out of the house by their parents, because they lost their job and must find cheaper housing, or because they need to move closer to an ailing family member to provide care (Sheller & Urry, 2006). In fact, over a quarter of movers are dissatisfied with their new living conditions (Phinney, 2013).

The more that couples have relational and tangible resources available to them when they do or do not move, the more protected their relationship should be (Coulter et al., 2016), for several reasons. First, couples vary in their communication skills and capacity to support one another (Carroll et al., 2013; Randall & Bodenmann, 2009). Those that do communicate more effectively should be less impacted by both normative and non-normative residential transitions. Second, socioeconomic resources like income protect against acute stressors. Low-income families who have greater assets experience less family disruption when confronted by acute stressors than families with fewer assets (Rothwell & Han, 2010).

By highlighting the downsides (e.g., stress) and upsides (e.g., moving to a better neighborhood) of moving, the life-course perspective also raises the possibility that moving may be detrimental to the relationship in the short-term, during and immediately after the move while couples deal with the stresses of physically moving and the changing routines of living in a new home or neighborhood, but beneficial in the long-term after couples have settled into their new residence. This would mean that the *concurrent effect* of moving (i.e., how moving affects the relationship around the time of the move) may be negative whereas the *lagged effect* (i.e., how moving affects the relationship a short time *after* the move) may be positive.

The Current Study

Support for each of these models would indicate something different about the nature of stress that couples frequently encounter early in their marriages. Results favoring the family stress perspective suggest even the most common transitions for young couples can negatively affect intimacy, potentially pulling partners apart at a time when they should be most satisfied, whereas support for the normative stress perspective would indicate that even a significant life event like moving homes is only moderately stressful and minimally damaging for partners who can rely on each other while navigating this transition. Support for the life-course perspective would suggest the implications of moving for relationships stems from the interplay between the event and the partners' resources, living situation, and state of mind, and that not all couples view or experience moving the same. All three of these perspectives will lead to different suggestions for how relationship researchers not only study moving, but stress in general. That being said, research on the effects of moving on marital processes has been largely absent, with one scholar recently noting that "the current understanding of the impact of moving homes is limited" (Cheung & Wong, 2022, p. 1) due to a lack of longitudinal data needed to address these questions. This is despite Peter Rossi's seminal work recognizing that residential mobility should have interpersonal consequences (Rossi, 1955) and decades of scholarship describing moving as a disruptive process with potentially negative mental health and relational consequences (Munton, 1990; Oishi & Talhelm, 2012). The current work overcomes the limitations of prior research by drawing upon two studies of newlywed married couples that were interviewed over the first several years of their marriages. These analyses were preregistered: https://osf.io/nvg7a/. Study 1 consists of 231 couples interviewed four times over nearly three years, and Study 2 consists of 431 couples interviewed seven times over 10 years. Using a multi-method approach

consisting of self-report data, behavioral data, and data from the US Census, we drew upon these data to address the following two research questions:

1. *How does residential mobility affect couples' marital satisfaction on average?* Family stress theories predict that couples may struggle to maintain their satisfaction through the moving process, but the normative perspective predicts that the stress of moving may not be detrimental to marriage and perhaps is beneficial as couples move to circumstances that fit their needs. The life-course perspective integrates the two and predicts that there may be a slight negative *concurrent* effect of moving on marital satisfaction (because moving is stressful), but a positive *lagged* effect (because moving is normative and, further, may lead to a better housing situation).
2. *What makes moving (or a lack thereof) better or worse for couples?* Towards this aim, we tested how the association between moving and marital satisfaction depended on three factors. The following hypotheses apply to both the *concurrent* effect and *lagged* effect of moving. First, marital satisfaction should be higher to the extent that couples move when they are motivated to move (2 predictions):
    a. **Household-to-neighborhood SES comparison**: The effect of moving on couples' satisfaction should be more positive if they had a higher socioeconomic status relative to their neighborhood when they moved.
    b. **Living with others**: The effect of moving on couples' satisfaction should be more positive if they lived with people other than their immediate family prior to the move.

Second, marital satisfaction should be higher to the extent that the outcome of the move is positive (2 predictions):

a. **Housing satisfaction**: The effect of moving on couples' satisfaction should be more positive to the extent that they experience greater satisfaction with their living conditions following the move.
b. **Neighborhood satisfaction**: The effect of moving on couples' satisfaction should be more positive to the extent that they experience greater satisfaction with their neighborhood following the move.

Third, marital satisfaction should be higher to the extent that couples possess greater relational and socioeconomic resources (2 predictions):

a. **Communication**: The effect of moving on couples' satisfaction should be more positive to the extent that couples communicate with one another more positively.
b. **Income**: The effect of moving on couples' satisfaction should be more positive to the extent that couples have higher income.

Study 1

In Study 1, we drew upon four waves of a longitudinal study of newlywed married couples. Based on the structure of the data, as described in further detail below, this study was best positioned to address a between-person main effect of residential moves on marital satisfaction (RQ #1) and whether couples who communicated better and had higher income experienced a more positive association between moving and marital satisfaction (RQ #2).

Method

Sampling

Between 2014 and 2015, recently married couples living in lower income communities were identified through marriage license applications obtained from the Recorder's Office in Harris County, Texas, the third most populous county in the United States. Because sample

recruitment occurred before the legalization of same-sex marriage nationwide, all couples were mixed-gender. Addresses were matched with census data to identify couples living in census block groups where a minimum of 30% of households were categorized as living below the poverty line (United States Census Bureau, 2013). Because eligibility was linked to neighborhood income rather than household income, this sampling frame was selected to maximize the likelihood of including poorer couples that have been often overlooked in prior research. Through this procedure, 4,916 couples were identified for screening on the telephone or in person. Among the couples attempted for screening, 3,535 could not be reached and 1,157 (24%) responded and agreed to be screened for eligibility. Interviewers screened couples to ensure they had married, partners were in their first marriage, partners spoke English or Spanish, and both partners were at least 18 years old. This screening identified 506 eligible couples, and 401 (79%) agreed to participate in the study. The 231 couples who were interviewed prior to the close of the baseline assessment period comprise the current sample. All procedures were approved by the RAND Corporation institutional review board.

Participants

The final sample of 231 couples had been married for an average of 5.5 months (*SD* = 2.0) at baseline. Wives were 28.1 (*SD* = 7.4) years old and husbands were 29.5 (*SD* = 7.5) years old, on average. The majority of wives (54%) and husbands (60%) reported receiving less than or the equivalent of a high school diploma or General Educational Development (GED) test. Approximately 16% of wives and 12% of husbands reported a college degree or higher education. In terms of racial identification, 53% of wives and 52% of husbands identified as Latinx, 35% of wives and 32% of husbands as Black, 9% of wives and 10% of husbands as White, and 4% of wives and 7% of husbands as Other/multiracial.

Procedure

Couples were interviewed four times at approximately nine-month intervals between 2015 and 2017. Data collection during the fourth assessment was interrupted by Hurricane Harvey in August 2017, limiting the sample to 25 couples at that time. Trained interviewers visited couples in their homes at each assessment. They took spouses to separate areas to obtain informed consent and verbally administer the individual interviews.

Measures

For Study 1 analyses, we used exclusively time-invariant predictors. Our focal independent variable, moving, was assessed at the three interviews after the baseline interview. Due to attrition and particularly to the interruption of Hurricane Harvey, there were less than 2 within-person moving observations on average (i.e., on average, couples were asked about moving fewer than twice). Given that within-person effects are more difficult to detect with fewer repeated observations (Curran & Bauer, 2011), we decided to treat the moving variable (and associated moderators) as time-invariant. We conducted power analyses using the R *mlmpower* package, which showed that there was 96% power to detect an interaction effect with an effect size of R=.01 (Aguinis et al., 2005; Keller, n.d.).

Dependent Variable: Marital Satisfaction

Partners assessed their marital satisfaction using a 10-item scale adapted from the Couple Satisfaction Index (Funk & Rogge, 2007). Items addressed general evaluations of the relationship (e.g., “Our relationship is strong”) and characteristics of the partner (e.g., “How well does your partner meet your needs?”). Nine of the 10 items were on a 6-point scale, and one on a 7-point scale. All items were recoded to a 6-point scale (i.e., 0-5), then averaged for each individual, creating a final composite measure. The average satisfaction for husbands at Time 1

was 4.25 (*SD* = 0.77) and the average for wives was 4.24 (*SD* = 0.76), with a maximum possible score of 5. Cronbach's alpha for the 10 items ranged from .85-.94 for husbands across the four assessments, and for wives from .87-.92.

