Three Essays on the Determinants and Consequences of Union Experiences

by

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DEDICATION

This dissertation is dedicated to my parents and my partner Minghao, for their unconditional and endless love for me.

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ABSTRACT

Sociologists and demographers have long sought to investigate the patterns, determinants, and consequences of intimate relationships. As the economic conditions and consumption landscape of young adult lives have shifted, we have gradually observed the delay and even retreat from marriage, the increasing popularity of cohabitation, and the growing instability of unions. Against the background of fast-changing union experiences, this dissertation investigates the precursors and consequences of union formation and dissolution through the triple lenses of birth cohort comparison, social context comparison, and marital behavior comparison. The first paper examines whether the wealth foundation has shifted for marriage and cohabitation formation in the context of the United States by comparing two birth cohorts. The results indicate a rising wealth foundation for both marriage and cohabitation among young adults, particularly in terms of secured and appreciating assets and debt (e.g., home ownership and debt holding). The second paper investigates how family wealth shapes first marriage in China, a vastly different social setting from the United States, in order to test whether this positive association is universal or contingent (context-specific) and whether there are gender and rural-urban differences in this association. The findings reveal that family wealth is a strong positive predictor for first marriage, especially for rural Chinese men. The findings also indicate that gendered

marriage practices and family wealth arrangements may lead to Chinese women's disadvantaged position in wealth possession and yield a severe marriage squeeze for economically underprivileged Chinese men (especially rural men). The third paper explores the consequences of union dissolution, specifically cohabitation dissolution, on mental health outcomes, investigating the moderating effects of gender and parenthood. The findings suggest that gender differences in the association of cohabitation dissolution with psychological distress are contingent upon the types of psychological distress under consideration and also reveal that cohabitation dissolution intertwined with non-marital parenthood is harmful to mental health, especially for young women. Taken together, the three freestanding albeit connected empirical studies illustrate that demographic behaviors are responses of individuals to dramatic social changes, and in return, the influence of demographic behavior shapes individual outcomes and then perhaps further social changes.

CHAPTER I Introduction

Marriage, as a fundamental institution, has a long history in human society, even longer than the history of sociology. Its varied forms and variants over time and across social settings are embodiments of responses of individual intimate relationships to social changes (economic, cultural, and political) and mechanisms shaping individual outcomes and promoting societal social changes. As sociologists note, the worldwide "growing heterogeneity in union formation and dissolution highlights cultural shifts in values and gender relations but also uncovers the ways that inequality of all kinds shape and reflect our most intimate behaviors" (Sassler and Lichter 2020, p. 35).

In the past few decades, we have observed dramatic changes in the forms of union worldwide, though at a different pace and magnitude. These changes include the delay and even retreat from marriage, the increasing popularity of cohabitation, and the growing instability of unions (Eickmeyer 2018; Manning, Brown, and Payne 2014). Against the context of fast-changing union formation and dissolution experiences, I aim to investigate their precursors and consequences in three freestanding but connected empirical chapters through the triple lenses of birth cohort comparison, social context comparison, and marital behavior comparison.

Through a cross-cohort comparison, I investigate whether *wealth* as a foundation has shifted for marriage and cohabitation formation in the context of the United States across birth cohorts. Over the past few decades, as the economic conditions and consumption landscape of young adult lives have shifted in the United States, marriage has been delayed,

and cohabitation has become more common (Manning et al. 2014; Smock and Schwartz 2020). The economic expectations and standards of marriage and cohabitation may have significantly transformed. Yet, this shift in economic expectations and standards goes well beyond individual earnings and educational attainment, and wealth components (i.e., assets and debt) and total net worth have become important predictors for marriage and cohabitation formation (Addo 2014; Ishizuka 2018; Vespa and Painter 2011). Thus, to better understand the economic roots of the changing patterns of marriage and cohabitation, it becomes necessary to examine the changing *wealth* foundation for marriage and cohabitation across birth cohorts.

Drawing on the National Longitudinal Surveys of Youth 1979 and 1997, the second chapter examines cohort changes in the association of wealth with first marriage and cohabitation formation between late Baby Boomers and early Millennials. This study finds that household total net worth has become more important for first cohabitation formation but not for first marriage. Regarding various wealth components, findings reveal that more secured and appreciating assets and debt—home ownership and debt holding—have become more critical in first marriage and cohabitation formation. Additionally, the gaps in the competing risk between first marriage and cohabitation across the two cohorts have significantly decreased, especially regarding the influences of household total net worth and home ownership and debt holding. For instance, compared with early Millennials, late Baby Boomers were more likely to choose marriage over cohabitation when owning a home. To sum up, changes in the consumption landscape and financial lives in society have encouraged a rising wealth foundation for young adults' marriage and cohabitation.

In addition to the cross-cohort comparison, I examine how family *wealth* shapes first

marriage in China, a vastly different social setting from the United States, in order to test whether this positive link is universal or contingent (context-specific). China has provided a unique social setting to examine the link between family wealth and marriage. As China has gradually transitioned into a market-oriented economy, a renewed emphasis on family wealth in the marriage market has surged (Hu 2016). Further, the legacy of gendered marriage practices due to entrenched patriarchal culture intertwined with the significant improvement of women's status relative to men in the past few decades has complicated the gender difference in the link between family wealth and first marriage among young cohorts, especially those born in the 1980s and 1990s. Additionally, the rural-urban divide resulting from the long history of the *hukou*[1] system adds another layer of complexity in the association between family wealth and marriage and its gender differences. Thus, examining how family wealth shapes first marriage by gender and *hukou* status among these cohorts is a high research priority.

Nevertheless, in comparison to the growing research on the link between wealth and union formation in western societies, we know little about how family wealth shapes first marriage patterns in China, though family wealth has gained importance in recent years due to high marriage expenses and prevalent gendered marriage practices, which requires the husband's family to pay for marriage expenses and provide a basic economic foundation for newlywed couples. Drawing on five waves of the China Family Panel Study (2010-2018), the third chapter examines the association between family wealth and first marriage and its differences by gender and *hukou* status for the 1980s and 1990s young

[1] *Hukou* is a system of household registration used in mainland China. Every citizen is issued a hukou certificate at birth (either urban or rural). Differential benefits from education, medical care, and retirement security are attached to a specific *hukou* type with urban *hukou* generally deemed at a higher social status than rural *hukou*.

cohorts. This study finds a strong positive association between household total asset value and first marriage. This study also reveals that household home value is more predictive for men's first marriage while household saving value is more predictive for women's first marriage among rural Chinese. Moreover, gender differences in the link between family wealth and first marriage are generally higher among rural than urban Chinese. These findings indicate that the gendered marriage practices and family wealth arrangements may lead to women's disadvantaged position in wealth possession because women are often discriminated against in the division of family wealth. Moreover, these findings also provide a new explanation for the severe marriage squeeze among economically underprivileged Chinese men (especially rural men) from the angle of wealth inequality.

In addition to investigating the economic determinants of union formation, I also explore the consequences of union dissolution, specifically cohabitation dissolution, using mental health outcomes as an exemplar. Cohabitation has become a normative experience for American young adults and a common setting for childbearing in recent decades (Curtin 2014; Finer and Zolna 2014). However, the high dissolution rate of cohabitation exposes young adults to the potential stress of intimate relationship dissolution and single parenthood during early adulthood.

Drawing on data from the National Longitudinal Survey of Youth 1997, the fourth chapter applies growth curve models to analyze how cohabitation dissolution associates with trajectories of depressive symptoms and binge drinking behaviors for young adults (aged 17 to 35). This study also investigates how the presence of children moderates this association for men and women. Findings suggest that cohabitation dissolution is associated with increased depressive symptoms for both men and women. However,

cohabitation dissolution only positively increases binge drinking behaviors for men, and a significant gender difference is observed. The presence of children when cohabitation dissolves strengthens the positive association between cohabitation dissolution and depressive symptoms among women, and this positive moderation fades away as young women age. These findings suggest that gender differences in the association of cohabitation dissolution with psychological distress are contingent on the types of psychological distress and also reveal that cohabitation dissolution intertwined with non-marital parenthood is harmful to mental health, especially for young women.

References

Addo, Fenaba R. 2014. “Debt, Cohabitation, and Marriage in Young Adulthood.” *Demography* 51(5):1677–1701. doi: 10.1007/s13524-014-0333-6.

Eickmeyer, Kasey J. 2018. “Cohort Trends in Union Dissolution During Young Adulthood: Cohort Trends in Union Dissolution.” *Journal of Marriage and Family* 81(3):760–70. doi: 10.1111/jomf.12552.

Hu, Yang. 2016. “Marriage of Matching Doors: Marital Sorting on Parental Background in China.” *Demographic Research* 35:557–80. doi: 10.4054/DemRes.2016.35.20.

Ishizuka, Patrick. 2018. “The Economic Foundations of Cohabiting Couples’ Union Transitions.” *Demography* 55(2):535–57. doi: 10.1007/s13524-018-0651-1.

Manning, Wendy D., Susan L. Brown, and Krista K. Payne. 2014. “Two Decades of Stability and Change in Age at First Union Formation.” *Journal of Marriage and Family* 76(2):247–60. doi: 10.1111/jomf.12090.

Sassler, Sharon, and Daniel T. Lichter. 2020. “Cohabitation and Marriage: Complexity and Diversity in Union-Formation Patterns.” *Journal of Marriage and Family* 82(1):35–61. doi: 10.1111/jomf.12617.

Schneider, Daniel. 2011. “Wealth and the Marital Divide.” *American Journal of Sociology* 117(2):627–67. doi: 10.1086/661594.

Smock, Pamela J., and Christine R. Schwartz. 2020. “The Demography of Families: A Review of Patterns and Change.” *Journal of Marriage and Family* 82(1):9–34. doi: 10.1111/jomf.12612.

Vespa, Jonathan, and Matthew A. Painter. 2011. “Cohabitation History, Marriage, and Wealth Accumulation.” *Demography* 48(3):983–1004. doi: 10.1007/s13524-011-0043-2.

CHAPTER II Rising Wealth Foundation for First Marriage and Cohabitation?

Introduction

In the past few decades, the United States has witnessed a steady decline in marriage rates, with cohabitation becoming an increasingly common context for young adults' first union experiences (Lamidi and Manning 2016; Manning et al. 2014). One explanation for this trend so-called "retreat from marriage" (Cherlin 2004, 2020) is a rising threshold of the economic resources people feel they need to accumulate before marriage (referred to as economic foundation) (Cherlin 2020; Edin and Kefalas 2011; Ishizuka 2018). Prior empirical studies have almost exclusively interpreted this shift in an "economic foundation for marriage" regarding labor market performance or educational backgrounds (e.g., Allred 2018; Sweeney 2002), and none explicitly examined the changing wealth foundation for marriage and cohabitation across cohorts.

Examining how a changing wealth foundation shapes marriage and cohabitation formation across cohorts is necessary for two reasons. First, as the economic conditions and consumption landscape have transformed greatly in recent decades, more than just total net worth, different components of wealth—assets and debt—have gained importance in shaping marriage and cohabitation patterns (Addo 2014; Schneider 2011). However, these changes in the use of assets or debt may not be accurately and directly reflected by income or education changes. Second, wealth may shape marriage and cohabitation formation patterns, independent of other economic factors, for both practical and symbolic reasons.

One practical reason is that the economic benefits generated from wealth are more stable and can be used to cushion economic risks. As risks in the labor market have risen over the past few decades, income volatility has increased (Western et al. 2012). At the same levels of income or education, those with more wealth, however, can use savings or assets to cushion income volatility (Fisher et al. 2016). A partner's wealth thus may imply a future "economically secured lifestyle," which can become a distinctive consideration for union formation. For a symbolic reason, compared to other economic factors, wealth represents a more tangible embodiment (e.g., ownership of a home or vehicle that can be easily seen) of the economic standards for cohabitation or marriage. Various wealth components may have their independent social meaning for establishing a family, and their social meaning may vary across cohorts as well. Due to the distinctive nature of wealth on these dimensions, investigating cohort changes in how wealth (both including total net worth and different wealth components) shapes marriage and cohabitation formation may advance our understanding of the economic roots and meanings of contemporary marriage and cohabitation patterns.

As the economic foundation for marriage has increased and cohabitation has become more socially acceptable, young adults may be using cohabitation as an alternate or transitional stage for marriage. Previous quantitative studies document that the economic standard (e.g., earnings, education, and employment) associated with marriage is higher than that associated with cohabitation (Smock and Manning 1997; Xie et al. 2003). And some qualitative studies suggest that while young adults usually decide to cohabit for economic reasons, they also believe that they should have ownership of a home or a vehicle before marriage (Edin and Kefalas 2011; Sassler and Miller 2011, 2017). Additionally, the

social meaning of marriage and cohabitation has changed dramatically across cohorts. Cohabitation has transitioned from a selective experience among economically disadvantaged groups to a normative experience, while marriage has gradually become an expensive personal achievement (Cherlin 2004, 2020). We thus have reason to believe that the wealth foundation for marriage is higher than that for cohabitation, with this difference likely varying across cohorts. Comparing cohabitation and marriage formation helps us better understand the shifting economic foundation for union formation over time.

In this study, I harmonized data from two longitudinal surveys — the National Longitudinal Survey of Youth 1979 and 1997 (NLSY79 and NLSY97) — to compare late Baby Boomers with early Millennials. I address three pertinent research questions: (1) Is the link between household total net worth and first marriage and cohabitation formation stronger among early Millennials, compared to late Baby Boomers?; (2) Are there cohort differences in how wealth components (i.e., assets and debt) shape first marriage and cohabitation formation?; (3) What are the cohort changes in how wealth shapes the choice between first marriage and cohabitation? Answering these questions contributes to our understanding of how the wealth foundation for marriage and cohabitation changes across cohorts and, ultimately, offers new insights into how wealth policies could effectively reduce subsequent wealth inequality via mitigating family structure differences.

Contexts, Theories, and Previous Research

Here I explain the critical sociological reasoning that motivates the approach to constructing empirical models examining cohort changes in how wealth shapes marriage and cohabitation formation. I begin with a discussion of the changing social contexts for marriage and cohabitation and the evolving role of wealth. I then explicate the importance

of wealth in shaping marriage and cohabitation from a theoretical perspective. Finally, I discuss the potential cohort changes in the associations of different wealth components and total net worth with marriage and cohabitation formation.

The changing patterns of marriage and cohabitation formation and the evolving role of wealth

In the past few decades, the United States has witnessed dramatic changes in marriage and cohabitation formation among young adults. First marriage has been delayed, and thus marriage rates have declined among more recent cohorts. For instance, in 1995, 64% of women aged 25–29 reported ever being married, compared with only 51% in 2011/2013 (Lamidi and Manning 2016). With the retreat from marriage, cohabitation has become an increasingly common setting for the first union (Manning et al. 2014). In 1995, 49% of women aged 25–29 reported ever cohabiting, compared with 73% in 2011/2013. However, these changes in marriage and cohabitation are uneven by socioeconomic status. As McLanahan (2004) has noted, there are two distinct trajectories that exist: one for disadvantaged groups, associated with a higher probability of early unstable cohabitation, and another for more advantaged groups, associated with a higher probability of late stable marriage. These diverging trajectories are then associated with differing outcomes (e.g., economic, social, and child well-being), likely resulting in the reproduction of social inequality.

Regarding explanations for these changes in marriage and cohabitation, researchers have found that economic reasons have remained essential (Sassler and Lichter 2020). But while economic reasons for marriage and cohabitation formation remain in place, what these economic foundations *are* have shifted in the past few decades. These shifts reflect

individual adaptations to fast globalization, rapid economic restructuring, growing income and wealth inequality, and rising economic insecurities (Cherlin 2014; Sassler and Lichter 2020). Specifically, late Baby Boomers have experienced a rapid economic transformation during their adulthood, characterized by accelerated globalization and a restructured labor market (e.g., declines in stable jobs among the working class). Early Millennials, in comparison, have witnessed accelerated economic financialization, the Great Recession, and the COVID-19 Pandemic during their adulthoods. Under economic financialization, consumer credit has increased dramatically, driven by the expansion of a variety of debt products, such as home mortgages, vehicle loans, credit cards, and in recent years, student loans. Compared to late Baby Boomers, debt has become more important in the financial life of early Millennials. Additionally, early Millennials have experienced higher levels of economic insecurity and income and wealth inequality (Hacker 2019; Lin and Neely 2020; Western et al. 2012). Along with these shifts in the economy and labor market, we have observed a steeper retreat from marriage and a greater increase in cohabitation among early Millennials than was the case for late Baby Boomers (Bloome and Ang 2020; Lamidi and Manning 2016).

In short, the economic context of marriage and cohabitation has significantly transformed between late Baby Boomers and early Millennials. But as I have already suggested, this economic context goes well beyond individual earnings and educational attainment. Wealth components (i.e., assets and debt) and its total net worth are also important predictors for marriage and cohabitation formation (Addo 2014; Ishizuka 2018; Schneider 2011; Vespa and Painter 2011). Thus, to better understand the economic roots of the changing patterns of marriage and cohabitation, it becomes necessary to examine the

changing *wealth* foundation for marriage and cohabitation across cohorts.

Why does wealth matter for marriage and cohabitation formation?

Wealth has important social meanings and implications, including the access to scarce social resources (e.g., high-quality neighborhoods, schools, and social networks), the ability to withstand economic risks or emergency, the opportunity to advance social status and achievement, and even the ability to gain political power (Fisher et al. 2016; Keister and Moller 2000). But while a small number of studies have investigated the association between wealth and marriage and cohabitation formation (e.g., Addo 2014; Schneider 2011), its theoretical importance has not yet been adequately understood. The main reason for this oversight is that the importance of wealth is too often conflated with that of income or education. However, there is good reason to think that wealth has a distinct influence on marriage and cohabitation formation for reasons grounded in both structuralist and interactionist perspectives.

From a structuralist perspective, and according to social stratification theories, the most commonly used economic indicators (e.g., education, income, and occupation) are anchored in the productive system, indicating one's ranking in the social order evaluated based on performance in the labor market (Spilerman 2000). However, wealth is a unique economic indicator because not only does it reflect a position in the productive system, but it also indicates a ranking in the consumption system (Spilerman 2000). For instance, Weber ([1946]2018) used the concept of "style of life"—indicating consumption structure—to describe the importance of wealth. In what follows, I highlight characteristics of wealth respectively from the structural and interactionist perspectives that are crucial for marriage and cohabitation formation.

Unlike other economic indicators, wealth also captures an important component of consumption—debt. Taking on debt has a long history in the United States and has transformed from a stigmatized practice to a common and even advantageous practice (Lin and Neely 2020). Under the time of financial deregulation, credit was used as a means to alleviate inequality and promote American household prosperity (Krippner 2011). As a result, consumer credit has increased dramatically, driven by the expansion of a variety of debt products, such as home mortgages, vehicle loans, credit cards, and in recent years, student loans. Consequently, the economic conditions and consumption structures of young adult lives have been greatly transformed. These changes in the structure of debt are crucial factors shaping young adults' union formation (e.g., Addo 2014; Addo et al. 2019). A potential partner's debt composition can thus also be a distinctive consideration for marriage and cohabitation formation.

A second consideration that the structuralist perspective attunes us to is that wealth economic asset can buoy an individual through labor market fluctuations. This is because, unlike earnings from the labor market, economic benefits generated from wealth do not directly decline with unemployment or illness unless wealth is spent down to buffer against these negative life events. Additionally, in a time of economic crisis, assets can be consumed to buffer against emergency—which is not the case with human capital. This is perhaps even more true now than in the past: as the risk of the labor market has risen over the past few decades, income volatility has increased (Western et al. 2012). However, within the same levels of income or education, those with more wealth can use savings or assets to cushion economic risk and emergencies (Fisher et al. 2016). This stable economic condition secured by wealth can become a distinctive practical consideration when young

adults decide to cohabit or marry, especially when perceived economic insecurity is increasing.

Wealth could also matter for marriage and cohabitation formation from the interactionist perspective. Human beings act based on the meanings that objects generate for them; an interaction occurs within a social context in which physical and social objects must be defined or categorized based on individual meanings; the meanings are derived from interactions with other individuals and with society, modified through an interpretive process (Blumer [1969]1986; Carter and Fuller 2016). According to the interactionist perspective, decisions to cohabit or marry may be made on the basis of the meanings that economic symbols have for couples and the meanings that arise out of the interaction between couples. Within a certain social context, economic symbols for marriage or cohabitation can be different. Further, the economic symbols for marriage or cohabitation may vary across social contexts (e.g., cohorts).

Wealth as a symbol is different from other economic symbols (e.g., high earnings and educational attainment), representing a more tangible embodiment for economic standards for cohabitation or marriage formation. These tangible embodiments per se have distinctive social and economic meanings for establishing a family in the U.S. context. For instance, a few qualitative studies show that most young Americans today believe that they should have not just steady earnings or an educational degree but also some assets—money saved, a car, or even a home—before they marry (Edin and Kefalas 2011; Sassler and Miller 2011, 2017). Ownership of a home and car is usually considered a significant economic symbol for establishing a middle-class family. Ownership of certain assets thus may imply an economic boundary of cohabitation or marriage eligibility.

Due to practical and symbolic reasons, wealth may play significant independent roles in shaping marriage and cohabitation decisions. Moreover, the importance of wealth components may also vary across cohorts contingent upon the types of wealth under consideration because their practical and symbolic meanings can differ from each other and vary over time.

The changing importance of wealth for marriage and cohabitation formation

Next, I will first explicitly discuss the potential cohort changes in the associations of household total net worth and wealth components with marriage and cohabitation formation, then explain the difference in the wealth foundation for first marriage and cohabitation formation, proposing hypotheses and motivating approach to constructing empirical models.

1. Household total net worth

With economic restructure and massive financialization, the economic foundation for marriage has eroded. Marriage is increasingly viewed as a common good and even a luxury, and cohabitation has spread from economically disadvantaged groups to economically advantaged groups (Sassler and Lichter 2020). In the meantime, the economic standard associated with first union formation has risen (Edin and Kefalas 2011; Gibson-Davis, Edin, and McLanahan 2005; Watson and McLanahan 2011). Therefore, *household total net worth may have an increased association with first marriage and cohabitation formation among early Millennials, compared to late Baby Boomers (Hypothesis 1).*

2. ***Different types of wealth component***

Wealth consists of different types of assets and debt. Various wealth components may be associated with marriage and cohabitation formation in varied ways, and their associations

may also vary across cohorts. This is because different wealth components may have varied and time-varying practical and symbolic meanings for marriage and cohabitation formation due to their changing importance in household wealth building and the social attitudes toward them. *An asset or debt that is persistently viewed as secured and appreciating may have a stronger effect in predicting first marriage and cohabitation formation among early Millennials, compared to late Baby Boomers (Hypothesis 2).* This is because secured and appreciating assets or debt is important in wealth accumulation, and its pertinent social attitudes are often positive, signaling both practical and symbolic meanings for marriage or cohabitation.

Home ownership has long been understood to be a fundamental determinant of the long-run well-being of individuals and families (Oliver and Shapiro 1990; Sherraden 1991). Home ownership is widely valued as an indicator of social achievement (Rossi and Weber 1996) and an effective means of wealth accumulation (Di, Belsky, and Liu 2007; Herbert, McCue, and Sanchez-Moyano 2013; Killewald and Bryan 2016). In recent qualitative studies, young adults recognize home ownership as a necessary economic condition for marriage (Edin and Kefalas 2011; Sassler and Miller 2011, 2017). To promote home ownership and home equity value appreciation, the availability and cost of home mortgages have become more consumer-friendly, especially since the late 1990s (Herbert et al. 2013). Home mortgages tend to be seen as a "good debt," requiring a prime credit score and a substantial amount of savings but leading to direct wealth accumulation. We thus may observe a *stronger* positive association between home ownership (debt holding) and first marriage and cohabitation formation among early Millennials, compared to late Baby Boomers.

In contrast to the heightened aspirations for home ownership, the rate of vehicle ownership has been *declining* in the United States since the mid-2000s, particularly among Millennials (Klein and Smart 2017; Kuhnimhof, Zumkeller, and Chlond 2013; Metz 2013). Vehicle ownership can contribute to wealth accumulation because it plays important role in commuting to work; however, as public transportation has become safer and more convenient, the importance of vehicle ownership for commuting may gradually decline. Moreover, unlike housing asset, vehicle asset often depreciates over time and requires maintenance cost without potential economic return. Similarly, vehicle loans, compared to home mortgages, are easier to acquire and lead to no direct wealth accumulation. Given that vehicle ownership (debt holding) is likely associated with the economic independence of young adults (Klein and Smart 2017), we may observe a positive association between vehicle ownership (debt holding) and first marriage and cohabitation formation. Nevertheless, whether this association will be stronger or weaker among younger cohorts is uncertain because we are unclear whether the declining rate of vehicle ownership is due to declining social preferences or worsening economic conditions of young people (Kurz, Li, and Vine 2016; McDonald 2015; Metz 2013; Ralph 2015).

Amid the financialization of the U.S. economy (Krippner 2011), the proportion of financial assets in household portfolios has surged, particularly among the wealthiest households (Lin and Neely 2020). Because financial investments are effective means of wealth accumulation, owning financial assets signals a good standing of economic status, potential of wealth accumulation, and sophisticated financial management and investment capabilities, all of which are attractive attributes in the marriage market. We thus may observe a *stronger* positive association between financial asset ownership and first

marriage and cohabitation formation among early Millennials, compared to late Baby Boomers.

Education loan debt has become an essential component in contemporary young adults' financial lives. Compared to late Baby Boomers, student loan debt has increased 30% among young adults with at least four years of postsecondary education in early Millennials (Houle 2014). Addo (2014) found that early Millennials with education loan debt are more likely than early Millennials without such debt to delay direct marriage and transition into cohabitation, but a similar case was not observed among late Baby Boomers (Addo et al. 2019). Because serving student loan debt may reduce couple-level income, diminish the ability to acquire new assets, and consequentially reduce attractiveness in the marriage market, student loan debt may become an impediment to marriage. We may thus observe a strengthened negative association between student loan debt and first marriage and a strengthened positive association between student loan debt and first cohabitation formation among early Millennials, compared to late Baby Boomers. However, as an alternative possibility, with social attitudes towards student loan debt becoming more accepting (Addo et al. 2019), we may instead observe a weakened negative association between student loan debt and first marriage and a strengthened positive association between student loan debt and first cohabitation formation.

3. Marriage versus cohabitation

As cohabitation has gradually become a normative experience, similarities and dissimilarities between cohabitation and marriage have long been debated. Similar to marriage, cohabitation is also an intensive, intimate sexual relationship that involves all of the household organization and financial responsibilities. However, cohabitation is

distinguished from marriage in many important aspects, such as timing, levels of commitment, economic integration within couples, and social relationship integration into partners' families (Eickmeyer, Manning, and Brown 2019; Sassler and Miller 2017; Thornton, Axinn, and Xie 2008).

Importantly, the economic foundation for marriage and cohabitation also differs. Prior studies found that individual earnings strongly and positively predict marriage (Smock and Manning 1997; Xie et al. 2003) but do not predict cohabitation (Xie et al. 2003). Though there are no quantitative studies explicitly comparing wealth foundation between marriage and cohabitation, a few qualitative studies have revealed that young cohabitors usually believe that they should have a better financial condition, such as ownership of a home or vehicle, before transitioning into marriage (Edin and Kefalas 2011; Sassler and Miller 2011, 2017). It is thus reasonable to expect that *given the competing relationship between first marriage and cohabitation, the association of total net worth with first marriage may be stronger than that with first cohabitation (Hypothesis 3), and assets or debt that strongly positively predict first marriage may negatively predict the first cohabitation or have no effect on first cohabitation formation (Hypothesis 4).* Moreover, as marriage is increasingly viewed as a signal of individual achievement and cohabitation has gradually become a common setting for the first union in the past few decades (Cherlin 2004, 2020), we have reason to believe that *how wealth shapes the choice between marriage and cohabitation may be time-varying (Hypothesis 5).*

Data and Methods

Data

This study uses data from two nationally representative panel datasets — the National

Longitudinal Surveys of Youth 1979 (NLSY79) and 1997 (NLSY97). The NLSY79 was initiated in 1979, with annual interviews from 1978–1994 and biennial interviews since then. Respondents were born between 1957 and 1964, thus were aged 51 to 59 at the time of their most recent interview (Round 27, 2016). The NLSY97 was initiated in 1997, with annual interviews from 1997–2001 and biennial interviews since then. Respondents were born between 1980 and 1984 and were aged 32 to 37 at the time of their most recent interview (Round 18, 2017). About 12,686 (8984) NLSY79 (NLSY97) individuals were initially interviewed at baseline, and by the time of the most recent interview, 69% (75%) of respondents had been retained.

These surveys are ideal for addressing the research questions. First, the NLSY79 and NLSY97 are representatives of late Baby Boomers (born 1957–1964) and early Millennials (born 1980–1984), and they were tracked prospectively from adolescence to adulthood. Second, both the NLSY79 and NLSY97 have complete information on marital and cohabiting history, which can be employed to investigate first marriage and cohabitation formation and to compare differential risks of first marriage and cohabitation formation. Third, both the NLSY79 and NLSY97 have detailed information on wealth, including annual household net worth, asset ownership and their market value (e.g., home, vehicle, financial investment, other real estates, and retirement plans), and debt holdings and their market value (e.g., home mortgage, vehicle loan, and student loan). Even though the survey questions have been revised and enriched in the NLSY97 cohorts, it is still practical and feasible to harmonize the wealth measures of these two cohorts.

Sample

The analytic sample was organized in a person-year format, and restrictions were set based

on both person and person-year levels. To align two cohorts, I limit the analytic sample to non-Hispanic whites, non-Hispanic blacks, and Hispanics aged 21–35 for two reasons. Firstly, the earliest and latest age when wealth information was available for both NLSY79 and NLSY97 were 21 and 35 respectively.[2] Corresponding survey interviews were employed in this age range and respondent were excluded if they were married or cohabited or dropped out of the survey before age 21. Secondly, to keep the racial categories consistent across the two cohorts, I excluded the "mixed race" category (only in the NLSY97, 0.90%). Thirdly, person-years of respondents with any missing values in the interested measures were excluded. These rules yield analysis samples of 4,194 (person-years=26,451) for the NLSY79 first marriage and 4,996 (person-years=24,355) for the NLSY97 first marriage. The analysis samples of first cohabitation for the NLSY79 is 4,999 (person-years=29,250) and for the NLSY97 is 4196 (person-years=22,283). The analysis samples of the competing risk between first marriage and cohabitation for the NLSY79 is 4,999 (person-years=22,404) and for the NLSY97 is 4175 (person-years=19,379).

Outcomes

To capture the timing of first marriage and cohabitation formation, I draw on reported current marital/cohabiting status and start dates of marriage and cohabitation. The NLSY79 provides information on the current spouse or unmarried partner (i.e., living with an opposite-sex partner) at each interview, and the exact dates of marriages (up to seven) and

[2] Beginning in 1985, the NLSY79 asked a full set of questions about the ownership of wealth from respondents who met one of the independence criteria —18 years or older, had a child, enrolled in college, married, living outside their parents' home. These data were then collected annually through 1994, (except for in 1991), and biennially since then. Born between 1957 and 1964, the youngest respondents of the NLSY79 cohorts were 21 in 1985. In contrast to the NLSY79, the NLSY97 asked assets questions from individual respondents at infrequent intervals rather than at each round. Between 1997 and 1999, respondents were asked assets questions if they were age 18 or if they met one of the other independence criteria. After 1999, respondents were asked assets questions again in the first interview after they had turned 20. Similar series of asset questions were asked again when the respondent was 25, 30, and 35.

cohabitations (only with married spouses).[3] The exact dates of cohabitation (with non-spouses) entrances and exits were not available until 2002, but since 2002 retrospective data were collected on non-marital cohabiting relationships during any unmarried spells. I used reported start dates of marriage and cohabitation to acquire the timing of the first marriage and cohabitation for the NLSY79 cohorts. Monthly marital and cohabiting status data are available in the NLSY97, where cohabitation is defined as "a sexual relationship in which partners establish one household and live together." I used the complete monthly marital and cohabiting status to acquire the timing of the first marriage and cohabitation for the NLSY97 cohorts.

I created three outcomes—first marriage (yes or no, ignoring cohabitation), first cohabitation (yes or no, before the first marriage)[4], and first union (single, first cohabitation, or first marriage)—for both NLSY79 and NLSY97 cohorts. Figure 1 describes the hazards of first marriage and cohabitation formation by cohort and gender. The NLSY97 cohorts have a higher rate of first cohabitation and a lower rate of first marriage than the NLSY79 cohorts. These results are consistent with prior empirical evidence (Manning et al. 2014; Smock and Schwartz 2020). Additionally, except for the first cohabitation of the NLSY79 cohorts, men have a lower hazard curve than women across the life course for first cohabitation and marriage in two cohorts. For robustness check, I also examined alternative outcomes, including first marriage (with first cohabitation as a competing risk), first cohabitation (with first marriage as a competing risk), and first union (either first marriage or cohabitation), and included pertinent results in the appendix (see Tables S2–S4).

[3] Prior to 2000, the questions on NLSY79 partners were limited to an opposite-sex adult.
[4] Cohabitation occurred after the first marriage was ignored in this outcome.

Main predictors

The main predictors encompass household total net worth, asset ownership and debt holding, and asset and debt net values.

Household total net worth. The NLSY79 and NLSY97 both constructed aggregated measures for household total net worth by summing all asset market values and subtracting all debt.[5] To obtain consistent topcodes across surveys (top 2% in the NLSY79; values above $600,000 in the NLSY97), I imputed the top 3% of the household total net worth from a Pareto distribution for the two cohorts. For comparability of measures across cohorts and survey years, I also transformed the values to constant dollars in 2016 using the personal consumption expenditures index (PCE), and adjusted net worth by the square root of reported family size in the focal survey year (see a similar approach in Bloome, Dyer, and Zhou [2018]). I handled cases of negative household total net worth in two steps. I first used the inverse hyperbolic sine (IHS) function to transform these indicators to reduce skewness while still using the information contained in the relative order of the net debt values (Carroll, Dynan, and Krane 2003; Pence 2006). I then separated the total net worth into two parts for modeling: the positive household total net worth and negative household total net worth (including zero). This is because while the inverse hyperbolic sine (IHS) function can help contain the information of net negative values, it does not relax the assumption that the association direction between marriage or cohabitation formation and

[5] The NLSY97 constructed household total net worth measures annually between 1985 and 1994 with the exception of 1991, biennially between 1994 and 2000, and fourth-yearly in 2000–2016. The NLSY97 constructed household total net worth measures for survey years 1997–2003. Since 2004, the surveys asked questions regarding wealth from individual respondents at infrequent intervals rather than at each round. The household total net worth measures were only available when respondents were 20, 25, 30, and 35 after the year 2004. For data harmonization between the NLSY79 and NLSY97, I imputed the total net worth for off-survey age intervals (i.e., 21–24, 26–29, 30–34) based on the available information at age 20, 25, 30, and 35 for the NLSY97. Linear interpolation methods were used to impute values within each single off-survey age interval (i.e., 21–24, 26–29, 30–34).

net worth is the same for net worth holders and net debtors (for more discussion regarding the handling of negative net worth, see Killewald [2013]).[6]

Asset ownership and debt holding. I created a set of dummy indicators for home, vehicle, financial asset, and other asset ownership. Financial assets include bank accounts, financial investments, or retirement plans (i.e., pension or retirement savings/tax-deferred plans, IRAs, and other tax-advantaged accounts).[7] Other assets include farms, businesses, or other real estates. Asset ownership indicators in the NLSY79 and NLSY97 (before age 25) were derived from survey questions about the current asset ownership. Asset ownership in the NLSY97 after age 25 was derived from survey questions about the current ownership and the changes in ownership (e.g., purchasing a vehicle or home).

I created dummy indicators for home, vehicle, student loan, and other debt holding.[8] Home and vehicle debt indicators were derived from survey questions about debt or loans associated with owned homes and vehicles. The student loan indicator in the NLSY79 was derived from survey questions, such as "Since [Date of the last interview], did you receive a loan to cover any of the costs for your most recent/current college expenses at [Name of college or university respondent attended (college 1)]?" The student loan indicator in the NLSY97 includes government educational loans and personal educational loans. The other

[6] I transformed the household total net worth using the following function: $f(w_{it}) = In(w_{it} + \sqrt{w_{it} + 1})$.

[7] The NLSY79 has been asking questions about holding a bank account since 1985. However, information regarding financial investment and retirement plans was not available until 1988 and 1994, respectively, when the youngest of the NLSY79 cohort turned 24 and 30. For the NLSY97, asset ownership at age 25, 30, and 35 was derived from questions in the age-specific asset section. Asset ownership before 25 was derived from survey questions in the general asset section in each round between 1998 and 2008. Information about IRAs and other tax-advantaged accounts was only available till respondents turned 30. Additionally, the research questions about financial investment are not consistent across the two surveys. For the comparability of measures across two cohorts, I constructed a consistent measure for financial investment that only includes bonds, stocks, mutual funds, and CDs.

[8] The NLSY79 did not ask respondents to report total amounts owed on credit card accounts until 2004. In 2004, the youngest of the NLSY79 cohorts were already over 40. Because the credit card histories cannot be compared across cohorts before age 40, I excluded them from the analyses.

debt indicator includes any reported debt, excluding home mortgages/debt, vehicle loans, and student loans.

For the NLSY97 cohorts, asset ownership or debt holding before age 25 was derived from survey questions in the general asset section in each round between 1998 and 2008. Asset ownership or debt holding after age 25 was derived from the age-specific asset section at age 25, 30, and 35. I thus imputed the asset ownership and debt holding in off-survey age intervals (i.e., 21–24, 26–29, 30–34) based on the available information at age 20, 25, 30, and 35 for the NLSY97 cohorts. For instance, if home ownership at age 20 and 25 is the same ("Yes" or "No"), I coded the home ownership between age 21 and 24 to be "Yes" or "No" accordingly; if home ownership at age 20 is "No" but at age 25 is "Yes," I coded home ownership at age 21 and 22 to be "No" but home ownership at age 23 and 24 to be "Yes" (and vice versa).

Asset and debt net values. I calculated the net values for primary housing (reported estimated market value - reported estimated mortgages/debt), vehicles (reported estimated market value - reported estimated loans/debt), financial assets, and other assets (reported estimated market value - reported estimated loans/debt). The net values of vehicles in the NLSY97 were created based on survey questions of reported values (exact values or a range of values) for estimated market values and debt. The total values for financial assets were summed across the values of bank accounts, financial investments, and retirement plans. The total values for other assets were calculated by subtracting the total debt from the total market values.

I constructed measures of debt values for primary housing, vehicles, student loans, and other debt. Home debt in the NLSY79 was derived from survey questions — "About

how much do you owe on this property, for mortgages, back taxes, home improvement loans, etc.?" and "How much other debt do you have on this property, such as assessments, home repair bills, etc.?" Vehicle debt in the NLSY79 was derived from one survey question — "How much altogether? Do not include leased vehicles or vehicles owned by your farm or business." The home debt in the NLSY97 was derived from a constructed measure — "Debt owed on respondent's primary housing at age 20/25/30/35." The total debt values of vehicles in the NLSY97 were created by combining reported exact values or range of values for estimated total debt. The values of other debt were summed across the other debt reported by respondents.

I imputed the off-survey year asset or debt net value between ages 20, 25, 30, and 35 for the NLSY97.[9] I then imputed the top 3 percent of the net values for assets and debt from a Pareto distribution and transformed net values to constant dollars in 2016. I then transformed these indicators using the inverse hyperbolic sine (IHS) function.

Covariates

I controlled for time-varying economic covariates that are associated with marriage and cohabitation formation and wealth accumulation, including individual educational attainment (Ishizuka 2018; Sassler, Michelmore, and Qian 2018) and labor employment performance (Ishizuka 2018; Smock, Manning, and Porter 2005). Individual educational attainment was measured by the respondent's highest attained educational qualification (less than high school, high school [reference group], some college, and college and above). Individual employment status was created based on questions eliciting "the number of

[9] For instance, if home ownership at age 20 and 25 is the same ("Yes" or "No"), I imputed the home net values by the average of home net values between age 20 and 25; if home ownership at age 20 is "No" but at age 25 is "Yes," I coded the home net values at age 21 and 22 to be zero and the home net values at age 23 and 24 to be the same as those at age 25.

weeks respondents worked any civilian jobs in the past calendar year," with one week or more coded as employed (unemployed is the reference group).[10] Individual annual income was a summed measure from a variety of sources, including wages and salaries, and income from farms and businesses.[11] I imputed the top 3 % of income from a Pareto distribution, adjusted it into constant dollars in 2016, and transformed it by the logarithm function.

I also controlled for individual demographic covariates. Given that women typically form their first cohabitation or marriage earlier than men (Manning et al. 2014) and the influences of asset ownership and debt holding may differ by gender (Addo 2014; Schneider 2011), analyses were stratified by gender. Race/ethnicity (non-Hispanic White (reference group), Black, and Hispanics/Latino) was included because significant racial gaps in both wealth (Killewald 2013; Oliver and Shapiro 2006) and marriage and cohabitation formation (Raley and Kuo 2016; Raley, Sweeney, and Wondra 2015) are well documented in prior studies. Age was included (measured in years) because both wealth accumulation (Killewald and Bryan 2018) and marriage and cohabitation formation vary across the life course (Zhang and Ang 2020). I controlled for the religion (roman catholic [reference group], protestant, and others or no religion) in which respondents were raised because religious affiliation is associated with both wealth accumulation (Keister 2003, 2007) and marriage and cohabitation formation (Lehrer 2004). Residing children (i.e., biological/adoptive/step children) in the household is included as a time-varying covariate because the residence of children before marriage may discourage wealth accumulation

[10] I used alternate coding criteria (e.g., four weeks, six months), the main results are still consistent.

[11] For robustness check, I created measures of household total annual income, which are aggregated measures available in the NLSY79 and the NLSY97. I imputed the top 3 % of income from a Pareto distribution, transformed it to constant dollars in 2016, and then adjusted the household total annual income by the square root of family size. I then transformed it using the logarithm function.

(Yamokoski and Keister 2006) and transition to first marriage (Qian, Lichter, and Mellott 2005).

The receipt of public welfare such as AFDC/TANF may negatively associate with marriage (Carlson et al. 2004; Moffitt 1998; Teitler et al. 2009), and the eligibility guidelines of public assistance may also discourage recipients from wealth accumulation (Nam 2008; Ziliak 2003). I included indicators of receipt of AFDC/TANF and receipt of other welfare program benefits (i.e., unemployment insurance, food stamps, WIC, SSI, and others) at age 20. These measures were created based on the reported monthly receipt status of public benefits.

Family background covariates were also controlled because family structure during childhood or adolescence, as well as parents' educational attainment, can affect marriage and cohabitation formation (Sassler et al. 2018; Sassler and Miller 2017; Stanley, Rhoades, and Markman 2006) and wealth accumulation (Keister 2004; Killewald and Bryan 2018). Family structure of respondents at age 14 was created based on questions soliciting household members' relationship to the respondents and includes five categories: living by self or with children/siblings, living with two biological/adoptive/step parents (reference group), living with single parents, living with extended families, and others. Parental highest educational attainment includes four categories: less than high school (below 12th grade), high school (12th grade; reference group), some college (first to third college year), and four years of college or above.[12]

Analytic Strategy

I used hazard models to estimate the time-varying risk of first marriage (ignoring

[12] The highest parental educational attainment in the NLSY97 cohorts was created by the highest degree received by biological parent(s) OR the highest degree received by adoptive parent(s).

cohabitation) and cohabitation (before first marriage) formation and competing risk hazard models to estimate the competing risk of first marriage versus cohabitation formation, Given that the data are precise to the year, I used a discrete-time approach, which allows for the inclusion of both time-varying and invariant regressors in the estimation (see [Allison 1982; Peterson 1991; Yamaguchi 1991] for more details).

To estimate the discrete-time hazard models, I used logistic regression with person-year exposure to the risk of transitioning from single into first marriage or cohabitation as the analysis unit (see Equation [1]; first marriage and cohabitation modeled separately). In the Equation (1), Y_{it} represents the first marriage or cohabitation formation ($Y_{it} = 1$) of individual *i* during age *t,* with single as the reference group ($Y_{it} = 0$). X_{jit} are n vectors of time-varying predictors for individual *i* during age *t* with coefficients α_j. Z_{kit} are m vectors of time-varying covariates for individual *i* during age *t* with coefficients β_k. O_{it} are q vectors of time-constant covariates for individual *i* with coefficients γ_l.

$$In\frac{Pr(Y_{it}=1)}{1-Pr(Y_{it}=1)} = \sum_{j=1}^{j=n} \alpha_j X_{jit} + \sum_{k=1}^{k=m} \beta_k Z_{kit} + \sum_{l=1}^{l=q} \gamma_l O_{li} \quad (1)$$

To estimate the discrete-time competing risk hazard models, I used multinomial logistic regression with analysis unit being person-year exposure to the risk of transitioning from single into the first marriage—given that first cohabitation has not occurred—or transitioning from single into the first cohabitation—given that first marriage has not occurred. The discrete-time competing risk hazard models can assist compare the choices between first marriage and first cohabitation, as well as the choices between remaining single and first marriage or cohabitation. In Equation (2) and (3), Y_{it} represents the first cohabitation formation ($Y_{it} = 1$) or the first marriage ($Y_{it} = 2$) of individual *i* during age *t,*

with being single as the reference group ($Y_{it} = 0$).

$$In\frac{Pr(Y_{it}=1)}{Pr(Y_{it}=0)} = \sum_{j=1}^{j=n} \alpha_{1j} X_{jit} + \sum_{k=1}^{k=m} \beta_{1k} Z_{kit} + \sum_{l=1}^{l=q} \gamma_l O_{li} \quad (2)$$

$$In\frac{Pr(Y_{it}=2)}{Pr(Y_{it}=0)} = \sum_{j=1}^{j=n} \alpha_{2j} X_{jit} + \sum_{k=1}^{k=m} \beta_{2k} Z_{kit} + \sum_{l=1}^{l=q} \gamma_l O_{li} \quad (3)$$

I estimated both the independent and competing risk of first marriage and cohabitation formation for the NLSY79 and NLSY97 cohorts separately, stratified by gender. I stratified samples by gender because men and women have differential hazards of first marriage and cohabitation and may also respond to wealth differently (though gender differences are not the focus of this study). Within each cohort, I first explored the association between household total net worth and first marriage and cohabitation formation, controlling for covariates. I then investigated the association between assets and first marriage and cohabitation formation, examining asset ownership and net value, respectively. I next examined the relationship between debt and first marriage and cohabitation formation, examining debt holding and value, respectively.

To facilitate the interpretation of model estimates and their comparison across non-linear models, I transformed coefficients to average marginal effects (AMEs). In the discrete-time (competing risk) hazard model, AMEs of a predictor can be interpreted as the average of predicted changes in the risk of first marriage or cohabitation formation for a one-unit change in the predictor (if it is continuous). To obtain the cohort changes in the association between wealth and first marriage (first cohabitation) formation, I calculated the cohort differences in AMEs for first marriage (see Equation [4]) and first cohabitation (see Equation [5]), respectively. To acquire the cohort changes in the competing risk

between first marriage and cohabitation formation, I calculated cohort changes in the differences of AMEs for first marriage ($Y_{it} = 2$) and first cohabitation ($Y_{it} = 1$) (see Equation [6]). The pertinent standard deviations were estimated by the non-parametric bootstrap technique with 1000 replications.[13]

$$\delta_1 = E(Y_{it} = 1)_{c=NLSY97} - E(Y_{it} = 1)_{c=NLSY79} \quad (4)$$

$$\delta_2 = E(Y_{it} = 2)_{c=NLSY97} - E(Y_{it} = 2)_{c=NLSY79} \quad (5)$$

$$\Delta = [E(Y_{it} = 2)_{c=NLSY97} - E(Y_{it} = 1)_{c=NLSY97}] - [E(Y_{it} = 2)_{c=NLSY79} - E(Y_{it} = 1)_{c=NLSY79}] \quad (6)$$

Results

Household total net worth and first marriage and cohabitation formation

Table 1 describes the association between household total net worth and first marriage and cohabitation formation among men and women in two cohorts. Figure 2 presents cohort differences in the association between household total net worth and first marriage and cohabitation formation.

Household total net worth (when it is above zero) positively predicts first marriage for both late Baby Boomers and late Millennials, and no significant cohort differences were detected. For late Baby Boomers, among those whose household total net worth is above zero, a 1-percentage-point increase in the household total net worth is associated with a 1.50-percentage-point and a 1.58-percentage-point increase in the risk of first marriage for men and women, respectively. For early Millennials, among those whose household total net worth is above zero, a 1-percentage-point increase in the household total net worth is associated with a 0.98-percentage-point and a 1.67-percentage-point increase in the risk of

[13] The descriptive results were estimated with the adjustment of NLSY79 and NLSY97 baseline sampling weights. The logistic and multinomial logistic regression results were estimated without the adjustment of NLSY79 and NLSY97 sampling weights.

first marriage for both men and women. Even though a decrease in the magnitude of this association for men and an increase for women have been observed, these cohort changes are not statistically significant (see Figure 2, first column). In addition, a significantly negative association between the household total net worth and first marriage for late Baby Boomers is observed when the household total net worth is below zero. This finding implies that the association between household total net worth and first marriage may not be monotonic (at least for late Baby Boomers), suggesting both larger positive and negative household total net worth are positively associated with first marriage.

The results for first cohabitation are obviously different from those for first marriage. For men and women in the two cohorts, when the household total net worth is above zero, the associations between household total net worth and first cohabitation formation are in a small positive magnitude (except for late Baby Boomer women), and most of these associations are not statistically significant. However, when the household total net worth is below zero, the associations between household total net worth and first cohabitation formation are significantly negative. This indicates that people who hold a larger amount of debt are more likely to transition into first cohabitation. Moreover, significantly positive cohort changes among women have been observed (see Figure 2, second column), which suggests that household total net worth has become stronger in predicting first cohabitation.

Regarding the competing risk between first marriage and cohabitation, the difference in the competing risk is much larger among late Baby Boomers as compared to among early Millennials. For instance, for late Baby Boomers, the risk of first marriage is larger than that of first cohabitation for both men (0.94% versus 0.46%) and women (1.07% versus 0.16%) with a 1-percentage-point increase in the total net worth (when it is above

zero). However, for early Millennials, the risk of first marriage is similar to that of first cohabitation for both men (0.62% versus 0.62%) and women (0.79% versus 0.77%) with a 1-percentage-point increase in the total net worth (when it is above zero). Figure 2 (third column) shows that the differences in the competing risk between first marriage and cohabitation across the two cohorts have significantly decreased among women.

In summary, household total net worth has a stronger association with first cohabitation in early Millennial women as compared to in late Baby Boomer women. However, this trend has not been observed for men or first marriage. *Hypothesis 1* is thus only partially supported. Moreover, the association of household total net worth with first marriage is stronger than that with first cohabitation given their competing relationship, especially for late Baby Boomers, which supports *Hypothesis 3*. Additionally, the differences in the competing risk between first marriage and cohabitation across the two cohorts have significantly decreased among women, which partially supports *Hypothesis 5*.

Assets, debt, and first marriage and cohabitation formation

Because asset ownership is sometimes highly correlated to debt holding (e.g., home and vehicle loans), I discuss asset and debt results in the same section. Tables 2 and 3 respectively describe the association of asset ownership and debt holding with first marriage and cohabitation formation by cohort and gender. Figures 2 and 3 respectively present the cohort differences in the association of asset ownership and debt holding with first marriage and cohabitation formation by gender.

Home and vehicle ownership (debt holding) are significant strong predictors for first marriage, regardless of gender and cohort, with the increasing importance of home

ownership (debt holding) and decreasing importance of vehicle ownership (debt holding). Specifically, shown in Table 2, late Baby Boomer men (women) who own a home or vehicle asset have a 3.36% (1.96%) and 4.04% (3.40%) higher risk of first marriage. Early Millennial men (women) who own a home or vehicle asset have a 5.10% (6.84%) and 1.59% (1.59%) higher risk of first marriage. A similar cohort trend can also be observed for home and vehicle debt holding (see Table 3). Figure 2 (first column) shows that home ownership has become more important for first marriage for women, and vehicle ownership has become less important for first marriage for men and women. Figure 3 (first column) presents that home debt holding has become more important for first marriage for women, and vehicle debt holding has become less important for first marriage for men.

For first cohabitation, home ownership (debt holding) has transitioned from a significant negative predictor into an insignificant positive predictor, while vehicle ownership (debt holding) has become a stronger positive predictor. Specifically, shown in Table 2, late Baby Boomer men (women) who own a home asset have a 1.98% (1.86%) lower risk of first cohabitation formation, while late Baby Boomer men (women) who own a vehicle asset have a 0.68% (0.74%) higher risk of first cohabitation formation. Early Millennial men (women) who own a home or a vehicle asset have a 0.02% (0.62%) (albeit not significant) and 2.20% (1.53%) higher risk of first cohabitation formation. A similar cohort trend can also be found for home and vehicle debt holding (see Table 3). Figure 2 (second column) shows that home ownership has become more important for first cohabitation formation for men and women, and vehicle ownership has become more important for first cohabitation formation for men. Figure 3 (second column) presents that home debt holding has become more important for first cohabitation formation for both

men and women, and vehicle debt holding has become more important for first cohabitation formation for men. Additionally, financial asset ownership has become a strong negative predictor for first cohabitation formation for men (Figure 2, second column).

The differences in the competing risk of asset ownership and debt holding (e.g., home and vehicle) are larger among late Baby Boomers as compared to early Millennials. For instance, shown in Table 2, for late Baby Boomer men, the increase in the risk of first marriage is larger than that of first cohabitation when owning a home (3.29% versus -0.75%); however, for early Millennial men, the increase in the risk of first marriage is close to (even smaller) that of first cohabitation when owning a home (3.49% versus 3.99%). A similar cohort trend can also be found for home debt (see Table 3). Figure 2 (third column) shows that the differences in the competing risk between first marriage and cohabitation for home and vehicle ownership have significantly decreased among the younger cohort men. Figure 3 (third column) shows a similar cohort trend for home and vehicle debt holding. Additionally, the increase in the differences of the competing risk for financial asset ownership is mainly driven by its strong negative association with first cohabitation formation for early Millennial men (Figure 2, third column).

To sum up, this study finds that the importance of more secured and appreciating assets and debt (e.g., home ownership and debt holding) has gained its importance in predicting first marriage and cohabitation formation, which partially support *Hypothesis 2*. This study does not find consistent evidence for *Hypothesis 4* that assets or debt that strongly positively predict first marriage may negatively predict first cohabitation or have no effect on first cohabitation formation. Moreover, this study indeed finds that the gap in the competing risk between marriage and cohabitation regarding certain asset ownership

or debt holding has narrowed across cohorts, which partially supports *Hypothesis 5*.

Discussion

Drawing on data from the NSLY79 and NLSY97, this study compares the role of wealth in shaping first marriage and cohabitation formation between late Baby Boomers and early Millennials. This study contributes to the literature on the economic roots of marriage and cohabitation patterns by uncovering a stronger role of wealth in shaping first marriage and cohabitation formation unfolding against the rapid transformation of U.S. society. Further, by preserving the complexity of wealth, this study provides a fuller picture of how various wealth components shape marriage and cohabitation formation across cohorts. Moreover, how wealth shapes cohabitation formation and whether it differs from marriage are still elusive in the literature, though cohabitation has become a normative setting for the first union. This research fills this gap by contrasting first cohabitation formation with first marriage and comparing their differences across cohorts, revealing a higher wealth foundation for first marriage relative to first cohabitation but that the gaps in the competing risk between first marriage and cohabitation across the two cohorts have significantly decreased.

This study partially supports the hypothesis that household total net worth has become more predictive for first marriage and cohabitation formation among the younger cohorts. Household total net worth has a stronger association with first cohabitation in early Millennial women relative to late Baby Boomer women, while this trend was not observed for men or first marriage. Several reasons may explain this unanticipated finding for first marriage. The widening gap in first marriage rates by education or income across cohorts identified in prior studies (Kamp Dush, Jang, and Snyder 2018; Lundberg, Pollak, and

Stearns 2016; Sweeney 2002) is not mirrored in the measure of household total net worth, perhaps because the latter consists of both asset values and debt values. That is, the association between household total net worth and first marriage and cohabitation formation may not be monotonic because both large asset and debt worth may encourage first marriage and cohabitation formation. It is a fruitful area for future research to further investigate this potential non-monotonic association between total net worth and first union formation. Moreover, because the direction and magnitude of the links between wealth components and marriage are often hinging upon their types (Schneider 2011), the aggregated household total net worth alone might not be sufficient to capture the changing wealth foundation for marriage and cohabitation formation across cohorts. It is thus necessary to have a deeper look into the roles of various wealth components.

This study also reveals that the cohort changes in the link between wealth components and first marriage and cohabitation formation are contingent upon types of assets and debt—with secured and appreciating assets or debt being increasingly important. Specifically, home ownership (home debt holding) has become more predictive for first marriage (especially for women) and cohabitation formation; in contrast, vehicle ownership (vehicle debt holding) has become less predictive for first marriage while more predictive for first cohabitation formation (especially for men). These findings indicate that holding a secured and appreciating asset or debt has become more crucial for both first marriage and cohabitation formation, demonstrating that forming first union in the contemporary US requires a higher level of wealth foundation. The different direction and magnitudes of the associations between different wealth components and first marriage and cohabitation formation remind scholars of the necessity to investigate wealth components

separately rather than treat them only as an aggregated measure (i.e., total net worth).

As Cherlin (2020) recently noted, marriage has become a luxury personal achievement, gradually seen as a capstone instead of a cornerstone of adult life among younger cohorts. This study empirically examines this qualitative observation, demonstrating that today's marriage requires a higher level of wealth foundation. In complement to this qualitative observation, this study reveals that the wealth foundation for cohabitation has also been increased. In other words, no matter to form a cohabitation or a marriage, early Millennials have to possess more secured and appreciating assets or good debt than late Baby Boomers do. Specifically, as home assets are persistently appreciated as an effective means to build household wealth, their importance as an economic cornerstone for forming a marriage or establishing a family has become highly valued. For early Millennials, owning a home has already become a definite advantage for seeking a partner in the marriage market. Compared to late Baby Boomers, early Millennials are more likely to be in debt (e.g., credit card debt and student loan debt) before even start their first job, and they are living in a more financially unstable society with higher levels of economic uncertainty. Together, all of these obstacles have made early Millennials less likely to have home ownership than late Baby Boomers when they are at the same age. This may also explain why home ownership (home debt holding) is more important for early Millennials' first marriage, probably for both practical and symbolic reasons, as compared to late Baby Boomers.

Though practical and symbolic reasons were not specifically captured in this study, the findings in study—such that secured and appreciating assets have become more important in predicting first marriage and cohabitation—suggest that perhaps both the practical functions (e.g., appreciating cumulative wealth for buffering emergency) and

symbolic functions of wealth (e.g., signals of a secured and stable life) have played more important roles in predicting the younger cohorts' first marriage and cohabitation formation than the older cohorts'. Based on the current study, future studies could specifically investigate how practical and symbolic functions of wealth differently shape first union formation across cohorts probably through qualitative interviews and observations.

Regarding the differences in how wealth shapes first cohabitation from first marriage across two cohorts, this study finds that the gaps in the competing risk between marriage and cohabitation have significantly narrowed among the younger cohorts, especially regarding the influences of household total net worth and home ownership and home debt holding. These findings indicate that while the wealth foundation for both first marriage and cohabitation have been rising, their differences are indeed declining. In other words, no matter whether cohabitation is regarded as a preparation for or an alternative to marriage, its wealth foundation has also been increasing and even at a faster pace than has the wealth foundation for marriage. Cohabitation has transitioned from an experience disproportionately concentrated in people of low socioeconomic status to a normative and common experience regardless of socioeconomic status in the past few decades (Lamidi and Manning 2016). Even though cohabitation continues to provide a kind of "poor man's" marriage, a temporary arrangement, or a holding station for the "real thing" (Sassler and Lichter 2020), people of high socioeconomic backgrounds have also become likely to form a cohabitation as the first union (albeit they may marry later), which to some extent pushes up the average wealth foundation for first cohabitation. In the meantime, some people of low socioeconomic backgrounds may find it not only difficult to find a spouse but also difficult to find a cohabiting partner.

Additionally, in broad agreement with previous studies (Eads and Tach 2016; Schneider 2011), this study does not identify distinct differences in the effects of asset ownership (debt holding) from those of asset net values (debt values). The evidence of asset net values or debt values validates the findings pertinent to the assets ownership or debt holding (see Table S5 and S6).

We should interpret results considering the following limitations. Firstly, as the transition to adulthood has been delayed, first marriage occurs much later in the younger cohorts' life course. The age restriction by 35, due to data limitations, results in censoring cases that transition into first marriage (or cohabitation) after age 35. The results should be interpreted with this right censoring in mind. If the age restriction could be lifted, we may observe that the wealthy privileged adults who had chosen to remain single might gradually marry, leading to a stronger association between total net worth and first marriage. Secondly, because the NLSY97 asked wealth-related questions at specific ages, I imputed information for off-survey ages. Compared to the data quality of wealth trajectories in the NLSY79 cohorts, the data quality of wealth trajectories in the NLSY97 cohorts may be blemished by the data imputation. As a robustness check, I used time-constant measures of wealth at age 20, 25, and 30 to predict subsequent marriage and cohabit formation in the two cohorts and compared their cohort changes. The major results were consistent. Thirdly, because credit card history was not available until the oldest cohort of the NLSY79 had already turned 40, I did not include credit card debt in the analyses, even though credit card debt accounted for a significant proportion of debt and positively predicted first cohabitation among early Millennials (Addo 2014). Fourthly, the estimated market values of assets and debt were self-reported, probably jeopardizing the accuracy of these

measurements. Though the results based on asset and debt values are consistent with results based on asset and debt ownership/holding, it still merits research attention on reexamining the associations between asset and debt values and marriage and cohabitation formation based on more accurate measures. Fifthly, the NLSY79 began to obtain a detailed cohabitation history in 2002, including short-term and non-premarital cohabiting relationships. Although I drew on available data about cohabitation from the NLSY79 collected prior to 2002, cohabitation was still likely underestimated in the NLSY79.

Despite these limitations, the present study promotes our understanding of the economic roots and meanings of marriage and cohabitation formation against a rapidly changing society. Due to its unique symbolic and practical functions, wealth should be recognized as a distinctive measure from other economic factors in shaping marriage and cohabitation formation across cohorts. Furthermore, through integration and validation of evidence from both the aggregated measure—total net worth—and wealth components, this study obtains a better understanding of the association between wealth and marriage and cohabitation formation. Specifically, the association between household total net worth and first marriage and cohabitation formation may not be monotonic because both large asset and debt worth may encourage first marriage and cohabitation formation. The influence of wealth on marriage and cohabitation formation depends on the types of wealth component, suggesting distinct portfolio compositions may be associated with marriage and cohabitation formation in different and specific ways. Moreover, examining how wealth shapes diverging marriage and cohabitation formation can, to some extent, contribute to our knowledge of the reciprocal link between marriage and wealth inequality and how marital behaviors may function as a mechanism for intergenerational stratification

from an angle of wealth inequality. This is because past research often focuses more on the reciprocal links between marital behaviors and income and education inequality, and how marriage functions as a mechanism for intergenerational income and educational stratification. Based on the current study, the natural next research priority is to examine how marriage impacts wealth inequality and then contributes to intergenerational wealth stratification.

References

Addo, Fenaba R. 2014. "Debt, Cohabitation, and Marriage in Young Adulthood." *Demography* 51(5):1677–1701. doi: 10.1007/s13524-014-0333-6.

Addo, Fenaba R., Jason N. Houle, and Sharon Sassler. 2019. "The Changing Nature of the Association Between Student Loan Debt and Marital Behavior in Young Adulthood." *Journal of Family and Economic Issues* 40(1):86–101. doi: 10.1007/s10834-018-9591-6.

Allison, Paul D. 1982. "Discrete-Time Methods for the Analysis of Event Histories." *Sociological Methodology* 13:61–98. doi: 10.2307/270718.

Allred, Colette A. 2018. *Marriage: More than a Century of Change, 1900-2016*. National Center for Family and Marriage Research. doi: 10.25035/ncfmr/fp-18-17.

Bloome, Deirdre, and Shannon Ang. 2020. "Marriage and Union Formation in the United States: Recent Trends Across Racial Groups and Economic Backgrounds." *Demography*. doi: 10.1007/s13524-020-00910-7.

Bloome, Deirdre, Shauna Dyer, and Xiang Zhou. 2018. "Educational Inequality, Educational Expansion, and Intergenerational Income Persistence in the United States." *American Sociological Review* 83(6):1215–53. doi: 10.1177/0003122418809374.

Blumer, Herbert. 1986. *Symbolic Interactionism: Perspective and Method*. Berkeley, California: University of California Press.

Carlson, Marcia, Irwin Garfinkel, Sara McLanahan, Ronald Mincy, and Wendell Primus. 2004. "The Effects of Welfare and Child Support Policies on Union Formation." *Population Research and Policy Review* 23(5–6):513–42. doi: 10.1007/s11113-004-2707-8.

Carroll, Christopher D., Karen E. Dynan, and Spencer D. Krane. 2003. "Unemployment Risk and Precautionary Wealth: Evidence from Households' Balance Sheets." *The Review of Economics and Statistics* 85(3):586–604. doi: 10.1162/003465303322369740.

Carter, Michael J., and Celene Fuller. 2016. "Symbols, Meaning, and Action: The Past, Present, and Future of Symbolic Interactionism." *Current Sociology* 64(6):931–61. doi: 10.1177/0011392116638396.

Cherlin, Andrew J. 2004. "The Deinstitutionalization of American Marriage." *Journal of Marriage and Family* 66(4):848–61. doi: 10.1111/j.0022-2445.2004.00058.x.

Cherlin, Andrew J. 2014. *Labor's Love Lost: The Rise and Fall of the Working-Class Family in America.* New York: Russell Sage Foundation.

Cherlin, Andrew J. 2020. “Degrees of Change: An Assessment of the Deinstitutionalization of Marriage Thesis.” *Journal of Marriage and Family* 82(1):62–80. doi: 10.1111/jomf.12605.

Di, Zhu Xiao, Eric Belsky, and Xiaodong Liu. 2007. “Do Homeowners Achieve More Household Wealth in the Long Run?” *Journal of Housing Economics* 16(3–4):274–90. doi: 10.1016/j.jhe.2007.08.001.

Eads, Alicia, and Laura Tach. 2016. “Wealth and Inequality in the Stability of Romantic Relationships.” *RSF: The Russell Sage Foundation Journal of the Social Sciences* 2(6):197. doi: 10.7758/rsf.2016.2.6.10.

Edin, Kathryn, and Maria Kefalas. 2011. *Promises I Can Keep Why Poor Women Put Motherhood before Marriage: With a New Preface*. Berkeley, California: University of California.

Eickmeyer, Kasey J., Wendy D. Manning, and Susan L. Brown. 2019. “What’s Mine Is Ours? Income Pooling in American Families.” *Journal of Marriage and Family* 81(4):968–78. doi: 10.1111/jomf.12565.

Fisher, Jonathan, David Johnson, Jonathan P. Latner, Timothy Smeeding, and Jeffrey Thompson. 2016. “Inequality and Mobility Using Income, Consumption, and Wealth for the Same Individuals.” *RSF: The Russell Sage Foundation Journal of the Social Sciences* 2(6):44–58. doi: 10.7758/RSF.2016.2.6.03.

Gibson-Davis, Christina M., Kathryn Edin, and Sara McLanahan. 2005. “High Hopes but Even Higher Expectations: The Retreat From Marriage Among Low-Income Couples.” *Journal of Marriage and Family* 67(5):1301–12. doi: 10.1111/j.1741-3737.2005.00218.x.

Hacker, Jacob S. 2019. *The Great Risk Shift: The New Economic Insecurity and the Decline of the American Dream*. Oxford, England: Oxford University Press.

Herbert, Christopher E., Daniel T. McCue, and Rocio Sanchez-Moyano. 2013. *Is Homeownership Still an Effective Means of Building Wealth for Low-Income and Minority Households? (Was It Ever?)*. HBTL-06. Harvard University: Joint Center for Housing Studies.

Houle, Jason N. 2014. “Disparities in Debt: Parents’ Socioeconomic Resources and Young Adult Student Loan Debt.” *Sociology of Education* 87(1):53–69. doi: 10.1177/0038040713512213.

Ishizuka, Patrick. 2018. “The Economic Foundations of Cohabiting Couples’ Union Transitions.” *Demography* 55(2):535–57. doi: 10.1007/s13524-018-0651-1.

Kamp Dush, Claire M., Bohyun Jang, and Anastasia R. Snyder. 2018. “A Cohort

Comparison of Predictors of Young Adult Union Formation and Dissolution in the US." *Advances in Life Course Research* 38:37–49. doi: 10.1016/j.alcr.2018.09.001.

Keister, L. A. 2007. "Upward Wealth Mobility: Exploring the Roman Catholic Advantage." *Social Forces* 85(3):1195–1225. doi: 10.1353/sof.2007.0044.

Keister, Lisa A. 2003. "Sharing the Wealth: The Effect of Siblings on Adults' Wealth Ownership." *Demography* 40(3):521. doi: 10.2307/1515158.

Keister, Lisa A. 2004. "Race, Family Structure, and Wealth: The Effect of Childhood Family on Adult Asset Ownership." *Sociological Perspectives* 47(2):161–87. doi: 10.1525/sop.2004.47.2.161.

Keister, Lisa A., and Stephanie Moller. 2000. "Wealth Inequality in the United States." *Annual Review of Sociology* (26):63–81. doi: 10.1146/annurev.soc.26.1.63.

Killewald, Alexandra. 2013. "Return to Being Black, Living in the Red: A Race Gap in Wealth That Goes Beyond Social Origins." *Demography* 50(4):1177–95. doi: 10.1007/s13524-012-0190-0.

Killewald, Alexandra, and Brielle Bryan. 2016. "Does Your Home Make You Wealthy?" *RSF: The Russell Sage Foundation Journal of the Social Sciences* 2(6):110. doi: 10.7758/rsf.2016.2.6.06.

Killewald, Alexandra, and Brielle Bryan. 2018. "Falling Behind: The Role of Inter- and Intragenerational Processes in Widening Racial and Ethnic Wealth Gaps through Early and Middle Adulthood." *Social Forces* 97(2):705–40. doi: 10.1093/sf/soy060.

Klein, Nicholas J., and Michael J. Smart. 2017. "Millennials and Car Ownership: Less Money, Fewer Cars." *Transport Policy* 53:20–29. doi: 10.1016/j.tranpol.2016.08.010.

Krippner, Greta R. 2011. *Capitalizing on Crisis: The Political Origins of the Rise of Finance*. Cambridge, Massachusetts: Harvard University Press.

Kuhnimhof, Tobias, Dirk Zumkeller, and Bastian Chlond. 2013. "Who Made Peak Car, and How? A Breakdown of Trends over Four Decades in Four Countries." *Transport Reviews* 33(3):325–42. doi: 10.1080/01441647.2013.801928.

Kurz, Christopher, Geng Li, and Daniel Vine. 2016. *The Young and the Carless? The Demographics of New Vehicle Purchases*. Washington: Board of Governors of the Federal Reserve System.

Lamidi, Esther, and Wendy D. Manning. 2016. *FP-16-17 Marriage and Cohabitation Experiences Among Young Adults*. 60. National Center for Family and Marriage Research.

Lehrer, Evelyn L. 2004. “The Role of Religion in Union Formation: An Economic Perspective.” *Population Research and Policy Review* 23(2):161–85. doi: 10.1023/B:POPU.0000019917.00860.ba.

Lin, Ken-Hou, and Megan Tobias Neely. 2020. *Divested: Inequality in Financialized America*. Oxford, England: Oxford University Press.

Lundberg, Shelly, Robert A. Pollak, and Jenna Stearns. 2016. “Family Inequality: Diverging Patterns in Marriage, Cohabitation, and Childbearing.” *Journal of Economic Perspectives* 30(2):79–102. doi: 10.1257/jep.30.2.79.

Manning, Wendy D., Susan L. Brown, and Krista K. Payne. 2014. “Two Decades of Stability and Change in Age at First Union Formation.” *Journal of Marriage and Family* 76(2):247–60. doi: 10.1111/jomf.12090.

McDonald, Noreen C. 2015. “Are Millennials Really the ‘Go-Nowhere’ Generation?” *Journal of the American Planning Association* 81(2):90–103. doi: 10.1080/01944363.2015.1057196.

McLanahan, Sara. 2004. “Diverging Destinies: How Children Are Faring Under the Second Demographic Transition.” *Demography* 41(4):607–27. doi: 10.1353/dem.2004.0033.

Metz, David. 2013. “Peak Car and Beyond: The Fourth Era of Travel.” *Transport Reviews* 33(3):255–70. doi: 10.1080/01441647.2013.800615.

Moffitt, Robert A. 1998. *The Effect of Welfare on Marriage and Fertility*. Washington, DC: National Academy Press.

Nam, Yunju. 2008. “Welfare Reform and Asset Accumulation: Asset Limit Changes, Financial Assets, and Vehicle Ownership.” *Social Science Quarterly* 89(1):133–54. doi: 10.1111/j.1540-6237.2008.00525.x.

Oliver, Melvin L., and Thomas M. Shapiro. 1990. “Wealth of a Nation: A Reassessment of Asset Inequality in America Shows at Least One Third of Households Are Asset-Poor.” *American Journal of Economics and Sociology* 49(2):129–51. doi: 10.1111/j.1536-7150.1990.tb02268.x.

Oliver, Melvin L., and Thomas M. Shapiro. 2006. *Black Wealth, White Wealth: A New Perspective on Racial Inequality*. New York: Taylor & Francis.

Pence, Karen M. 2006. “The Role of Wealth Transformations: An Application to Estimating the Effect of Tax Incentives on Saving.” *The BE Journal of Economic Analysis & Policy* 5(1):1–24. doi: 10.1515/1538-0645.1430.

Peterson, Trond. 1991. “The Statistical Analysis of Event Histories.” *Sociological Methods & Research* 19(3):270–323. doi: 10.1177/0049124191019003002.

Qian, Zhenchao, Daniel T. Lichter, and Leanna M. Mellott. 2005. “Out-of-Wedlock Childbearing, Marital Prospects and Mate Selection.” *Social Forces* 84(1):473–91. doi: 10.1353/sof.2005.0117.

Raley, Kelly, and Janet Chen-Lan Kuo. 2016. “Diverging Patterns of Union Transition among Cohabitors by Race-Ethnicity and Education: Trends and Marital Intentions.” *Demography* 53(4):921–35. doi: 10.31235/osf.io/6t3gp.

Raley, R. Kelly, Megan M. Sweeney, and Danielle Wondra. 2015. “The Growing Racial and Ethnic Divide in U.S. Marriage Patterns.” *The Future of Children* 25(2):89–109. doi: 10.1353/foc.2015.0014.

Ralph, Kelcie Mechelle. 2015. “Stalled on the Road to Adulthood? Analyzing the Nature of Recent Travel Changes for Young Adults in America, 1995 to 2009.” PhD Thesis, UCLA.

Rossi, Peter H., and Eleanor Weber. 1996. “The Social Benefits of Homeownership: Empirical Evidence from National Surveys.” *Housing Policy Debate* 7(1):1–35. doi: 10.1080/10511482.1996.9521212.

Sassler, Sharon, and Daniel T. Lichter. 2020. “Cohabitation and Marriage: Complexity and Diversity in Union-Formation Patterns.” *Journal of Marriage and Family* 82(1):35–61. doi: 10.1111/jomf.12617.