Focal Independent Variable: Moving

Spouses were asked at each time, beginning at the second assessment, whether they moved to a new residence since the last time they were interviewed. We created two binary, time-invariant, moving variables. The first (i.e., the *0/1* variable) coded couples who moved once during Times 2-4 as "1" and those who did not move as "0." Thus, couples who moved 2 or 3 times were excluded from this variable. The second (i.e., the *0/1+* variable) coded couples in which either spouse indicated that they had moved at least once during Times 2-4 as "1" and those who did not move during those times as "0." Of the 204 couples who provided data at the second assessment (the first at which they were asked about moving), 90 (44%) did not move during the study, 74 (36%) moved once during the study, and 40 (20%) moved more than once.

Income

Husbands and wives were separately asked to report their monthly income. Responses were summed to create a household income variable. To create a time-invariant variable, incomes from all available timepoints were averaged to create an average income variable. The median income value of the sample was $36,563.

Communication

At the baseline assessment, couples participated in an 8-minute conflict discussion. Trained research assistants continuously and concurrently rated the individual partners for *affiliation* (i.e., expressions of engagement and connectedness) using a computer joystick, on scales ranging from -100 to +100. Ratings were sampled at a rate of twice per second, consistent

with procedures used in previous studies (e.g., Ross et al., 2017; Sadler et al., 2009). To create time-invariant variables, the affiliation measurements for each spouse were averaged across the entire discussion, creating a variable each for husbands and wives. The average affiliation score for husbands was 11.73 (*SD* = 22.34) and for wives it was 16.81 (*SD* = 17.97).

Analytic Plan

To address our research aims, we conducted multilevel modeling using Restricted Estimation Maximum Likelihood to estimate random effects in SPSS using the MIXED procedure (Corbeil & Searle, 1976). We used a two-intercept approach where appropriate, which models data from both spouses, providing separate husband and wife intercepts and slopes and accounting for the covariance between husbands' and wives' responses (Planalp et al., 2017; Raudenbush et al., 1995). The supplemental materials link contains data, a codebook, and syntax for all models: https://osf.io/nvg7a/.

Research Aim 1: Main Effect of Moving on Satisfaction

The first research question is whether moving, disregarding other factors, is associated with marital satisfaction. The multilevel model to address this question has the following level-1 equation:

$$Sat_{idt} = b_{1d}(Husband_{id}) + b_{2d}(Wife_{id}) + b_{3d}(Time_{idt} * Husband_{id}) + b_{4d}(Time_{idt} * Wife_{id}) + e_{idt}$$

The outcome is marital satisfaction, which varies across time and can be different for husbands and wives in the same couple. The b_{1d} and b_{2d} coefficients are the satisfaction intercepts for husbands and wives and b_{3d} and b_{4d} represent the linear change in satisfaction for husbands and wives. The level-2 equations are:

$$b_{1d} = b_{10} + b_{11}(Move_d) + \zeta_{1d}$$

$$b_{2d} = b_{20} + b_{21}(Move_d) + \zeta_{2d}$$

$$b_{3d} = b_{30} + \zeta_{3d}$$

$$b_{4d} = b_{40} + \zeta_{4d}$$

The b_{11} coefficient represents the expected difference in satisfaction intercepts between husbands who did move compared to husbands who did not move. This model was run twice, once with the moving variable that excluded those who moved two or more times (i.e., the *0/1* moving variable) and once with the variable that included those couples (i.e., the *0/1+* moving variable). The b_{21} coefficient is the same but for wives. The b_{30} and b_{40} coefficients represent the average satisfaction slope for husbands and wives, respectively.

Research Aim 2: Moderators of the Effect of Moving on Satisfaction

The second research question addresses whether the effects of moving on marital satisfaction depend on other factors which, in Study 1, are the resources (i.e., income and communication) available to the couple. The level-1 equation is the same as for the main effect of moving described earlier. The level-2 equation, using income as an example, is:

$$b_{1d} = b_{10} + b_{11}(Move_d) + b_{12}(Inc_d) + b_{13}(Move_d * Inc_d) + \zeta_{1d}$$

$$b_{2d} = b_{20} + b_{21}(Move_d) + b_{22}(Inc_d) + b_{23}(Move_d * Inc_d) + \zeta_{2d}$$

$$b_{3d} = b_{30} + \zeta_{3d}$$

$$b_{4d} = b_{40} + \zeta_{4d}$$

The focal coefficients in this model are b_{13} (husbands) and b_{23} (wives), which represent how the effect of moving on marital satisfaction intercepts differs for spouses who differ in their incomes by 1-unit.

Results

Main Effect of Moving on Satisfaction

Descriptive statistics and correlations for the Study 1 variables are provided in Table 4-1. Results from the three focal models are provided in Table 4-2. First, we examined whether there was a main effect of moving on satisfaction for the moving variable in which we included only participants who had moved 0 or 1 times. There was no main effect of moving on satisfaction for husbands (b = 0.05, t = 0.44, p = .661) or wives (b = 0.15, t = 1.30, p = .195). Second, we ran a model that used the moving variable in which participants were coded as having moved 0 times or 1+ times. Similarly, there was no main effect of moving on satisfaction for husbands (b = -0.01, t = -0.13, p = .899) or wives (b = 0.17, t = 1.72, p = .087).

Moderation of the Effect of Moving on Satisfaction

Although we did not find a main effect of moving on satisfaction in Study 1, this does not preclude the possibility that the effect depends on couples' financial (i.e., income) and interpersonal (i.e., communication) resources. To address whether communication moderated the effect of moving on satisfaction, we entered communication as a level-2 moderator in two separate models, one for each of the moving variables. For the *0/1* variable, communication did not moderate the effect of moving on satisfaction for husbands (b = 0.00, t = -0.01, p = .994) or wives (b = 0.00, t = -0.06, p = .056). The same was true for the *0/1+* variable, in which communication also did not moderate the effect of moving on satisfaction for husbands (b = 0.00, t = 0.48, p = .635) or wives (b = 0.00, t = -0.12, p = .904).

To address whether income moderated the effect of moving on satisfaction, we again entered the couples' average income as a level-2 variable in two separate models. For the *0/1* variable, income did not moderate the effect of moving on satisfaction for husbands (b = 0.00, t = -0.33, p = .741) or wives (b = 0.00, t = -1.01, p = .312). Income also did not moderate the effect

of the *0/1+* moving variable on satisfaction for husbands ($b = 0.00$, $t = -0.10$, $p = .920$) or wives ($b = 0.00$, $t = -1.45$, $p = .148$).

Discussion

We did not find a significant main effect of moving on marital satisfaction, nor did we find that income or communication moderated the effect of moving on satisfaction. The results of Study 1 therefore support the normative perspective. That is, these results are consistent with the idea that moving is experienced as a common, predictable feature of young married couples' lives and as such has little effect on couples' ability to maintain their intimacy. Yet, although Study 1 had several strengths, including leveraging a diverse, relatively large sample of couples with significant variation in socioeconomic status, it also had some limitations. For example, the sample size and number of observations per spouse did not allow for a within-person investigation of the effects of moving. That is, Study 1 was not able to examine whether spouses were more or less satisfied than usual following a move. Additionally, moderator analyses were limited to couples' resources in Study 1. In Study 2, we undertook a second, independent test of our hypotheses, this time addressing within-person effects of moving and more expansive analyses of moderation.

Study 2

Compared to Study 1, Study 2 leveraged a sample that was nearly twice as large ($n = 431$) studied for twice as long (7 assessments over 12 years). As explained in more depth below, this allowed us to address whether residential moves were associated with within-person changes in marital satisfaction. These within-person analyses examined both the *concurrent* and *lagged* effects of moving, addressing the possibility that any effects of moving on marital satisfaction may change over time. Study 2 also addressed our second research question in greater depth,

including within-person moderators of the effect of moving on marital satisfaction, specifically the motivations to move (e.g., living with others) and outcomes of the move (e.g., satisfaction with living conditions), as well as the resources that were addressed in Study 1 (i.e., communication and income).