Sassler, Sharon, Katherine Michelmore, and Zhenchao Qian. 2018. “Transitions From Sexual Relationships Into Cohabitation and Beyond.” *Demography* 55(2):511–34. doi: 10.1007/s13524-018-0649-8.

Sassler, Sharon, and Amanda J. Miller. 2011. “Class Differences in Cohabitation Processes.” *Family Relations* 60(2):163–77. doi: 10.1111/j.1741-3729.2010.00640.x.

Sassler, Sharon, and Amanda Jayne Miller. 2017. *Cohabitation Nation: Gender, Class, and the Remaking of Relationships*. Oakland, California: University of California Press.

Schneider, Daniel. 2011. “Wealth and the Marital Divide.” *American Journal of Sociology* 117(2):627–67. doi: 10.1086/661594.

Sherraden, Michael Wayne. 1991. *Assets and the Poor*. New York: ME Sharpe.

Smock, Pamela J., and Wendy D. Manning. 1997. “Cohabiting Partners’ Economic Circumstances and Marriage.” *Demography* 34(3):331. doi: 10.2307/3038287.

Smock, Pamela J., Wendy D. Manning, and Meredith Porter. 2005. "'Everything's There Except Money': How Money Shapes Decisions to Marry Among Cohabitors." *Journal of Marriage and Family* 67(3):680–96. doi: 10.1111/j.1741-3737.2005.00162.x.

Smock, Pamela J., and Christine R. Schwartz. 2020. "The Demography of Families: A Review of Patterns and Change." *Journal of Marriage and Family* 82(1):9–34. doi: 10.1111/jomf.12612.

Spilerman, Seymour. 2000. "Wealth and Stratification Processes." *Annual Review of Sociology* 26(1):497–524. doi: 10.1146/annurev.soc.26.1.497.

Stanley, Scott M., Galena Kline Rhoades, and Howard J. Markman. 2006. "Sliding Versus Deciding: Inertia and the Premarital Cohabitation Effect." *Family Relations* 55(4):499–509. doi: 10.1111/j.1741-3729.2006.00418.x.

Sweeney, Megan M. 2002. "Two Decades of Family Change: The Shifting Economic Foundations of Marriage." *American Sociological Review* 67(1):132. doi: 10.2307/3088937.

Teitler, Julien O., Nancy E. Reichman, Lenna Nepomnyaschy, and Irwin Garfinkel. 2009. "Effects of Welfare Participation on Marriage." *Journal of Marriage and Family* 71(4):878–91. doi: 10.1111/j.1741-3737.2009.00641.x.

Thornton, Arland, William G. Axinn, and Yu Xie. 2008. *Marriage and Cohabitation*. Chicago: University of Chicago Press.

Vespa, Jonathan, and Matthew A. Painter. 2011. "Cohabitation History, Marriage, and Wealth Accumulation." *Demography* 48(3):983–1004. doi: 10.1007/s13524-011-0043-2.

Watson, Tara, and Sara McLanahan. 2011. "Marriage Meets the Joneses: Relative Income, Identity, and Marital Status." *The Journal of Human Resources* 46(3):482–517. doi: 10.1353/jhr.2011.0021.

Weber, Max. 2018. "Class, Status, Party." Pp. 37–52 in *Inequality: Classic Readings in Race, Class, and Gender*, edited by D. Grusky. Thames, Oxfordshire, England: Routledge.

Western, Bruce, Deirdre Bloome, Benjamin Sosnaud, and Laura Tach. 2012. "Economic Insecurity and Social Stratification." *Annual Review of Sociology* 38(1):341–59. doi: 10.1146/annurev-soc-071811-145434.

Xie, Yu, James M. Raymo, Kimberly Goyette, and Arland Thornton. 2003. "Economic Potential and Entry into Marriage and Cohabitation." *Demography* 40(2):351–67. doi: 10.1353/dem.2003.0019.

Yamaguchi, Kazuo. 1991. *Event History Analysis*. Newbury Park, California: SAGE

Publications.

Yamokoski, Alexis, and Lisa A. Keister. 2006. “The Wealth of Single Women: Marital Status and Parenthood in the Asset Accumulation of Young Baby Boomers in the United States.” *Feminist Economics* 12(1–2):167–94. doi: 10.1080/13545700500508478.

Zhang, Yang, and Shannon Ang. 2020. “Trajectories of Union Transition in Emerging Adulthood: Socioeconomic Status and Race/Ethnicity Differences in the National Longitudinal Survey of Youth 1997 Cohort.” *Journal of Marriage and Family* 82(2):713–32. doi: 10.1111/jomf.12662.

Ziliak, James P. 2003. “Income Transfers and Assets of the Poor.” *Review of Economics and Statistics* 85(1):63–76. doi: 10.1162/003465303762687712.

Tables and Figures

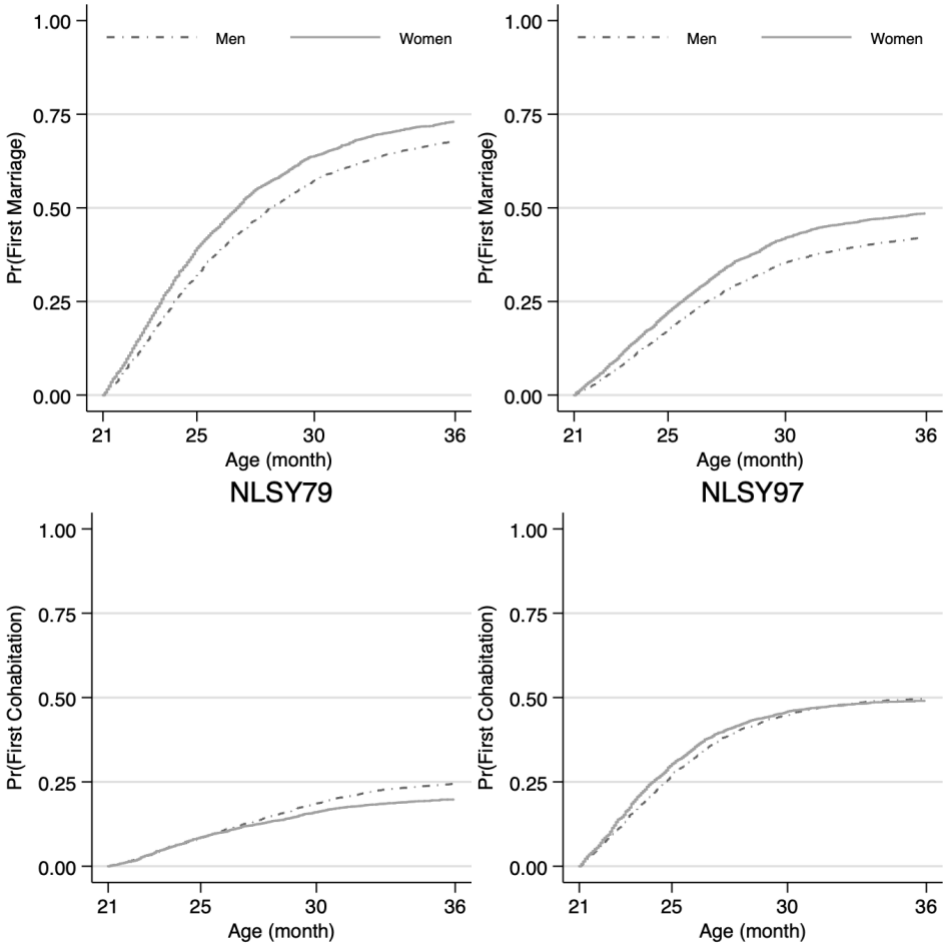

Figure 1. Hazards of first marriage and cohabitation formation by gender and cohort.

Notes:

1. First marriage ignores first cohabitation; first cohabitation is before first marriage.
2. The results were adjusted by NLSY79 and NLSY97 baseline sampling weights.

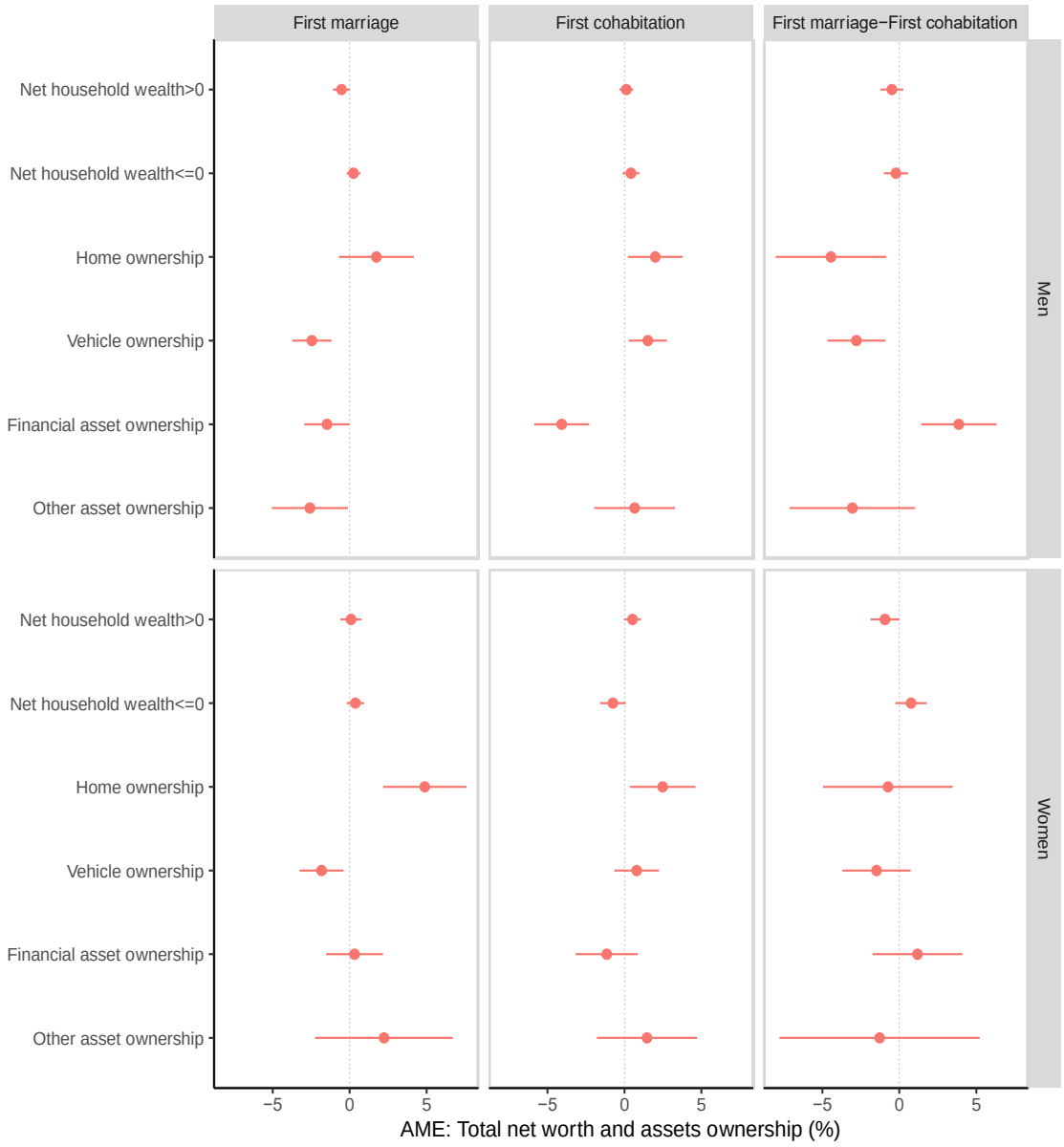

Figure 2. Cohort differences in the Average Marginal Effects (%) of total net worth and asset ownership between late Baby Boomers and early Millennials (early Millennials–late Baby Boomers).

Note: The middle points represent point estimates; Error bars represent 95% confidence intervals.

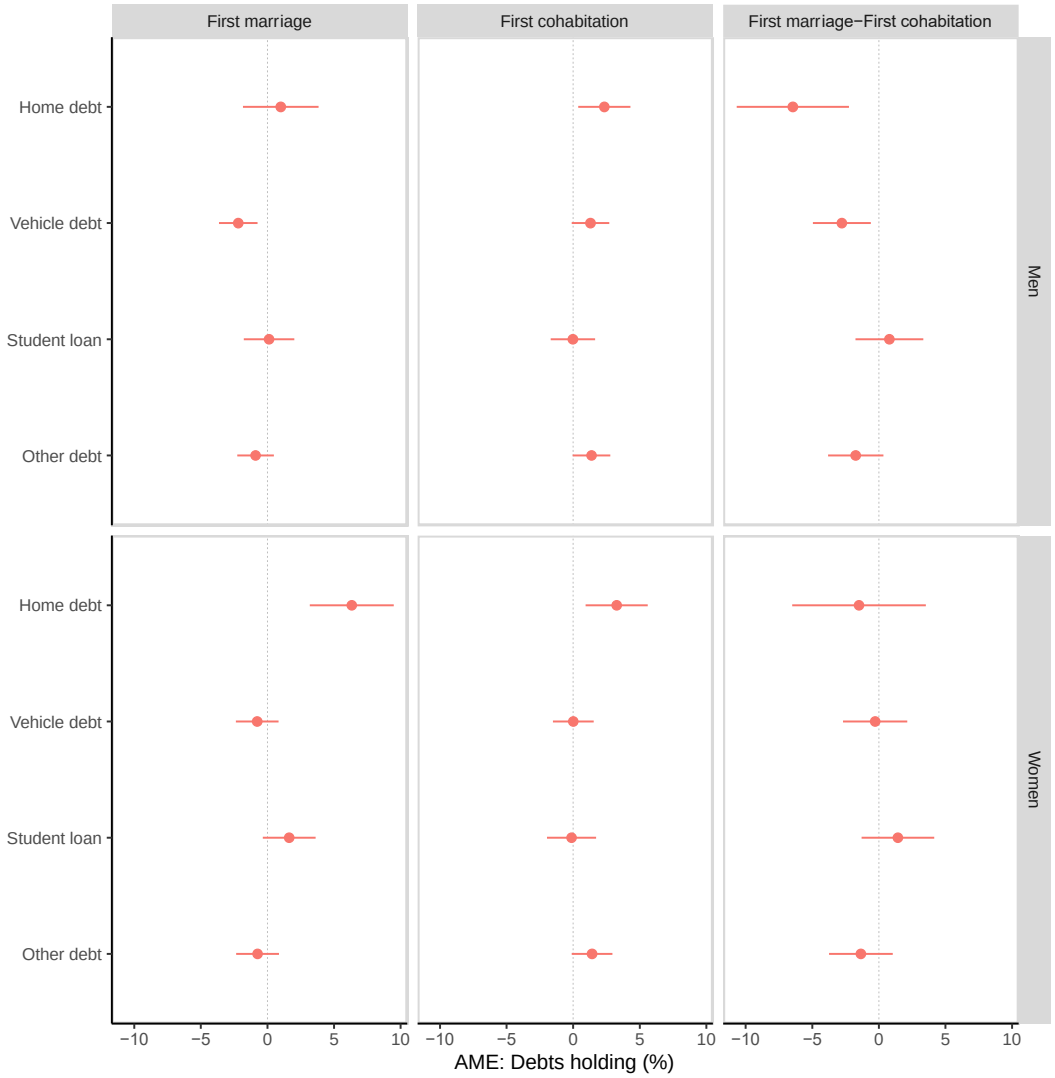

Figure 3. Average Marginal Effects (%) of debt holding on first marriage and cohabitation formation among late Baby Boomers and early Millennials (early Millennials- late Baby Boomers).

Note: The middle points represent point estimates; Error bars represent 95% confidence intervals.

Table 1. Estimates of total household net worth for marriage and cohabitation formation among NLSY79 and NLSY97 cohorts, Average Marginal Effects (%) from discrete-time logistic and multinomial logistic regression.

	Men		Women	
	NHW>0 AME	NHW<=0 AME	NHW>0 AME	NHW<=0 AME
NLSY79				
First marriage (%) (Ignoring cohabitation)	1.50	-0.26	1.58	-0.21
	(1.07, 1.93)	(-0.45, -0.08)	(1.06, 2.11)	(-0.41, -0.01)
First cohabitation (%) (Before first marriage)	0.13	-0.01	-0.27	-0.12
	(-0.08, 0.34)	(-0.18, 0.15)	(-0.50, -0.05)	(-0.27, 0.03)
Competing risk: (Single as reference)				
First cohabitation (%)	0.46	-0.07	0.16	-0.19
	(0.15, 0.76)	(-0.25, 0.12)	(-0.21, 0.52)	(-0.36, -0.02)
First marriage (%)	0.94	-0.13	1.07	-0.11
	(0.56, 1.31)	(-0.29, 0.04)	(0.60, 1.54)	(-0.29, 0.07)
NLSY97				
First marriage (%) (Ignoring cohabitation)	0.98	-0.01	1.67	0.16
	(0.65, 1.31)	(-0.42, 0.40)	(1.26, 2.08)	(-0.34, 0.65)
First cohabitation (%) (Before first marriage)	0.26	-0.59	0.25	-0.88
	(-0.16, 0.67)	(-0.20, -0.98)	(-0.24, 0.74)	(-1.66, -0.09)
Competing risk: (Single as reference)				
First cohabitation (%)	0.62	0.41	0.79	-0.94
	(0.14, 1.10)	(-0.13, 0.95)	(0.21, 1.37)	(-1.81, -0.08)
First marriage (%)	0.62	0.13	0.77	-0.10
	(0.34, 0.89)	(-0.21, 0.47)	(0.42, 1.13)	(-0.40, 0.21)

Notes:

1. All results were adjusted by demographic and economic covariates.

2. HNW represents household net worth.

3. The top 3 percent of both total household net worth was imputed from a Pareto distribution. The values were then transformed into constant dollars in 2016 using the personal consumption expenditures index (PCE). The total household net worth was adjusted by the square root of the reported family size at the corresponding calendar year. All the values were transformed by the inverse hyperbolic sine (IHS) function.

Table 2. Estimates of asset ownership for marriage and cohabitation formation among NLSY79 and NLSY97 cohorts, Average Marginal Effects (%) from discrete-time logistic and multinomial logistic regression.

	Men		Women	
	AME	95%CI	AME	95%CI
NLSY79				
First marriage (%) (Ignoring cohabitation)				
Home ownership	3.36	(1.51, 5.21)	1.96	(-0.15, 4.07)
Vehicle ownership	4.04	(3.06, 5.02)	3.40	(2.27, 4.54)
Financial asset ownership	1.61	(0.54, 2.68)	0.51	(-0.79, 1.81)
Other asset ownership	2.15	(0.10, 4.20)	2.11	(-1.54, 5.77)
First cohabitation (%) (Before first marriage)				
Home ownership	-1.98	(-2.67, -1.28)	-1.86	(-2.54, -1.18)
Vehicle ownership	0.68	(0.02, 1.34)	0.74	(0.06, 1.42)
Financial asset ownership	-0.47	(-1.18, 0.25)	-0.77	(-1.57, 0.03)
Other asset ownership	0.48	(-0.83, 1.79)	-1.45	(-2.67, -0.23)
Competing risk: (Single as reference)				
Home ownership				
First cohabitation	-0.75	(-2.02, 0.51)	-0.10	(-1.52, 1.31)
First marriage	3.29	(1.42, 5.16)	0.11	(-1.76, 1.98)
Vehicle ownership				
First cohabitation	1.36	(0.52, 2.20)	1.65	(0.78, 2.52)
First marriage	2.50	(1.65, 3.34)	2.34	(1.32, 3.36)
Financial asset ownership				
First cohabitation	-0.46	(-1.38, 0.46)	-0.67	(-1.68, 0.34)
First marriage	0.60	(-0.34, 1.53)	0.70	(-0.44, 1.83)
Other asset ownership				
First cohabitation	0.40	(-1.26, 2.05)	-0.91	(-3.14, 1.32)
First marriage	1.74	(-0.09, 3.56)	0.29	(-2.75, 3.33)
NLSY97				
First marriage (%) (Ignoring cohabitation)				
Home ownership	5.10	(3.68, 6.52)	6.84	(5.11, 8.58)
Vehicle ownership	1.59	(0.80, 2.37)	1.59	(0.71, 2.47)
Financial asset ownership	0.15	(-0.90, 1.20)	0.84	(-0.41, 2.08)
Other asset ownership	-0.43	(-1.68, 0.82)	4.35	(1.93, 6.77)
First cohabitation (%) (Before first marriage)				
Home ownership	0.02	(-1.63, 1.68)	0.62	(-1.36, 2.60)
Vehicle ownership	2.20	(1.15, 3.25)	1.53	(0.24, 2.82)
Financial asset ownership	-4.55	(-6.15, -2.95)	-1.92	(-3.73, -0.12)
Other asset ownership	1.14	(-1.05, 3.33)	0.01	(-3.00, 3.02)
Competing risk: (Single as reference)				
Home ownership				
First cohabitation	3.99	(1.69, 6.10)	4.81	(2.10, 7.52)
First marriage	3.49	(2.02, 4.97)	4.29	(2.47, 6.11)
Vehicle ownership				
First cohabitation	2.75	(1.58, 3.92)	2.05	(0.60, 3.51)
First marriage	1.10	(0.46, 1.73)	1.27	(0.51, 2.02)
Financial asset ownership				
First cohabitation	-4.87	(-6.65, -3.09)	-2.33	(-4.37, 6.78)
First marriage	0.04	(-0.83, 0.92)	0.21	(-0.90, 1.32)
Other asset ownership				
First cohabitation	1.64	(-0.91, 4.20)	2.73	(-1.32, 6.78)
First marriage	-0.07	(-1.26, 1.12)	2.65	(0.30, 5.01)

Note: Results were adjusted by demographic and economic covariates.

Table 3. Estimates of debt holding for marriage and cohabitation formation among NLSY79 and NLSY97 cohorts, Average Marginal Effects (%) from discrete-time logistic and multinomial logistic regression.

	Men		Women	
	AME	95%CI	AME	95%CI
NLSY79				
First marriage (%) (Ignoring cohabitation)				
Home debt holding	4.90	(2.71, 7.08)	2.46	(0.11, 4.82)
Vehicle debt holding	3.58	(2.50, 4.67)	2.43	(1.24, 3.63)
Student loan debt holding	-0.96	(-2.66, 0.73)	-2.10	(-3.71, -0.49)
Other debt holding	1.68	(0.66, 2.71)	0.98	(-0.12, 2.09)
First cohabitation (%) (Before first marriage)				
Home debt holding	-1.80	(-2.54, -1.06)	-1.99	(-2.67, -1.31)
Vehicle debt holding	-0.10	(-0.73, 0.53)	0.08	(-0.57, 0.73)
Student loan debt holding	-0.89	(-2.00, 0.21)	-0.01	(-1.17, 1.15)
Other debt holding	0.03	(-0.60, 0.67)	0.63	(-0.02, 1.28)
Competing risk: (Single as reference)				
Home debt holding				
First cohabitation	-0.16	(-1.62, 1.29)	-0.07	(-1.64, 1.49)
First marriage	4.31	(2.14, 6.49)	0.52	(-1.62, 2.66)
Vehicle debt holding				
First cohabitation	0.51	(-0.34, 1.36)	0.93	(0.04, 1.81)
First marriage	1.98	(1.06, 2.91)	1.77	(0.69, 2.86)
Student debt holding				
First cohabitation	-1.25	(-2.67, 1.70)	-0.18	(-1.62, 1.26)
First marriage	-1.15	(-2.44, 0.14)	-1.52	(-2.86, -0.18)
Other debt holding				
First cohabitation	0.35	(-0.50, 1.19)	0.80	(-0.05, 1.65)
First marriage	1.11	(0.22, 2.01)	-0.03	(-1.02, 0.96)
NLSY97				
First marriage (%) (Ignoring cohabitation)				
Home debt holding	5.90	(4.30, 7.50)	8.79	(6.72, 10.87)
Vehicle debt holding	1.40	(0.50, 2.30)	1.67	(0.63, 2.70)
Student loan debt holding	-0.84	(-1.66, -0.02)	-0.47	(-1.47, 0.53)
Other debt holding	0.79	(-0.08, 1.67)	0.24	(-0.89, 1.37)
First cohabitation (%) (Before first marriage)				
Home debt holding	0.54	(-1.30, 2.37)	1.28	(-0.93, 3.49)
Vehicle debt holding	1.20	(-0.06, 2.47)	0.10	(-1.33, 1.52)
Student loan debt holding	-0.91	(-2.14, 0.32)	-0.14	(-1.55, 1.28)
Other debt holding	1.41	(0.18, 2.64)	2.05	(0.62, 3.48)
Competing risk: (Single as reference)				
Home debt holding				
First cohabitation	6.02	(3.43, 8.62)	6.71	(3.54, 9.88)
First marriage	4.04	(2.30, 5.79)	5.82	(3.55, 8.09)
Vehicle debt holding				
First cohabitation	2.14	(0.69, 3.59)	1.02	(-0.64, 2.69)
First marriage	0.84	(0.06, 1.62)	1.59	(0.56, 2.61)
Student debt holding				
First cohabitation	-1.45	(-2.82, -0.09)	-0.25	(-1.84, 1.34)
First marriage	-0.56	(-1.28, 0.16)	-0.16	(-1.05, 0.73)
Other debt holding				
First cohabitation	1.47	(0.08, 2.86)	1.94	(0.29, 3.60)
First marriage	0.50	(-0.24, 1.24)	-0.24	(-1.31, 0.83)

Note: Results were adjusted by demographic and economic covariates.

Appendix

Table S. 1. Descriptive statistics of demographic measures, NLSY79 and NLSY97.

	NLSY79		NLSY97	
	Mean/%	SE	Mean/%	SE
Race/ethnicity				
Non-Hispanic Black	18.41	0.50	16.71	0.53
Non-Hispanic White	75.68	0.57	71.38	0.69
Hispanic	5.91	0.25	11.91	0.46
Gender				
Men	59.38	0.85	59.40	0.85
Women	40.62	0.85	40.60	0.85
Age	27.05	2.97	24.92	2.39
Raised religion				
Roman Catholic	33.87	0.84	34.36	0.82
Protestant	50.19	0.87	57.12	0.87
Others/None	15.94	0.65	8.52	0.51
Children residing in the household				
No	89.42	0.20	92.97	0.18
Yes	10.58	0.20	7.03	0.18
Employment				
No	11.50	0.23	7.25	0.20
Yes	88.50	0.23	92.75	0.20
Highest educational attainment				
Less than high school	10.29	0.22	9.66	0.22
High school	37.71	0.40	51.05	0.40
Some college	26.46	0.37	6.54	0.20
College or above	25.54	0.38	32.76	0.39
Parental highest educational attainment				
Less than high school	20.46	0.62	8.77	0.44
High school	39.84	0.86	38.82	0.84
Some college	14.29	0.63	12.06	0.57
College or above	25.41	0.80	40.35	0.86
AFDC/TANF recipiency at age 20	4.25	0.27	0.98	0.14
Other welfare recipiency at age 20	17.73	0.62	8.35	0.45
Family structure at age 14				
Living with two parents	62.94	0.82	68.99	0.78
Living with single parent	16.22	0.61	18.88	0.66
Living with extended families	13.05	0.52	9.34	0.46
Living by self or with siblings/children	3.65	0.32	0.62	0.13

Others	4.14	0.36	2.17	0.24
N	4992		4131	
Person-Years	22,328		19,133	

Notes:

1. Race/ethnicity, gender, raised religion, parental highest educational attainment, AFDC/TANF recipiency by age 20, other welfare recipiency by age 20, and earliest observed family structure by age 20 are time-constant measures. The other measures are time-varying measures.

2. The descriptive statistics were estimated based on person-years of first union samples and adjusted by baseline sampling weights.

Table S. 2. Estimates of total household net worth for marriage and cohabitation formation among NLSY79 and NLSY97 cohorts, Average Marginal Effects (%) from discrete-time logistic regression.

	Men		Women	
	NHW>0 AME	NHW<=0 AME	NHW>0 AME	NHW<=0 AME
NLSY79				
First union (%)	1.33	-0.19	1.20	-0.29
	(0.87, 1.80)	(-0.43, 0.06)	(0.61, 1.78)	(-0.53, -0.05)
First marriage (%)	1.12	-0.19	1.25	-0.17
(Cohabitation as a competing risk)	(0.71, 1.52)	(-0.37, -0.01)	(0.75, 1.75)	(-0.36, 0.02)
First cohabitation (%)	0.47	-0.07	0.18	-0.19
(Marriage as a competing risk)	(0.16, 0.78)	(-0.26, 1.15)	(-0.19, 0.54)	(-0.37, -0.02)
NLSY97				
First union (%)	1.24	0.53	1.56	-1.06
	(0.70, 1.77)	(-0.09, 1.14)	(0.90, 2.21)	(-1.95, -0.17)
First marriage (%)	0.79	0.09	1.33	0.11
(Cohabitation as a competing risk)	(0.48, 1.11)	(-0.31, 0.48)	(0.92, 1.74)	(-0.30, 0.53)
First cohabitation (%)	0.52	0.41	0.69	-0.93
(Marriage as a competing risk)	(0.05, 1.00)	(-0.12, 0.94)	(0.13, 1.26)	(-1.77, -0.08)

Notes:

1. All results were adjusted by demographic and economic covariates.

2. HNW represents household net worth.

3. The top 3 percent of both total household net worth was imputed from a Pareto distribution. The values were then transformed into constant dollars in 2016 using the personal consumption expenditures index (PCE). The total household net worth was adjusted by the square root of the reported family size at the corresponding calendar year. All the values were transformed by the inverse hyperbolic sine (IHS) function.

Table S. 3. Estimates of asset ownership for marriage and cohabitation formation among NLSY79 and NLSY97 cohorts, Average Marginal Effects (%) from discrete-time logistic regression.

	Men		Women	
	AME	95%CI	AME	95%CI
NLSY79				
First union				
Home ownership	2.14	(-0.02, 4.30)	-0.06	(-2.31, 2.20)
Vehicle ownership	3.74	(2.56, 4.91)	3.93	(2.63, 5.24)
Financial asset ownership	0.08	(-1.20, 1.36)	0.02	(-1.45, 1.50)
Other asset ownership	2.10	(-0.31, 4.52)	-0.64	(-4.41, 3.13)
First marriage (%) (Cohabitation as a competing risk)				
Home ownership	3.50	(1.54, 5.46)	0.21	(-1.76, 2.18)
Vehicle ownership	3.02	(2.09, 3.94)	2.52	(1.44, 3.60)
Financial asset ownership	0.72	(-0.30, 1.74)	0.81	(-0.41, 2.02)
Other asset ownership	2.10	(0.12, 4.08)	0.62	(-2.71, 3.94)
First cohabitation (%) (Marriage as a competing risk)				
Home ownership	-0.73	(-2.00, 0.54)	-0.10	(-1.52, 1.33)
Vehicle ownership	1.38	(0.53, 2.21)	1.68	(0.81, 2.56)
Financial asset ownership	-0.45	(-1.38, 0.47)	-0.66	(-1.67, 0.36)
Other asset ownership	0.37	(-1.27, 2.02)	-0.89	(-3.14, 1.35)
NLSY97				
First union				
Home ownership	7.53	(4.97, 10.08)	9.34	(6.23, 12.46)
Vehicle ownership	3.88	(2.56, 5.19)	3.29	(1.68, 4.89)
Financial asset ownership	-4.94	(-6.88, -3.00)	-2.23	(-4.48, 0.02)
Other asset ownership	1.51	(-1.24, 4.27)	5.82	(1.35, 10.30)
First marriage (%) (Cohabitation as a competing risk)				
Home ownership	4.95	(3.33, 6.57)	6.66	(4.65, 8.66)
Vehicle ownership	1.28	(0.51, 2.06)	1.42	(0.54, 2.29)
Financial asset ownership	0.02	(-1.02, 1.06)	0.65	(-0.57, 1.87)
Other asset ownership	-0.39	(-1.74, 0.96)	4.34	(1.61, 7.07)
First cohabitation (%) (Marriage as a competing risk)				
Home ownership	3.07	(0.99, 5.15)	3.93	(1.41, 6.45)
Vehicle ownership	2.67	(1.53, 3.82)	1.89	(0.47, 3.32)
Financial asset ownership	-4.95	(-6.70, -3.19)	-2.25	(-4.24, -0.26)
Other asset ownership	1.70	(-0.84, 4.23)	1.95	(-1.86, 5.76)

Note: Results are adjusted by demographic and economic covariates.

Table S. 4. Estimates of debt holding for marriage and cohabitation formation among NLSY79 and NLSY97 cohorts, Average Marginal Effects (%) from discrete-time logistic regression.

	Men		Women	
	AME	95%CI	AME	95%CI
NLSY79				
First union				
Home debt holding	3.73	(1.23, 6.23)	0.36	(-2.21, 2.93)
Vehicle debt holding	2.52	(1.29, 3.75)	2.67	(1.32, 4.03)
Student loan debt holding	-2.13	(-4.03, -0.22)	-1.74	(-3.65, 0.18)
Other debt holding	1.41	(0.21, 2.60)	0.75	(-0.53, 2.02)
First marriage (%) (Cohabitation as a competing risk)				
Home debt holding	4.72	(2.43, 7.01)	0.84	(-1.41, 3.09)
Vehicle debt holding	2.63	(1.62, 3.64)	2.09	(0.95, 3.24)
Student loan debt holding	-1.27	(-2.69, 0.15)	-1.92	(-3.36, -0.47)
Other debt holding	1.29	(0.32, 2.26)	0.32	(-0.74, 1.39)
First cohabitation (%) (Marriage as a competing risk)				
Home debt holding	-0.13	(-1.59, 1.33)	-0.06	(-1.64, 1.51)
Vehicle debt holding	0.50	(-0.35, 1.35)	0.95	(0.06, 1.85)
Student loan debt holding	-1.25	(-2.67, 0.17)	-0.17	(-1.62, 1.28)
Other debt holding	0.34	(-0.50, 1.19)	0.81	(-0.04, 1.67)
NLSY97				
First union				
Home debt holding	10.28	(7.21, 13.34)	12.83	(9.19, 16.47)
Vehicle debt holding	3.05	(1.44, 4.66)	2.53	(0.66, 4.41)
Student loan debt holding	-2.06	(-3.57, -0.56)	-0.42	(-2.18, 1.34)
Other debt holding	1.97	(0.42, 3.51)	1.78	(-0.11, 3.67)
First marriage (%) (Cohabitation as a competing risk)				
Home debt holding	5.53	(3.68, 7.38)	8.58	(6.14, 11.01)
Vehicle debt holding	1.26	(0.34, 2.17)	1.56	(0.48, 2.64)
Student loan debt holding	-0.79	(-1.64, 0.05)	-0.45	(-1.45, 0.55)
Other debt holding	0.52	(-0.37, 1.40)	0.06	(-1.09, 1.21)
First cohabitation (%) (Marriage as a competing risk)				
Home debt holding	4.72	(2.29, 7.14)	5.45	(2.54, 8.35)
Vehicle debt holding	1.91	(0.49, 3.33)	0.80	(-0.82, 2.42)
Student loan debt holding	-1.31	(-2.66, 0.05)	-0.23	(-1.79, 1.33)
Other debt holding	1.38	(0.02, 2.74)	1.92	(0.30, 3.53)

Note: Results are adjusted by demographic and economic covariates.

Table S. 5. Estimates of asset net value for marriage and cohabitation formation among NLSY79 and NLSY97 cohorts, Average Marginal Effects (%) from discrete-time logistic regression.

	Men		Women	
	AME	95%CI	AME	95%CI
NLSY79				
First union				
Home net value	0.03	(-0.15, 0.21)	-0.02	(-0.24, 0.20)
Vehicle net value	0.31	(0.20, 0.42)	0.18	(0.06, 0.30)
Financial assets net value	0.09	(-0.06, 0.23)	0.12	(-0.05, 0.30)
Other assets net value	0.29	(0.10, 0,48)	-0.16	(-0.57, 0.24)
First marriage (%) (Ignoring cohabitation)				
Home net value	0.12	(-0.02, 0.26)	0.03	(-0.15, 0.22)
Vehicle net value	0.33	(0.24, 0.43)	0.28	(0.17, 0.39)
Financial assets net value	0.27	(0.15, 0.40)	0.15	(-0.01, 0.31)
Other assets net value	0.27	(0.11, 0.42)	0.09	(-0.21, 0.39)
First marriage (%) (Cohabitation as a competing risk)				
Home net value	0.11	(-0.04, 0.25)	-0.09	(-0.29, 0.11)
Vehicle net value	0.27	(0.17, 0.36)	0.26	(0.15, 0.36)
Financial assets net value	0.15	(0.03, 0.27)	0.17	(0.02, 0.32)
Other assets net value	0.26	(0.12, 0.40)	0.06	(-0.22, 0.35)
First cohabitation (%) (Before first marriage)				
Home net value	-0.19	(-0.28, -0.10)	-0.14	(-0.23, -0.05)
Vehicle net value	0.04	(-0.02, 0.10)	-0.08	(-0.13, -0.02)
Financial assets net value	-0.04	(-0.11, 0.04)	-0.07	(-0.15, 0.01)
Other assets net value	0.05	(-0.06, 0.15)	-0.21	(-0.46, 0.03)
First cohabitation (%) (Marriage as a competing risk)				
Home net value	-0.07	(-0.20, 0.05)	0.04	(-0.09, 0.18)
Vehicle net value	0.09	(0.01, 0.16)	-0.06	(-0.14, 0.02)
Financial assets net value	-0.01	(-0.11, 0.09)	-0.02	(-0.13, 0.09)
Other assets net value	0.04	(-0.10, 0.18)	-0.18	(-0.50, 0.15(
Competing risk: (Single as reference)				
Home net value				
First cohabitation	-0.08	(-0.20, 0.05)	0.04	(-0.09, 0.18)
First marriage	0.11	(-0.02, 0.25)	-0.07	(-0.26, 0.11)
Vehicle net value				
First cohabitation	0.08	(0.01, 0.16)	-0.06	(-0.14, 0.02)
First marriage	0.22	(0.14, 0.31)	0.25	(0.15, 0.35)
Financial assets net value				
First cohabitation	-0.01	(-0.11, 0.09)	-0.02	(-0.13, 0.09)
First marriage	0.11	(-0.00, 0.22)	0.15	(0.01, 0.29)
Other assets net value				
First cohabitation	0.05	(-0.10, 0.19)	-0.18	(-0.50, 0.14)
First marriage	0.22	(0.10, 0.35)	-0.01	(-0.28, 0.27)
NLSY97				
First union				
Home net value	0.37	(0.18, 0.55)	0.53	(0.31, 0.76)
Vehicle net value	0.39	(0.25, 0.54)	0.41	(0.25, 0.57)
Financial assets net value	-0.24	(-0.42, -0.07)	-0.10	(-0.32, 0.12)
Other assets net value	0.10	(-0.19, 0.38)	0.63	(0.22, 1.03)
First marriage (%) (Ignoring cohabitation)				
Home net value	0.16	(0.06, 0.25)	0.27	(0.15, 0.38)
Vehicle net value	0.23	(0.14, 0.32)	0.19	(0.09, 0.29)
Financial assets net value	0.12	(0.01, 0.23)	0.31	(0.16, 0.45)

Other assets net value	0.03	(-0.11, 0.17)	0.30	(0.12, 0.47)
First marriage (%) (Cohabitation as a competing risk)				
Home net value	0.18	(0.08, 0.28)	0.24	(0.13, 0.04)
Vehicle net value	0.18	(0.09, 0.27)	0.20	(0.10, 0.30)
Financial assets net value	0.08	(-0.03, 0.18)	0.23	(0.09, 0.38)
Other assets net value	-0.01	(-0.17, 0.15)	0.30	(0.12, 0.48)
First cohabitation (%) (Before first marriage)				
Home net value	-0.04	(-0.19, 0.11)	0.12	(-0.05, 0.29)
Vehicle net value	0.17	(0.06, 0.28)	0.17	(0.05, 0.30)
Financial assets net value	-0.30	(-0.44, -0.16)	-0.26	(-0.43, -0.08)
Other assets net value	0.09	(-0.12, 0.31)	0.09	(-0.25, 0.43)
First cohabitation (%) (Marriage as a competing risk)				
Home net value	0.19	(0.02, 0.35)	0.33	(0.14, 0.53)
Vehicle net value	0.23	(0.10, 0.35)	0.23	(0.09, 0.37)
Financial assets net value	-0.30	(-0.46, -0.15)	-0.23	(-0.42, -0.04)
Other assets net value	0.11	(-0.14, 0.36)	0.33	(-0.05, 0.72)
Competing risk: (Single as reference)				
Home net value				
First cohabitation	0.23	(0.06, 0.41)	0.39	(0.19, 0.59)
First marriage	0.12	(0.03, 0.21)	0.13	(0.02, 0.25)
Vehicle net value				
First cohabitation	0.24	(0.11, 0.37)	0.25	(0.10, 0.39)
First marriage	0.16	(0.08, 0.24)	0.17	(0.07, 0.26)
Financial assets net value				
First cohabitation	-0.29	(-0.45, -0.13)	-0.23	(-0.43, -0.04)
First marriage	0.06	(-0.03, 0.15)	0.16	(0.03, 0.29)
Other assets net value				
First cohabitation	0.12	(-0.14, 0.37)	0.41	(0.02, 0.80)
First marriage	-0.02	(-0.17, 0.12)	0.18	(0.03, 0.33)

Notes:

1. All results were adjusted by demographic and economic covariates.

2. The top 3 percent of net values was imputed from a Pareto distribution. Net values were then transformed into constant dollars in 2016 using the personal consumption expenditures index (PCE). All the net values were transformed by inverse hyperbolic sine (IHS) function.

Table S. 6. Estimates of debt value for marriage and cohabitation formation among NLSY79 and NLSY97 cohorts, Average Marginal Effects (%) from discrete-time logistic regression.

	Men		Women	
	AME	95%CI	AME	95%CI
NLSY79				
First union				
Home debt value	0.23	(0.07, 0.40)	-0.01	(-0.22, 0.20)
Vehicle debt value	0.56	(0.43, 0.69)	0.48	(0.34, 0.62)
Student loan debt value	-0.26	(-0.51, -0.02)	-0.18	(-0.41, 0.05)
Other assets debt value	0.14	(0.01, 0.27)	0.07	(-0.07, 0.21)
First marriage (%) (Ignoring cohabitation)				
Home debt value	0.32	(0.19, 0.44)	0.17	(0.01, 0.33)
Vehicle debt value	0.64	(0.52, 0.76)	0.44	(0.31, 0.57)
Student loan debt value	-0.15	(-0.34, 0.05)	-0.24	(-0.45, -0.03)
Other assets debt value	0.16	(0.06, 0.27)	0.10	(-0.02, 0.21)
First marriage (%) (Cohabitation as a competing risk)				
Home debt value	0.29	(0.16, 0.41)	0.05	(-0.12, 0.22)
Vehicle debt value	0.49	(0.38, 0.60)	0.35	(0.23, 0.47)
Student loan debt value	-0.18	(-0.35, 0.00)	-0.22	(-0.41, -0.02)
Other assets debt value	0.12	(0.02, 0.22)	0.03	(-0.09, 0.14)
First cohabitation (%) (Before first marriage)				
Home debt value	-0.21	(-0.31, -0.10)	-0.25	(-0.35, -1.36)
Vehicle debt value	0.08	(0.01, 0.15)	0.05	(-0.02, 0.12)
Student loan debt value	-0.09	(-0.24, 0.06)	0.00	(-0.12, 0.12)
Other assets debt value	0.04	(-0.07, 0.07)	0.07	(-0.00, 0.13)
First cohabitation (%) (Marriage as a competing risk)				
Home debt value	-0.03	(-0.16, 0.10)	-0.03	(-0.16, 0.11)
Vehicle debt value	0.18	(0.09, 0.27)	0.16	(0.06, 0.25)
Student loan debt value	-0.13	(-0.32, 0.07)	-0.01	(-0.17, 0.14)
Other assets debt value	0.04	(-0.05, 0.13)	0.09	(-0.00, 0.18)
Competing risk: (Single as reference)				
Home debt value				
First cohabitation	-0.03	(-0.16, 0.10)	-0.00	(-0.16, 0.11)
First marriage	0.26	(0.14, 0.37)	0.03	(-0.14, 0.19)
Vehicle debt value				
First cohabitation	0.18	(0.08, 0.27)	0.15	(0.06, 0.25)
First marriage	0.40	(0.30, 0.50)	0.33	(0.21, 0.45)
Student loan debt value				
First cohabitation	-0.13	(-0.32, 0.07)	-0.01	(-0.17, 0.14)
First marriage	-0.16	(-0.32, 0.00)	-0.17	(-0.34, 0.01)
Other assets debt value				
First cohabitation	0.04	(-0.05, 0.13)	0.09	(-0.00, 0.18)
First marriage	0.10	(0.01, 0.19)	-0.01	(-0.12, 0.09)
NLSY97				
First union				
Home debt value	0.66	(0.50, 0.83)	0.82	(0.63, 1.01)
Vehicle debt value	0.43	(0.29, 0.57)	0.28	(0.11, 0.46)
Student loan debt value	-0.13	(-0.29, 0.03)	0.01	(-0.16, 0.18)
Other assets debt value	0.09	(-0.05, 0.23)	0.25	(0.08, 0.43)
First marriage (%) (Ignoring cohabitation)				
Home debt value	0.35	(0.28, 0.43)	0.49	(0.40, 0.58)
Vehicle debt value	0.24	(0.16, 0.32)	0.21	(0.12, 0.31)
Student loan debt value	-0.08	(-0.17, 0.01)	-0.03	(-0.12, 0.06)

Other assets debt value	0.07	(-0.01, 0.15)	0.01	(-0.09, 0.10)
First marriage (%) (Cohabitation as a competing risk)				
Home debt value	0.32	(0.24, 0.40)	0.44	(0.35, 0.53)
Vehicle debt value	0.22	(0.13, 0.30)	0.18	(0.08, 0.27)
Student loan debt value	-0.07	(-0.16, 0.03)	-0.05	(-0.15, 0.05)
Other assets debt value	0.03	(-0.05, 0.11)	-0.02	(-0.12, 0.07)
First cohabitation (%) (Before first marriage)				
Home debt value	0.01	(-0.14, 0.16)	0.09	(-0.08, 0.26)
Vehicle debt value	0.18	(0.07, 0.29)	0.04	(-0.09, 0.18)
Student loan debt value	-0.07	(-0.20, 0.06)	0.02	(-0.11, 0.16)
Other assets debt value	0.12	(0.01, 0.23)	0.28	(0.14, 0.42)
First cohabitation (%) (Marriage as a competing risk)				
Home debt value	0.31	(0.16, 0.46)	0.38	(0.21, 0.56)
Vehicle debt value	0.27	(0.15, 0.40)	0.11	(-0.04, 0.27)
Student loan debt value	-0.09	(-0.23, 0.06)	0.03	(-0.12, 0.18)
Other assets debt value	0.09	(-0.04, 0.22)	0.28	(0.13, 0.43)
Competing risk: (Single as reference)				
Home debt value				
First cohabitation	0.41	(0.25, 0.56)	0.48	(0.30, 0.66)
First marriage	0.23	(0.16, 0.30)	0.30	(0.21, 0.38)
Vehicle debt value				
First cohabitation	0.30	(0.17, 0.42)	0.14	(-0.02, 0.29)
First marriage	0.13	(0.06, 0.20)	0.15	(0.06, 0.24)
Student loan debt value				
First cohabitation	-0.09	(-0.24, 0.06)	0.04	(-0.12, 0.19)
First marriage	-0.04	(-0.12, 0.04)	-0.02	(-0.11, 0.06)
Other assets debt value				
First cohabitation	0.09	(-0.04, 0.21)	0.29	(0.13, 0.44)
First marriage	0.00	(-0.07, 0.08)	-0.03	(-0.11, 0.05)

Notes:

1. All results were adjusted by demographic and economic covariates.

2. The top 3 percent of debt values was imputed from a Pareto distribution. Debt values were then transformed into constant dollars in 2016 using the personal consumption expenditures index (PCE). All the debt values were transformed by inverse hyperbolic sine (IHS) function.

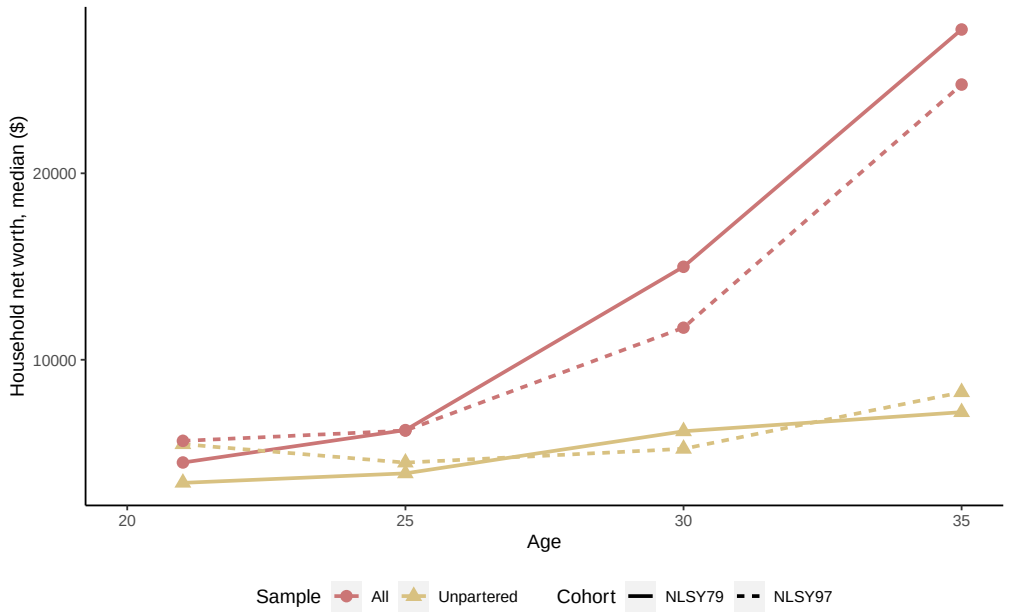

Figure S. 1. Household net worth by age, cohort, and partnership (median, $).

Notes:

1. The results were adjusted by NLSY79 and NLSY97 baseline sampling weights.

2. The top 3 percent of the total household net worth was imputed from a Pareto distribution, and values were transformed into constant dollars in 2016 using the personal consumption expenditures index (PCE). The total household net worth was adjusted by the square root of the reported family size at the corresponding calendar year.

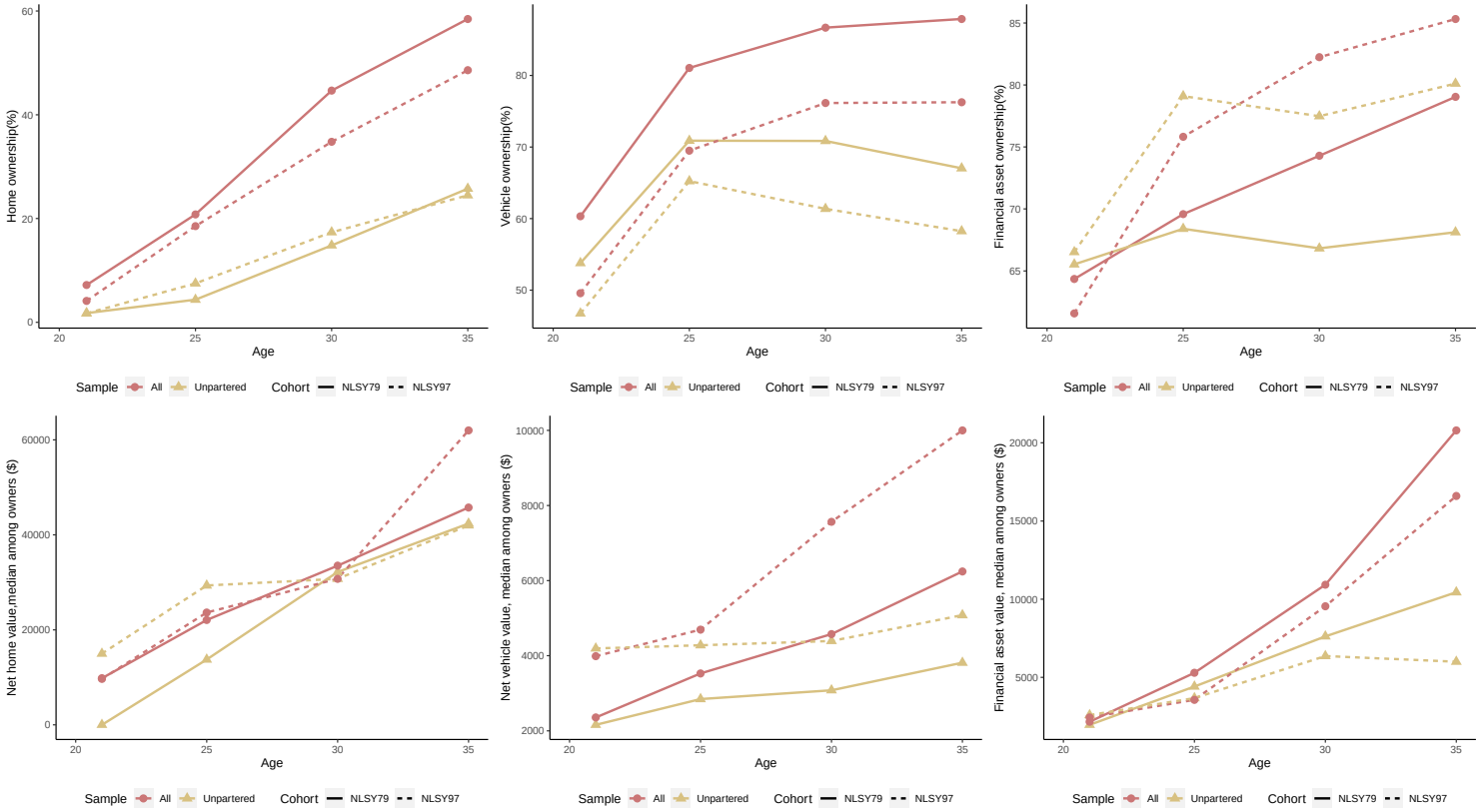

Figure S. 2. Asset ownership (%) and net values (median, $) by age, cohort, and partnership.

Notes:

1. The results were adjusted by NLSY79 and NLSY97 baseline sampling weights.

2. The top 3 percent of net values of assets was imputed from a Pareto distribution, and net values were transformed into constant dollars in 2016 using the personal consumption expenditures index (PCE).

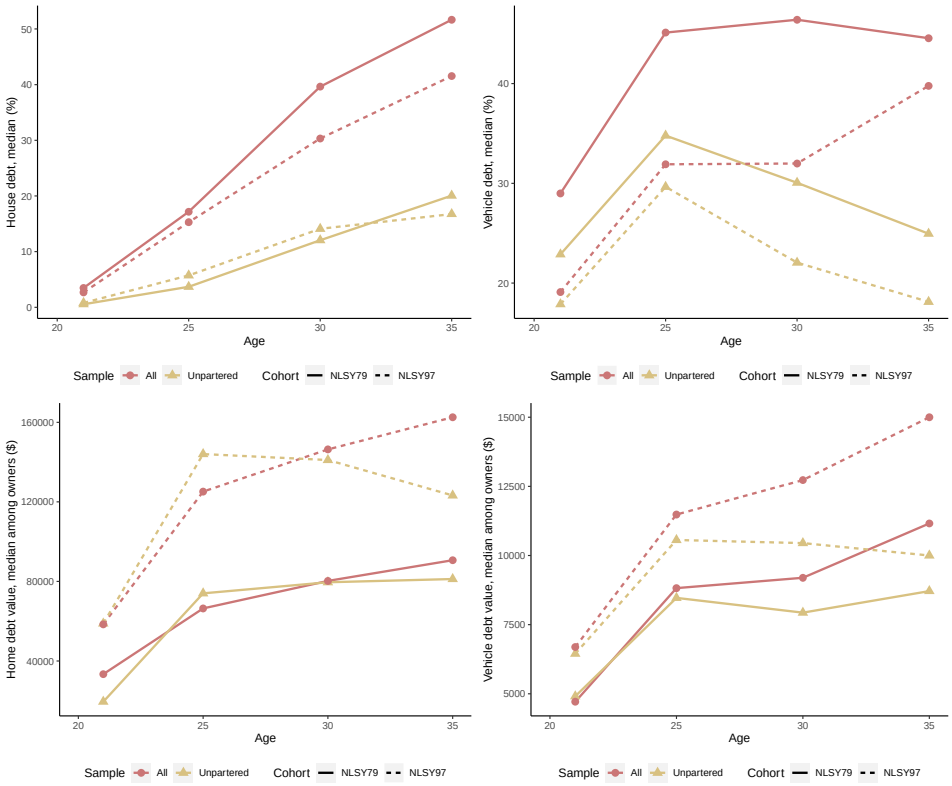

Figure S. 3. Debt holding (%) and values (median, $) by age, cohort, and partnership.

Notes:

1. The results were adjusted by NLSY79 and NLSY97 baseline sampling weights.

2. The top 3 percent of net values of debt was imputed from a Pareto distribution, and net values were transformed into constant dollars in 2016 using the personal consumption expenditures index (PCE).

Appendix A. Description for Figures S1-S3

Figure S1 shows the trajectory of total household net worth across the life course by cohort and partnership. The total household net worth of the unpartnered (neither cohabiting nor married) is significantly smaller than the total household net worth of all, which indicates that partnership is positively associated with total household net worth. Moreover, for the overall sample, the NLSY79 cohorts have a higher household net worth than the NLSY97 cohorts.

Figure S2 describes the ownership rates and values of assets across the life course by cohort and partnership. The rate of home ownership in the total sample is much higher than that in the unpartnered sample. Moreover, the NLSY79 cohorts have a higher home ownership rate than the NLSY97 cohorts in the total sample. This trend is in alignment with documented trends in data from the U.S. census bureau. The home ownership rate of Americans younger than 35 was 35% in 2016, having peaked in 2005 at 42% (U.S. Census Bureau 2005, 2016). However, when restricted to the unpartnered, the NLSY97 cohorts have a slightly higher home ownership rate than the NLSY79 cohorts. This may indicate increasing home ownership among the singles. Additionally, in terms of home net value, there are no obvious or clear cohort differences among the homeowners.

The vehicle ownership rate is higher in the NLSY79 cohorts than in the NLSY97 cohorts regardless of partnership. This finding agrees with evidence from the U.S. census bureau, which documents that the vehicle ownership rate of Americans younger than 35 was 78% in 2016, compared to 85% of the same age group in 2005 (U.S. Census Bureau 2005, 2016). However, among the vehicle owners, the net vehicle value is much higher in the NLSY97 cohorts than in the NLSY79 cohorts. Financial asset ownership is higher among the NLSY97 cohorts than among the NLSY79 cohorts in both samples, and the differences diverge as young adults age. This result is congruent with evidence from prior research (Lin and Neely 2020).

Figure S3 demonstrates the holding rates and values of debt across the life course by cohort and partnership. The rate of home debt follows a similar pattern to the rate of home ownership. The NLSY79 cohorts have a higher rate than the NLSY97 cohorts in the total sample but have a lower rate than the NLSY97 cohorts in the unpartnered sample. However, among the homeowners, home debt value is much higher in the NLSY97 cohorts than in the NLSY79 cohorts. This trend may be explained by the rising loan to value (LTV) since the 1990s because of the expansion of the home mortgage market (Herbert et al. 2013; Li and Yang

2010; Mian and Sufi 2011). Additionally, both the trajectories of vehicle debt holding rates and vehicle debt values show similar patterns to the trajectories of vehicle ownership rates and vehicle values.

CHAPTER III Gender and Rural-Urban Divide: Family Wealth and First Marriage among the 1980s and 1990s Birth Cohorts in China

Introduction

The economic determinants for marriage have been studied in both western and non-western countries (e.g., Sassler and Lichter 2020; Sweeney 2002; Yu and Xie 2015), with more research focusing on individual economic traits (e.g., education and earnings) than on family of origin. However, investigating the link between family of origin and marriage is crucial for answering a number of questions considered by sociologists, including the family-level economic determinants for first marriage timing, the relative importance of ascribed and acquired traits in determining individuals' social outcomes, and whether parental economic resources are transferred to children through marriage (Charles, Hurst, and Killewald 2013). A few empirical studies have investigated the link between family wealth and first marriage in western social settings (e.g., Bloome and Ang 2020). Nevertheless, no study has examined this link in the context of China. To fill the gap, this study examines the link between family wealth and first marriage among the 1980s and 1990s birth cohorts in contemporary China.

China has provided a unique social setting to examine the link between family wealth and marriage. Firstly, as China has gradually transitioned into a market-oriented economy,

living standards have improved dramatically, along with the rising consumer culture (Davis 1992, 2005); consequently, marriage expenses have skyrocketed. Further, marriage homogeneity in terms of partners' family socioeconomic status (e.g., parental occupation)—"matching doors"—has increased as well (Hu 2016), leading to a renewed emphasis on family wealth in the marriage market.

Secondly, in a patriarchal culture, Chinese marriage practices are highly gendered, often requiring the husband's family to pay for marriage expenses and provide a basic economic foundation for newlywed couples (Jiang and Sánchez-Barricarte 2012; Jiang, Zhang, and Sánchez-Barricarte 2015). We thus may observe a significant gender difference in the link between family wealth and first marriage. Importantly, for the 1980s and 1990s cohorts, we are likely to observe a complicated picture of gender difference. This is because these cohorts were born and grew up under the most rapid social changes—stringent fertility policy (e.g., one-child policy), rapid educational expansion, and soaring housing prices. Thus, examining how family wealth shapes first marriage by gender among these cohorts is a high research priority.

Thirdly, the rural-urban divide resulting from the long history of the *hukou* system may add another layer of complexity in the association between family wealth and marriage and gender differences in this association. *Hukou* is a system of household registration used in mainland China. Every citizen is issued a *hukou* certificate at birth (either urban or rural). Differential benefits from education, medical care, and retirement security are attached to a specific *hukou* type with urban *hukou* generally deemed at a higher social status than rural *hukou*. Given that people with rural *hukou* on average hold less family wealth but are more likely to marry earlier than people with urban *hukou*, people with rural *hukou* are likely

more responsive to the same amount increase in family wealth than people with urban *hukou*. We thus may observe that family wealth is more predictive for first marriage among people with rural *hukou* than people with urban *hukou*. Additionally, conservative marriage practices are more prevalent in rural areas than in urban areas. We may observe a larger gender difference in the link between family wealth and first marriage among people with rural *hukou* than people with urban *hukou*.

In this study, I use five waves of survey data from the China Family Panel Studies (spanning from 2010 to 2018) to examine the link between family wealth and the timing of subsequent first marriage among the 1980s and 1990s birth cohorts and investigate gender disparity and the rural-urban difference in this association. This study sheds new light on understanding the marriage pattern in contemporary China from the perspective of family wealth inequality.

Background

Wealth and Marriage

As the research on wealth inequality has gradually attracted attention since the 2000s (Keister and Moller 2000; Spilerman 2000), a few studies have started to focus on the link between wealth and marital behaviors (e.g., Eads and Tach 2016; Schneider 2011). Though there has been no systematic research unpacking the theoretical importance of wealth in shaping marital behaviors, prior research has indicated several possible explanations. Firstly, wealth has distinctive and essential social and economic meanings for establishing a family. For instance, ownership of a home and a car is usually considered a significant economic symbol for establishing a middle-class family in western societies. A few qualitative studies in the United States show that American young adults today believe that

they should not only obtain an educational degree and steady earnings but also some assets—money saved, a car, or even a home—before they marry (Edin and Kefalas 2011; Sassler and Miller 2011, 2017). Similarly, in contemporary China, "three gifts"—a house, a car, and banknotes—provided by the husband's family are considered as economic prerequisites for a new marriage (Jiang et al. 2015). Secondly, wealth can reflect a certain type of "style of life" or "life chances" (Weber [1946] 2018), which is an important consideration for choosing a spouse. This is because wealth can be used to access scarce social resources (e.g., high-quality neighborhoods, schools, and social networks), advance social status and achievement, and even gain political power (Fisher et al. 2016; Keister and Moller 2000). Thirdly, unlike earnings from the labor market, economic benefits generated from wealth usually do not decline with unemployment or major illness and can be spent to weather these negative events rather than going into debt. In a time of economic crisis, assets can be consumed to buffer against emergency—which is not the case with human capital (Fisher et al. 2016). The stable and affluent economic condition secured by wealth can become a distinctive consideration when young adults decide to marry, especially when perceived economic insecurity is increasing. Given these distinctive characteristics of wealth, we may expect a positive association between family wealth and first marriage.

Gender, Wealth, and Marriage

Gender differences in the economic determinants for marriage have been intensively studied theoretically and empirically by scholars, with an exclusive focus on individual economic traits, especially on labor market performance. Pertinent explanations can be traced back to two major perspectives: specialization and male breadwinner perspectives.

Becker's specialization theory (1981) states that individuals with complementary skills can take advantage of the gains of trading by forming a household and specializing in different domains. For instance, husbands and wives could maximize household well-being by household specialization, such as the wife specializing in domestic labor and the husband in paid work. Derived from Becker's specialization theory (1981) and gender role specialization assumption (Parsons 1949), the economic independence hypothesis (see Oppenheimer 1997 for a review) suggests that women with good prospects in the labor market will be less likely to marry than women with relatively poorer prospects, while the opposite is true for men. However, as the education gender gap has narrowed, and women's patterns of labor force participation come to closely resemble those of men, the nature of the marriage bargain has gradually shifted (Sweeney 2002). Oppenheimer (1988) proposed an alternative "career-entry theory of marriage" to acknowledge that women with greater economic resources are more attractive in the modern marriage market and to explain that as women's patterns of labor force participation come to more closely resemble those of men, the characteristics considered important in a spouse become more symmetrical between husbands and wives. The "career-entry theory of marriage" thus predicts that women's good economic prospects are positively associated with marriage.

In complement to the specialization perspective, the male breadwinner theory emphasizes the symbolically gendered meanings of economic contributions (Sayer et al. 2011). Because of the long history of male breadwinner norms, the imperative to be a good provider is expected to be stronger for men relative to women. Labor market activities are important ways that men and women "do gender" (Schneider 2012; West and Zimmerman 1987). The male breadwinner perspective indicates that only men's earnings or

employment increase the likelihood of marriage due to entrenched male breadwinner norms.

Though these two lines of perspective are constructed to explain gender differences in the link between individual economic characteristics—especially labor market performance—and marriage, it could still provide some insights in understanding the gender differences in the link between family wealth and marriage. In the marriage market, not only an individual's labor market performance but also his/her family wealth is evaluated when searching for a desirable partner (Charles, Hurst, and Killewald 2013). When men are expected to be major breadwinners while women are expected to be major caregivers in society, the family wealth of men may be more highly valued in the marriage market than that of women. This is because men's family wealth can be transferred to financially support a new marriage and provide a sound economic foundation for establishing a family. However, as the gender gap in education and labor participation has narrowed and gender norms towards household specialization have shifted, we may find that the family wealth of women has become important for marriage as well. This is because women's improved education and labor market performance has fundamentally altered the nature of marital bargains; women are increasingly evaluated on similar factors as men in a marriage search (Oppenheimer 1988). In this vein, investigating how family wealth shapes marriage by gender contributes to understanding how gender norms and dynamics shape the gendered economic determinants at the family-level for marriage and then the gendered marriage pattern.

Chinese Context

China provides a unique social setting to examine the link between family wealth and

marriage. China had a long history of arranged marriages, and family of origin was heavily valued in marriage. The 1950 Marriage Law launched by the Chinese government renounced arranged marriages and promoted love marriages instead. Moreover, as the institution of marriage has become more "individualized" and "privatized" in China (Yan 2020), individual socioeconomic traits, including education, income, *hukou* status, party membership, have become important factors determining marriage, while the influences of family wealth in marriage seemed to retreat during the 1950s–1970s. As China has experienced social and economic reforms and gradually transitioned into a market-oriented economy since the 1980s, marriage expenses have been rapidly increasing. For instance, the three gifts provided by the husband's family for a new marriage have transitioned from "a wristwatch, a bicycle, and a sewing machine" in the 1970s to "a house, a car, and banknotes" in contemporary China. The rise of consumer culture after the economic shift (Davis 1992, 2005) hand in hand with the resuscitation of a marriage of "matching doors" in terms of family socioeconomic status (Hu 2016) has led to a renewed emphasis on family wealth in the marriage market. Therefore, examining the link between family wealth and first marriage particularly among young adults born after social and economic reforms has become a research priority in contemporary China.

Marriage is a gendered experience, particularly in a patriarchal social setting. China has a long history of patriarchy, patrilineality, and patrilocal residence. The patriarchal culture has an entrenched influence even on the marriage and family of young adults in contemporary China. Specifically, sons are responsible for carrying on the family lineage and family name, taking care of the elder parents, and are the main heirs to inherit the family wealth. However, daughters usually leave their parents' home after marriage and

live with their husband's family, and are discriminated against in the division of family wealth if they have male siblings (Fincher 2016; Jiang et al. 2015). Embedded in this patriarchal culture for centuries, Chinese marriage practices usually require the husband's family to pay for marriage expenses and provide a basic economic foundation for newlywed couples, such as a home, a car, and a large amount of savings (Jiang and Sánchez-Barricarte 2012; Jiang et al. 2015). Though the wife's family is also expected to provide a dowry for daughters, it is often much lesser relative to the marriage expenses paid by the husband's family. A recent qualitative study in Shenzhen has revealed that women tend to leverage their female identity in the negotiation of conjugal housing consumption and require their potential spouse to provide a jointly owned home before marriage (Zheng 2020). The reason behind this gendered marriage practice in terms of wealth is that Chinese young women are discriminated against in parental support in housing consumption, conjugal property registration, and even compensation for mortgage contributions after divorce (Fincher 2016).

However, rapid social changes in the past few decades have seemed to complicate this gender difference picture, and an alternative explanation may also be possible. The 1980s and 1990s birth cohorts were born under the stringent fertility policy—one-child policy—launched in 1982. Though most rural and minority families were allowed to have more than one child, the average family size has decreased significantly since the 1980s (Cai 2010). Given the small family size, family wealth has become as likely to be transferred to daughters as to sons when they marry, particularly for those one-child families. Moreover, the 1980s and 1990s birth cohorts grew up in a rapid educational expansion period. The education level of women increased faster than that of men. According to the 2010

population census, among the 1980s birth cohort in urban areas, the shares of those with college or above degrees are 33 percent and 34 percent for men and women, respectively (calculation by the author). This shift in education structure has led to increasing educational homogamy in marriage sorting (Han 2010; Nie and Xing 2019), and marriages have also become more homogamous in terms of parental occupation and *hukou* status (Hu 2016). Additionally, the rapidly rising housing prices since the 2000s, especially in urban areas, make it is unaffordable to buy a home solely by the husband's family; women's family may contribute to purchasing a jointly owned house for marriage.

Given the competing explanations from the patriarchal culture and gendered marriage practice to the recent social changes in terms of education programs, fertility policies, and housing markets, for the young adults born between the 1980s and 1990s, it is a high priority to examine *whether family wealth is positively associated with first marriage for men (Hypothesis 1) and for women (Hypothesis 2), and whether family wealth is more predictive for first marriage among men, as compared to women (Hypothesis 3).*

Moreover, the rural-urban divide resulting from the long history of the *hukou* system may add another layer of complexity in the association between family wealth and marriage and the gender difference in this association. The current *hukou* system was established in 1951 by the Chinese government with the original purpose of blocking free flows of resources (including labor) between industry and agriculture and between urban and rural areas in order to speed up industrialization (Chan and Zhang 1999). Under the current *hukou* system, there are two major types of *hukou* status (rural and urban).[14] People's *hukou* is often registered under their family of origin, but its type and registered location can be

[14] Since 2014, the Chinese government has started *hukou* system reforms, which include promoting a new type of *hukou* status—resident *hukou*, in order to gradually unify rural and urban *hukou*.

changed because of education, job relocation, marriage, and family reunion. Due to its connection to social programs provided by the government, which assigns benefits (from education, health care, to retirement pension) based on *hukou* status, the *hukou* system is sometimes likened to a form of caste system, with urban *hukou* at a higher status than rural *hukou*. Though the Chinese government has relaxed rural-urban migration restrictions since the 1980s and promulgated *hukou* registration in cities and towns since the 1990s, the long-term existence of the *hukou* system and rural-urban dual economies has led to a deep rural-urban divide in wealth distribution and marriage patterns. Regarding wealth distribution, the mean of household net worth is much higher in urban households than in rural households (more than twice as high), with housing assets accounting for a higher percentage (79% versus 61%) in the household wealth portfolio in urban households than in rural households (Xie and Jin 2015). Regarding marriage patterns, urban residents are more likely to postpone first marriage than rural residents (Yu and Xie 2015). Because rural people hold less wealth but are more likely to marry earlier than their urban counterparts, rural people may be more responsive to a same unit increase in family wealth than urban people. Therefore, *we may observe that family wealth is more predictive for first marriage among people with rural hukou than people with urban hukou (Hypothesis 4).*

Furthermore, conditions of gender equity are weaker in rural areas than in urban areas, evident in the greater gender gaps in education, employment participation, and earnings (Hannum 2005; Hannum, Kong, and Zhang 2009; Wu 2019). Further, compared to urban areas, gender-egalitarian ideology has been less developed in rural areas, and Confucian family values and norms still have a deep-rooted influence (Fuligni and Zhang 2004; Hu 2015). Consequently, conservative marriage practices are more prevalent in rural areas than

urban areas (Jiang et al. 2015). Additionally, recent evidence shows that marriages in urban areas have become more homogenous, in terms of wife's and husband's individual and parental socioeconomic traits (Han 2010; Hu 2016), while evidence in rural areas still suggests that rural women are more likely to marry men with higher socioeconomic status than themselves and rural men of lower socioeconomic status are likely to be squeezed in the marriage market (Jiang, Feldman, and Li 2014; Jiang and Sánchez-Barricarte 2012). *We thus may observe a larger gender difference in the association between family wealth and first marriage among people with rural hukou than people with urban hukou (Hypothesis 5).*

Data and Methods

Data and Sample

The China Family Panel Studies (CFPS) are nearly nationwide, comprehensive, longitudinal social surveys, initiated in 2010 by Peking University and collected on a biennial basis since then.[15] The CFPS was designed based on the approaches and experiences from earlier successful survey projects, such as the Panel Study of Income Dynamics (PSID), the National Longitudinal Surveys of Youth (NLSY), and the Health and Retirement Study (HRS). The CFPS has been collecting longitudinal data at the individual, family, and community level for both rural and urban residents (Xie and Hu 2014). The CFPS used multistage probability proportional to size sampling (PPS), representing 94.5 percent of the total population in Mainland China.[16] Family members in

[15] The CFPS covers twenty-five provinces or their administrative equivalents (municipalities and autonomous regions) in China, excluding Hong Kong, Macao, Taiwan, Xinjiang, Tibet, Qinghai, Inner Mongolia, Ningxia, and Hainan (Xie and Hu 2014).

[16] All the subsamples in the CFPS were obtained through three stages: the primary sampling unit (PSU) was either an administrative district (in urban areas) or a county (in rural areas), the second-stage sampling unit was either a neighborhood community (in urban areas) or an administrative village (in rural areas), and the third-stage (final) sampling unit was the household.

the baseline survey in 2010 and their new children born or adopted since the baseline have been tracked throughout their lives. Besides birth, new CFPS family members can also appear through marriage (for more information, see Xie and Hu 2014). All members over age nine in a sampled household were interviewed. In the 2010 baseline survey, the CFPS successfully interviewed almost 14,960 households with about 33,600 adults and 8,990 children. In the 2018 survey, the CFPS interviewed almost 14,241 households with about 32,669 adults and 8454 children. The response rate in 2010 was 81.3 percent at the household level and 84.1 percent at the individual level.