Method

Sampling

Recently married couples were identified through names and addresses on marriage license applications filed during 2009, obtained from the Los Angeles County Recorder's Office. Again, because sample recruitment occurred before the legalization of same-sex marriage, all couples were mixed-gender. The sampling procedure of this second longitudinal study was designed to yield first-married newlywed couples in which both partners were of the same race/ethnicity (i.e., Latinx, Black, or White), living in neighborhoods with a high proportion of low-income residents in Los Angeles County. Addresses were matched with census data to identify applicants living in census block groups wherein the median household income was no more than 160% of the 1999 federal poverty level for a 4-person family. Names on the licenses were then weighted using data from a Bayesian Census Surname Combination, which integrates census and surname information to produce a multinomial probability of membership in each of four racial/ethnic categories. Couples were chosen using probabilities proportionate to the ratio of target prevalences to the population prevalences, weighted by the couple's average estimated probability of being Latinx, Black, or White. Couples were screened to ensure that they were married, that neither partner had been previously married, and that both spouses identified as Latinx, Black, or White. A total of 3,793 couples were identified through addresses listed on their marriage licenses for screening on the telephone or in person. Of those, 2,049 could not be

reached and 1,522 (40%) responded to a mailing and agreed to be screened for eligibility. Interviewers screened couples to ensure they had married, partners were in their first marriage, partners identified as the same race/ethnicity (i.e., Latinx, Black, or White), and both partners were at least 18 years old. This screening identified 824 eligible couples, and 658 (80%) of those couples agreed to participate in the study. A final baseline sample of 431 couples completed the initial assessment of this longitudinal study within the data collection window. All procedures were approved by the RAND Corporation institutional review board.

Participants

The final sample of 431 husbands and wives had been married for an average of 4.8 months (*SD* = 2.5) at baseline. Wives were 26.7 (*SD* = 5.0) years old and husbands were 28.4 (*SD* = 5.8) years old, on average. Approximately 85% of wives and 79% of husbands reported receiving a high school diploma or greater, with 28% of wives and 20% of husbands receiving a college degree or higher education. Spouses were required to identify as Latinx, Black, or White during the screening process to be included in the study. Of the 431 husbands and wives, 76% identified as Latinx, 12% identified as White, and 12% identified as Black.

Procedure

Couples were interviewed five times between 2009 and 2014, at approximately nine-month intervals, and then were recontacted for a sixth interview in 2018-2019. This began a series of five additional interviews between 2018 and 2022. Thus, couples who participated fully completed 10 interviews between 2009 and 2022. The data examined here were obtained from the first seven interviews, spanning from 2009 to 2020, because the COVID-19 pandemic beginning in mid-2020 had profound effects on residential mobility (Czarnecki et al., 2023; Lei & Liu, 2022). Trained interviewers visited couples in their homes at each assessment. They took

spouses to separate areas to obtain informed consent and verbally administer the individual interviews.

Measures

Our research questions were best answered with within-person analyses. For example, understanding whether couples were more satisfied than normal after they had moved requires time-varying predictors, as does assessing whether this effect depends on motivations and outcomes of moving. The level-2 sample size (n = 431) and the number of within-person observations allowed us to analyze within-person effects (Curran & Bauer, 2011). We conducted power analyses using the R *mlmpower* package, which showed that there was 94% power to detect an interaction effect with an effect size of R=.005 (Aguinis et al., 2005; Keller, n.d.). All predictors in Study 2 were time-varying except for communication, which was not assessed at every interview. Communication in couples is generally quite stable (Smith et al., 2008), justifying our decision to include it as a time-invariant variable.

Dependent Variable: Marital Satisfaction

Partners assessed their marital satisfaction using an 8-item scale. Five of the eight items asked the spouse how satisfied they were with a specific area of their relationship (e.g., "How satisfied are you with the way he/she contributes to household chores?"). Three items asked to what degree the spouse agreed with a statement about their relationship (e.g., "How much do you trust your partner?"). Individual measures were on 4- and 5-point scales. For these analyses, the 4-point scales were recoded to 5-point scales. The eight items were averaged for each individual, creating a final composite measure. The average satisfaction for husbands at Time 1 was 4.58 (SD = 0.41) and the average for wives was 4.49 (SD = 0.45). Cronbach's alpha for the eight

items ranged from .70-.83 for husbands across the seven assessments, and for wives from .71-.81.

Focal Independent Variable: Moving

Spouses were asked at each time, beginning with the second assessment, whether they moved to a new residence since the last time they were interviewed. If either spouse indicated that they had moved at a given assessment, the couple was coded as "1." If both spouses indicated that they had not moved, the couple was coded as "0." To account for the fact that moving may be detrimental to couples in the short term, but beneficial in the long run (i.e., a *lagged moving effect,* in contrast to a *concurrent moving effect*), another moving variable was displaced forward by one timepoint, thus representing whether the couple had moved at the prior timepoint. Additionally, we conducted exploratory analyses to investigate a *sustained moving effect*, that is, whether satisfaction differed at every timepoint including and after a move compared to prior to the move. To test this, we created a moving variable in which every timepoint including and after the first move was coded "1" and every timepoint prior to the move as "0." Of the 395 couples who provided data at the second assessment (the first at which they were asked about moving), 106 (27%) did not move during the study, 127 (32%) moved once, 95 (24%) moved twice, and 67 (17%) moved more than twice.

Motivations for Moving

Household-to-Neighborhood SES Comparison. To compute the household-to-neighborhood SES comparison, we first computed a household SES variable based on the following data that couples provided at Times 1-6: 1) yearly household income (adding spouses individual incomes), 2) couple education level (averaging spouses' education levels), and 3) household size. Each item was independently standardized relative to the rest of the sample, then

summed (income + education - household size) to create a final, composite measure of household SES. Cronbach's alpha for the three components ranged from .53-.66 across the study period.

Second, we computed a neighborhood SES variable, a composite of 3 items gathered from the American Community Survey at the census tract-level for each couple based on their home address: 1) median income, 2) average tract education level, and 3) average household size. Each item was independently standardized relative to the rest of the sample, then summed (income + education - household size) to create the final neighborhood SES measure. Cronbach's alpha for the three components ranged from .82-.84 across the study period.

Next, we created a household-to-neighborhood SES comparison variable by subtracting the neighborhood SES variable from the household SES variable. Higher values indicated couples doing better relative to their neighborhood. This variable was displaced forward by one timepoint to represent the household-to-neighborhood SES comparison at the *prior* timepoint, which allowed us to test our hypothesis that couples who were doing better financially compared to their neighborhood prior to moving would have a more positive within-person effect of moving on marital satisfaction. The average value for this variable at the baseline assessment was 0.00 (*SD* = 2.27).

Living with Others. Spouses were asked who lived in their household at each interview. If either spouse reported living with anyone besides their children (e.g., friends, parents, grandparents), both the husband and wife in that couple were coded as "1" (i.e., living with others). All others were coded "0." This variable was displaced forward by one timepoint, so that a value of "1" represented a couple living with others at the *prior* timepoint. At the baseline assessment, 43% of couples lived with others.

Moving Outcomes

Satisfaction with Living Conditions. At each timepoint aside from Time 5, spouses were asked "How do you feel about your current living situation? Would you say you are very satisfied, somewhat satisfied, neutral, somewhat dissatisfied, or very dissatisfied?" Thus, values ranged from 0-4, with higher values indicating greater satisfaction. The average satisfaction with living conditions at the baseline assessment was 2.80 (*SD* = 1.14) for husbands and 2.82 (*SD* = 1.22) for wives.

Neighborhood Satisfaction. At each timepoint aside from Time 5, spouses were asked two questions about their perception of their neighborhood (i.e., being a good place to raise kids and people being trustworthy in the neighborhood), measured on 1-5 scales. For husbands, Cronbach's alpha for these two items ranged from .71-.82 across the study period, and for wives it ranged from .73-.81. Items were averaged to create composite measures such that higher values represented greater satisfaction. The average neighborhood satisfaction at the baseline assessment was 2.14 (*SD* = 0.99) for husbands and 2.14 (*SD* = 1.00) for wives.

Resources

Income. At each assessment, husbands and wives were separately asked to report their monthly income. Responses were summed to create a household income variable. Unlike Study 1, the variable in Study 2 was time-varying. It was displaced by one timepoint to represent income at the *prior* timepoint. At the baseline assessment, the median household income of the sample was $50,000.

Communication. Spouses engaged in three 8-minute discussions at the first interview: a problem-solving discussion, a husband social support discussion, and a wife social support discussion. These discussions were videotaped and 16 trained research assistants coded each

spouse on each tape using the Iowa Family Interaction Rating Scales (Melby & Conger, 2001; Williamson et al., 2011). Spouses were coded for indicators of positivity (e.g., positive mood, physical affection), negativity (e.g., contempt, denial), and effectiveness (e.g., solution quality and quantity). The positivity scores were averaged across the three discussions, as were the negativity and effectiveness scores, each with a range of 1-9. For these analyses, to create a composite and time-invariant variable, we added the positivity and effectiveness scores and subtracted the negativity scores for each spouse. The average communication score for husbands was 4.64 (*SD* = 1.60) and for wives it was 4.70 (*SD* = 1.51). The minimum possible score was -7 and maximum possible score was 17.