The CFPS data are ideal for addressing research questions in this study for three reasons. First, the CFPS uses economic dependence instead of current residence as a key criterion for defining a household (use *household* and *family* exchangeably later), which reduces the possibility of excluding economically related family members who have left home for school or work (usually the case for the 1980s and 1990s birth cohorts). The CFPS defines a household as an economically independent dwelling unit. Family members refer to economically interdependent immediate relatives and economically related non-immediate relatives who have been living in the household continuously for three months or longer (Xie and Hu 2014). Second, the CFPS has prospectively collected the marital status of all adults from 2010 to 2018, which allows prospective tracking of the first marriage for the 1980s and 1990s birth cohorts. Third, the CFPS has collected complete information regarding household assets (e.g., home assets, vehicle assets, financial assets, and savings) in each wave from 2010 to 2018. The complete repeated measures can be used to predict subsequent first marriage and thus avoids the issue of entangled family wealth between husband's and wife's families in cross-sectional data. This is because family

wealth prior to first marriage can be distinguished from family wealth after first marriage in the CFPS. In cross-sectional data, the family wealth of married respondents is often, to some extent, mingled between husband's and wife's families, which may upwardly bias the measure of family wealth and then upwardly bias the estimation of the link between family wealth and first marriage.

This study uses five waves of survey data from the CFPS, spanning from 2010 to 2018. I kept those who were born between 1980 and 1999 and tracked those "never married" respondents till their transitions into first marriage or their latest interview. Drawing on prospectively reported marriage dates, I organized the sample in a person-year format (i.e., 2010–2018) by the timing of first marriage with attrition cases censored at the latest interviewed year. Moreover, I restricted samples to those aged above 20, because the minimum legal eligible age for marriage in the People's Republic of China is 20 for women and 22 for men. I also excluded those who did not have *hukou* or were non-Chinese citizens (<1% in each wave). Finally, after excluding cases with missing values in the interested measures (approximately 6.5%), the final sample size is 7365 (person-years=22923).

Measures

Outcome

The outcome of first marriage is created based on marital status (never married [single or cohabiting], married, divorced, or widowed) between each wave and corresponding self-reported first marriage date. For instance, a respondent reported "never married" in 2010 and 2012 but reported "married" in 2014 with the self-reported first marriage year being 2013; this respondent then is coded 0 from 2010 till 2013 with the year of marriage coded as 1.

Predictors

I created time-varying measures to capture the ownership of major household assets before first marriage, including homes, cars, financial assets, and savings. I also created measures for the self-reported market value of homes, durables, savings, and financial assets. Moreover, I created a measure of the total gross value of household assets before first marriage, including homes, lands, savings, durables, and financial assets.

The CFPS asked respondents to report the ownership of all homes that belong to family members in the same household and their self-reported market value in the corresponding survey year. I created an indicator for ownership of a home. Because China has a higher rate of household home ownership (e.g., 80% in urban residents by 2000) than that of almost all developed countries (ranging from 50% to 60%) due to China's unique history of housing distribution systems and policies (Xie and Jin 2015), I created an indicator for ownership of more than one home to better capture home ownership inequality across families. I also created a measure for the self-reported market value of total home assets. Moreover, I created an indicator for household car ownership based on questions asking household ownership of valuable items, including cars. Because the value of a car in the CFPS cannot be disentangled from the total value of other durable assets, I created a measure of self-reported durable asset value as a proxy for car value. I constructed two measures to capture household savings in the corresponding survey year—ownership and self-reported market value of savings. For financial assets (i.e., stocks, funds, bonds, and foreign currency), I also constructed two measures—ownership and self-reported market value of financial assets. Additionally, I constructed the measure for self-reported household assets' total gross value, summing homes, lands, savings, durables, and financial

assets together. All measures for the self-reported market value of assets were transformed to constant dollars in 2018 and then transformed by the logarithm function to adjust for the skewed distribution.

Covariates

To control for confounding factors, I have included demographic and socioeconomic measures. Age (measured in years) was controlled because it is positively associated with both first marriage and wealth accumulation (Killewald, Pfeffer, and Schachner 2017; Mu and Xie 2014). Due to different marriage and fertility traditions and government policies across Chinese ethnic groups, I controlled for individual ethnicities (non-Han/Han). To control for individual socioeconomic status, I included education (elementary school and below [reference group], middle school, high school, or college and above), employment (no/yes), and community party membership (no/yes). Education has been revealed to be associated with the postponement of first marriage in both men and women born in the post-reform era (Tian 2013; Yu and Xie 2015) and to positively predict household wealth accumulation (Xie and Jin 2015). Furthermore, I included school enrollment (no/yes) to control for the postponement of first marriage due to prolonged education in the young cohorts. Employment has been documented to positively predict first marriage, especially for men (Yu and Xie 2015). Communist party membership is a prerequisite for some lucrative and secure jobs, influencing economic prospectus and social status of individuals (Hauser and Xie 2005; Walder 1996; Xie and Hannum 1996); it thus might be positively associated with first marriage and household wealth accumulation (Xie and Jin 2015). Additionally, I controlled for annual household income to guarantee an independent association between household assets and first marriage. Annual household income was

transformed to constant dollars in 2018, adjusted for the corresponding household size, and transformed by the logarithm function to adjust for the skewed distribution. Additionally, even though analyses were performed on samples by rural and urban *hukou* status, I included the urbanicity of the family residing place (urban/rural) of respondents before their first marriage. This is because the type of residing place can differ from the type of *hukou* status. The discrepancy between hukou status and residing areas is usually due to two reasons. One reason is that people migrate from *hukou* registration places to other places. The other reason is that the criteria for one's *hukou* registration place are different from the criteria for one's *hukou* registration type; consequently, urban areas can contain both non-agricultural *hukou* population as well as agricultural *hukou* population (Chan and Zhang 1999). For instance, around 18 percent of men and 15 percent of women who hold urban *hukou* status live in rural areas, and around 65 percent of men and 63 percent of women who hold rural *hukou* status live in urban areas (see Table 4). Despite their *hukou* status, rural residents often transition into first marriage earlier than urban residents and households in rural areas usually hold a lower level of household wealth than their counterparts in urban areas (Xie and Jin 2015). Thus, I controlled for the urbanicity of the family residing place.

Analytic Approach

I used hazard models to estimate the time-varying probability of first marriage. Given that the data are precise to the year, I used a discrete-time approach. This modeling approach allows for the inclusion of both time-varying and invariant regressors in the estimation (see [Allison 1982; Peterson 1991; Yamaguchi 1991] for more details). The unit of analysis is the person-year exposure to the risk of transitioning from single into first marriage. To

estimate the discrete-time hazard model, I used logistic regression.

I estimated the probability of first marriage for men and women with rural or urban *hukou* separately, in order to investigate the link between family wealth and first marriage for each group and examine gender and rural-urban differences later. For each stratified sample, I first explored the association between household assets' total gross value and first marriage, controlling for covariates. I then investigated the association between household asset ownership and first marriage. Next, I investigated the association between household asset value and first marriage. Finally, I examined gender differences among rural and urban people and rural-urban differences among men and women in the above three types of associations.

In the following equations, Y_{it} represents the first marriage ($Y_{it} = 1$) of individual *i* at age *t,* with being single as the reference group ($Y_{it} = 0$). X_{jit} are n vectors of time-varying predictors for individual *i* at age *t* with coefficients α_j. Z_{kit} are m vectors of time-varying (or constant over time) covariates for individual *i* at age *t* with coefficients β_k.

$$In\frac{Pr(Y_{it}=1)}{1-Pr(Y_{it}=1)} = \sum_{j=1}^{j=n} \alpha_j X_{jit} + \sum_{k=1}^{k=m} \beta_k Z_{kit} \quad (1)$$

To facilitate the interpretation of model estimates and their comparison across non-linear models, I transformed coefficients to average marginal effects (AMEs). In the discrete-time hazard model, the AMEs of a predictor can be interpreted as the average of predicted changes in the probability of first marriage for a one-unit change in the predictor (if it is continuous). To test the gender and rural-urban differences (i.e., differences in AMEs across stratified samples in non-linear models) in the association between family wealth and first marriage, I used the delta method to acquire the covariance matrix and then

tested the inequality of AMEs based on the Wald statistic (see Mize, Doan, and Long 2019 for more details). The covariance matrix across two non-linear models can be obtained using the delta method (Agresti 2013, pp. 72–77), bootstrapping (Efron and Tibshirani 1993), or simulation (King, Tomz, and Wittenberg 2000). Because these methods produce similar results, I chose the delta method for its faster computation (Dowd, Greene, and Norton 2014). I performed all analyses in STATA 16.

Results

Descriptive Results

Figure 4 displays the hazard of first marriage from age 15 to 35 by gender and *hukou* status for the 1980s and 1990s birth cohorts. Women have a higher probability of first marriage than men, with rural women having the highest hazard rate. The hazard rate of rural men increases much faster than that of urban men before age 35 and then plateaus around age 35, suggesting that rural men are likely to marry at an earlier age (if they marry) but may face a serious marriage squeeze (fewer available women in the marriage market than men) after age 35. By age 35, around 90 percent of rural women, 80 percent of urban women, and 75 percent of rural and urban men have transitioned into first marriage. These estimates are close to but slightly lower than estimates in a recent study focused on those born after 1974. This small difference probably indicates a continuing postponement of first marriage among young adults (born 1980–1999) in China.

Table 4 shows descriptive statistics for single young adults (born between 1980 and 1999) by gender and *hukou* status. Rural households have a lower level of asset value and a lower rate of asset ownership than urban households. Men and women with rural *hukou* have lower educational attainment than men and women with urban *hukou*. Furthermore,

women have a higher percentage of those who are in school or have a college degree or above than men. In terms of employment rate, women have a lower level than men, and rural people have a higher level than urban people. Regarding communist party membership, urban people have a higher rate than rural people, with urban women having the highest level. Additionally, rural households have lower annual household income than urban households. The mean age is around 24 for both urban and rural men and women. Urban people have a higher percentage of *Han* ethnicity than rural people. In terms of the urbanicity of household residing place, around 64 percent of people with rural *hukou* living in the urban area, while less than 20 percent of people with urban *hukou* living in the rural area.

Wealth and First Marriage

Table 5 shows the association between household total asset value and first marriage. Household total asset value is significantly positively associated with first marriage for urban and rural men. A 1-percentage-point increase in household total asset value is associated with a 0.73-percentage-point, and 1.17-percentage-point increase in first marriage for urban and rural men, respectively. The household total asset value has the strongest predictive power for first marriage for rural men.

Table 6 presents the associations between different types of asset ownership and first marriage. Owning more than one house significantly increases the probability of first marriage for rural men by 1.70-percentage-point. In addition, I also examined the association between owning a house and first marriage and found that home ownership is associated with first marriage positively for urban and rural men, but negatively for urban and rural women (albeit not significant).

Household car ownership strongly positively predicts first marriage, except for urban women. Owning a car significantly increases the probability of first marriage by 4.02-percentage-point, 4.34-percentage-point, and 4.43-percentage-point for urban men, rural men, and rural women, respectively. Household savings account ownership is positively associated with first marriage, but the association is only significantly for rural women. Owning a saving account more than 10,000 RMB significantly increases the probability of rural women's first marriage formation by 2.19-percentage-point. Household financial asset ownership is negatively associated with first marriage, but the association is only significant for rural men. Owning financial assets significantly reduces the probability of rural men's first marriage formation by 2.31-percentage-point.

Table 7 displays the associations between different types of asset value and first marriage. Household home value significantly positively predicts first marriage for rural men. A 1-percentage increase in household home value is associated with a 0.14-percentage-point increase in the probability of first marriage for rural men. A 1-percentage-point increase in household durable asset value is associated with a 0.41-percentage-point, 0.88-percentage-point, and 0.97-percentage-point increase in the probability of first marriage for urban women, rural men, and rural women, respectively. A 1-percentage-point increase in household saving value is associated with a 0.17-percentage-point increase in the probability of first marriage for rural women.

To sum up, total asset value positively predicts first marriage for men but not for women. I thus find evidence to support *Hypothesis 1 for both rural and urban people*—that family wealth positively predicts first marriage for men. However, I do not find evidence to support *Hypothesis 2 for either rural or urban people*—that family wealth

positively predicts first marriage for women. Different types of household asset ownership and value are associated with first marriage in different directions. Household home or car ownership positively predict first marriage. Noteworthily, home and car ownership strongly predict rural men's first marriage. Household saving account ownership (more than 10,000 RMB) or value only positively predicts first marriage for rural women. Gendered marriage practices in China may lend some explanations for these findings. The husband's family is often expected to provide major assets, such as home and car, for the newlywed couple, while the wife's family often provides dowry for their daughters (mostly in cash or bank saving account). Household financial asset ownership negatively predicts first marriage, especially for rural men. This surprisingly negative association may be because rural men owning financial assets are a selective group of people who are most likely to be highly educated, well-paid, and tend to postpone their first marriage voluntarily. In terms of different types of household asset ownership and value, taken as a whole, the results do not provide consistent evidence in support of either *Hypothesis 1* or *Hypothesis 2*.

Gender and Rural-Urban Differences

Table 8 shows the statistical testing results for gender and rural-urban differences in the association between family wealth and first marriage. In terms of gender differences, though not statistically significant, household total asset value is more predictive for first marriage for men than for women. Except for household savings account ownership, the ownership of other assets is more predictive for men than for women (albeit not significant). The link between household car ownership and first marriage is significantly stronger for urban men than urban women by 2.79-percentage-point. As for household asset value, household home value is significantly more predictive for first marriage for rural men than

for rural women. With a 1-percentage-point increase in household home value, the probability of first marriage is increased more for rural men than for rural women by approximately 0.13-percentage-point. Household saving value is more predictive for first marriage for women than for men. With a 1-percentage-point increase in household saving value, the probability of first marriage is increased more for rural women than for rural men by approximately 0.18-percentage-point.

Regarding rural-urban differences, no significant differences are observed for either men or women. One exception is that household total asset value is less predictive for the first marriage of urban women than that of rural women by 0.78-percentage-point.

In terms of gender differences by *hukou* status, except for household total asset value, household car ownership, and household durable asset value, gender differences among rural people are generally higher than those among urban people. Specifically, the gender difference in the link between household home ownership and value is larger among rural people than urban people. The gender gap in the link between household savings account ownership and value is larger among rural people than urban people. In addition, the gender difference in the link between household financial asset ownership and value is larger among rural people than urban people as well. In addition, the larger gender gap in the total asset value among urban people than rural people is probably driven by the larger gender gap in the household durable asset value among urban people.

To sum up, no significant rural-urban disparities in the prediction of family wealth for first marriage have been observed in this study; thus, no sufficient evidence is found in support of *Hypothesis 4* that family wealth is more predictive for first marriage among people with rural *hukou* than people with urban *hukou*. However, significant gender

differences in household home value have indeed been observed among rural people, which partially supports *Hypothesis 3* that we may observe that family wealth is more predictive for first marriage among men, as compared to women. Moreover, except for household total asset value, household car ownership, and household durable asset value, gender differences in rural people are generally higher than those in urban people, which partially supports *Hypothesis 5* that we may observe a larger gender difference in the association between family wealth and first marriage among people with rural *hukou* than people with urban *hukou*.

Discussion

The 1980s and 1990s birth cohorts were born under great social transformation, such as market-oriented economy transition, stringent fertility policy, rapid educational expansion, and rising housing prices; prior evidence documents that they are postponing their first marriage (especially for urban young adults), and rural men of lower socioeconomic status are difficult to find a spouse in the marriage market (i.e., marriage squeeze) (Yu and Xie 2015). As marriage expenses are rising (Jiang and Sánchez-Barricarte 2012; Jiang et al. 2015) and marriage has become more homogenous in terms of individual and family socioeconomic status (Han 2010; Hu 2016), family wealth has gained increasing importance in determining the transition into first marriage. Focusing on family wealth as a determinant for first marriage, this study thus furthers our understanding of the marriage pattern of the 1980s and 1990s birth cohorts from the angle of family wealth inequality. This study also advances our understanding of gender and rural-urban divide in marriage experiences and patterns. Moreover, this study contributes to our understanding of the persisting (if not strengthening) intergenerational wealth inequality and stratification via

the mechanism of marriage. Additionally, this study advances prior studies methodologically by a prospective design based on the China Family Panel Studies, investigating how family wealth shapes subsequent first marriage. This research design reduces recall bias inherent to many retrospective surveys using the life history calendar to elicit such information usually from decades ago and avoids the issue of entangled family wealth between husband's and wife's families in cross-sectional data. The entangled family wealth particularly for married respondents in cross-sectional data may upwardly bias the measure of family wealth and then upwardly bias the estimation of the association between family wealth and first marriage.

This study reveals that family wealth is a crucial predictor for first marriage in contemporary China, especially for urban and rural men. This finding suggests that besides acquired traits (e.g., education and earnings), ascribed traits (e.g., family wealth) may also play important roles in determining the first marriage of young men. Furthermore, the link between family wealth and first marriage is strongest for rural men, which may provide a new insight in explaining the marriage squeeze phenomenon among rural men from the perspective of family wealth inequality. Comparing across East Asian countries, prior studies revealed that though young adults tend to postpone their first marriage, marriage has remained nearly universal and concentrated in a relatively narrow age range in China (Frejka, Jones, and Sardon 2010; Raymo et al. 2015). However, most of these studies were based on estimates from cross-sectional data, pooling multiple birth cohorts together. Yu and Xie (2015), comparing the marriage patterns across different birth cohorts, contended that marriage patterns in contemporary China could no longer be characterized as early and universal. They found that approximately 30 percent of women with a college degree and

20 percent of the men with only primary school education (mostly in rural areas) had never been married by age 35. Beyond individual socioeconomic status, family wealth inequality also provides some explanation for this marriage squeeze phenomenon of rural men. That is, rural men who lack support from his family to provide housing, a car, and savings are likely to be most discriminated against in the marriage market. However, family wealth inequality could explain little of the timing (postponement) of marriage for urban women. This unexpected finding cannot be satisfactorily explained by gender specialization or male breadwinner perspectives, but it is too hasty to conclude that family wealth is not important for urban women's first marriage. Instead, there are alternate explanations. Urban women are probably postponing their first marriage due to prolonged education, and as the gender gap in education narrows, urban women, especially highly educated ones, may find it is difficult to find desirable spouses due to a smaller number of highly educated men available in the marriage market.

This study also finds significant gender differences in the association between family wealth and first marriage among young adults with rural *hukou*. Further, gender differences in the link between family wealth and first marriage are contingent upon asset type. Specifically, household home value is a stronger predictor for first marriage in rural men than rural women. In comparison, the household saving value is a stronger predictor for first marriage in rural women than rural men. Gendered marriage practices in China may lend some explanations for these findings. The husband's family is often expected to provide major assets, such as home and car, for the newlywed couple, while the wife's family often provides dowry for their daughters (mostly in cash or bank saving account).

Moreover, gender differences in the link between family wealth and first marriage are

generally higher in rural people than urban people, except for household car ownership and durable asset value. The high prevalence of traditional gendered marriage practices in rural areas may help explain this difference. In rural areas, the marriage expenses usually include housing expenses, bride-price (an amount of money the husband's family gives to the bride to make a marriage official), and marriage banquet expenses. Parental obligation, face-related competition in village culture, and imbalanced bargaining power between men and women due to the shortage of women have been driving the high and gendered marriage expenses in rural areas (Jiang et al. 2014, 2015; Jiang and Sánchez-Barricarte 2012).

The gendered association between family wealth and first marriage among rural people may indicate that gender disparity in the transfer of wealth from parents to children through building marital bonds has persisted even among the 1980s and 1990s birth cohorts. Marriage expenses have been increasing rapidly since the 2000s. A prior study, spanning across different provinces in rural China, has documented that the marriage expenses were equivalent to 10 to 33 times of annual household savings (for more details see Jiang et al. 2015, p. 212). Within the marriage expenses, housing accounts for a major portion. Though women and their families seem to have more negotiation power in the process of marriage, the highly gendered family wealth arrangement pertinent to marriage practices actually situates women in a disadvantaged position in wealth inheritance and possession. This is because, compared to men, young women are less likely to obtain parental support in housing consumption, conjugal property registration, and even compensation for mortgage contributions after divorce (Fincher 2016). Consequently, compared to men, women are in a disadvantaged position in wealth possession, more difficult to leave unhappy marriage due to high financial dependence on their spouse, and more likely to have financial strains

after divorce. Further, these gendered marriage practices have an issue of objectifying women and perpetuating and reproducing gender inequality. In sum, under the context of high marriage expenses, the gendered marriage practices and family wealth arrangements lead to women's disadvantaged position in wealth possession and accumulation and yield a severe marriage squeeze for economically disadvantaged men, especially in rural areas.

Findings in this study should be interpreted with the following limitations under consideration. Firstly, the CFPS did not have family wealth information for paired married couples before their first marriage. Instead, the CFPS can only provide family wealth information for individual respondents. To better understand how wealth inequality shapes marriage and in reverse is shaped by marriage, we need high-quality longitudinal couple dyadic data. When these data are available in the future, we could investigate wealth assortative mating and its subsequent influences on wealth inequality across households. Secondly, the estimated market value for household assets is based on self-reported measures, which may bias the estimation of the link between family wealth and first marriage especially when misreporting is not randomly distributed among different sub-populations. Despite this limitation, this current study is still a good start for future research to further examine how family wealth shapes first marriage considering the nature of misreporting on family wealth. Thirdly, family debt is not included in the measure of family wealth, which may bias the estimation of the link between family wealth and first marriage. This is because the CFPS did not start collecting all cumulative family debt at the survey year (rather than family debt in the past year in 2010) until 2012, which may result inconsistent measures of family debt across survey years. Though debt, particularly student loan and credit debt, is found to be associated with union formation among American young

adults (Addo 2014), the prevalence of student loan and credit debt is relatively low in China (not consistently collected in the CFPS), which may have a weak role in predicting first marriage in China. However, household debt has gradually become an important component in the Chinese household wealth portfolio as the credit market has been growing in the past few decades. Examining the link between household debt and first marriage might be a fruitful research area for future studies. Fourthly, the CFPS did not collect estimated market value for household car separately from the household durable asset; this study thus used household durable asset value as a proxy for household car value. This may explain the inconsistent results between household car ownership and household durable asset value. When more accurate measures were available, the estimation between household car ownership and value and first marriage would be more accurate. Fifthly, the CFPS did not provide detailed information to differentiate young adults with rural *hukou* who migrated to urban areas from those who stayed in rural areas. According to the National Sixth Population Census, 72 million young adults aged from 20 to 29 migrated from *hukou* registered places to other places (mostly urban areas) for higher-paid jobs (Chen and Ye 2013). The exposure to urban lifestyles and more liberal ideology may change rural migrants' attitudes and even behaviors towards marriage. It is possible that the gender difference in the link between family wealth and first marriage among rural migrants is smaller than those who stayed in rural areas. This to some extent may explain why this study find little evidence to support rural-urban divide (based on *hukou* status) in the association between family wealth and first marriage.

Despite these limitations, this study sheds new light on marriage patterns of the 1980s and 1990s birth cohorts from the perspective of family wealth inequality, and it provides a

new angle to understand gendered marriage experiences in China. This study also suggests that public policies to support sustainable housing may help resolve socioeconomic disadvantaged men's marriage squeeze phenomenon, especially in rural areas. This study also calls on research attention to the consequences of gendered family wealth arrangement through building marital bonds for reproducing or even exacerbating gender inequality in wealth possession and accumulation. In addition, this study indicates that marriage can be a mechanism of maintaining, reproducing, and even strengthening intergenerational wealth inequality and social stratification in China because family wealth is a strong positive predictor for first marriage (particularly for men) and intergenerational wealth often transfers through a marriage. Therefore, it is a promising research field to investigate how marriage contributes to the persistence and reproduction of wealth inequality and social stratification among the young cohorts. This study also advances our understanding of how wealth shapes first marriage theoretically. Most research, based on western social settings, focuses on individual wealth rather than family or household wealth and often explains the theoretical importance of wealth from an individual perspective (symbolic or practical reasons). However, in a social setting with long and persisting histories of familism and collectivism, the importance of wealth in shaping first marriage incorporates maximizing family wealth benefits, such as family wealth transfer, merge, accumulation, and appreciation. Therefore, the importance of wealth in shaping marital behaviors could be evaluated beyond an individual perspective, varying by social settings.

References

Addo, Fenaba R. 2014. “Debt, Cohabitation, and Marriage in Young Adulthood.” *Demography* 51(5):1677–1701. doi: 10.1007/s13524-014-0333-6.

Agresti, Alan. 2013. *Categorical Data Analysis*, 3d ed. Hoboken, N.J.: Wiley.

Allison, Paul D. 1982. “Discrete-Time Methods for the Analysis of Event Histories.” *Sociological Methodology* 13:61–98. doi: 10.2307/270718.

Bloome, Deirdre, and Shannon Ang. 2020. “Marriage and Union Formation in the United States: Recent Trends Across Racial Groups and Economic Backgrounds.” *Demography*. doi: 10.1007/s13524-020-00910-7.

Cai, Yong. 2010. “China’s below-Replacement Fertility: Government Policy or Socioeconomic Development?” *Population and Development Review* 36(3):419–40. doi: 10.1111/j.1728-4457.2010.00341.x.

Chan, Kam Wing, and Li Zhang. 1999. “The Hukou System and Rural-Urban Migration in China: Processes and Changes.” *The China Quarterly* (160):818–55. http://www.jstor.org/stable/656045

Charles, Kerwin Kofi, Erik Hurst, and Alexandra Killewald. 2013. “Marital Sorting and Parental Wealth.” *Demography* 50(1):51–70. doi: 10.1007/s13524-012-0144-6.

Chen, Bingxin, and Yumin Ye. 2013. “Socioeconomic and Demographic Characteristics of Chinese Floating Population and Its Impacts On Urbanization (in Chinese).” *Urban Problems* (3):2–8. http://www.cnki.com.cn/Article/CJFDTOTAL-CSWT201303001.htm

Davis, Deborah. 1992. “‘Skidding’: Downward Mobility among Children of the Maoist Middle Class.” *Modern China* 18(4):410–37. doi: 10.1177/009770049201800402.

Davis, Deborah. 2005. “Urban Consumer Culture Special Issue on Culture In the Contemporary PRC.” *China Quarterly* 2005(183):692–709. doi: 10.1017/S0305741005000421.

Dowd, Bryan E., William H. Greene, and Edward C. Norton. 2014. “Computation of Standard Errors.” *Health Services Research* 49(2):731–50. doi: 10.1111/1475-6773.12122.

Eads, Alicia, and Laura Tach. 2016. “Wealth and Inequality in the Stability of Romantic Relationships.” *RSF: The Russell Sage Foundation Journal of the Social Sciences* 2(6):197. doi: 10.7758/rsf.2016.2.6.10.

Edin, Kathryn, and Maria Kefalas. 2011. *Promises I Can Keep Why Poor Women Put Motherhood before Marriage: With a New Preface*. Berkeley, California: University of

California.

Efron, Bradley, and Robert Tibshirani. 1993. *An Introduction to the Bootstrap*. New York: Chapman & Hall.

Fincher, Leta Hong. 2016. *Leftover Women: The Resurgence of Gender Inequality in China*. London: Zed Books Ltd.

Fisher, Jonathan, David Johnson, Jonathan P. Latner, Timothy Smeeding, and Jeffrey Thompson. 2016. "Inequality and Mobility Using Income, Consumption, and Wealth for the Same Individuals." *RSF: The Russell Sage Foundation Journal of the Social Sciences* 2(6):44–58. doi: 10.7758/RSF.2016.2.6.03.

Frejka, Tomas, Gavin W. Jones, and Jean-Paul Sardon. 2010. "East Asian Childbearing Patterns and Policy Developments." *Population and Development Review* 36(3):579–606. doi: 10.1111/j.1728-4457.2010.00347.x.

Fuligni, Andrew J., and Wenxin Zhang. 2004. "Attitudes Toward Family Obligation Among Adolescents in Contemporary Urban and Rural China." *Child Development* 75(1):180–92. doi: 10.1111/j.1467-8624.2004.00662.x.

Han, Hongyun. 2010. "Trends in Educational Assortative Marriage in China from 1970 to 2000." *Demographic Research* 22:733–70. doi: 10.4054/DemRes.2010.22.24.

Hannum, Emily. 2005. "Market Transition, Educational Disparities, and Family Strategies in Rural China: New Evidence on Gender Stratification and Development." *Demography* 42(2):275–99. doi: 10.1353/dem.2005.0014.

Hannum, Emily, Peggy Kong, and Yuping Zhang. 2009. "Family Sources of Educational Gender Inequality in Rural China: A Critical Assessment." *International Journal of Educational Development* 29(5):474–86. doi: 10.1016/j.ijedudev.2009.04.007.

Hauser, Seth M., and Yu Xie. 2005. "Temporal and Regional Variation in Earnings Inequality: Urban China in Transition between 1988 and 1995." *Social Science Research* 34(1):44–79. doi: 10.1016/j.ssresearch.2003.12.002.

Hu, Yang. 2015. "Gender and Children's Housework Time in China: Examining Behavior Modeling in Context." *Journal of Marriage and Family* 77(5):1126–43. doi: 10.1111/jomf.12225.

Hu, Yang. 2016. "Marriage of Matching Doors: Marital Sorting on Parental Background in China." *Demographic Research* 35:557–80. doi: 10.4054/DemRes.2016.35.20.

Jiang, Quanbao, Marcus W. Feldman, and Shuzhuo Li. 2014. "Marriage Squeeze, Never-Married Proportion, and Mean Age at First Marriage in China." *Population Research and*

Policy Review 33(2):189–204. doi: 10.1007/s11113-013-9283-8.

Jiang, Quanbao, and Jesús J. Sánchez-Barricarte. 2012. "Bride Price in China: The Obstacle to 'Bare Branches' Seeking Marriage." *The History of the Family* 17(1):2–15. doi: 10.1080/1081602X.2011.640544.

Jiang, Quanbao, Yanping Zhang, and Jesús J. Sánchez-Barricarte. 2015. "Marriage Expenses in Rural China." *The China Review* 15(1):207–36. https://www.jstor.org/stable/24291934

Keister, Lisa A., and Stephanie Moller. 2000. "Wealth Inequality in the United States." *Annual Review of Sociology* (26):63–81. doi: 10.1146/annurev.soc.26.1.63.

Killewald, Alexandra, Fabian T. Pfeffer, and Jared N. Schachner. 2017. "Wealth Inequality and Accumulation." *Annual Review of Sociology* 43(1):379–404. doi: 10.1146/annurev-soc-060116-053331.

King, Gary, Michael Tomz, and Jason Wittenberg. 2000. "Making the Most of Statistical Analyses: Improving Interpretation and Presentation." *American Journal of Political Science* 44(2):347–61. doi: 10.2307/2669316.

Mize, Trenton D., Long Doan, and J. Scott Long. 2019. "A General Framework for Comparing Predictions and Marginal Effects across Models." *Sociological Methodology* 49(1):152–89. doi: 10.1177/0081175019852763.

Mu, Zheng, and Yu Xie. 2014. "Marital Age Homogamy in China: A Reversal of Trend in the Reform Era?*." *Social Science Research* 0:141–57. doi: 10.1016/j.ssresearch.2013.11.005.

Nie, Haifeng, and Chunbing Xing. 2019. "Education Expansion, Assortative Marriage, and Income Inequality in China." *China Economic Review* 55:37–51. doi: 10.1016/j.chieco.2019.03.007.

Oppenheimer, Valerie Kincade. 1988. "A Theory of Marriage Timing." *American Journal of Sociology* 94(3):563–91. doi: 10.1086/229030.

Oppenheimer, Valerie Kincade. 1997. "Women's Employment and the Gain to Marriage: The Specialization and Trading Model." *Annual Review of Sociology* 23(1):431–53. doi: 10.1146/annurev.soc.23.1.431.

Parsons, Talcott. 1949. "The Social Structure of the Family." Pp. 173–201 in *The family: its function and destiny*. Oxford, England: Harper.

Peterson, Trond. 1991. "The Statistical Analysis of Event Histories." *Sociological Methods & Research* 19(3):270–323. doi: 10.1177/0049124191019003002.

Raymo, James M., Hyunjoon Park, Yu Xie, and Wei-jun Jean Yeung. 2015. “Marriage and Family in East Asia: Continuity and Change.” *Annual Review of Sociology* 41:471–92. doi: 10.1146/annurev-soc-073014-112428.

Sassler, Sharon, and Daniel T. Lichter. 2020. “Cohabitation and Marriage: Complexity and Diversity in Union-Formation Patterns.” *Journal of Marriage and Family* 82(1):35–61. doi: 10.1111/jomf.12617.

Sassler, Sharon, and Amanda J. Miller. 2011. “Class Differences in Cohabitation Processes.” *Family Relations* 60(2):163–77. doi: 10.1111/j.1741-3729.2010.00640.x.

Sassler, Sharon, and Amanda Jayne Miller. 2017. *Cohabitation Nation: Gender, Class, and the Remaking of Relationships*. Oakland, California: University of California Press.

Sayer, Liana C., Paula England, Paul D. Allison, and Nicole Kangas. 2011. “She Left, He Left: How Employment and Satisfaction Affect Women’s and Men’s Decisions to Leave Marriages.” *American Journal of Sociology* 116(6):1982–2018. doi: 10.1086/658173.

Schneider, Daniel. 2011. “Wealth and the Marital Divide.” *American Journal of Sociology* 117(2):627–67. doi: 10.1086/661594.

Schneider, Daniel. 2012. “Gender Deviance and Household Work: The Role of Occupation.” *American Journal of Sociology* 117(4):1029–72. doi: 10.1086/662649.

Spilerman, Seymour. 2000. “Wealth and Stratification Processes.” *Annual Review of Sociology* 26(1):497–524. doi: 10.1146/annurev.soc.26.1.497.

Sweeney, Megan M. 2002. “Two Decades of Family Change: The Shifting Economic Foundations of Marriage.” *American Sociological Review* 67(1):132. doi: 10.2307/3088937.

Tian, Felicia Feng. 2013. “Transition to First Marriage in Reform-Era Urban China: The Persistent Effect of Education in a Period of Rapid Social Change.” *Population Research and Policy Review* 32(4):529–52. doi: 10.1007/s11113-013-9272-y.

Walder, Andrew G. 1996. “Markets and Inequality in Transitional Economies: Toward Testable Theories.” *American Journal of Sociology* 101(4):1060–73. doi: 10.1086/230789.

Weber, Max. 2018. “Class, Status, Party.” Pp. 37–52 in *Inequality: Classic Readings in Race, Class, and Gender*, edited by D. Grusky. Thames, Oxfordshire, England: Routledge.

West, Candace, and Don H. Zimmerman. 1987. “Doing Gender.” *Gender & Society* 1(2):125–51. doi: 10.1177/0891243287001002002.

Wu, Xiaogang. 2019. “Inequality and Social Stratification in Postsocialist China.” *Annual*

Review of Sociology 45(1):363–82. doi: 10.1146/annurev-soc-073018-022516.

Xie, Yu, and Emily Hannum. 1996. "Regional Variation in Earnings Inequality in Reform-Era Urban China." *American Journal of Sociology* 101(4):950–92.

Xie, Yu, and Jingwei Hu. 2014. "An Introduction to the China Family Panel Studies (CFPS)." *Chinese Sociological Review* 47(1):3–29. doi: 10.2753/CSA2162-0555470101.

Xie, Yu, and Yongai Jin. 2015. "Household Wealth in China." *Chinese Sociological Review* 47(3):203–29. doi: 10.1080/21620555.2015.1032158.

Yamaguchi, Kazuo. 1991. *Event History Analysis*. Newbury Park, California: SAGE Publications.

Yan, Yunxiang. 2020. *The Individualization of Chinese Society*. Thames, Oxfordshire, England: Routledge.

Yu, Jia, and Yu Xie. 2015. "Changes in the Determinants of Marriage Entry in Post-Reform Urban China." *Demography* 52(6):1869–92. doi: 10.1007/s13524-015-0432-z.

Zheng, Jing. 2020. "Women's 'Gender Capital' Experiences in Conjugal Housing Consumption: Understanding a New Pattern of Gender Inequality in China." *Chinese Sociological Review* 52(2):144–66. doi: 10.1080/21620555.2019.1680279.

Tables and Figures

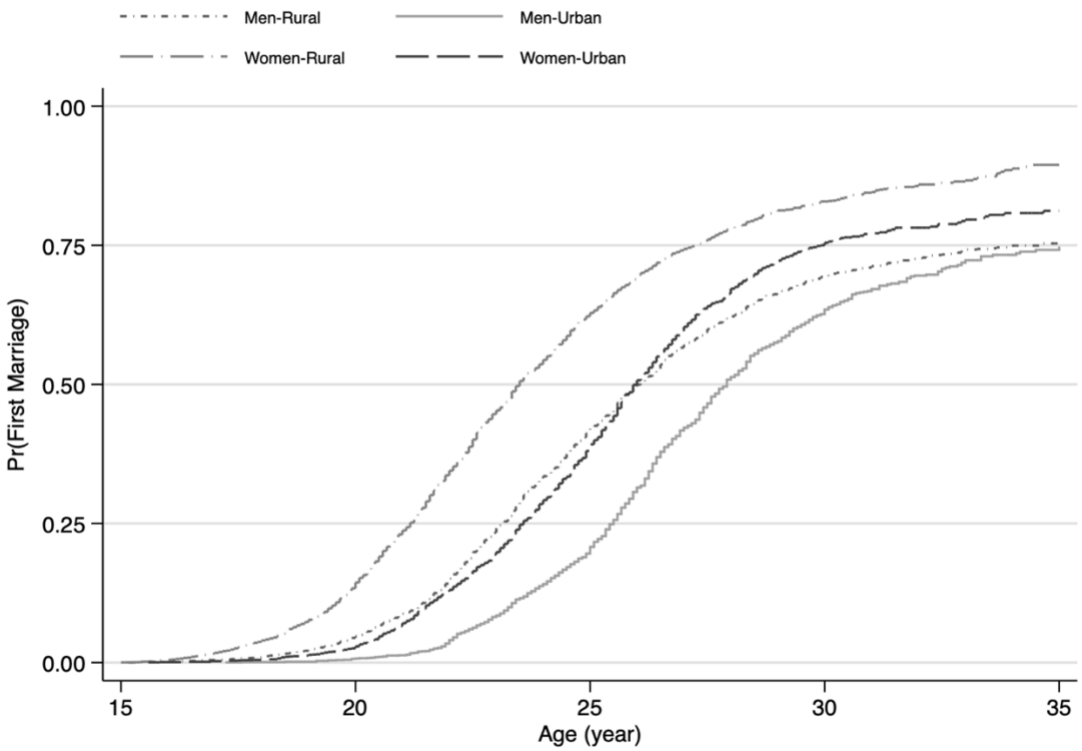

Figure 4. Hazards of first marriage of the 1980s and 1990s birth cohorts by gender and *hukou* status.