Analytic Plan

As in Study 1, we conducted multilevel modeling using Restricted Estimation Maximum Likelihood to estimate random effects in SPSS using the MIXED procedure (Corbeil & Searle, 1976) and used a two-intercept approach where appropriate (Planalp et al., 2017; Raudenbush et al., 1995). The supplemental materials link contains data, a codebook, and syntax for all models: https://osf.io/nvg7a/.

Research Aim 1: Main Effect of Moving on Satisfaction

The first research question addressed whether spouses' satisfaction covaries with moving. In contrast to Study 1, moving was a time-varying variable in Study 2. Thus, the level-1 equation for the main effect of moving on satisfaction is as follows:

$$Sat_{idt} = b_{1d}(Husband_{id}) + b_{2d}(Wife_{id}) + b_{3d}(Time_{idt} * Husband_{id}) + b_{4d}(Time_{idt} * Wife_{id}) + b_{5d}(cwc(Move_{idt}) * Husband_{id}) + b_{6d}(cwc(Move_{idt}) * Wife_{id}) + e_{idt}$$

In this case, the moving variable is centered within each person (or "cluster") which removes the between-person variability and allows us to test within-person effects (Enders & Tofighi, 2007). The level-2 equations are as follows:

$$b_{1d} = b_{10} + \zeta_{1d}$$

$$b_{2d} = b_{20} + \zeta_{2d}$$

$$b_{3d} = b_{30} + \zeta_{3d}$$

$$b_{4d} = b_{40} + \zeta_{4d}$$

$$b_{5d} = b_{50}$$

$$b_{6d} = b_{60}$$

The focal coefficients are b_{50} (husbands) and b_{60} (wives) which represent the average difference in satisfaction for an individual at a timepoint at which they reported having moved compared to a timepoint at which they reported not moving. This model was run using the *concurrent* moving variable, *lagged* moving variable, and exploratory *sustained* moving variable.

Research Aim 2: Moderators of the Effect of Moving on Satisfaction

The second research question was the same as in Study 1, but the sample size and number of within-person observations in the Study 2 sample allowed us to treat most of the moderators as time-varying variables. When this was the case, the level-1 equation is as follows, using the SES comparison variable as an example:

$$Sat_{idt} = b_{1d}(Husband_{id}) + b_{2d}(Wife_{id}) + b_{3d}(Time_{idt} * Husband_{id}) + b_{4d}(Time_{idt} * Wife_{id}) + b_{5d}(cwc(Move_{idt}) * Husband_{id}) + b_{6d}(cwc(Move_{idt}) * Wife_{id}) + b_{7d}(cwc(SES_{idt}) * Husband_{id}) + b_{8d}(cwc(SES_{idt}) * Wife_{id}) + b_{9d}(cwc(Move_{idt}) * cwc(SES_{idt}) * Husband_{id}) + b_{10d}(cwc(Move_{idt}) * cwc(SES_{idt}) * Wife_{id}) + e_{idt}$$

Like the moving variable, the SES variable is also centered within cluster. The level-2 equations are as follows:

$$b_{1d} = b_{10} + \zeta_{1d}$$

$$b_{2d} = b_{20} + \zeta_{2d}$$

$$b_{3d} = b_{30} + \zeta_{3d}$$

$$b_{4d} = b_{40} + \zeta_{4d}$$

$$b_{5d} = b_{50}$$

$$b_{6d} = b_{60}$$

$$b_{7d} = b_{70}$$

$$b_{8d} = b_{80}$$

$$b_{9d} = b_{90}$$

$$b_{10d} = b_{100}$$

In this example, the focal coefficients are b_{90} (husbands) and b_{100} (wives). These describe how the within-person effect of moving on satisfaction is expected to differ for a 1-unit increase in the SES comparison variable. That is, we might expect that couples have lower satisfaction right after they move, but this is attenuated to the extent that they were doing better compared to their neighborhood prior to the move. Similar to the main effects models, this model

was run using the *concurrent* moving variable, *lagged* moving variable, and exploratory *sustained* moving variable. The moderator variables were lagged by an additional timepoint in the *lagged* moving variable analyses. For the communication moderator variable (the only level-2 variable in the Study 2 analyses), the level-1 equation is:

$$Sat_{idt} = b_{1d}(Husband_{id}) + b_{2d}(Wife_{id}) + b_{3d}(Time_{idt} * Husband_{id}) + b_{4d}(Time_{idt} * Wife_{id}) + b_{5d}(cwc(Move_{idt}) * Husband_{id}) + b_{6d}(cwc(Move_{idt}) * Wife_{id}) + e_{idt}$$

The level-2 equations are as follows:

$$b_{1d} = b_{10} + \zeta_{1d}$$

$$b_{2d} = b_{20} + \zeta_{2d}$$

$$b_{3d} = b_{30} + \zeta_{3d}$$

$$b_{4d} = b_{40} + \zeta_{4d}$$

$$b_{5d} = b_{50} + b_{51}(cgm(Comm_{id})) + \zeta_{5d}$$

$$b_{6d} = b_{60} + b_{61}(cgm(Comm_{id})) + \zeta_{6d}$$

In this analysis, the communication variable is centered at the grand mean to aid interpretability of the coefficients. The focal coefficients in this model are b_{51} (husbands) and b_{61} (wives), which represent how the within-person effect of moving on marital satisfaction differs for spouses who differ on the communication variable by 1-unit. We also ran exploratory models in Study 2 that included effect coded and uncentered versions of the binary, level-1 variables (i.e., moving and living with others) which yielded similar results, so we report only the results of the analyses described above.

Results

Descriptive Statistics and Covariate Main Effects

Table 4-3 contains the descriptive statistics and correlations for the entire set of Study 2 variables. Additionally, we ran exploratory, preliminary analyses to address the main effects of the covariates on marital satisfaction, before subsequently using them as moderators. Table 4-4 displays the results of these analyses. The motivations to move were not significantly associated with marital satisfaction. Husbands' and wives' marital satisfaction ratings were not associated with whether they were living with others (husbands: $b = 0.00$, $t = 0.17$, $p = .86$; wives: $b = -0.04$, $t = -1.54$, $p = .12$) or their SES relative to their neighborhood (husbands: $b = 0.00$, $t = 0.43$, $p = .66$; wives: $b = 0.01$, $t = 1.53$, $p = .13$). However, the moving outcome variables were both significantly associated with marital satisfaction for husbands and for wives. Husbands who were more satisfied with their living conditions than average at a given timepoint were likely to be more satisfied with their relationship at that timepoint as well, $b = 0.05$, $t = 5.63$, $p < .01$. The same was true for wives, $b = 0.05$, $t = 5.20$, $p < .01$. Similarly, husbands who were more satisfied with their neighborhood than average at a given timepoint were likely to be more satisfied with their relationship at that timepoint as well, $b = 0.03$, $t = 2.54$, $p = .01$. Again, the same was true for wives, $b = 0.03$, $t = 2.49$, $p = .01$. Lastly, in terms of resources, husbands and wives who communicated more positively, more effectively, and less negatively were more satisfied with their relationships overall (husbands: $b = 0.03$, $t = 2.58$, $p = .01$; wives: $b = 0.06$, $t = 4.38$, $p = < .01$). Counter-intuitively, husbands who had more income at a given timepoint relative to their average were likely to be *less* satisfied at that timepoint ($b = 0.00$, $t = -2.30$, $p = .02$). Spouses may have to work longer hours and spend less time with each other in order to make more money than usual, possibly accounting for why husbands may have been temporarily less satisfied even though they were earning more money. In support of this hypothesis, we ran an exploratory analysis which showed that earning more money at the *previous* assessment was not

associated with husbands' satisfaction at the *next* assessment (b = 0.00, t = 0.96, p = .34). The main effect of income on wives' marital satisfaction was not significant (b = 0.00, t = 0.57, p = .57).

Concurrent Effect: Main Effect of Moving on Satisfaction

Results from the Study 2 analyses are provided in Table 4-5. We first tested whether there was a *concurrent* within-person effect of moving on satisfaction, that is, whether spouses' satisfaction differed depending on whether they had just moved or not. Results showed that there was not a significant within-person effect of moving on marital satisfaction for husbands (b = 0.01, t = 0.68, p = .50) or wives (b = -0.03, t = -1.18, p = .24).

Concurrent Effect: Moderators of the Effect of Moving on Satisfaction

As Table 4-5 shows, we then examined whether any of the motivations for moving, outcomes of moving, or resources moderated the *concurrent* effect of moving on satisfaction. Results showed that this within-person effect did not depend on whether spouses were living with others at the timepoint prior to the move, for either husbands (b = -0.09, t = -1.28, p = .20) or wives (b = 0.07, t = 0.87, p = .38). Similarly, the within-person effect of moving on satisfaction did not depend on whether couples' SES was higher or lower compared to that of their neighborhood prior to the move, for either husbands (b = 0.02, t = 1.36, p = .18) or wives (b = 0.01, t = 0.70, p = .48). We then assessed whether the within-person effect of moving on satisfaction depended on the outcome of the move, i.e., whether spouses were more satisfied than normal with their living conditions or with their neighborhood. There was some support for this for husbands, such that the effect of moving on satisfaction was less negative (more positive) for husbands who were more satisfied with their living conditions relative to average after the move, b = 0.07, t = 2.49, p = .01. Figure 4-1 depicts this interaction, showing that husbands tended to be

less satisfied than normal if they had just moved to a place where they were less satisfied with their living conditions than normal, compared to having not moved. This simple slope was not significant for those with moderate or high satisfaction with living conditions. The interaction was nonsignificant for wives, b = -0.02, t = -0.52, p = .60. Neighborhood satisfaction did not moderate the effect of moving on satisfaction for husbands (b = 0.01, t = 0.23, p = .82) or for wives (b = 0.00, t = 0.02, p = .98). Next, we assessed whether the within-person effect of moving on satisfaction depended on interpersonal and financial resources available to couples. Results showed that communication skills did not moderate the effect of moving on satisfaction for husbands (b = 0.00, t = -0.23, p = .82) or wives (b = 0.01, t = 0.86, p = .39). There was similarly no significant moderation of income on the effect of moving on satisfaction for husbands (b = 0.00, t = -1.43, p = .16) or wives (b = 0.00, t = 0.53, p = .70).

Lagged Effect: Main Effect of Moving on Satisfaction

Although we did not find a significant *concurrent* effect of moving on satisfaction, there still may be a *lagged* effect given that the actual process of moving is likely stressful for most people and so the benefits of moving for couples could take time to materialize (e.g., Bartlett, 1997; Oishi & Talhelm, 2012). However, we also did not find a significant main effect of the *lagged* moving variable on satisfaction for husbands or wives, indicating that spouses were not more satisfied with their relationships at the timepoint subsequent a move relative to their average satisfaction (husbands: b = -0.02, t = -0.66, p = .51; wives: b = -0.01, t = -0.28, p = .78).

Lagged Effect: Moderators of the Effect of Moving on Satisfaction

We next tested whether any of the motivations to move, moving outcomes, or couple resources moderated the *lagged* effect of moving on satisfaction. For the motivation variables, results in Table 4-5 show that husbands who were living with others prior to the move had a

more positive within-person *lagged* effect of moving on satisfaction compared to husbands who were not living with others prior to the move ($b = 0.16$, $t = 1.99$, $p = .05$). Figure 4-2 depicts this interaction, showing that, on average, for husbands who did live with others, moving was not associated with marital satisfaction, but for husbands who had not been living with others, moving was associated with lower marital satisfaction 9 months after the move. For wives, this effect was nonsignificant, $b = 0.14$, $t = 1.55$, $p = .12$. The SES comparison variable also did not moderate the *lagged* within-person effect of moving on marital satisfaction for either husbands ($b = -0.01$, $t = -0.43$, $p = .67$) or wives ($b = 0.00$, $t = 0.18$, $p = .86$). In terms of the moving outcomes factors, satisfaction with living conditions did not moderate the *lagged* within-person effect of moving on marital satisfaction for husbands ($b = 0.01$, $t = 0.30$, $p = .77$) or for wives ($b = 0.01$, $t = 0.22$, $p = .83$). There was also no evidence that neighborhood satisfaction moderated the effect of moving on satisfaction for husbands ($b = 0.07$, $t = 1.61$, $p = .11$) or for wives ($b = 0.08$, $t = 1.62$, $p = .11$). Lastly, we examined whether couples' resources moderated this *lagged* moving effect. The income results were nonsignificant (husbands: $b = 0.00$, $t = 0.25$, $p = .81$; wives: $b = 0.00$, $t = 0.53$, $p = .60$). For communication, wives' communication moderated the *lagged* within-person effect of moving on satisfaction such that moving was more detrimental to wives' satisfaction about 9 months after the move if she communicated *better* compared to worse, $b = -0.04$, $t = -2.33$, $p = .02$. Figure 4-3 depicts this interaction, showing that wives who did not move tended to be more satisfied if they communicated well, but for those that moved, communication was not association with satisfaction. The corresponding effect for husbands was nonsignificant ($b = -0.01$, $t = -0.93$, $p = .35$).

Exploratory Sustained Moving Effect Analyses

We tested an exploratory hypothesis that couples may be more satisfied with their relationship after their first move compared to before their first move. To do so, we examined the effect of the sustained moving variable, in which spouses were coded as "0" for every assessment prior to their first move and "1" for every assessment including and after their first move, on marital satisfaction. There was no main effect of the sustained moving variable on satisfaction for either husbands (b = 0.02, t = 0.69, p = .49) or wives (b = -0.01, t = -0.16 p = .87). Additionally, communication did not moderate this effect (husbands: b = 0.00, t = 0.08, p = .94; wives: b = 0.00, t = 0.20, p = .85), nor did income (husbands: b = 0.00, t = -1.09, p = .28; wives: b = 0.00, t = 1.68, p = .09).

Discussion

With a sample size larger than Study 1 and nearly twice as many assessments, Study 2 corroborated the finding that there is no main effect (*concurrent*, *lagged*, or *sustained*) of moving on marital satisfaction, this time in a within-person analysis. Additionally, moving motivations, moving outcomes, and couple resources did not moderate the effect of moving on marital satisfaction for the most part. Thus, Study 2, like Study 1, tends to support the normative perspective of moving on marital satisfaction. Moving may be a challenging but predictable stressor that couples generally deal with effectively, leaving them equally satisfied with their marriage compared to before the move.

General Discussion

Early in their marriages, couples move frequently (Cheung & Wong, 2022; Frost, 2020). Three theoretical perspectives generate different predictions about how moving should affect a couples' ability to maintain a satisfying relationship. The family stress perspective suggests that, because moving is stressful, couples who move may have greater difficulty maintaining their

marital satisfaction than couples who remain in place (e.g., Conger et al., 1999). In contrast, the normative stress perspective suggests, because residential moves are an expected part of the early years of marriage, moving may not be particularly harmful *or* beneficial for couples (McCubbin & Figley, 1983). Finally, the life-course perspective posits no main effect of moving on satisfaction, emphasizing instead that couples who are more motivated to move, experience better conditions after moving, and who possess greater interpersonal and financial resources may experience greater relational benefits from moving than couples who move reluctantly or lack these resources (Coulter et al., 2012; Coulter et al., 2016).

Both the normative stress perspective and life-course perspective predict that there may not be a main effect of moving, and this is what results showed. Study 1 showed that spouses who moved were no different in their satisfaction across the early years of marriage than couples who did not move. Study 2 extended this to a within-person analysis, finding that moving, on average, was not associated with any differences in marital satisfaction either at the time of the move or approximately 9 months after the move for either husbands or wives. Where these two perspectives differ is in their predictions of moderation. For the most part, motivations to move, outcomes of the move, and resources did not moderate the effect of moving on satisfaction, offering further support for the normative perspective.