Note: The hazards of first marriage of the 1980s and 1990s birth cohorts were estimated based on the four waves of CFPS dataset (2010–2018, N=16333) without sample restrictions on *single* status in each wave before first marriage and covariates of interest.

Table 4. Descriptive statistics of single young adults (born in 1980–1999) in China Family Panel Study (2010–2018).

	Urban *hukou* Mean or %		Rural *hukou* Mean or %	
	Men (N=1,199)	Women (N=972)	Men (N=3,222)	Women (N=2,353)
Predictors				
Household total asset value (logged)	12.52 (0.03)	12.54 (0.04)	11.98 (0.01)	12.01 (0.02)
Household home ownership[1] (more than one = 1, others = 0)	22.73 (0.69)	20.95 (0.77)	16.05 (0.37)	13.51 (0.42)
Household car ownership (yes = 1, no = 0)	18.29 (0.64)	20.44 (0.76)	14.06 (0.35)	14.00 (0.43)
Household savings account ownership (more than 10,000 =1, others = 0)	49.75 (0.83)	49.32 (0.95)	33.77 (0.47)	33.28 (0.59)
Household financial asset (yes = 1, no = 0)	14.19 (0.58)	16.93 (0.71)	1.81 (0.13)	1.84 (0.17)
Household home value (logged)	10.43 (0.09)	10.43 (0.10)	10.07 (0.04)	10.10 (0.05)
Household durable asset value (logged)	8.54 (0.05)	8.66 (0.06)	8.29 (0.03)	8.43 (0.03)
Household saving value (logged)	7.52 (0.08)	7.49 (0.09)	6.21 (0.05)	6.17 (0.06)
Household financial asset value (logged)	1.51 (0.06)	1.80 (0.08)	0.17 (0.01)	0.18 (0.02)
Covariates				
Education				
Elementary school and below	4.31 (0.34)	2.55 (0.30)	21.69 (0.41)	12.01 (0.40)
Middle school	11.63 (0.53)	6.13 (0.45)	32.83 (0.47)	27.83 (0.56)
High school	36.52 (0.80)	35.51 (0.91)	28.32 (0.45)	36.41 (0.60)
College and above	47.54 (0.83)	55.81 (0.94)	17.15 (0.38)	23.75 (0.53)
School enrollment (yes = 1, no = 0)	25.98 (0.72)	32.07 (0.88)	18.38 (0.39)	28.90 (0.56)
Employment[2] (not employed = 0, employed = 1)	70.52 (0.75)	65.10 (0.90)	76.98 (0.42)	66.71 (0.59)
Communist party membership (yes = 1, no = 0)	8.43(0.46)	12.84 (0.63)	3.33 (0.18)	3.45 (0.23)

Annual household income (logged)	9.74 (0.02)	9.61 (0.02)		9.18 (0.01)	9.06 (0.02)
Age	24.89 (0.06)	24.21 (0.06)		24.19 (0.04)	23.04 (0.04)
Ethnicity (han = 1, others = 0)	95.63 (0.34)	95.70 (0.38)		89.63 (0.31)	90.49 (0.36)
Rural residence (urban = 0, rural = 1)	18.18 (0.64)	15.24 (0.68)		64.78 (0.48)	63.19 (0.59)
Person-Years	3,664	2,788		9,981	6,485

Notes:

1. For urban and rural men and women, the percent of household home ownership is around 84.01%, 83.75%, 88.80%, and 89.14%, respectively.
2. The category of "not employed" includes both the unemployed and those who were out of the labor market (e.g., full-time school students).
3. SEs are in parentheses.

Table 5. Estimates of household total asset value for first marriage, Average Marginal Effects (%) from discrete-time logistic regression.

	Urban *hukou*		Rural *hukou*	
	Men	Women	Men	Women
Predictors				
Household total asset value (logged)	0.73**	0.30	1.17***	1.08
	(0.25)	(0.22)	(0.32)	(0.32)
Covariates				
Annual household income(logged)	0.13	-0.68	-0.05	0.49
	(0.32)	(0.38)	(0.13)	(0.36)
Age	11.98***	14.06***	7.57***	7.59***
	(1.69)	(3.14)	(1.22)	(1.46)
Age2	-0.21***	-0.25***	-0.14***	-0.14***
	(0.03)	(0.06)	(0.02)	(0.03)
Education				
(ref. = elementary school and below)				
Middle school	1.37	0.26	-0.19	0.05
	(2.79)	(4.28)	(0.64)	(1.32)
High school	1.37	-0.53	-0.55	0.78
	(2.79)	(2.77)	(0.64)	(1.39)
College and above	0.16	-1.04	1.37	-1.05
	(2.78)	(2.33)	(0.66)	(2.08)
School enrollment	-3.05**	-4.43***	-5.35***	-9.61***
(no = 0, yes = 1)	(1.03)	(1.24)	(0.78)	(1.04)
Employment[2]	3.47***	3.71**	3.50***	-0.13
(not employed = 0, employed = 1)	(0.83)	(1.18)	(0.67)	(1.19)
Ethnicity	0.72	2.38	1.01	0.75
(han = 1, others = 0)	(1.19)	(1.52)	(1.13)	(1.99)
Party member	4.02*	-0.11	1.46	0.39
(yes = 1, no = 1)	(2.05)	(0.79)	(1.42)	(2.20)
Rural residence	3.64***	-0.33	0.14	-0.98
(urban = 0, rural = 1)	(0.72)	(0.78)	(0.58)	(0.72)
Person-Years	3,664	2,788	9,981	6,485

***Note*:** *$p < .05$; **$p < .01$; ***$p < .001$ (two-tailed tests).

Table 6. Estimates of household asset ownership for first marriage, Average Marginal Effects (%) from discrete-time logistic regression.

	Urban *hukou*		Rural *hukou*	
	Men	Women	Men	Women
Predictors				
Household home ownership	0.58	-0.04	1.70***	-0.04
(more than one = 1, others = 0)	(0.80)	(1.01)	(0.48)	(1.08)
Household car ownership	4.02**	1.22	4.34***	4.43**
(yes = 1, no = 0)	(1.38)	(1.11)	(0.64)	(1.40)
Household savings account ownership	0.14	0.50	0.52	2.19*
(more than 10,000 =1, others = 0)	(0.67)	(1.26)	(0.30)	(0.91)
Household financial asset ownership	-0.57	-1.19	-2.31*	- 3.17
(yes = 1, no = 0)	(0.89)	(0.66)	(1.02)	(1.75)
Covariates				
Annual household income (logged)	0.21	-0.56	-0.11	0.42
	(0.31)	(0.37)	(0.12)	(0.30)
Age	12.10***	14.11***	7.42***	7.38***
	(1.75)	(3.17)	(1.14)	(1.46)
Age2	-0.21***	-0.25***	-0.14***	-0.14***
	(0.03)	(0.06)	(0.02)	(0.03)
Education				
(ref=elementary school and below)				
Middle school	0.98	0.31	-0.11	-0.06
	(3.06)	(4.28)	(0.48)	(1.35)
High school	1.17	-0.58	-0.48	0.62
	(2.99)	(2.79)	(0.69)	(1.42)
College and above	-0.08	-0.99	0.18	-1.43
	(2.94)	(2.40)	(0.66)	(1.99)
School enrollment	-2.92**	-4.51***	-5.02***	-9.41***
(no = 0, yes = 1)	(1.08)	(1.19)	(0.70)	(0.97)
Employment[2]	3.64***	3.74**	3.35***	-0.11
(not employed = 0, employed = 1)	(0.84)	(1.21)	(0.62)	(1.14)
Ethnicity	0.93	0.24	0.96	0.78
(han = 1, others = 0)	(1.17)	(1.53)	(1.11)	(2.00)
Party member	4.16	0.10	1.33	0.52
(yes = 1, no = 1)	(2.20)	(0.83)	(1.30)	(2.29)
Rural residence	3.66***	-0.45	0.11	-0.84

(urban = 0, rural = 1)	(0.68)	(0.84)		(0.49)	(0.76)
Person-Years	3,664	2,788		9,981	6,485

***Note*:** *$p < .05$; **$p < .01$; ***$p < .001$ (two-tailed tests).

Table 7. Estimates of household asset value for first marriage Average Marginal Effects (%) from discrete time logistic regression.

	Urban *hukou*		Rural *hukou*	
	Men	Women	Men	Women
Predictors				
Household home value (logged)	0.09	0.08	0.14*	0.01
	(0.07)	(0.11)	(0.06)	(0.10)
Household durable asset value (logged)	0.62	0.41***	0.88***	0.97**
	(0.32)	(0.12)	(0.12)	(0.31)
Household saving value (logged)	-0.07	-0.04	-0.01	0.17*
	(0.07)	(0.10)	(0.04)	(0.07)
Household financial asset value (logged)	-0.08	-0.12	-0.20	-0.39
	(0.09)	(0.08)	(0.16)	(0.20)
Covariates				
Log Annual Household Income (logged)	0.26	-0.53	-0.09	0.32
	(0.30)	(0.35)	(0.14)	(0.23)
Age	11.97***	13.95***	7.40***	7.26***
	(1.66)	(3.06)	(1.16)	(1.44)
Age2	-0.21***	-0.25***	-0.14***	-0.14***
	(0.03)	(0.06)	(0.02)	(0.03)
Education				
(ref. = elementary school and below)				
Middle school	1.08	0.41	-0.24	-0.18
	(2.91)	(4.28)	(0.51)	(1.35)
High school	1.35	-0.59	-0.65	0.34
	(2.89)	(2.77)	(0.66)	(1.43)
College and above	0.13	-0.91	-0.03	-1.53
	(2.87)	(2.36)	(0.65)	(2.10)
School enrollment	-2.94**	-4.50***	-5.23***	-9.36***
(no = 0, yes = 1)	1.14	(1.23)	(0.73)	(1.02)
Employment[2]	3.35***	3.38***	3.22***	-0.46
(not employed = 0, employed = 1)	(0.85)	(1.24)	(0.67)	(1.19)
Ethnicity	0.90	2.23	1.02	0.37
(han = 1, others = 0)	(1.07)	(1.59)	(1.11)	(2.00)
Party member	3.94	-0.00	1.41	0.61
(yes = 1, no = 1)	(2.12)	(0.80)	(1.35)	(2.17)

Rural residence	3.35***	-0.71		-0.08	-0.84
(urban = 0, rural = 1)	(0.77)	(0.86)		(0.50)	(0.78)
Person-Years	3,664	2,788		9,981	6,485

***Note*: *$p < .05$; **$p < .01$; ***$p < .001$ (two-tailed tests).

Table 8. Gender and rural-urban differences in the Average Marginal Effects (%) of household assets for first marriage, from discrete time logistic regression.

	Gender Differences		Urban-Rural Differences	
	Urban men -Urban women	Rural men -Rural women	Urban men - Rural men	Urban women -Rural women
Total asset value				
Household total asset value	0.43	0.10	-0.45	-0.78*
(logged)	(0.31)	(0.26)	(0.47)	(0.32)
Household asset ownership				
Household home ownership[1]	0.62	1.74	-1.12	-0.00
(more than one = 1, others = 0)	(1.18)	(1.30)	(1.04)	(1.84)
Household car ownership	2.79*	-0.10	-0.32	-3.21
(yes = 1, no = 0)	(1.40)	(1.37)	(1.55)	(1.82)
Household savings account ownership	-0.36	-1.68	-0.38	-1.70
(more than 10,000 =1, others =0)	(1.36)	(0.91)	(0.68)	(1.54)
Household financial asset ownership	0.62	0.86	1.74	1.98
(yes = 1, no = 0)	(1.15)	(1.90)	(1.49)	(1.82)
Household asset value				
Household home value	0.00	0.13*	-0.06	0.06
(logged)	(0.16)	(0.06)	(0.10)	(0.14)
Household durable asset value	0.20	-0.09	-0.26	-0.56
(logged)	(0.28)	(0.31)	(0.34)	(0.28)
Household saving value	-0.00	-0.18**	-0.06	-0.21
(logged)	(0.11)	(0.06)	(0.08)	(0.13)
Household financial asset value	0.04	0.20	0.11	0.27
(logged)	(0.12)	(0.23)	(0.20)	(0.20)
Covariates	Yes	Yes	Yes	Yes

***Note*:** *$p < .05$; **$p < .01$; ***$p < .001$ (two-tailed tests).

CHAPTER IV Cohabitation Dissolution and Psychological Distress Among Young Adults: The Role of Parenthood and Gender

Introduction

Cohabitation has become a normative context for contemporary young adults' first union experience (Manning, Brown, and Payne 2014). More than half of recent cohorts cohabited as the first union (Copen, Daniels, and Mosher 2013). However, cohabitation is generally a short-lived experience with a high dissolution rate (Eickmeyer 2018; Eickmeyer and Manning 2018). Even though some cohabitations transition into marriage, many cohabitations eventually dissolve (Eickmeyer 2018), which can be a traumatic experience for young adults. The instability of cohabitation creates a crucial new opportunity to better understand the consequences of potentially traumatic experiences—intimate relationship dissolution—for the psychological distress of young adults. Moreover, as cohabitation becomes a normative experience, non-marital childbearing is at the highest level ever in the U.S. (over 40% in 2010). Over 58% of those events occur within cohabitation (Curtin 2014; Finer and Zolna 2014). Prior studies have found that parenthood is associated with increased psychological distress, especially when parenthood is outside of marriage (Evenson and Simon 2005; Koropeckyj-Cox, Pienta, and Brown 2007; Mckenzie and Carter 2013; Simon and Caputo 2018). In the present study, we integrate research on cohabitation dissolution and non-marital parenthood, and investigate how parenthood interacts with cohabitation dissolution to influence the psychological distress of young adults.

Relationship dissolution and parenthood are gendered experiences (Chodorow 1999; Gove 1972; Nomaguchi and Milkie 2003, 2020). Theoretically, in a social context with women's roles in relationships potentially different than men's roles, women may endure differential declines in psychological well-being than men after relationship dissolution (Aseltine and Kessler 1993; Marks and Lambert 1998; Simon and Marcussen 1999). Thus, we are likely to observe that increases in psychological distress after cohabitation dissolution differ by gender. As gender equality within and outside the home has been improved in recent decades (Williams 2003), we are likely to observe no gender difference after cohabitation dissolution. Moreover, parenthood is also a gendered experience because a mother's parental roles and responsibilities are often more demanding and costly (Nomaguchi and Milkie 2003, 2020). Therefore, when relationship dissolution accompanies parenthood, we may observe that parenthood moderates the negative consequences of relationship dissolution differently by gender.

Moreover, with high rates of dissolution for contemporary young adults, cohabitation can begin in adolescence and occur repeatedly across young adulthood (Eickmeyer 2018; Zhang and Ang 2020). Cohabitation dissolution may have different psychological consequences depending on when it occurs in young adulthood (George 1993, 2013). Similarly, the transition to parenthood may take place during young adulthood and thus may moderate the consequences of cohabitation dissolution contingent on timing. The timing of these events is important because both cohabitation and parenthood may have different meanings for adults at different time points during young adulthood, and adults may accumulate different experiences or resources in response to them. To guide the investigation of these complexities we use a life course framework to examine the time-

varying associations between cohabitation dissolution, parenthood, and psychological distress during young adulthood.

In this study, we use nationally representative longitudinal data, the National Longitudinal Survey of Youth 1997 (NLSY97), and growth curve models to explore several related aspects of the associations between cohabitation dissolution, parenthood, and psychological distress within a life course framework. Specifically, we addressed the following research questions. First, is cohabitation dissolution differently associated with distress for men and women? Second, does parenthood strengthen the positive association between cohabitation dissolution and distress? Third, does the moderating effects of parenthood differ by gender? Fourth, how does the link between cohabitation dissolution and its interaction with parenthood vary across young adulthood? Careful empirical examination of these issues greatly advances our understanding of the family life dynamics that shape psychological distress.

Background

Cohabitation Dissolution, Gender, and Distress

Cohabitation dissolution, as a stressful life event, may result in acute and even chronic stress, increasing the risk of adverse emotional, behavioral, and health outcomes (Pearlin 1989). Recent empirical studies based on panel data document that the dissolution of cohabitation among young adults is associated with increased depressive symptoms and declines in life well-being (Kamp Dush 2013; Rhoades et al. 2011). However, much is still unknown about the gendered nature of these experiences or their relationship with parenthood.

Relationship dissolution has long been considered a gendered experience. The

integration of the social stress model and theories of gendered socialization and social roles provides insights into the gendered consequences of intimate relationship dissolution. The social stress model understands intimate relationship dissolution as a stressful life event, resulting in both acute and chronic stress (Amato 2010; Aseltine and Kessler 1993). The subsequent decline in well-being after intimate relationship dissolution results from both the loss of resources associated with relationships (e.g., financial benefits, social support, and health regulation) and the stress induced by this transition (see Amato 2000, for more details).

Socialization theories argue that women place more value than men on intimate relationships from childhood to adulthood due to gendered socialization. Intimate relationships are thus more crucial for women's self-identity, self-conception, and mental health (Chodorow 1999; Simon, Eder, and Evans 1992; Thorne 1993). Consequently, intimate relationship dissolution may lead to higher levels of imbalance in self-identity and self-conception among women, as compared to men.

Social role theories argue that intimate relationships are more disadvantageous for women's mental health due to the greater demands and lower rewards of women's social roles within relationships (Aneshensel, Frerichs, and Clark 1981; Gove 1972; Gove and Tudor 1973). For instance, women often assume primary responsibility for family care and shoulder more housework than men (Raley, Bianchi, and Wang 2012; Ruppanner, Perales, and Baxter 2019). Women are more likely to drop out of the labor market to meet the demands of family responsibilities than men. Those who remain in the labor market may cut back to part-time employment, take less demanding jobs, choose occupations that are more family-friendly, or pass up promotions, all of which affect their wage trajectories and

career development. Women thus are more likely to suffer the loss of financial benefits associated with intimate relationships and to experience financial and childcare burden after relationship dissolution. Consequently, women may endure more declines in psychological well-being than men after relationship dissolution.

Equally important for understanding gender differences in response to stress or trauma is the possibility that men and women may have different types of psychological responses. Using a single measure of mental health may distort the observed gender difference in mental health consequences of an event such as relationship dissolution (Horwitz, White, and Howell-White 1996). The emotional socialization hypothesis states that women and men may manifest emotion in different ways due to gendered socialization processes (Gordon 1981; Pollak and Thoits 1989). Women may learn to express distress through internalizing psychological responses (e.g., depression and anxiety), while men may learn to manifest distress through externalizing psychological responses (e.g., antisocial behavior and substance abuse) (Aneshensel, Rutter, and Lachenbruch 1991; Horwitz et al. 1996). Consistent with the emotional socialization hypothesis, some empirical evidence suggests that gender differences in response to intimate relationship transitions involve distinct expressions of distress (Simon 2002; Simon and Barrett 2010). However, it is also possible that gender differences in response to stress and trauma are negligible. A growing number of studies have challenged the emotional socialization hypothesis and suggest that women do not substitute internalizing problems for externalizing problems when encountering stressful life events (e.g., Hill and Needham 2013). The evidence for gender differences in response to stress is inconsistent within and across empirical studies (Aneshensel 1992; Slopen et al. 2011). To address the possibility that men and women may

have gendered responses to stress, we examine two different measures of expressions of distress in this study, one drawing on internalizing symptoms (e.g., depression) and one on externalizing symptoms (e.g., binge drinking), in order to capture potential variation in the expression of consequences of cohabitation dissolution.

Empirical evidence regarding gendered consequences of intimate relationship dissolution on mental health has been inconsistent. The majority of studies conducted in the 1990s show that divorce is worse for women's mental health than for men's (Aseltine and Kessler 1993; Lillard and Waite 1995; Marks and Lambert 1998; Simon and Marcussen 1999). However, since the 2000s, accumulating evidence has found few and even no gender differences (Strohschein et al. 2005; Williams 2003). Scholars explained this new finding in terms of the shifts in women's roles in the direction of gender equality improvement both within and outside the home (Williams 2003).

Compared to the many empirical studies on marital dissolution, there are few studies on cohabitation dissolution (for examples, see [Kamp Dush 2013] and [Rhoades et al. 2011]). Even though cohabitation shares many similarities with marriage, it is also different from marriage in some crucial ways, especially in terms of timing, long-term commitment, income pooling, and integration into partners' families (Sassler and Miller 2017; Smock 2000; Stanley et al. 2006). For the young cohorts examined in this study, cohabitation is more common and at a higher risk of dissolution and happens much earlier in the life course than marriage (Eickmeyer 2018; Zhang and Ang 2020).[17] Compared to marriage,

[17] We separated cohabitation dissolution from marital dissolution for the studied young adults for two reasons directly related to the NLSY97 birth cohorts. First, cohabitation and cohabitation dissolution are much more common and occur much earlier than marriage and marital dissolution in the NLSY97 cohorts (N = 8876). Only approximately 15% (n = 1301) of young adults transitioned directly into the first marriage without any cohabitation experiences, and among them 25% had ever divorced (n = 330). Young adults who choose to cohabit as the first union tend to be slightly more liberal, less religious, and more supportive of egalitarian gender roles and nontraditional family roles than young adults who choose to marry directly (Clarkberg et al. 1995; Lye and Waldron 1997; Thornton et al. 1992). Those who married

cohabitation often involves lower levels of income pooling and integration into partners' families (Addo 2017; Eickmeyer, Manning, and Brown 2019; Thornton, Axinn, and Xie 2008). These lower levels of economic and social integration may reduce financial and social network dependence on partners, especially for young women. Moreover, young adults who choose to cohabit as their first union tend to be slightly more liberal, less religious, and more supportive of egalitarian gender roles and nontraditional family roles than young adults who choose to marry without prior cohabitation (Clarkberg, Stolzenberg, and Waite 1995; Lye and Waldron 1997; Thornton, Axinn, and Hill 1992). Cohabitation dissolution thus probably creates fewer gender differences in the loss of resources and the level of stress, which may lead to small or even no gender differences in the consequences of cohabitation dissolution for psychological distress. However, there are also researchers who discovered that cohabiting women might be more disadvantaged than married women when the union ends because the former lack equivalent legal options to recoup the investment they put into their relationships (Bowman 2004). Considering the high prevalence of cohabitation and the significant differences between cohabitation and marriage for these young cohorts, it is crucial to examine *whether the increase of distress after cohabitation dissolution differs by gender (Hypothesis 1).*

Cohabitation Dissolution, Parenthood, and Distress

As cohabitation has become a common experience among young adults, non-marital

directly thus are a more selective group of young adults than those who did not. Conflating marital dissolution of this selective group of young adults with cohabitation dissolution of the others may have the potential to overestimate the negative consequence of relationship dissolution and its potential gender differences. Second, there are young adults who cohabited first and then transitioned into marriage (36%; n = 3151), and among them 25% had ever divorced (n = 779). These young adults had their marriage/marital dissolution after cohabitation/cohabitation dissolution. Combining marital dissolution of these young adults with cohabitation dissolution has the potential to conflate relationship dissolutions that occurred at different time points. Because these types of people are included in our analytic samples, we included an indicator for marriage in our models.

childbearing has also been rising rapidly. In 2010, the proportion of all births in the U.S. to unmarried women reached its highest level ever—over 40% (CDC/NCHC 2014). Non-marital births are increasingly likely to occur within cohabiting unions—rising from 41% of recent births in 2002 to 58% in 2006-2010—and over 50% of them are unintended (Curtin 2014; Finer and Zolna 2014).

Prior research repeatedly shows that parenthood is associated with increased distress. Studies have found that parents report higher levels of distress than their childless counterparts (e.g., Evenson and Simon 2005; Koropeckyj-Cox, Pienta, and Brown 2007; Mckenzie and Carter 2013; Simon and Caputo 2018). Scholars speculate that this is because the emotional rewards derived from parenthood are overshadowed by the rising emotional, social, and economic burdens associated with parenthood (Umberson and Gove 1989). Parenthood within cohabiting relationships is associated with more distress than within marriage (Evenson and Simon 2005; Nomaguchi and Milkie 2003). This may be because parents in cohabiting relationships may lack sufficient financial, social, or emotional support relative to their married counterparts (Ishizuka 2018; Sassler and Miller 2017). During in-depth interviews, cohabitors reported that financial readiness and marriage are ideal prerequisites for parenthood within cohabiting unions (Sassler and Miller 2017). However, many cohabitors had children without these two prerequisites satisfied (Sassler and Cunningham 2008; Sassler and Miller 2017).

Unfortunately, the overlap of parenthood with cohabitation dissolution may make the situation even worse. Research shows that transitions into and out of relationships are associated with increased parenting stress (Beck et al. 2010; Cooper et al. 2009). Studies also demonstrate that single parenthood is related to a higher level of depression than

parenthood in unions (Evenson and Simon 2005; Meier et al. 2016; Nomaguchi and Milkie 2003). In this vein, we hypothesize that *parenthood will strengthen the positive association between cohabitation dissolution and distress (Hypothesis 2).*

Parenthood is also a gendered experience. Parental roles of mothers are more demanding and costly than those of fathers because mothers are often primary caretakers in childrearing and are more likely to reduce participation in or withdraw from the labor market to meet childcare needs (Aneshensel, Frerichs, and Clark 1981; Raley, Bianchi, and Wang 2012). Moreover, the salience of parental roles is thought to be stronger for women than men; women thus are more sensitive to both parenting strains and parenting rewards (Mulford and Salisbury 1964). Though many studies have documented gender differences in the consequences of single parenthood for mental health outcomes (e.g., Evenson and Simon 2005; Keizer, Dykstra, and Poortman 2010; Mckenzie and Carter 2013), few studies have explicitly examined gender differences in the moderating effects of the presence of children on relationship dissolution. One empirical study suggests that for women without young children, marital dissolution has fewer negative consequences for psychological well-being, as compared to women with young children (Williams and Dunne-Bryant 2006). However, they did not find a similar moderating effect among men. But the findings of this study are limited to the context of marital relationships. As cohabitation and marriage experiences diverge in the U.S. (McLanahan 2004; McLanahan and Jacobsen 2015; Raley and Kuo 2016), young adults who choose marriage and have children within marriage are quite different from those who choose long-term or serial cohabitations and have children within cohabitation, in terms of socioeconomic status, race-ethnicity, and attitudes toward cohabitation, marriage, and family (Clarkberg et al. 1995; Lye and

Waldron 1997; Thornton et al. 1992). Those who choose to become parents within cohabitation are on average in more disadvantaged and precarious socioeconomic circumstances than those who choose to become parents within marriage (McLanahan 2004). Therefore, it is necessary to explicitly examine *whether the moderating effects of parenthood on the link between cohabitation dissolution and mental distress are stronger for women than for men (Hypothesis 3).*

The Time-varying Association of Cohabitation Dissolution and Parenthood with Distress

To understand the influences of cohabitation dissolution on mental health outcomes and its overlap with parenthood experiences, we need to consider the timing of those important life events from a life course perspective, considering how they evolve over the course of young adulthood (Elder, Johnson, and Crosnoe 2003; George 2013). Cohabitation dissolution and its interaction with parenthood may affect individuals differently depending on when they occur in young adulthood (George 1993) because their antecedents, consequences, and behavioral patterns vary according to their timing (Elder, Johnson, and Crosnoe 2003).

According to the life course perspective, multiple factors influence how the timing (age) of life events impacts individuals, including the developmental process of growing older and the varying social roles individual occupy at different ages. An increase in age can reflect a rising level of psychological maturity and pragmatic life expertise. Adults in midlife might be more psychologically resilient than younger adults and thus better equipped to navigate life transitions. Compared with younger adults, middle-aged adults might have more coping experiences and strategies to rely on in the face of cohabitation

dissolution, which can help buffer its negative impact. *Therefore, the increased distress associated with cohabitation dissolution may decrease with age (Hypothesis 4a).*

However, age can also locate people within different social expectations. Young adults in their late teens and early 20s often cohabit for economic reasons or convenience (Raley, Crissey, and Muller 2007). In contrast, individuals in their mid to late 20s or early 30s may cohabit as a trial for marriage or as an alternative to marriage (Guzzo 2014). The dissolution of cohabitation in the early 20s is closer to a romantic relationship breakup, while the dissolution of cohabitation in the late 20s or early 30s may indicate a failure of transition from cohabitation into marriage. Compared with adults in their early 20s, adults in their late 20s or early 30s may have a mental health disadvantage in the face of cohabitation dissolution because their cohabiting relationships share more dimensions of integration. They are more likely to be socially and economically interdependent (Manning and Smock 2002; Sassler and Miller 2017; Smock, Manning, and Porter 2005); consequently, cohabitation dissolution engenders more loss of economic resources and social networks. Thus, as a competing hypothesis for Hypothesis 4a, *the increased distress associated with cohabitation dissolution may increase with age (Hypothesis 4b).*

Additionally, compared to middle-aged adults, younger adults are less likely to be financially and psychologically prepared for a cohabitation dissolution with the presence of children. This may be because an early transition into parenthood is associated with truncated educational and work opportunities (Hofferth, Reid, and Mott 2001), and young adults may lack coping strategies and experiences that equip them to handle the demanding roles of a parent. *Thus, the positive moderating effects of parenthood on the increased distress associated with cohabitation dissolution may decrease over the life course*

(Hypothesis 5).

Data and Methods

Data

We conducted analyses using the National Longitudinal Survey of Youth 1997 (NLSY97), a nationally representative, longitudinal dataset initiated in 1997 and collected on an annual (biennial after 2011) basis. The respondents were born between 1980 and 1984, and they were 30 to 36 at the time of the 2015–2016 interview. In round one, 8984 individuals were initially interviewed, and nearly 80% (7103) of the round-one respondents were interviewed in the 2015–2016 interview. The NLSY97 gathered detailed monthly cohabitation and marital history information between 1994 and 2016. Measures of depressive symptoms were collected in 2000, 2002, 2004, 2006, 2008, 2010, and 2015. Information on the quantity and frequency of alcohol consumption (in the past 30 days prior to the interview) was collected annually between 1997 and 2015. Because depressive symptoms and binge drinking indicators were collected in different waves, this study utilized seven waves of data between 2000 and 2015 (N=8729, person-years=51173) to construct an analytic sample for depressive symptoms and fourteen waves of data between 1999 and 2015 (N=8449, person-years=84563) to construct an analytic sample for binge drinking behaviors.

Analytic Sample

Next, we explain the criteria for constructing our final analytic samples. First, only those who experienced cohabitation are exposed to the risk of cohabitation dissolution; thus, we restricted our respondents to those who had at least one cohabitation experience. We removed the person-years prior to the first cohabitation. If respondents had no cohabitation

experiences at all, none of their person-years were included. This step dropped 3464 persons (person-years=26759) and 3333 persons (person-years=44429) from the analytic samples of depressive symptoms and binge drinking behaviors, respectively. Second, because our study only compares person-years in cohabitation dissolution with person-years in cohabitation, we further excluded person-years after the first marriage. This step removed 652 persons (person-years=9282) and 427 persons (person-years=15710) from the analytic samples of depressive symptoms and binge drinking behaviors, respectively. Third, we excluded respondents who were mixed race due to a small number of cases. This step removed 47 persons (person-years=143) and 47 persons (person-years=247) from the analytic samples of depressive symptoms and binge drinking behaviors, respectively. Fourth, we removed observations with any missing values across all variables (less than 14% of respondents). The final sample for depressive symptoms is 4082 (person-years=12151), and for binge drinking behaviors it is 4009 (person-years=19715).

Measures

Depressive Symptoms. The NLSY97 used a five-item short version of the Mental Health Inventory (MHI5) (Veit and Ware 1983) to measure depressive symptoms. Respondents reported the frequency in the past month of feeling nervous, calm and peaceful, downhearted and blue, happy, or so down in dumps that nothing could cheer them up. Respondents reported their feelings based on a four-point scale: all of the time, most of the time, some of the time, and none of the time. We combined information from these five items and calculated the MHI-5 score according to the guidance of the Multiple Sclerosis Quality of Life Inventory Manual (National Multiple Sclerosis Society 1997, p. 29). We weighed the five items separately by their frequencies, summed them into a composite

index, and transformed it into an index ranging between 0 and 100, with higher scores indicating more depressive symptoms. The Cronbach's alpha is over 0.98 for each wave, and the mean across seven waves is 0.99.

Binge Drinking. We used an indicator of binge drinking to measure alcohol use. The definition of binge drinking is the consumption of five or more drinks on one occasion (Wechsler and Austin 1998; Wechsler and Nelson 2001). Binge drinking is detrimental to health, generally results in acute impairment, and is responsible for a significant amount of alcohol-related death (Chikritzhs et al. 2001). The NLSY97 collected a measure of binge drinking, which consisted of a question about the number of days in the past month that respondents had five or more drinks per day. The indicator ranges between 0 and 30.[18] 2

Cohabitation Dissolution. One significant feature of the NLSY97 is that it collected detailed histories of cohabitation and marriage from respondents. We summarized a yearly cohabitation history (1997–2015) based on monthly cohabitation status collected from 1994 to 2016 (268 months) and its corresponding monthly partner ID. By aggregating monthly information into yearly information, we matched the unit of analysis for the measure of cohabitation dissolution to that for psychological distress (gathered annually). The measure we created to track cohabitation dissolution between 1997 and 2015 captures the status of respondents experiencing the dissolution of cohabitation (i.e., years after the exit of a cohabiting relationship and before the entry into a new relationship). The cohabitation dissolution indicator is a time-varying variable that tracks all the dissolutions of cohabitation before marriage from 1997 to 2015.

[18] Given that the distribution of the binge drinking indicator is often zero-inflated and over-dispersed, we also ran zero-inflated negative binomial models with random effects for binge drinking behaviors as a robustness check. Results are consistent with the current findings (available upon request).

Moreover, as young adult cohabiting relationships become normative and volatile, serial cohabitations have become more common, and more young adults have experienced multiple cohabitation dissolutions during young adulthood (Cohen and Manning 2010; Lichter, Turner, and Sassler 2010). Higher-order cohabitation dissolutions are more likely to happen later than lower-order cohabitation dissolutions. Because this positive correlation between timing and order may confound how the effects of cohabitation dissolution vary with age, we need to control for the order of cohabitation dissolution. Thus, we created a time-varying variable that distinguishes the person-years in cohabitation from the person-years in cohabitation dissolution, as well as the order of cohabitation dissolution (cohabitation, first cohabitation dissolution, second-order or higher cohabitation dissolution).

Parenthood. The NLSY97 gathered yearly information on ID, birth date, death date, and residence of biological or adopted children from 1994 to 2015. We created a time-varying measure—the presence of children of respondents—to capture the parenthood status of respondents. This time-varying measure is a categorical variable with two categories: having children versus having no children. The former includes two scenarios: having children residing in the household or having children residing in the other biological parent's household. We excluded scenarios where all of the respondents' children were deceased, adopted out, or in foster care because the loss of children may increase psychological distress through a different mechanism than parenthood related stress. We also examined an alternative coding schema: children residing in the household versus children not residing in the household. The results are robust to different coding methods. Additionally, because the children of these young cohorts were relatively young (the mean

age of the youngest child is approximately 4.5 with a standard deviation of 3.3), we did not further stratify this time-varying measure by the age of the children.

Duration of Cohabitation. We constructed a time-varying measure of cohabitation duration based on monthly cohabitation status between 1997 and 2015. This indicator started from the month when respondents initiated their cohabitation, accumulated by month, achieved the maximum value at the end of one particular cohabitation experience, and remained constant till respondents initiated another cohabitation experience with another person or entered into marriage. If respondents initiated another cohabitation, the indicator started from zero and repeated the process described above again. Then we aggregated the monthly information to yearly information and created a time-varying measure of cohabitation duration (transformed in years) between 1997 and 2015.

Covariates. All analyses controlled for demographic covariates: a time-varying measure for age (in years) and a categorical measure for race/ethnicity (Black [reference], Hispanic, and Non-Hispanic White). In order to control for socioeconomic status, we included time-varying measures for the highest education degree, employment status, and individual annual income. The highest education degree is a categorical measure (none, GED, high school diploma [reference], and some college and above). The employment status of respondents was "the number of weeks respondents worked any civilian jobs in the past calendar year," with one or more weeks coded as employed (unemployed is the reference group). Individual annual income was a summed measure from a variety of sources, including wages and salaries, and income from farms and businesses. We imputed the top 2 percent of incomes from a Pareto distribution for the individual annual income because the top 2 percent of incomes were truncated in the NLSY97 surveys (see Bloome, Dyer,

and Zhou 2018 for more details). We transformed income into constant dollars in 2016 for comparability across survey years. Then we log-transformed individual annual income to adjust for the skewed distribution. We controlled for baseline depressive symptoms (in 2000) and binge drinking behaviors (in 1997) in our analyses because they may be associated with the growth rate of the age trajectories of psychological distress (Headey 2006). Additionally, we also controlled for subsequent marriage outcomes for the respondents because it may confound the link between cohabitation dissolution and psychological distress.