These results did identify a few factors that increased the benefits of moving for couples. First, the effect of moving on marital satisfaction for husbands was more positive if they were more satisfied with their living conditions. Husbands were particularly more dissatisfied in their marriage if they moved to a home in which they had lower satisfaction with their living conditions than normal. Although we did not ask couples exactly why they were satisfied or dissatisfied with their living conditions, undesirable living conditions are associated with greater

stress (Clark & Huang, 2003) and couples typically experience more difficulty maintaining their relationships under stressful conditions (Karney & Bradbury, 1995). Additionally, if couples are spending time tending to repairs or complaining to landlords, they have less time to spend maintaining their relationship (Rusbult et al., 2001). This within-person result demonstrates that couples may be capable of sustaining intimacy if not for their immediate, stressful environment. Although moving itself is stressful (Oishi, 2010), it may benefit relationships if couples can move to more satisfying living conditions. Second, husbands who were living with others tended to experience worse marital satisfaction if they did not move. If couples are living in crowded spaces with reduced privacy, they may find it more difficult to communicate positively with one another (Coulter & Thomas, 2019), and living with extended family can make it difficult for couples to practice the relationship maintenance behaviors that sustain intimacy (St. Vil et al., 2018). It is likely much more difficult to have a date night in or to talk to each other privately when surrounded by extended family, friends, or roommates.

Wives who communicated better also had a more *negative* within-person lagged effect of moving on satisfaction. This means that, for wives who communicated better, moving was associated with lower satisfaction compared to timepoints at which they did not move, but for wives who communicated worse, moving had a more positive effect on satisfaction. This is counterintuitive: We expected that communicating better would make moving an easier process for couples, helping them deal with the stressors that inevitably arise while moving (O'Brien et al., 2009; Power, 2022). A closer look at Figure 4-3 revealed that, although wives who did not move were more satisfied than normal to the extent that they communicated better, there were no differences in satisfaction depending on communication among wives who moved. It is possible that the concurrent stressors during a move (Oishi, 2010) challenge even those who communicate

effectively to maintain their positive communication at those times (Widmer et al., 2005). Future longitudinal work can identify how moving affects couples' communication.

Confidence in our results is bolstered by the strengths of the methods and design of this preregistered study. First, this study draws upon data from participants with a wide range of socioeconomic status, with a particular focus on lower-income couples who are more impacted by residential mobility. Scholars have commented that the moving experiences of lower-income individuals differ from those of individuals with higher incomes (Dieleman, 2001; Mulder & Clark, 2000; Phinney, 2013). Lower-income couples are more likely to be living with others to cut costs and to live in unfavorable housing and neighborhood conditions, so our sampling procedure meant that we had considerable variability on these measures. Second, our results generally replicated across two independent samples. Analyses in Study 1 supported the normative perspective, and we largely corroborated this conclusion in Study 2. Third, we had a large enough sample and enough assessments to run within-person analyses in Study 2. The life-course perspective, which has become the predominant perspective in research on residential mobility, emphasizes how individuals and their residential needs change over time. Thus, this perspective focuses on a within-person viewpoint, specifically that one person's housing desires and satisfaction, as well as their residential mobility intentions, can change over time. And yet, as Coulter et al. (2016) note: "…most residential mobility studies have only analyzed one aspect of life courses at a time" (p. 357). That is, most studies focus on discrete events (e.g., getting married, having a child, retiring) at one point in time or compare across people (i.e., between-subjects analyses) at different life stages. Our study utilized seven interviews over a 12-year period to examine how moving (and moderators of moving) covary with spouses' marital satisfaction.

Our study showed that moving may not be damaging or beneficial for relationships because it is a *normative transition*, something that is expected particularly in the earlier years of marriage (Buckle, 2017; Rossi, 1955). What makes moving a manageable transition during which marital satisfaction remains steady, rather than a challenge that threatens relationships? First, although people undoubtedly can be forced to move or end up in worse conditions than where they started, moving may generally be an adaptive, voluntary, and predictable response to changing needs. Even though moving is stressful (Oishi, 2010), predictable stressors evoke less anxiety and negative affect than unpredictable stressors (Grillon et al., 2004; Katz & Wykes, 1985). Unpredictable stressors may have particularly damaging effects for relationships because stress is cognitively taxing and reduces peoples' ability to communicate well and problem-solve effectively (Grupe & Nitschke, 2013). Second, moving is a shared stressor, meaning both partners experience and must cope with the stressor. Although coping strategies vary widely across couples, when couples experience a shared stressor they tend to be better positioned to support one another (Falconier & Kuhn, 2019). For example, partners who view one spouse's cancer diagnosis as a "we" problem more effectively balance emotion-focused and problem-focused support, whereas couples who treat the diagnosis as an individual problem do not support one another emotionally to the same extent (Kayser & Revenson, 2016; Kayser et al., 2007). Future work can highlight between-couple differences in whether moving is construed as a shared or individual stressor, but given that both partners are affected by a move by default, it is likely that many couples view moving as a shared challenge to overcome. Third, moving may be an acute, rather than chronic, stressor for most couples. Acute stressors are generally perceived as more manageable than chronic stressors, evoke less stress, and have fewer negative psychological and interpersonal consequences (Randall & Bodenmann, 2017). Moving tends to

be a short-term process; the physical act of moving does not typically take years to accomplish (Kearns & Smith, 1994). This does not, however, imply that moving is an isolated event. In fact, decades of residential mobility research using the life-course perspective demonstrate that the *decision* to move comes from a complex interplay of personal, interpersonal, and contextual factors that develop over years (Coulter et al., 2016; Stokols et al., 1983). Nevertheless, the process of selecting a home, packing, and moving may not be an extended process. Another reason that moving is typically an acute stressor is that, particularly for couples, they may not be moving frequently. Although frequently moving can have negative effects on psychological and interpersonal outcomes (Choi & Oishi, 2020), Warner and Sharp (2016) point out that "the transition into marriage will be associated with short-term mobility, and that larger patterns of stability associated with marriage will unfold as individuals spend more time in the state of marriage" (p. 3). That is, couples generally move once or a few times early in the marriage, but then find stable housing and remain there.

The life-course perspective has become the dominant way of thinking in the residential mobility literature in the past several decades and so one might find it surprising that our results supported the normative perspective to a greater extent. However, it is not that surprising if we consider that residential mobility research rarely looks beyond the move to how that move affects individual outcomes (e.g., well-being, physical health, social connectivity) and couple outcomes (e.g., marital satisfaction, divorce). Much of the prior research on residential mobility, including the work that generated the normative and life-course perspectives, largely focuses on what causes moving rather than on moving as a predictor (Coulter & Scott, 2015; Coulter et al., 2016; Rossi, 1955). Thus, one implication of this work is that future studies of residential mobility would benefit from a longitudinal approach that examines long-term psychological and

interpersonal outcomes. Another implication of this work is that there may be other transitions that are commonly perceived as stressful but have little bearing on couples' relationship quality in the long-term. For example, we previously discussed parenthood as one of these transitions. Although having and raising a child is undoubtedly stressful, most couples maintain their relationships effectively through this transition (Belsky & Kelly, 1994; ter Kuile et al., 2021). Another seemingly difficult transition is moving out of the workforce and into retirement. AARP, for example, has advised retirees to "avoid annoying each other in retirement" (Johnston, 2023). And yet, in a study of wives with retired husbands, "the majority of wives reported that they had not been bothered at all in the last three months" (Bushfield et al., 2008, pp. 207-208) and another study found that the effects of retirement on marital outcomes were "far subtler than previously believed" (Davey & Szinovacz, 2004, p. 431). Future longitudinal work can help identify the adaptive processes that couples employ to effectively navigate these transitions. A final implication of this study is that most couples may be able to deal with moderate amounts of stress effectively, raising the possibility that marital satisfaction declines, and even divorce, are mostly due to factors other than stressful events. Indeed, many couples remain satisfied during the course of their marriage and a nonnegligible amount of satisfied couples divorce (Lavner & Bradbury, 2010), so traditional measures of stress and satisfaction may not be capturing the reasons that some couples experience declines in satisfaction or some satisfied couples divorce (Karney & Bradbury, 2020). In addition to continuing to study stressful events and transitions like moving, parenthood, job transitions, and retirement, scholars may need to focus on partners' everyday experiences to better understand why couples are satisfied and maintain their relationships.

The two studies were also limited in a few ways. First, because neither study was specifically designed to study moving, we were only able to infer motivations and outcomes of moving rather than explicitly asking couples about their reasons for moving, the struggles they encountered while moving, and their feelings about the move before and after the fact. For example, living with others may be a greater motivation for some couples to move than others (Coulter & Thomas, 2019), but couples in our studies did not explicitly report on why they moved. Second, the samples were comprised entirely of different-sex couples in their first marriage who were generally younger adults at the beginning of the studies and so we cannot generalize our results to same-sex couples or older couples. Moving may have different implications for same-sex couples, for example. Same-sex couples have traditionally lived in urban areas with high concentrations of other same-sex relationships (Spring & Charleston, 2021), which provides same-sex couples with key sources of support that often times they do not receive through family (Blair & Holmberg, 2008; Blair & Pukall, 2015; Holmberg & Blair, 2016).Thus, same-sex couples may have different considerations for when they move and to where they move. Moving either into a neighborhood with a high concentration of same-sex relationships or, more likely in the last several decades, out of one of these neighborhoods (Spring & Charleston, 2021), may have significant ramifications for network support and marital satisfaction, more so than for different-sex couples.