Analytic Strategy

Growth curve models (Fitzmaurice, Laird, and Ware 2012), a form of generalized mixed models, are appropriate for studying between-person differences in within-person changes (Curran, Obeidat, and Losardo 2010). This analytical strategy allows us to utilize unbalanced data, where each respondent may contribute to one or more observation waves. We nested person-year observations (level-1) within individual subjects (level-2). Age was used as the "growth" variable, indicating changes over young adulthood (age 17 to 35), and was centered at age 17, which is the starting age of our analytical sample. As previous studies have reported a nonlinear relationship between psychological distress and age (Bell 2014; Mirowsky and Ross 1992), we included a squared term for age (i.e., the slope for the age variable) in all models.

The basic models are as follows:

Level-1 Model:

$$y_{ti} = \beta_{0i} + \beta_{1i}(Age_{ti} - 16) + \beta_{2i}(Age_{ti} - 16)^2 + \sum_{q=1}^{q=k} \beta_{3q} TVC_{qti} + e_{ti} \quad (1)$$

Level-2 Model:

$$\beta_{0i} = \gamma_{00} + \gamma_{01} Dissolution_{it} + \sum_{b=3}^{b=k} \gamma_{0b} TIC_i + u_{0i} \quad (2)$$

$$\beta_{1i} = \gamma_{10} + \gamma_{11} Dissolution_{it} + \sum_{b=3}^{b=k} \gamma_{1b} TIC_i + u_{1i} \quad (3)$$

The level-1 model characterizes within-individual changes over age. The outcome variable y_ti for person i at age t is modeled as a function of the linear and quadratic terms of age. The coefficients β_0i, β_1i, and β_2i represent the intercept, the linear growth rate, and the quadratic growth rate with age, respectively. The level-2 model captures the heterogeneity in growth rate across individuals and examines how cohabitation dissolution shapes individual psychological distress trajectories. The coefficients β_0i and β_1i are further modeled as functions of individual attributes, with their coefficients denoted as γ.

We adjusted the psychological distress trajectories by controlling for time-varying covariates (TVC) in the level-1 model and time-invariant covariates (TIC) in the level-2 model in both the intercept (β_0i) and the slope (β_1i). The baseline depressive symptoms and binge drinking behaviors were controlled in the slope because they may influence the growth rate of psychological distress.[19] The effects of the time-varying covariates normally bypass the growth predictors and directly influence the repeated outcomes modeled in the level-1 model (McCoach 2010). The random within-person error term e_ti is assumed to be normally distributed and the individual residual random errors u_0i and u_1i have a multivariate normal distribution.

$$(u_0, u_1)^T = \mathcal{N}(\boldsymbol{\mu}, \boldsymbol{\Sigma})$$

$$\boldsymbol{\mu} = (\mu_0, \mu_1), \boldsymbol{\Sigma} = \begin{bmatrix} u_0^2 & \rho u_0 u_1 \\ \rho u_0 u_1 & u_1^2 \end{bmatrix}$$

[19] We did not include baseline psychological distress in the intercept model at the second level because it is already approximately reflected by the intercept of psychological distress at age 17.

We first analyzed the association between cohabitation dissolution and psychological distress for men and women separately, controlling for covariates. We then examined gender differences in the association between cohabitation dissolution and psychological distress in a total sample of men and women (for *Hypothesis 1*). Based on basic models, we updated the models as follows. In the second level, both the intercept and slope are modeled as a function of cohabitation dissolution, gender, and an interaction between cohabitation dissolution and gender.

$$\beta_{0i} = \gamma_{00} + \gamma_{01} Dissolution_{it} + \gamma_{02} Gender_i + \gamma_{03} Dissolution_{it} * Gender_i + \sum_{b=4}^{b=k} \gamma_{0b} TIC_i + u_{0i} \quad (4)$$

$$\beta_{1i} = \gamma_{10} + \gamma_{11} Dissolution_{it} + \gamma_{12} Gender_i + \gamma_{13} Dissolution_{it} * Gender_i + \sum_{b=4}^{b=k} \gamma_{1b} TIC_i + u_{1i} \quad (5)$$

We then investigated the moderating effects of parenthood on cohabitation dissolution among men and women, controlling for covariates (for *Hypothesis 2*). In the second level, both the intercept and slope are modeled as a function of cohabitation dissolution, parenthood, and an interaction between cohabitation dissolution and parenthood. The updated models are as follows.

$$\beta_{0i} = \gamma_{00} + \gamma_{01} Dissolution_{it} + \gamma_{02} Parenthood_{it} + \gamma_{03} Dissolution_{it} * Parenthood_{it} + \sum_{b=4}^{b=k} \gamma_{0b} TIC_i + u_{0i} \quad (6)$$

$$\beta_{1i} = \gamma_{10} + \gamma_{11} Dissolution_{it} + \gamma_{12} Parenthood_{it} + \gamma_{13} Dissolution_{it} * Parenthood_{it} + \sum_{b=4}^{b=k} \gamma_{1b} TIC_i + u_{1i} \quad (7)$$

We then examined gender differences in parenthood's moderating effects on the association between cohabitation dissolution and psychological distress in a total sample

of men and women (for *Hypothesis 3*). In the second level, both the intercept and slope are modeled as a function of cohabitation dissolution, gender, parenthood, and interactions between the three measures. The updated models are as follows.

$$\begin{aligned}\beta_{1i} = {} & \gamma_{10} + \gamma_{11} Dissolution_{it} + \gamma_{12} Parenthood_{it} + \gamma_{13} Gender_i \\ & + \gamma_{14} Dissolution_{it} * Parenthood_{it} + \gamma_{15} Dissolution_{it} * Gender_i \\ & + \gamma_{16} Parenthood_{it} * Gender_i + \gamma_{17} Parenthood_{it} * Dissolution_{it} * Gender_i \\ & + \sum_{b=8}^{b=k} \gamma_{1b} TIC_i + u_{1i} \end{aligned} \tag{8}$$

$$\begin{aligned}\beta_{1i} = {} & \gamma_{10} + \gamma_{11} Dissolution_{it} + \gamma_{12} Parenthood_{it} + \gamma_{13} Gender_i \\ & + \gamma_{14} Dissolution_{it} * Parenthood_{it} + \gamma_{15} Dissolution_{it} * Gender_i \\ & + \gamma_{16} Parenthood_{it} * Gender_i + \gamma_{17} Parenthood_{it} * Dissolution_{it} * Gender_i \\ & + \sum_{b=8}^{b=k} \gamma_{1b} TIC_i + u_{1i} \end{aligned} \tag{9}$$

To test *Hypothesis 4a* and *4b*, we can draw on results from the basic models (see Equations 1, 2, and 3). To test *Hypothesis 5*, we can draw on results from the same models used to test *Hypothesis 2* (see Equations 6 and 7). We will return to explicitly discuss the details in the result section.

Results

Descriptive Results

Table 9 presents weighted descriptive statistics for men and women at the level of person-years for samples of depressive symptoms and binge drinking behaviors. The mean of MHI-5 scores is 29.29 for men and 34.49 for women, with women having a significantly higher level than men. The mean of bring drinking behaviors is 3.50 days for men and 1.79 days for women, with men having a significantly higher level than women. By age 35, approximately 57% of men and 62% of women ever had at least one cohabitation dissolution experience. For both samples, among our observed person-years,

approximately half of the person-years are lived in the status of post-cohabitation dissolution, with women having a higher percentage of person-years in higher-order dissolutions than men. For both samples, the mean of cohabitation duration is around two years, with women having a slightly longer duration than men. By age 35, 38% of men and 45% of women ever had children in the depressive symptom sample, and 36% of men and 40% of women ever had children in the binge drinking behavior sample. The gender distribution is quite even in the two analytic samples, and the mean age is around 25 years old for both men and women. For the two samples, Non-Hispanic Whites account for around 67%–73% of the respondents, and Blacks account for 15%–19%. High school degree accounts for the highest percentage of person-years, followed by No degree and Some college and above, with women having significantly higher educational attainment than men. Men were also more likely to be employed and had a higher level of annual income than women did for both samples. Additionally, by age 35, approximately 46% of men and 52% of women had ever married in the depressive symptom sample, and 49% of men and 56% of women had ever married in the binge drinking behavior sample.

Dissolution of Cohabitation, Gender, and Age Trajectories of Psychological Distress

Table 10 demonstrates that the dissolution of cohabitation is associated with increased depressive symptoms, and repeated cohabitation dissolutions are associated with even more distress. For men, first cohabitation dissolution increases MHI-5 scores by 3.14 units ($p < 0.01$), and the dissolution of the second (or higher-order) cohabitation raises MHI-5 scores by 4.68 units ($p < 0.01$). However, these associations are not time-varying across the life course for men because the coefficients for their slopes are not significant. For women, results in Model 2 indicate that the first cohabitation dissolution is positively

associated with distress (b = 1.36; albeit not significant) and the second-order (or higher) cohabitation dissolution increases distress by 6.74 units ($p < 0.001$). The results of Model 2 provide some evidence for *Hypothesis 4a* that the increase in distress associated with cohabitation dissolution decreases over the life course. The negative slope for the second (or higher-order) cohabitation dissolutions indicates that the association between cohabitation dissolution and depression weakens by 0.38 units (two-tailed test: $p < 0.05$; one-tailed test: $p < 0.01$), with a year increase in age.

To examine whether these findings are different between men and women, we included the interaction between cohabitation dissolution and gender in both the intercept and the slope of the growth curve model based on the total sample of men and women (Model 3). The interaction results indicate no significant gender differences in the positive association between cohabitation dissolution and depressive symptoms. *Hypothesis 1* that the increase in distress after cohabitation dissolution differs by gender is thus not supported for the outcome of depressive symptoms.

Table 11 shows that first cohabitation dissolution is not significantly associated with increased binge drinking behaviors. However, repeated cohabitation dissolutions are associated with a significant increase in binge drinking behaviors, but only among men. For men, the dissolution of the first cohabitation is negatively associated with binge drinking behaviors (albeit not significant), while the dissolution of the second (or higher-order) cohabitation is associated with a significantly higher level of binge drinking behaviors (0.81 days; $p < 0.05$). For women, results in Model 2 imply that neither the first cohabitation dissolution nor the second-order (or higher) cohabitation dissolution significantly increases binge drinking behaviors (see coefficients in the Slope columns).

The results for binge drinking behaviors should be cautiously interpreted. Young men often have a higher risk of binge drinking behaviors than young women (Grucza, Norberg, and Bierut 2009) because drinking is a common social practice, especially among young men. Thus, the increased binge drinking behaviors after cohabitation dissolution can also be interpreted as a strategy for coping with a traumatic event (rather than a negative mental health outcome). Additionally, these associations are not time-varying across the life course for either men or women, indicating that *Hypothesis 4a* and *4b* are not supported for the outcome of binge drinking behaviors.

The interaction results in Model 3 indicate significant gender differences in the positive association between the second (or higher-order) cohabitation dissolution and binge drinking behaviors. If respondents are women, the positive association between higher-order cohabitation dissolution and binge drinking behaviors is reduced by 1.01 days (two-tailed test: $p < 0.05$; one-tailed test: $p < 0.01$). Unlike for the outcome of depressive symptoms, we find evidence of gender differences in responses to cohabitation dissolution for the outcome of binge drinking behaviors. Thus, *Hypothesis 1* that the increase in distress after cohabitation dissolution differs by gender is supported by evidence for the outcome of binge drinking behaviors.

To facilitate the interpretation of the results, in Figure 5, we display the trajectories of predicted MHI-5 scores and binge drinking behaviors by orders of cohabitation dissolutions across the life course. Across the life course, women have a higher level of depressive symptoms than men, while men have a higher level of binge drinking behaviors than women. For depressive symptoms, men and women who are in the second-order or higher cohabitation dissolutions have the highest level of depressive symptoms, followed

by those who are in the first cohabitation dissolutions, and then by those who were in cohabitation. Moreover, the differences between the three trajectories are significantly converging as women age, which indicate that the association between cohabitation dissolution and depressive symptoms is stronger earlier in the life course than later in the life course among women. For binge drinking behaviors, men who are in the second-order or higher cohabitation dissolution phases have the highest level of binge drinking behaviors, followed by those who are in the first cohabitation dissolution phase or still cohabitating. Women who are in cohabitation dissolution phase have a higher level of binge drinking behaviors than those who are cohabitating, though this difference is not significant.

We want to highlight several interesting findings related to the covariates. Baseline depressive symptoms and binge drinking behaviors are significantly positively related to the slope of distress trajectories ($b = 0.03$, $p < 0.001$). Among these cohabiting young adults, having a child is significantly associated with an increase in depressive symptoms for men ($b = 1.35$, $p < 0.05$) and significantly associated with a decrease in binge drinking behaviors for women ($b = -0.69$, $p < 0.001$).[20] The duration of cohabitation is significantly negatively associated with depressive symptoms and binge drinking behaviors, which indicates that longer cohabitations are associated with better mental health than shorter cohabitations.[21] In addition, men and women who did not graduate from high school have a significantly higher level of depressive symptoms than their counterparts who did; men with a college

[20] Among the limited number of studies on cohabitors, Woo and Raley (2005) found that having a child is associated with remarkable declines in social integration and self-esteem for both women and men and increases in depression for women. Woo and Raley (2005) used the National Survey of Families and Households (1992–1994) and focused on a much older cohort than early millennials and the types of mental distress under consideration differ from this current study. These differences may be factors in the slightly incongruent results from the current study.

[21] We also examined the interaction between cohabitation duration and cohabitation dissolution and did not find any significant interaction effects.

degree have a significantly lower level of binge drinking behaviors than their counterparts with only a high school degree. Because less educated young adults are more likely to transition into cohabitation earlier in young adulthood and are at a higher risk of cohabitation dissolution than their more highly-educated counterparts (Lichter and Qian 2008; Sassler, Michelmore, and Qian 2018), we examined the interactions between education and cohabitation dissolution. Yet, we do not identify significant moderating effects of education in this study (see Table S9, S10, and S11 in the Appendix).

Cohabitation Dissolution, Parenthood, and Age Trajectories of Psychological Distress

Table 12 presents how parenthood moderates the link between cohabitation dissolution and depressive symptoms. For men, having a child within cohabitation is significantly associated with increased depressive symptoms ($b = 4.93$, $p < 0.01$), but we do not observe a significant moderating effect of children's presence on cohabitation dissolution. In comparison, there is no increase in depressive symptoms when women have a child within cohabitation, but having a child will increase depressive symptoms when this cohabitation dissolves. The results for Model 2 show that compared to those who do not have children, the presence of children strengthens the positive association between cohabitation dissolution and distress by 3.60 units (two-tailed test: $p < 0.05$; one-tailed test: $p < 0.01$). Moreover, this positive moderating effect significantly attenuates by 0.45 units (two-tailed test: $p < 0.05$; one-tailed test: $p < 0.01$) with each year increase of age. Therefore, *Hypothesis 2* and *Hypothesis 5* are supported for the outcome of depressive symptoms among women.

We tested gender differences in the moderating effects of the presence of children on the positive association between cohabitation dissolution and depressive symptoms. The

interaction result indicates that the main effects of the presence of children on distress significantly differ by gender; however, there are no significant gender differences in the moderation of the presence of children on the link between cohabitation dissolution and depressive symptoms. Thus, *Hypothesis* 3 is not supported for the outcome of depressive symptoms.

For binge drinking behaviors, we do not observe a significant moderating effect of parenthood on the relationship between cohabitation dissolution and binge drinking behaviors for men or women. We include the results in the appendix (see Table S7). As we noted before, binge drinking is a common social practice, especially among young men. Moreover, prior studies indicate a significant reduction of binge drinking behaviors among young adults after transitions into parenthood (Leonard and Eiden 2007). The negative association between parenthood and binge drinking behaviors may, to some extent, explain why we have not observed a significant moderating effect of parenthood. Thus, we do not find evidence to support *Hypothesis 2*, *Hypothesis 3*, and *Hypothesis 5* for the outcome of binge drinking behaviors.

Discussion

The high prevalence of cohabitation as a first union, the short-lived nature of those relationships, and the rising prevalence of childbearing within those relationships have a strong potential to contribute to the psychological distress of contemporary young adults. Using panel data collected over 16 years, this study addresses the potential negative consequences of cohabitation dissolution and its overlap with parenthood on psychological distress among contemporary young men and women from a life course perspective. A key strength of this analysis is the use of a longitudinal design with consistent measurements

of depressive symptoms and binge drinking behaviors across young adulthood, enabling the estimation of psychological distress trajectories over 16 years. Growth curve models were utilized to model these trajectories and test the study hypotheses.

Building upon prior research, this study sheds light on cohabitation dissolution and reveals that cohabitation dissolution is associated with increased depressive symptoms for both men and women and increased binge drinking behaviors for men. Moreover, this study also reveals that higher-order cohabitation dissolution is more detrimental to mental health than the first cohabitation dissolution, especially for depressive symptoms among women and binge drinking behaviors among men. This finding implies that the cumulative consequences of multiple cohabitation dissolutions are more harmful to psychological distress than a single dissolution.

This study obtains novel evidence regarding gender differences in the consequences of cohabitation dissolution for psychological distress. We find that cohabitation dissolution is associated with increased depressive symptoms for both men and women, but no significant gender difference has been observed. Yet, cohabitation dissolution (second-order or higher) is associated with a significant increase in binge drinking behaviors for men, but not for women; significant gender difference has been found. We reveal that women exhibit similar increases in depressive symptoms but fewer increases in binge drinking behaviors after cohabitation dissolution, as compared to men. Hypothesis 1 is thus partially supported regarding the outcome of binge drinking behaviors.

These findings suggest that gender differences in the consequences of cohabitation dissolution for psychological distress may be contingent upon the types of psychological distress under consideration. Both men and women may respond to cohabitation

dissolution through internalizing symptoms, but men are also likely to respond to cohabitation dissolution through externalizing symptoms. Therefore, men and women may not express distress only through a certain type of symptoms pertinent to their gender. Associating gender with a dichotomous division of symptoms (i.e., externalizing symptoms versus internalizing symptoms) may be too simplistic to accurately represent gender differences in responses to the dissolution of intimate relationships.

This study also reveals that the presence of children strengthens the positive association between cohabitation dissolution and depressive symptoms for women. In comparison, the presence of children within cohabitation has no significant moderating effects on the positive association between cohabitation dissolution and depressive symptoms for men. However, we do not find evidence for significant gender differences in these moderating effects for depressive symptoms. Moreover, we find no significant moderating effects of parenthood on the link between cohabitation dissolution and binge drinking behaviors for either men or women. We find evidence to support the hypothesis that parenthood will strengthen the positive association between cohabitation dissolution and distress (Hypothesis 2) for the outcome of depressive symptoms among women; but we find no evidence to support the hypothesis that there would be gendered moderating effects of parenthood (Hypothesis 3).

Gender differences in the moderating effects of parenthood on cohabitation dissolution may be due to gendered parenthood experiences for men and women. Within intensive intimate relationships, women often put more time and efforts into unpaid housework, daily childcare, and even cognitive labor (e.g., the anticipation and monitoring work) than men do (Daminger 2019; Ruppanner et al. 2019; Sassler and Miller 2017).

Compared to men, women are also more likely to reduce participation in or withdraw from the labor market to meet childcare demands, and those who remain in the labor market may face competing work and family responsibilities (Craig 2006; Raley, Bianchi, and Wang 2012; Stone 2007). Consequently, women are more likely to suffer from financial or childcare strains after cohabitation dissolution. That may explain why parenthood adds more depressive symptoms when cohabitation dissolves for women but not for men. Additionally, because women are less likely to respond to cohabitation dissolution through binge drinking behaviors, we do not observe similar moderating effects of parenthood for the outcome of binge drinking behaviors.

Moreover, this study finds some evidence that the association between cohabitation dissolution and depressive symptoms is heterogeneous over young adulthood. As young women age, they become more psychologically resilient when faced with higher-order cohabitation dissolutions, which partially supports Hypothesis 4a. Compared with younger adults, middle-aged adults may have developed better coping strategies for cohabitation dissolution, reducing the potential negative influences. We also find that the moderating effects of parenthood on cohabitation dissolution lessen over the course of young adulthood for the outcome of depressive symptoms among women (Hypothesis 5). Younger adults may lack sufficient financial and psychological preparation in the face of a cohabitation dissolution with the presence of children because early parenthood may indicate truncated educational and working opportunities (Hofferth et al. 2001).

Our findings should be interpreted in light of several limitations. First, the latest wave of the NLSY97 for psychological distress was collected in 2015, so the majority of the 1980–1984 cohorts have not finished their marital and cohabitation experiences. Therefore,

we cannot compare the influences of the cohabitation dissolution over a more extended age range. Using the later waves of the NLSY97, future scholars will have the means to track the trajectories of mental health across more of the life course. A second limitation is that our study focuses on only one direction of the potentially bidirectional association between mental health and cohabitation experiences. Prior research demonstrates that people might be selected into or out of cohabitation based on their mental health (e.g., Duncan, Wilkerson, and England 2006). Our approach includes baseline psychological distress in modeling the slope of psychological distress trajectories, which to some extent controls for the non-time varying unobserved heterogeneity. Nevertheless, given the association that we document here, models of how mental health predicts subsequent cohabitation dissolution remain an important priority for future research, though this is beyond the scope of the current study. Third, though we have detailed the differences between cohabitation and marriage that may lead to different consequences of the dissolution of these two forms of intimate, co-residential relationship, our contribution is this new focus on the dissolution of cohabitation. However, as a supplementary analysis, we have added an examination of the negative consequences of marital dissolution on depressive symptoms and binge drinking behaviors among those who had ever married, using the same data source for comparability (see Table S8).[22] Fourth, the NLSY97 did not collect information about relationship quality and marriage plans within cohabitation; we thus cannot distinguish outcomes for cohabiting relationships varying in quality. A prior study examining the effects of dissolution of nonmarital romantic relationships on mental health found that having had plans for

[22] We have examined the consequences of marital dissolution for psychological distress (see Table S2), though we did not include the results in the main text. Marital dissolution increased the level of depressive symptoms twice as much as cohabitation dissolution did (see Table S2). However, we did not observe significant gender differences in the consequences of marital dissolution for either depressive symptoms or binge drinking behaviors.

marriage is associated with more significant reductions in life satisfaction, and higher relationship quality is related to smaller declines in life satisfaction following a dissolution (Rhoades et al. 2011). Investigation of moderation of marital plans and relationship quality should be a high priority for future studies. Fifth, this study does not distinguish non-heterosexual cohabitation from heterosexual cohabitation. There is a growing number of studies suggesting that the link between marriage and psychological distress operates differently for heterosexual and non-heterosexual couples (Garcia and Umberson 2019) because same-sex couples adhere less strongly to gendered cultural scripts and are more egalitarian than different-sex couples (Reczek and Umberson 2016; Thomeer, Umberson, and Reczek 2020). However, among those in their first cohabitation in the NLSY97 cohorts, only 2.58% were in non-heterosexual relationships. The small sample size may not be sufficient for statistical analyses. To examine how gender shapes the impact of parenthood and cohabitation dissolution on mental health, future studies need to consider the heterogeneity of sexuality if data is available and feasible.

Despite these limitations, this study provides new insights into the complex associations between family dynamics and psychological distress. Contemporary young adults are living in a social setting where marriage has been delayed and cohabitation has taken the place of marriage as the most common context for the first union during young adulthood (Manning, Brown, and Payne 2014; Smock and Schwartz 2020). Moreover, childbearing has gradually been separated from marriage. Parenthood has its own meanings and purpose for individual lives, independent of marriage (Edin and Kefalas 2011; Edin and Nelson 2013). These changes have provided new opportunities for us to better understand how family dynamics shape the psychological distress of contemporary young

adults and whether men and women respond differently. Overall, the findings in this study make important contributions to understanding of cohabitating relationships, parenthood, and distress from a life course perspective. Results reported here also motivate future work in this area to focus on several understudied research topics: (1) consequences of serial cohabitation and its influence on mental health inequality, (2) heterogeneous effects of different types of parenthood on mental health and its contribution to gender differences in mental health, (3) the influences of complex intertwinement between cohabitation and parenthood (e.g., multiple partner fertility) on mental health.

References

Addo, Fenaba R. 2017. "Financial Integration and Relationship Transitions of Young Adult Cohabiters." *Journal of Family and Economic Issues* 38(1):84–99. doi:10.1007/s10834-016-9490-7

Amato, Paul R. 2010. "Research on Divorce: Continuing Trends and New Developments." *Journal of Marriage and Family* 72(3):650–66. doi: 10.1111/j.1741-3737.2010.00723.x

Aneshensel, Carol S. 1992. "Social Stress: Theory and Research." *Annual Review of Sociology* 18(1):15–38. https://doi.org/10.1146/annurev.so.18.080192.000311

Aneshensel, Carol S., Ralph R. Frerichs, and Virginia A. Clark. 1981. "Family Roles and Sex Differences in Depression." *Journal of Health and Social Behavior* 22(4):379–393. https://www.jstor.org/stable/2136679

Aneshensel, Carol S., Carolyn M. Rutter, and Peter A. Lachenbruch. 1991. "Social Structure, Stress, and Mental Health: Competing Conceptual and Analytic Models." *American Sociological Review* 56(2):166–178. https://www.jstor.org/stable/2095777

Aseltine Jr, Robert H., and Ronald C. Kessler. 1993. "Marital Disruption and Depression in a Community Sample." *Journal of Health and Social Behavior* 34(3):237–251. https://www.jstor.org/stable/2137205

Beck, Audrey N., Carey E. Cooper, Sara Mclanahan, and Jeanne Brooks-Gunn. 2010. "Partnership Transitions and Maternal Parenting." *Journal of Marriage and Family* 72(2):219–33. doi: 10.1111/j.1741-3737.2010.00695.x

Bell, Andrew. 2014. "Life-Course and Cohort Trajectories of Mental Health in the UK, 1991–2008 – A Multilevel Age–Period–Cohort Analysis." *Social Science & Medicine* 120:21–30. doi: 10.1016/j.socscimed.2014.09.008

Bloome, Deirdre, Shauna Dyer, and Xiang Zhou. 2018. "Educational Inequality, Educational Expansion, and Intergenerational Income Persistence in the United States." *American Sociological Review* 83(6):1215–53. doi: 10.1177/0003122418809374

Bowman, Cynthia Grant. 2004. "Legal Treatment of Cohabitation in the United States*." *Law & Policy* 26(1):119–51. doi: 10.1111/j.0265-8240.2004.00165.x

Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System. 2014. Accessed data at: https://www.cdc.gov/nchs/data/databriefs/db162_table.pdf.

Chikritzhs, Tanya, H. Jonas, Tim Stockwell, P. Heale, and P. Dietze. 2001. "Mortality and Life-Years Lost Due to Alcohol: A Comparison of Acute and Chronic Causes." *Medical Journal of Australia* 174(6):281–284. doi: 10.1371/journal.pone.0051923

Chodorow, Nancy J. 1999. *The Reproduction of Mothering: Psychoanalysis and the Sociology of Gender*. Berkeley, California: University of California Press.

Clarkberg, Marin, Ross M. Stolzenberg, and Linda J. Waite. 1995. "Attitudes, Values, and Entrance into Cohabitational versus Marital Unions." *Social Forces* 74(2):609–32. https://heinonline.org/HOL/P?h=hein.journals/josf74&i=625

Cohen, Jessica, and Wendy Manning. 2010. "The Relationship Context of Premarital Serial Cohabitation." *Social Science Research* 39(5):766–76. doi: 10.1016/j.ssresearch.2010.04.011

Cooper, Carey E., Sara S. McLanahan, Sarah O. Meadows, and Jeanne Brooks-Gunn. 2009. "Family Structure Transitions and Maternal Parenting Stress." *Journal of Marriage and Family* 71(3):558–74. doi: 10.1017/S0033291707001493

Copen, Casey E., Kimberly Daniels, and William D. Mosher. 2013. *First Premarital Cohabitation in the United States: 2006-2010 National Survey of Family Growth*. 64. Hyattsville, MD: National Center for Health Statistics. https://www.cdc.gov/nchs/data/nhsr/nhsr064.pdf

Craig, Lyn. 2006. "Does Father Care Mean Fathers Share?: A Comparison of How Mothers and Fathers in Intact Families Spend Time with Children." *Gender & Society* 20(2):259–81. doi: 10.1177/0891243205285212

Curran, Patrick J., Khawla Obeidat, and Diane Losardo. 2010. "Twelve Frequently Asked Questions About Growth Curve Modeling." *Journal of Cognition and Development* 11(2):121–36. doi: 10.1080/15248371003699969

Curtin, Sally C. 2014. *Recent Declines in Nonmarital Childbearing in the United States*. US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics. https://www.cdc.gov/nchs/data/databriefs/db162.pdf

Daminger, Allison. 2019. "The Cognitive Dimension of Household Labor." *American Sociological Review* 84(4):609–33. doi: 10.1177/0003122419859007

Duncan, Greg J., Bessie Wilkerson, and Paula England. 2006. "Cleaning up Their Act: The Effects of Marriage and Cohabitation on Licit and Illicit Drug Use." *Demography* 43(4):691–710. doi: 10.1353/dem.2006.0032

Edin, Kathryn, and Maria. Kefalas. 2005. *Promises I Can Keep Why Poor Women Put Motherhood before Marriage*. Berkeley, California: University of California Press.

Edin, Kathryn, and Timothy Nelson. 2013. *Doing the Best I Can Fatherhood in the Inner City*. Berkeley, California: University of California Press.

Eickmeyer, Kasey J. 2018. "Cohort Trends in Union Dissolution During Young Adulthood: Cohort Trends in Union Dissolution." *Journal of Marriage and Family* 81(3):760–70. doi: 10.1111/jomf.12552

Eickmeyer, Kasey J., and Wendy D. Manning. 2018. "Serial Cohabitation in Young Adulthood: Baby Boomers to Millennials: Serial Cohabitation in Young Adulthood." *Journal of Marriage and Family* 80(4):826–40. doi: 10.1111/jomf.12495

Eickmeyer, Kasey J., Wendy D. Manning, and Susan L. Brown. 2019. "What's Mine Is Ours? Income Pooling in American Families." *Journal of Marriage and Family* 81(4):968–78. doi: 10.1111/jomf.12565

Elder, Glen H., Monica Kirkpatrick Johnson, and Robert Crosnoe. 2003. "The Emergence and Development of Life Course Theory." Pp. 3–19 in *Handbook of the life course*, edited by J. T. Mortimer and M. J. Shanahan. New York: Kluwer Academic/Plenum Publishers.

Evenson, Ranae J., and Robin W. Simon. 2005. "Clarifying the Relationship Between Parenthood and Depression." *Journal of Health and Social Behavior* 46(4):341–58. doi: 10.1177/002214650504600403

Finer, Lawrence B., and Mia R. Zolna. 2014. "Shifts in Intended and Unintended Pregnancies in the United States, 2001–2008." *American Journal of Public Health* 104(S1):S43–48. doi: 10.2105/AJPH.2013.301416

Fitzmaurice, Garrett M., Nan M. Laird, and James H. Ware. 2012. *Applied Longitudinal Analysis*. Second edition. Hoboken, New Jersey: Wiley.

Garcia, Michael A., and Debra Umberson. 2019. "Marital Strain and Psychological Distress in Same-Sex and Different-Sex Couples." *Journal of Marriage and Family* 81(5):1253–68. doi: 10.1111/jomf.12582

George, Linda K. 1993. "Sociological Perspectives on Life Transitions." *Annual Review of Sociology* 19(1):353–373. doi: 10.1146/annurev.so.19.080193.002033

George, Linda K. 2013. "Life-Course Perspectives on Mental Health." Pp. 585–602 in *Handbook of the sociology of mental health*, edited by C. S. Aneshensel, J. C. Phelan, and A. Bierman. Dordrecht: Springer Netherlands.

Gove, Walter R. 1972. “The Relationship between Sex Roles, Marital Status, and Mental Illness.” *Social Forces* 51(1):34–44. https://www.jstor.org/stable/2576129

Gove, Walter R., and Jeannette F. Tudor. 1973. “Adult Sex Roles and Mental Illness.” *American Journal of Sociology* 78(4):812–835. doi: 10.1086/225404.

Grucza, Richard A., Karen E. Norberg, and Laura J. Bierut. 2009. “Binge Drinking Among Youths and Young Adults in the United States: 1979–2006.” *Journal of the American Academy of Child & Adolescent Psychiatry* 48(7):692–702. https://doi.org/10.1097/CHI.0b013e3181a2b32f

Guzzo, Karen Benjamin. 2014. “Trends in Cohabitation Outcomes: Compositional Changes and Engagement Among Never-Married Young Adults: Trends in Cohabitation Outcomes.” *Journal of Marriage and Family* 76(4):826–42. doi: 10.1111/10.1111/jomf.12123

Headey, Bruce. 2006. “Subjective Well-Being: Revisions to Dynamic Equilibrium Theory Using National Panel Data and Panel Regression Methods.” *Social Indicators Research* 79(3):369–403. doi: 10.1007/s11205-005-5381-2

Hill, Terrence D., and Belinda L. Needham. 2013. “Rethinking Gender and Mental Health: A Critical Analysis of Three Propositions.” *Social Science & Medicine* 92:83–91. doi: 10.1016/j.socscimed.2013.05.025

Hofferth, Sandra L., Lori Reid, and Frank L. Mott. 2001. “The Effects of Early Childbearing on Schooling over Time.” *Family Planning Perspectives* 33(6):259–67. doi: 10.2307/3030193

Horwitz, Allan V., Helene Raskin White, and Sandra Howell-White. 1996. “The Use of Multiple Outcomes in Stress Research: A Case Study of Gender Differences in Responses to Marital Dissolution.” *Journal of Health and Social Behavior* 37(3):278–91. https://www.jstor.org/stable/2137297

Ishizuka, Patrick. 2018. “The Economic Foundations of Cohabiting Couples’ Union Transitions.” *Demography* 55(2):535–57. doi: 10.1007/s13524-018-0651-1

Kamp Dush, Claire M. 2013. “Marital and Cohabitation Dissolution and Parental Depressive Symptoms in Fragile Families.” *Journal of Marriage and Family* 75(1):91–109. doi: 10.1111/j.1741-3737.2012.01020.x

Keizer, Renske, Pearl A. Dykstra, and Anne-Rigt Poortman. 2010. “The Transition to Parenthood and Well-Being: The Impact of Partner Status and Work Hour Transitions.” *Journal of Family Psychology* 24(4):429–38. doi: 10.1111/10.1037/a0020414

Koropeckyj-Cox, Tanya, Amy Mehraban Pienta, and Tyson H. Brown. 2007. “Women of the 1950s and the ‘Normative’ Life Course: The Implications of Childlessness, Fertility Timing, and Marital Status for Psychological Well-Being in Late Midlife.” *The International Journal of Aging and Human Development* 64(4):299–330. doi: 10.2190/8PTL-P745-58U1-3330

Lichter, Daniel T., and Zhenchao Qian. 2008. “Serial Cohabitation and the Marital Life Course.” *Journal of Marriage and Family* 70(4):861–78. doi: 10.1111/j.1741-3737.2008.00532.x

Lichter, Daniel T., Richard N. Turner, and Sharon Sassler. 2010. “National Estimates of the Rise in Serial Cohabitation.” *Social Science Research* 39(5):754–765. doi: 10.1016/j.ssresearch.2009.11.002

Lillard, Lee A., and Linda J. Waite. 1995. “’Til Death Do Us Part: Marital Disruption and Mortality.” *American Journal of Sociology* 100(5):1131–56. doi: 10.1086/230634

Leonard, Kenneth E., and Rina D. Eiden. 2007. “Marital and Family Processes in the Context of Alcohol Use and Alcohol Disorders.” *Annual Review of Clinical Psychology* 3(1):285–310. doi: 10.1146/annurev.clinpsy.3.022806.091424

Lye, Diane N., and Ingrid Waldron. 1997. “Attitudes toward Cohabitation, Family, and Gender Roles: Relationships to Values and Political Ideology.” *Sociological Perspectives* 40(2):199–225. doi: 10.2307/1389522

McCoach, D. Betsy. 2010. “Using Time-Varying Covariates in Multilevel Growth Models.” *Frontiers in Psychology* 1(17):1–12. doi: 10.3389/fpsyg.2010.00017

Manning, Wendy D., Susan L. Brown, and Krista K. Payne. 2014. “Two Decades of Stability and Change in Age at First Union Formation.” *Journal of Marriage and Family* 76(2):247–260. doi: 10.1111/jomf.12090

Manning, Wendy D., and Pamela J. Smock. 2002. “First Comes Cohabitation and Then Comes Marriage? A Research Note.” *Journal of Family Issues* 23(8):1065–1087. doi: 10.1177/019251302237303

Marks, Nadine F., and James David Lambert. 1998. “Marital Status Continuity and Change among Young and Midlife Adults: Longitudinal Effects on Psychological Well-Being.” *Journal of Family Issues* 19(6):652–686. doi: 10.1177/019251398019006001

McCoach, D. Betsy. 2010. “Using Time-Varying Covariates in Multilevel Growth Models.” *Frontiers in Psychology* 1(17):1–12. doi: 10.3389/fpsyg.2010.00017

Mckenzie, Sarah K., and Kristie Carter. 2013. "Does Transition into Parenthood Lead to Changes in Mental Health? Findings from Three Waves of a Population Based Panel Study." *Journal of Epidemiology and Community Health* 67(4):339–45. doi: 10.1136/jech-2012-201765

McLanahan, Sara. 2004. "Diverging Destinies: How Children Are Faring under the Second Demographic Transition." *Demography* 41(4):607–27. doi: 10.1353/dem.2004.0033

McLanahan, Sara, and Wade Jacobsen. 2015. "Diverging Destinies Revisited." Pp. 3–23 in *Families in an Era of Increasing Inequality: Diverging Destinies*, *National Symposium on Family Issues*, edited by P. R. Amato, A. Booth, S. M. McHale, and J. Van Hook. Cham: Springer International Publishing.