Does packing up and moving to a new home threaten couples' relationships or lead to greater satisfaction? Will couples who move up – to a better neighborhood, better home – be happier in their marriage? With little couples' research focusing on moving and much of the residential mobility literature studying the antecedents of moving, this paper makes an important contribution at the intersection of these two literatures, finding that couples typically emerge

from the transition to a new residence feeling the same about each other as when they began the transition. One study on work relocation summed this up nicely, finding that “We found most of the persons interviewed adjusted to their relocation over time. They had to” (Riemer, 2000). Couples adjust and adapt to previously stressful circumstances, and the excitement of a positive move wears away. Many marriages demonstrate resilience and consistency through stress and change (Neff & Broady, 2011), and moving appears no different.

Table 4-1

Descriptive Statistics and Correlations for Study 1 Variables

Measure	Mean	SD	1	2	3	4	5	6	7
1. Moved 0/1+	0.56	0.50	**1**						
2. Moved 0/1	0.45	0.50	**1****	**1**					
3. T1 H Satisfaction	4.25	0.77	.01	.01	**1**				
4. T1 W Satisfaction	4.24	0.76	**.06***	.06	**.53****	**1**			
5. Average Income	43935.00	29229.22	.01	.01	-.04	.03	**1**		
6. H Affiliation	11.73	22.34	.03	.03	**.22****	**.25****	.13	**1**	
7. W Affiliation	16.81	17.97	-.11	-.11	-.02	**.11***	**.22***	**.45****	**1**

Note. *$p < .05$; **$p < .01$. Bold values indicate statistically significant effects.

Table 4-2

Study 1 Results

	Husband Satisfaction Intercept		**Wife Satisfaction Intercept**	
Predictor	**Beta (SE)**	***p*-value**	**Beta (SE)**	***p*-value**
Moving main effect				
Moving (0 or 1 moves)	0.05 (0.11)	.66	0.15 (0.11)	.20
Moving (0 or 1+ moves)	-0.01 (0.10)	.90	0.17 (0.10)	.09
Communication moderation				
Communication*Moving (0 or 1 moves)	0.00 (0.01)	.99	0.00 (0.01)	.96
Communication*Moving (0 or 1+ moves)	0.00 (0.00)	.64	0.00 (0.01)	.90
Income moderation				
Income*Moving (0 or 1 moves)	0.00 (0.00)	.74	0.00 (0.00)	.31
Income*Moving (0 or 1+ moves)	0.00 (0.00)	.92	0.00 (0.00)	.15

Note. *$p < .05$; **$p < .01$. Bold values indicate statistically significant effects.

Table 4-3

Descriptive Statistics and Correlations for Study 2 Variables

Measure	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. T2 Move	0.27	0.45	1											
2. T2 H Satisfaction	4.52	0.49	.01	1										
3. T2 W Satisfaction	4.45	0.49	.04	**.48****	1									
4. T1 SES Comparison	0.00	2.27	**-.12****	.03	.04	1								
5. T1 Living with others	0.43	0.50	.03	-.06	-.05	**-.13****	1							
6. T2 H Sat w/ Living Conditions	3.98	1.07	**.19****	**.21****	**.13***	-.07	**-.20****	1						
7. T2 W Sat with Living Conditions	3.89	1.16	**.14***	**.13***	**.25****	-.01	**-.21****	**.44****	1					
8. T2 H Neighborhood Satisfaction	3.35	0.95	.09	**.15****	**.19****	**-.18****	-.05	**.26****	**.25****	1				
9. T2 W Neighborhood Satisfaction	3.28	1.00	.07	.04	**.24****	**-.18****	-.02	**.23****	**.41****	**.50****	1			
10. T1 Household Income	58586	41609	**-.09***	.06	.07	**.28****	**-.27****	**.15****	**.19****	**.17****	**.13***	1		
11. T1 H Communication	4.64	1.60	.01	**.19****	**.22****	-.02	-.06	.02	**.15****	**.15****	**.15****	**.20****	1	
12. T1 W Communication	4.70	1.51	.02	**.24****	**.20****	**.07***	**-.07***	.06	**.15****	.09	**.14****	**.24****	**.71****	1

Note. *$p < .05$; **$p < .01$. Bold values indicate statistically significant effects.

Table 4-4

Main Effects of Study 2 Covariates on Satisfaction

	Husbands		Wives	
Predictor	**Beta (SE)**	***p*-value**	**Beta (SE)**	***p*-value**
Living with others	0.00 (0.03)	.86	-0.04 (0.03)	.12
SES comparison	0.00 (0.01)	.66	0.01 (0.01)	.13
Satisfaction with living conditions	**0.05 (0.01)**	**<.01**	**0.05 (0.01)**	**<.01**
Neighborhood satisfaction	**0.03 (0.01)**	**.01**	**0.03 (0.01)**	**.01**
Income	**0.00 (0.00)**	**.02**	0.00 (0.00)	.57
Communication	**0.03 (0.01)**	**.01**	**0.06 (0.01)**	**<.01**

Note. Bold values indicate statistically significant effects.

Table 4-5

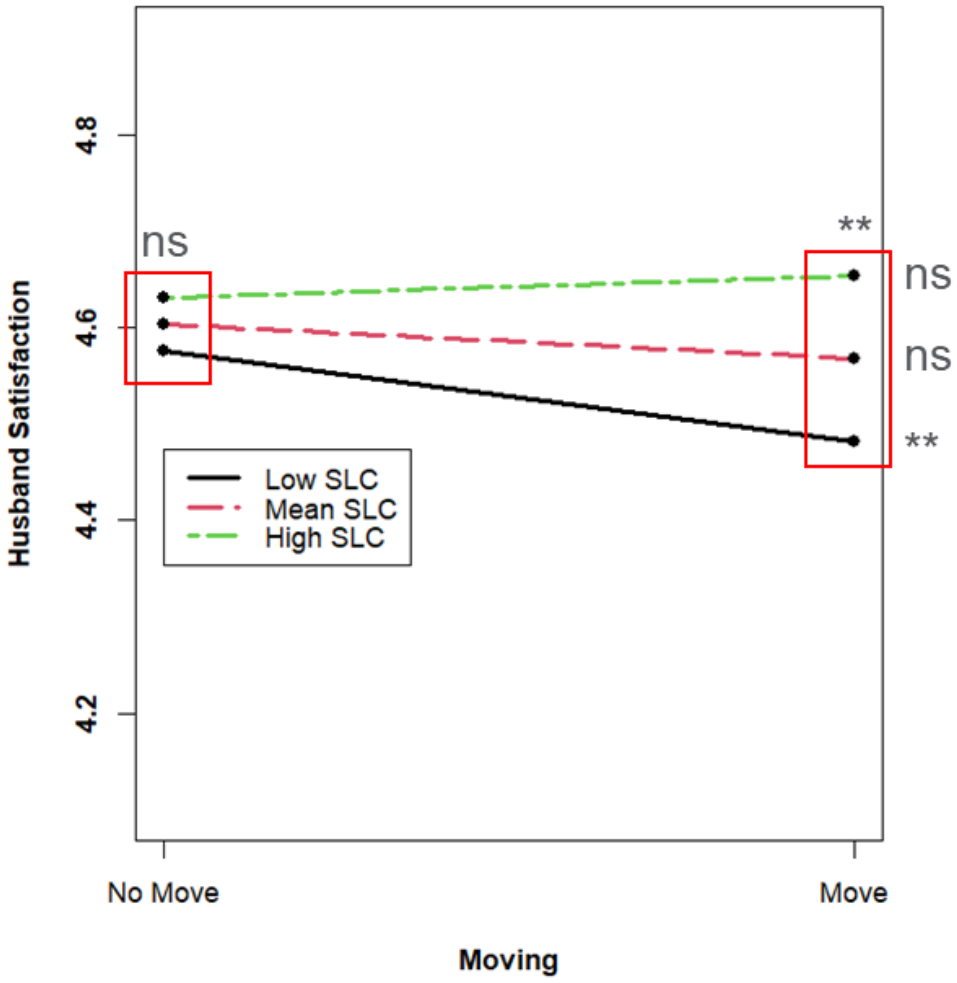
Study 2 Results

	Husbands		Wives	
Predictor	**Beta (SE)**	***p*-value**	**Beta (SE)**	***p*-value**
Concurrent Effect				
Moving (main effect)	0.01 (0.02)	.50	-0.03 (0.02)	.24
Living with others (moderation)	-0.09 (0.07)	.20	0.07 (0.08)	.38
SES comparison (moderation)	0.02 (0.01)	.18	0.01 (0.02)	.48
Satisfaction with living conditions (moderation)	**0.07 (0.03)**	**.01**	-0.02 (0.03)	.60
Neighborhood satisfaction (moderation)	0.01 (0.03)	.82	0.00 (0.03)	.98
Income (moderation)	0.00 (0.00)	.16	0.00 (0.00)	.70
Communication (moderation)	0.00 (0.01)	.82	0.01 (0.01)	.39
Lagged Effect				
Moving (main effect)	-0.02 (0.02)	.51	-0.01 (0.03)	.78
Living with others (moderation)	**0.16 (0.08)**	**.05**	0.14 (0.09)	.12
SES comparison (moderation)	-0.01 (0.02)	.67	0.00 (0.02)	.86
Satisfaction with living conditions (moderation)	0.01 (0.04)	.77	0.01 (0.04)	.83
Neighborhood satisfaction (moderation)	0.07 (0.04)	.11	0.08 (0.05)	.11
Income (moderation)	0.00 (0.00)	.81	0.00 (0.00)	.60
Communication (moderation)	-0.01 (0.01)	.35	**-0.04 (0.02)**	**.02**

Note. Bold values indicate statistically significant effects.

Figure 4-1

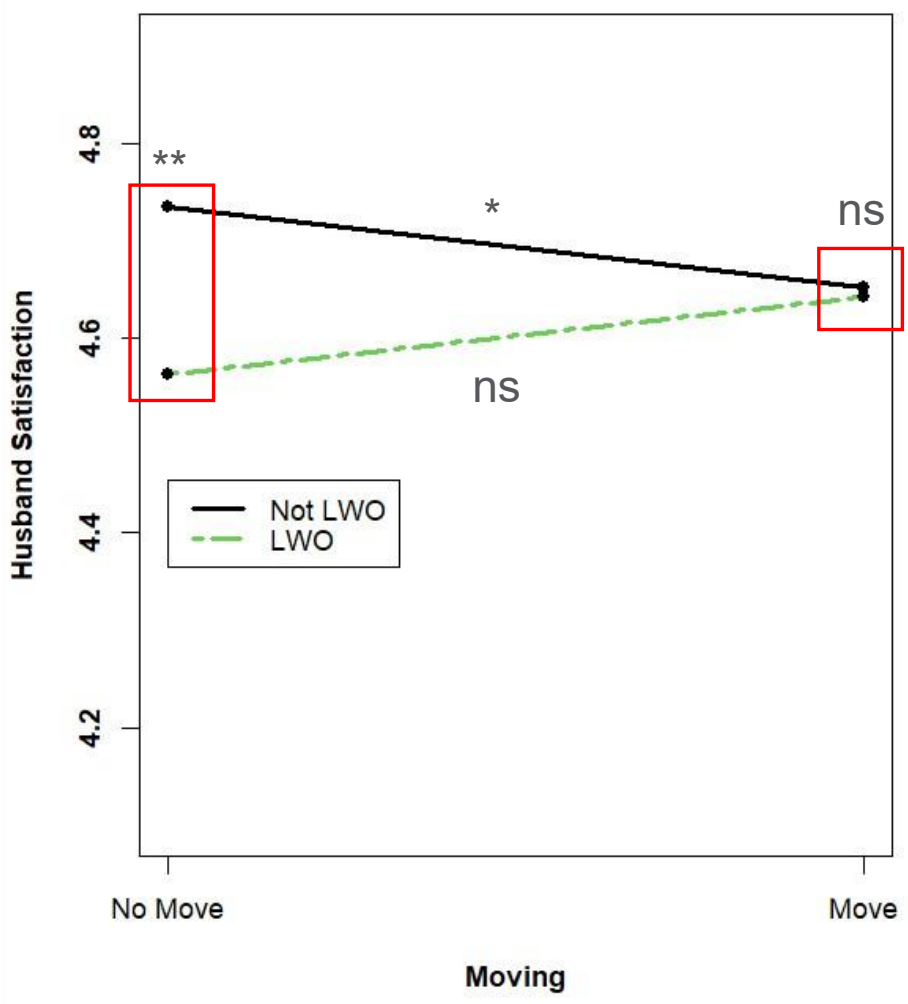
Husbands' Concurrent Moving Effect Moderated by Satisfaction with Living Conditions



Note. Conditional effects are denoted with boxes and simple slope significance is noted to the right of each line. "Low" and "High" correspond to -1 SD and +1 SD, respectively. "ns" = not significant; *$p < .05$; **$p < .01$

Figure 4-2

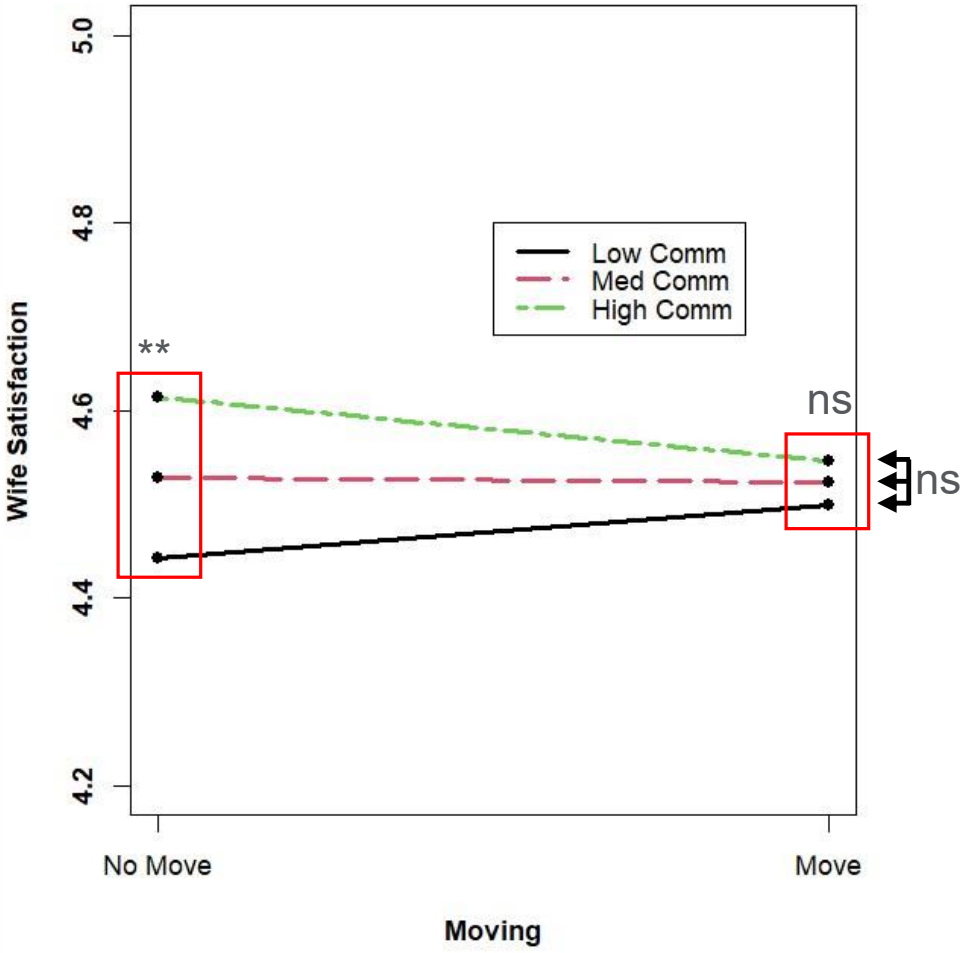
Husbands' Lagged Moving Effect Moderated by Living with Others



Note. Conditional effects are denoted with boxes and simple slope significance is noted above the midpoint of each line. "ns" = not significant; *$p < .05$; **$p < .01$

Figure 4-3

Wives' Lagged Moving Effect Moderated by Communication



Note. Conditional effects are denoted with boxes and simple slope significance is noted to the right of each line. "Low" and "High" correspond to -1 SD and +1 SD, respectively. "ns" = not significant; *$p < .05$; **$p < .01$

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