Meier, Ann, Kelly Musick, Sarah Flood, and Rachel Dunifon. 2016. "Mothering Experiences: How Single Parenthood and Employment Structure the Emotional Valence of Parenting." *Demography* 53(3):649–74. doi: 10.1007/s13524-016-0474-x

Mirowsky, John, and Catherine E. Ross. 1992. "Age and Depression." *Journal of Health and Social Behavior* 33(3):187–205. https://www.jstor.org/stable/2137349

Mulford, Harold A., and Winfield W. Salisbury. 1964. "Self-Conceptions in a General Population." *The Sociological Quarterly* 5(1):35–46. doi: 10.1111/j.1533-8525.1964.tb02254.x

Nomaguchi, Kei M., and Melissa A. Milkie. 2003. "Costs and Rewards of Children: The Effects of Becoming a Parent on Adults' Lives." *Journal of Marriage and Family* 65(2):356–74. doi: 10.1111/j.1741-3737.2003.00356.x

Nomaguchi, Kei, and Melissa A. Milkie. 2020. "Parenthood and Well-Being: A Decade in Review." *Journal of Marriage and Family* 82(1):198–223. doi: 10.1111/jomf.12646

Pearlin, Leonard I. 1989. "The Sociological Study of Stress." *Journal of Health and Social Behavior* 30(3):241–256. doi: 10.2307/2136956

Pollak, Lauren Harte, and Peggy A. Thoits. 1989. "Processes in Emotional Socialization." *Social Psychology Quarterly* 52(1):22–34. https://www.jstor.org/stable/2786901

Raley, R. Kelly, Sarah Crissey, and Chandra Muller. 2007. "Of Sex and Romance: Late Adolescent Relationships and Young Adult Union Formation." *Journal of Marriage and Family* 69(5):1210–26. doi: 10.1111/j.1741-3737.2007.00442.x

Raley, R. Kelly, and Janet Chen-Lan Kuo. 2016. "Diverging Patterns of Union Transition among Cohabitors by Race-Ethnicity and Education: Trends and Marital Intentions."

53(4):921–35. doi: 10.31235/osf.io/6t3gp

Raley, Sara, Suzanne M. Bianchi, and Wendy Wang. 2012. “When Do Fathers Care? Mothers’ Economic Contribution and Fathers’ Involvement in Child Care.” *American Journal of Sociology* 117(5):1422–59. doi: 10.1086/663354

Reczek, Corinne, and Debra Umberson. 2016. “Greedy Spouse, Needy Parent: The Marital Dynamics of Gay, Lesbian, and Heterosexual Intergenerational Caregivers: Greedy Spouse, Needy Parent.” *Journal of Marriage and Family* 78(4):957–74. doi: 10.1111/jomf.12607

Rhoades, Galena K., Claire M. Kamp Dush, David C. Atkins, Scott M. Stanley, and Howard J. Markman. 2011. “Breaking up Is Hard to Do: The Impact of Unmarried Relationship Dissolution on Mental Health and Life Satisfaction.” *Journal of Family Psychology* 25(3):366. doi: 10.1037/a0023627

Ruppanner, Leah, Francisco Perales, and Janeen Baxter. 2019. “Harried and Unhealthy? Parenthood, Time Pressure, and Mental Health: Parenthood, Time Pressure, and Mental Health.” *Journal of Marriage and Family* 81(2):308–26. doi: 10.1111/jomf.12531

Sassler, Sharon, and Anna Cunningham. 2008. “How Cohabitors View Childbearing.” *Sociological Perspectives* 51(1):3–28. doi: 10.1525/sop.2008.51.1.3

Sassler, Sharon, and Amanda Jayne Miller. 2017. *Cohabitation Nation: Gender, Class, and the Remaking of Relationships*. Oakland, California: University of California Press.

Sassler, Sharon, Katherine Michelmore, and Zhenchao Qian. 2018. “Transitions From Sexual Relationships Into Cohabitation and Beyond.” *Demography* 55(2):511–34. doi: 10.1007/s13524-018-0649-8

Simon, Robin W. 2002. “Revisiting the Relationships among Gender, Marital Status, and Mental Health.” *American Journal of Sociology* 107(4):1065–1096. doi: 10.1086/339225

Simon, Robin W., and Anne E. Barrett. 2010. “Nonmarital Romantic Relationships and Mental Health in Early Adulthood: Does the Association Differ for Women and Men?” *Journal of Health and Social Behavior* 51(2):168–182. doi: 10.1177/0022146510372343

Simon, Robin W., and Jennifer Caputo. 2018. “The Costs and Benefits of Parenthood for Mental and Physical Health in the United States: The Importance of Parenting Stage.” *Society and Mental Health* 9(3):293–315. doi: 10.1177/2156869318786760

Simon, Robin W., Donna Eder, and Cathy Evans. 1992. “The Development of Feeling Norms Underlying Romantic Love among Adolescent Females.” *Social Psychology Quarterly* 55(1):29–46. doi: 10.2307/2786684

Simon, Robin W., and Kristen Marcussen. 1999. "Marital Transitions, Marital Beliefs, and Mental Health." *Journal of Health and Social Behavior* 40(2):111–125. doi: 10.2307/2676367

Slopen, Natalie, David R. Williams, Garrett M. Fitzmaurice, and Stephen E. Gilman. 2011. "Sex, Stressful Life Events, and Adult Onset Depression and Alcohol Dependence: Are Men and Women Equally Vulnerable?" *Social Science & Medicine* 73(4):615–22. doi: 10.1016/j.socscimed.2011.06.022

Smock, Pamela J. 2000. "Cohabitation in the United States: An Appraisal of Research Themes, Findings, and Implications." *Annual Review of Sociology* 26(1):1–20. https://www.jstor.org/stable/223434

Smock, Pamela J., and Christine R. Schwartz. 2020. "The Demography of Families: A Review of Patterns and Change." *Journal of Marriage and Family* 82(1):9–34. doi: 10.1111/jomf.12612

Smock, Pamela J., Wendy D. Manning, and Meredith Porter. 2005. "'Everything's There Except Money': How Money Shapes Decisions to Marry Among Cohabitors." *Journal of Marriage and Family* 67(3):680–96. doi: 10.1111/j.1741-3737.2005.00162.x

Stanley, Scott M., Galena Kline Rhoades, and Howard J. Markman. 2006. "Sliding Versus Deciding: Inertia and the Premarital Cohabitation Effect." *Family Relations* 55(4):499–509. doi: 10.1017/CBO9780511761935.013

Stone, Pamela. 2007. *Opting out? Why Women Really Quit Careers and Head Home*. Berkeley, California: University of California Press.

Strohschein, Lisa, Peggy McDonough, Georges Monette, and Qing Shao. 2005. "Marital Transitions and Mental Health: Are There Gender Differences in the Short-Term Effects of Marital Status Change?" *Social Science & Medicine* 61(11):2293–2303. doi: 10.1111/j.1741-3737.2005.00217.x

The Consortium of Multiple Sclerosis Centers Health Services Research Subcommittee. 1997. "Multiple Sclerosis Quality of Life Inventory: A User's Manual." National Multiple Sclerosis Society. https://www.nationalmssociety.org/NationalMSSociety/media/MSNationalFiles/Brochures/MSQLI_-A-User-s-Manual.pdf

Thomeer, Mieke Beth, Debra Umberson, and Corinne Reczek. 2020. "The Gender-as-Relational Approach for Theorizing About Romantic Relationships of Sexual and Gender Minority Mid- to Later-Life Adults." *Journal of Family Theory & Review* 12(2):220–37. doi: 10.1111/jftr.12368

Thorne, Barrie. 1993. *Gender Play: Girls and Boys in School*. New Brunswick, New Jersey: Rutgers University Press.

Thornton, Arland, William G. Axinn, and Daniel H. Hill. 1992. "Reciprocal Effects of Religiosity, Cohabitation, and Marriage." *American Journal of Sociology* 98(3):628–51. http://www.jstor.org/stable/2781460

Thornton, Arland, William G. Axinn, and Yu Xie. 2008. *Marriage and Cohabitation*. Chicago: University of Chicago Press.

Umberson, Debra, and Walter R. Gove. 1989. "Parenthood and Psychological Well-Being." *Journal of Family Issues* 10(4):440–62. doi: 10.1177/019251389010004002

Veit, Clairice T., and John E. Ware. 1983. "The Structure of Psychological Distress and Well-Being in General Populations." *Journal of Consulting and Clinical Psychology* 51(5):730–42 doi: 10.1037/0022-006X.51.5.730

Wechsler, Henry, and S. Bryn Austin. 1998. "Binge Drinking: The Five/Four Measure." *Journal of Studies on Alcohol* 59(1):122–124. doi: 10.15288/jsa.1998.59.122

Wechsler, Henry, and Toben F. Nelson. 2001. "Binge Drinking and the American College Students: What's Five Drinks?" *Psychology of Addictive Behaviors* 15(4):287. doi: 10.1037/0893-164X.15.4.287

Williams, Kristi. 2003. "Has the Future of Marriage Arrived? A Contemporary Examination of Gender, Marriage, and Psychological Well-Being." *Journal of Health and Social Behavior* 44(4):470–87. doi: 10.2307/1519794

Williams, Kristi, and Alexandra Dunne-Bryant. 2006. "Divorce and Adult Psychological Well-Being: Clarifying the Role of Gender and Child Age." *Journal of Marriage and Family* 68(5):1178–1196. doi: 10.1111/j.1741-3737.2006.00322.x

Woo, Hyeyoung, and R. Kelly Raley. 2005. "A Small Extension to 'Costs and Rewards of Children: The Effects of Becoming a Parent on Adults' Lives.'" *Journal of Marriage and Family* 67(1):216–21. doi: 10.1111/j.0022-2445.2005.00016.x

Zhang, Yang, and Shannon Ang. 2020. "Trajectories of Union Transition in Emerging Adulthood: Socioeconomic Status and Race/Ethnicity Differences in the National Longitudinal Survey of Youth 1997 Cohort." *Journal of Marriage and Family* 82(2):713–32. doi: 10.1111/jomf.12662

Tables and Figures

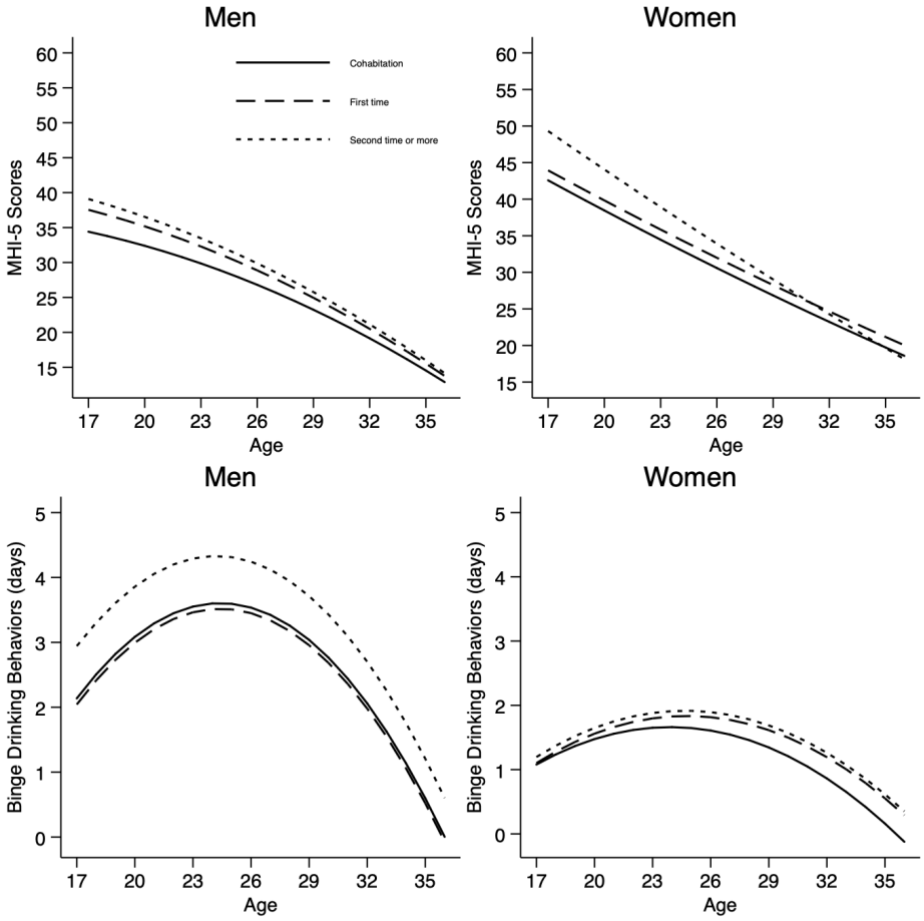

Figure 5. Growth curves for depressive symptoms and binge drinking behaviors at different orders of cohabitation dissolution.

Table 9. Descriptive statistics for analytic samples of depressive symptoms and binge drinking behaviors based on person-year longitudinal data (from ages 17 to 35), standard errors are in paratheses.[a]

	Depressive symptoms			Binge drinking behaviors		
	Men	Women	Difference	Men	Women	Difference
	Mean/%	Mean/%		Mean/%	Mean/%	
MHI-5 scores	29.29 (0.24)	34.49 (0.23)	p<0.001			
Baseline MHI-5 scores	30.06 (0.25)	36.41 (0.23)				
Binge drinking behaviors				3.50 (0.06)	1.79 (0.04)	p<0.001
Baseline binge drinking behaviors				1.82 (0.04)	1.05 (0.03)	
Cohabitation dissolution[b]						
Cohabitation	0.50	0.49	p<0.001	0.50	0.49	p<0.001
First cohabitation dissolution	0.35	0.32		0.35	0.31	
Second-order or higher cohabitation dissolution	0.15	0.19		0.15	0.20	
Having a child[c]	0.29	0.36	p<0.001	0.27	0.32	p<0.001
Duration of cohabitation	2.01 (0.03)	2.16 (0.03)	p<0.001	2.07 (0.02)	2.13 (0.02)	p<0.001
Age	24.90 (0.06)	24.19 (0.06)	p<0.001	25.23 (0.05)	24.35 (0.05)	p<0.001
Race/Ethnicity						
Black	0.19	0.19	N.S.	0.15	0.14	N.S.
Hispanic	0.14	0.13		0.14	0.12	
Non-Hispanic White	0.67	0.68		0.72	0.75	
Highest education degree						
None	0.23	0.22	p<0.001	0.21	0.21	p<0.001
GED	0.14	0.08		0.14	0.07	
High school diploma	0.50	0.52		0.50	0.52	
Some college and above	0.13	0.17		0.16	0.20	
Employed	89.72	88.33	p<0.05	0.91	0.89	p<0.001
Annual individual income (logged)	6.78 (0.07)	5.82 (0.06)	p<0.001	7.22 (0.05)	6.25 (0.05)	p<0.001
Ever married[d]	36.37	42.39	p<0.001	37.58	43.33	p<0.001
N	2,009	2,073		1,959	2,050	
Person-Years	5,672	6,479		9,087	10,628	

Notes:

1. For dichotomous and continuous variables, Wald tests were used to ascertain the p-value of the difference. For categorical variables, Chi-squared tests were used.
2. * p<0.05; ** p<0.01; *** p<0.001 (two-tailed tests).

a. The results are based on person-year longitudinal data (from ages 17 to 35), weighted by NLSY97 baseline weights
b. By age 35, approximately 57% of men and 62% of women ever had at least one cohabitation dissolution experiences for both samples.
c. By age 35, 38% of men and 45% of women ever had children for depressive symptom sample, and 36% of men and 40% of women ever had children for binge drinking behavior sample.
d. By age 35, 46% of men and 52% of women ever married for depressive symptom sample, and 49% of men and 56.% of women ever married for binge drinking behavior sample.

Table 10. Conditional growth curve model estimates of cohabitation dissolution on depressive symptoms, standard errors are in paratheses.

	Men			Women			Total	
	Model1			Model2			Model3	
Fixed Effects	Intercept	Slope		Intercept	Slope		Intercept	Slope
Main Predictors								
Cohabitation dissolution								
(Cohabitation=ref.)								
First dissolution	3.14**	-0.12		1.36	0.00		3.08**	-0.10
	(3.12)	(0.13)		(0.92)	(0.12)		(1.02)	(0.13)
Second-order or higher dissolution	4.68**	-0.18		6.74***	-0.38*		4.93***	-0.20
	(1.53)	(0.17)		(1.24)	(0.15)		(1.51)	(0.17)
Cohabitation dissolution*Women								
(Cohabitation*Women=ref.)								
First dissolution*Women							-1.67	0.08
							(1.36)	(0.17)
Second-order or higher dissolution*Women							1.70	-0.17
							(1.93)	(0.22)
Time-constant Covariates								
Women							5.60***	-0.26*
							(0.93)	(0.12)
Race/ethnicity								
(Non-Black/Non-Hispanic=ref.)								
Black	1.29	-0.21		0.19	-0.21		0.59	-0.19
	(1.24)	(0.15)		(1.19)	(0.14)		(0.86)	(0.10)
Hispanic	-0.56	-0.03		1.73	-0.35*		0.76	-0.21
	(1.37)	(0.16)		(1.25)	(0.16)		(0.92)	(0.11)
Ever married	1.34	-0.27		-0.78	-0.05		0.19	-0.15
	(1.14)	(0.15)		(1.06)	(0.14)		(0.78)	(0.10)
Baseline depressive symptoms	//	0.03***		//	0.03***		//	0.03***
		(0.00)			(0.00)			(0.00)
Time-varying Covariates								
Age	-0.42			-1.23***			-0.73***	

	(0.25)	(0.24)	(0.18)
Age^2	-0.03*	0.07	-0.01
	(0.01)	(0.01)	(0.01)
Having a child	1.35*	0.40	0.79*
	(0.58)	(0.54)	(0.40)
Duration of cohabitation	-0.48***	-0.08	-0.25**
	(0.14)	(0.12)	(0.09)
Highest education degree			
(High school diploma =ref.)			
None	1.42*	1.98**	1.78***
	(0.66)	(0.65)	(0.46)
GED	-1.33	0.98	-0.26
	(0.80)	(0.89)	(0.59)
Some college and above	-0.66	0.17	-0.16
	(0.85)	(0.71)	(0.55)
Employed	-1.69*	-2.36***	-2.12***
	(0.67)	(0.61)	(0.45)
Individual annual income (logged)	-0.01	0.02	0.01
	(0.05)	(0.05)	(0.03)
Intercept	28.67***	36.66***	30.00***
	(1.45)	(1.35)	(1.12)
Random Effects			
Individual level			
Var (Constant)	11.39***	12.13***	12.76***
	(0.65)	(0.54)	(0.11)
Var (Age)	1.20***	1.27***	1.25***
	(0.09)	(0.08)	(0.06)
Var (Constant, Age)	-0.70***	-0.72***	-0.71***
	(0.04)	(0.03)	(0.02)
Person-year level			

Var (Residuals)	12.82***		12.70***		12.76***
	(0.17)		(0.15)		(0.11)
N	2,009		2,073		4,082
Person Years	5,672		6,479		12,151
Log Likelihood	-23,473.03		-26,788.70		-50,273.51

Note: * p<0.05; ** p<0.01; *** p<0.001 (two-tailed tests).

Table 11. Conditional growth curve model estimates of cohabitation dissolution on binge drinking behaviors, standard errors are in paratheses.

	Men			Women			Total	
	Model1			Model2			Model3	
Fixed Effects	Intercept	Slope		Intercept	Slope		Intercept	Slope
Main Predictors								
Cohabitation dissolution								
(Cohabitation=ref.)								
First dissolution	-0.09	0.00		0.02	0.02		-0.13	0.01
	(0.25)	(0.03)		(0.14)	(0.02)		(0.21)	(0.02)
Second-order or higher dissolution	0.81*	-0.01		0.12	0.02		0.96**	-0.02
	(0.38)	(0.04)		(0.19)	(0.02)		(0.31)	(0.03)
Cohabitation dissolution*Women								
(Cohabitation*Women=ref.)								
First dissolution*Women							0.11	0.02
							(0.27)	(0.03)
Second-order or higher dissolution*Women							-1.01*	0.06
							(0.39)	(0.04)
Time-constant Covariates								
Women							-1.50***	-0.01
							(0.19)	(0.02)
Race/ethnicity								
(Non-Black/Non-Hispanic=ref.)								
Black	-2.00***	0.08*		-1.74***	0.11***		-1.95***	0.11***
	(0.35)	(0.03)		(0.22)	(0.02)		(0.20)	(0.02)
Hispanic	-0.50	-0.02		-0.74***	0.04		-0.64***	0.01
	(0.35)	(0.04)		(0.21)	(0.02)		(0.19)	(0.02)
Ever married	-0.51	0.06		-0.55**	0.05**		-0.53***	0.05**
	(0.30)	(0.03)		(0.18)	(0.02)		(0.16)	(0.02)
Baseline drinking behaviors	//	0.01***		//	0.01*		//	0.01***
		(0.00)			(0.00)			(0.00)
Time-varying Covariates								
Age	0.36***			0.11**			0.21***	

	(0.06)	(0.04)	(0.04)
Age^2	-0.03***	-0.01***	-0.02***
	(0.00)	(0.00)	(0.00)
Having a child	-0.10	-0.69***	-0.44***
	(0.16)	(0.10)	(0.09)
Duration of cohabitation	-0.09	-0.01	-0.05*
	(0.04)	(0.02)	(0.02)
Highest education degree			
(High school diploma =ref.)			
None	-0.06	-0.07	-0.05
	(0.20)	(0.12)	(0.11)
GED	-0.13	0.27	0.05
	(0.23)	(0.16)	(0.14)
Some college and above	-0.69	-0.31**	-0.44***
	(0.22)	(0.11)	(0.12)
Employed	0.07	0.10	0.08
	(0.19)	(0.11)	(0.10)
Individual annual income (logged)	0.02	-0.01	0.01
	(0.01)	(0.10)	(0.01)
Intercept	2.85***	2.12***	3.35***
	(0.37)	(0.22)	(0.24)
Random Effects			
Individual level			
Var (Constant)	3.08***	2.16***	2.58***
	(0.16)	(0.08)	(0.09)
Var (Age)	0.16***	0.12***	0.14***
	(0.03)	(0.01)	(0.01)
Var (Constant, Age)	-0.41***	-0.72***	-0.46***
	(0.10)	(0.04)	(0.05)
Person-year level			
Var (Residuals)	4.25***	2.81***	3.55***

	(0.04)		(0.02)		(0.02)
N	1,959		2,050		4,009
Person Years	9,087		10,628		19,715
Log Likelihood	-27,087.62		-27,104.66		-55,119.40

Note: * p<0.05; ** p<0.01; *** p<0.001 (two-tailed tests).

Table 12. Conditional growth curve model estimates of moderating effects of parenthood on cohabitation dissolution (depressive symptoms), standard errors are in paratheses.

	Men		Women		Total	
	Model 1		Model 2		Model3	
Fixed Effects	Intercept	Slope	Intercept	Slope	Intercept	Slope
Main Predictors						
Cohabitation dissolution (No=ref.)						
Yes	3.44**	-0.15	1.45	0.12	3.32**	-0.13
	(1.09)	(0.14)	(1.02)	(0.14)	(1.09)	(0.14)
Having a child	4.93**	-0.49**	-1.52	0.24	4.80**	-0.49**
	(1.65)	(0.19)	(1.41)	(0.18)	(1.60)	(0.18)
Cohabitation dissolution*Having a child	0.03	0.05	3.60*	-0.45*	0.14	0.05
	(2.13)	(0.24)	(1.74)	(0.21)	(2.14)	(0.24)
Cohabitation dissolution*Women					-1.68	0.22
					(1.47)	(0.20)
Having a child*Women					-6.14**	0.71**
					(2.04)	(0.24)
Cohabitation dissolution*Having a child*Women					3.25	-0.48
					(2.75)	(0.32)
Covariates	Yes	Yes	Yes	Yes	Yes	Yes
Random Effects						
Individual level						
Var(Constant)	11.29***		12.31***		11.93***	
	(0.65)		(0.53)		(0.41)	
Var(Age)	1.18***		1.27***		1.24***	
	(0.09)		(0.08)		(0.06)	
Var(Constant, Age)	-0.69***		-0.72***		-0.71***	
	(0.04)		(0.03)		(0.02)	
Person-year level						
Var(Residuals)	12.82***		12.70***		12.75***	

	(0.17)		(0.15)		(0.11)
N	2,009		2,073		4,082
Person Years	5,672		6,479		12,151
Log Likelihood	-23,468.87		-26,798.27		-50,277.68

Notes:

1. For an easier interpretation, we combined first cohabitation dissolution and second order (or higher) cohabitation dissolution into one category.
2. Results in this table are adjusted by covariates—duration of cohabitation, age, age squared, gender, race/ethnicity, highest education degree, employment, individual annual income (logged), ever married, and baseline depressive symptoms.
3. The reference group of cohabitation dissolution refers to person-years in cohabitation.
4. * $p<0.05$; ** $p<0.01$; *** $p<0.001$ (two-tailed tests).

Appendix

Table S. 7. Conditional growth curve model estimates of moderating effects of parenthood on cohabitation dissolution (binge drinking behaviors). standard errors are in paratheses.

	Men			Women			Total	
	Model 1			Model 2			Model3	
Fixed Effects	Intercept	Slope		Intercept	Slope		Intercept	Slope
Main Predictors								
Cohabitation dissolution (No=ref.)								
Yes	-0.07	0.03		-0.01	0.03*		-0.07	0.03
	(0.26)	(0.03)		(0.15)	(0.02)		(0.22)	(0.03)
Having a child	-0.54	0.05		-1.22***	0.07*		-0.16	-0.00
	(0.43)	(0.04)		(0.25)	(0.03)		(0.35)	(0.04)
Cohabitation dissolution*Having a child	0.39	-0.03		0.23	-0.03		0.33	-0.03
	(0.57)	(0.06)		(0.30)	(0.03)		(0.47)	(0.05)
Cohabitation dissolution*Women							0.05	0.01
							(0.28)	(0.04)
Having a child*Women							-1.32**	0.11*
							(0.45)	(0.05)
Cohabitation dissolution*Having a child*Women							-0.13	0.00
							(0.61)	(0.06)
Covariates								
Random Effects								
Individual level								
Var(Constant)	3.07***			2.17***			2.57***	
	(0.16)			(0.08)			(0.09)	
Var(Age)	0.15***			0.12***			0.14***	
	(0.03)			(0.01)			(0.01)	
Var(Constant, Age)	-0.40***			-0.73***			-0.45***	
	(0.10)			(0.04)			(0.06)	
Person-year level								

Var(Residuals)	4.26*** (0.04)		2.81*** (0.02)		3.55*** (0.02)
N	1,959		2,050		4,009
Person Years	9,087		10,628		19,715
Log Likelihood	-27,096.95		-27,101.28		-55,122.14

Notes:

1. For an easier interpretation, we combined first cohabitation dissolution and second order (or higher) cohabitation dissolution into one category.
2. Results in this table are adjusted by covariates—duration of cohabitation, age, age squared, gender, race/ethnicity, and highest education degree, employment, individual annual income (logged), ever married, and baseline depressive symptoms.
3. The reference group of cohabitation dissolution refers to person-years in cohabitation.
4. * $p<0.05$; ** $p<0.01$; *** $p<0.001$ (two-tailed tests).

Table S. 8. Conditional growth curve model estimates of marital dissolution on psychological distress, standard errors are in paratheses.

	Depressive Symptoms					Binge Drinking Behaviors			
	Men		Women			Men		Women	
Fixed Effects	Intercept	Slope	Intercept	Slope		Intercept	Slope	Intercept	Slope
Main Predictors									
Marital dissolution (Marriage=ref.)									
First dissolution	7.18***	-0.40**	4.52***	-0.24		0.24	-0.03	0.11	0.03
	(1.65)	(0.15)	(1.39)	(0.14)		(0.65)	(0.06)	(0.36)	(0.03
Second-order or higher dissolution	-0.89	0.36	9.75*	-0.62		2.00	-0.18	0.56	-0.03
	(9.20)	(0.76)	(5.00)	(0.44)		(3.71)	(0.28)	(1.21)	(0.10)
Covariates	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes
N	1,681		1,978			1,278		1,487	
Person Years	5,278		7,161			3,578		4,505	

Note: * p<0.05; ** p<0.01; *** p<0.001 (two-tailed tests).

Table S. 9. Conditional growth curve model estimates of moderating effects of educational degree on cohabitation dissolution.

	Depressive Symptoms				Binge Drinking Behaviors			
	Men		Women		Men		Women	
Fixed Effects	Intercept	Slope	Intercept	Slope	Intercept	Slope	Intercept	Slope
Main Predictors								
Cohabitation dissolution	3.39**	-0.12	2.17*	0.01	-0.14	0.04	0.08	0.01
(No=ref.)	(1.11)	(0.12)	(0.99)	(0.12)	(0.45)	(0.05)	(0.25)	(0.03)
Yes								
Highest education degree								
(High school diploma =ref.)								
None	1.52		1.53		0.04		-0.24	
	(0.84)		(0.83)		(0.36)		(0.23)	
GED	-1.57		1.56		0.22		0.49	
	(1.07)		(1.23)		(0.44)		(0.31)	
Some college and above	-0.73		0.56		-1.07**		-0.35	
	(1.07)		(0.93)		(0.40)		(0.21)	
Highest education degree* Cohabitation dissolution								
(High school diploma =ref.)								
None* Cohabitation dissolution	-0.11		0.94		0.12		0.23	
	(0.10)		(1.00)		(0.45)		(0.28)	
GED* Cohabitation dissolution	0.53		-0.81		-0.03		-0.25	
	(1.29)		(1.44)		(0.55)		(0.38)	
Some college and above* Cohabitation dissolution	0.05		-0.81		0.03		0.26	
	(1.50)		(1.22)		(0.57)		(0.28)	
Covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: * p<0.05; ** p<0.01; *** p<0.001 (two-tailed tests).

Table S. 10. Conditional growth curve model estimates of moderating effects of annual income on cohabitation dissolution.

	Depressive Symptoms					Binge Drinking Behaviors			
	Men		Women			Men		Women	
Fixed Effects	Intercept	Slope	Intercept	Slope		Intercept	Slope	Intercept	Slope
Main Predictors									
Cohabitation dissolution (No=ref.)									
Yes	3.23***	-0.11	2.87***	-0.04		-0.15	0.01	0.21	-0.01
	(0.25)	(0.11)	(0.89)	(0.11)		(0.41)	(0.05)	(0.23)	(0.03)
Individual annual income (logged)	-0.03		0.05			-0.00		-0.03	
	(0.07)		(0.06)			(0.03)		(0.02)	
Individual annual income (logged)*Cohabitation dissolution	0.03		-0.06			0.04		0.02	
	(0.09)		(0.08)			(0.04)		(0.02)	
Covariates	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes

Note: * p<0.05; ** p<0.01; *** p<0.001 (two-tailed tests).

Table S. 11. Conditional growth curve model estimates of moderating effects of annual income on cohabitation dissolution.

	Depressive Symptoms					Binge Drinking Behaviors			
	Men		Women			Men		Women	
Fixed Effects	Intercept	Slope	Intercept	Slope		Intercept	Slope	Intercept	Slope
Main Predictors									
Cohabitation dissolution (No=ref.)									
Yes	2.94*	-0.11	1.02	-0.06		-0.70	0.03	-0.43	0.01
	(1.44)	(0.11)	(1.27)	(0.11)		(0.67)	(0.05)	(0.36)	(0.03)
Employed	-1.97*		-3.44***			-0.02		-0.16	
	(1.01)		(0.87)			(0.46)		(0.26)	
Employed* Cohabitation dissolution	0.48		1.92			0.67		0.65*	
	(1.26)		(1.10)			(0.60)		(0.33)	
Covariates	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes

Note: * p<0.05; ** p<0.01; *** p<0.001 (two-tailed tests).

CHAPTER V Conclusion

Summary

The three empirical studies that comprise this dissertation uncover that demographic behaviors are responses of individuals to dramatic social changes, and in return, the influence of demographic behavior shapes individual outcomes and then perhaps further social changes. Making use of three research lenses—birth cohort comparison, social context comparison, and marital behavior comparison, these three studies investigate the varied wealth foundations for marriage and cohabitation formation across cohorts and social contexts, and the psychological consequences of cohabitation dissolution. Taken together, they contribute to our understanding of the economic roots of changing patterns of union formation and the potential negative consequences of increasing relationship instability in contemporary societies.

Employing a cross-cohort lens, in the first empirical study I use the National Longitudinal Surveys of Youth 1979 and 1997 to examine cohort changes in the association of wealth with first marriage and cohabitation formation between late Baby Boomers and early Millennials. This study reveals an increasing wealth foundation for young adults' union formation, reflected by a strengthened positive link between secured and appreciating assets and debt and first marriage and cohabitation. Findings in this study shed new light on a wealth inequality perspective in understanding the union formation pattern—the retreat from marriage and an increase of cohabitation. Furthermore, this study also indicates that union formation may be a less studied but essential mechanism in

shaping subsequent wealth inequality.

In the second empirical chapter, I use five waves of the China Family Panel Study (2010-2018) to examine the association between family wealth and first marriage and its differences by gender and *hukou* status for the 1980s and 1990s young cohorts in China. This study finds strong positive associations of household total asset value and family home value with first marriage and significant gender differences in these associations, especially among young adults with rural *hukou* status. These findings indicate that gendered marriage practices and family wealth arrangements may lead to women's disadvantaged position in wealth possession and yield a severe marriage squeeze for economically underprivileged men, especially in rural areas.

Using data from the National Longitudinal Survey of Youth 1997, in the third empirical paper I apply growth curve models to analyze how cohabitation dissolution associates with trajectories of depressive symptoms and binge drinking behaviors for young adults (aged 17 to 35) and how the presence of children moderates this association for men and women. Findings reveal gender differences in the associations of cohabitation dissolution with psychological distress but contingent on the types of psychological distress under consideration and also indicate that cohabitation dissolution intertwined with non-marital parenthood is harmful to mental health, especially for young women.

Considering the first two papers collectively, we could exploit a cross-context lens to interrogate the generality, contingency, and complexity of the link between wealth and union formation. The NLSY97 cohorts from the United States, born between 1980 and 1984, are comparable to the 1980s and 1990s Chinese cohorts. There were born and grew up nearly during the same time but in two vastly different societies. I found a strong positive

association between (family) wealth and first marriage and discovered that a key secured and appreciating asset—home ownership—strongly positively predicts first marriage for both American and Chinese young adults. However, one salient difference is the gender variation in those associations. I found that (family) wealth and secured and appreciating assets more likely to predict first marriage for men compared to women among Chinese young adults, while I found no significant gender difference among American young adults. Compared to the United States, the different patriarchal histories and gendered marriage practices in China may lend some explanation to those cross-national gender differences. Patriarchy in China and the United States originates from two different cultural and value systems. The patriarchy in China is originated from Confucianism, while the patriarchy in the United States is originated from Western culture. Since its establishment, the United States has experienced several waves of feminism movements from the bottom up, which have explicitly recognized women's equal rights, significantly promoted women's social status, and challenged conservative gender roles in society. However, China has experienced a different trajectory of feminism development. The major gender equality movement was promoted by the Chinese government in the 1950s and 1960s, which emphasized "gender sameness" and mobilized men's and women's equal participation in, and even sacrifice for, socialist construction in pre-reform China (i.e., Marxist egalitarian gender ideology) (Ji et al. 2017). Since the market transition in the 1990s, the Marxist egalitarian ideology has retreated, while Confucianism has rejuvenated in conjunction with newly adopted neoliberalism (Ji et al. 2017). These shifts in gender ideology to some extent have enabled and justified increasing gender inequality in employment and income. Under such complicated gender ideology, gendered marriage practices have still been prevalent

and family wealth has gained its importance in children's marriage. Beyond the differences in marriage practices and social attitudes towards marriage, the differences in institutional configuration, such as property protection, divorce legislation, and social policies, may also lead to those cross-national gender differences. The institutional configuration in China tends to disadvantage women in terms of parental support in housing consumption, conjugal property registration, and even compensation for mortgage contributions after divorce (Fincher 2016). In addition to gender, other socially constructed dimensions, such as rural-urban residence and related rights and resources, and race/ethnicity, may also complicate the association between wealth and first marriage, probably differently in varied societies. Therefore, while embedding studies in multi-dimensional and multi-layered social hierarchies, investigating the generality, contingency, and complexity of the association between wealth and first marriage (also cohabitation) is a future research priority.

Considering the first and third empirical studies collectively, I extend to discussing the consequences of cohabitation dissolution on individual outcomes among the NLSY97 cohorts, using mental health as an exemplar. One salient feature of the NLSY97 cohorts is rising intimate relationship instability of all kinds. The dissolution of intimate relationships is by nature an individual and couple decision. However, the uneven distribution of relationship dissolution and their disparate influences on individuals of varied social groups (e.g., gender, race, and socio-economic status) also reflect disparate social and institutional configurations. For instance, women are more negatively influenced by cohabitation dissolution relative to men, especially when they have children. This gendered consequence may reflect that cohabitation and its surrounded configurations, including

housework distribution, parental responsibilities, and workplace policies, may disadvantage women relative to men when they are involved in an intimate relationship. As the instability of intimate relationships of all kinds increases, we need to provide social and institutional support to alleviate the negative consequences of relationship dissolution and avoid relationship dissolution becoming a new mechanism of reproducing and reinforcing social inequality.

Limitations

Since I have explicated study-specific limitations in each chapter, here I want to note three common limitations and future research directions of the current and relevant studies. Firstly, the research on wealth inequality and its precursors and consequences has not become mainstream until the 2000s partially is due to data limitations. The innate complexity of wealth measurement and its high rate of nonresponses have slowed the progress of pertinent research. To better understand how wealth inequality shapes marital behaviors and is also shaped by them, we need high-quality longitudinal dyadic couple data or high-equality retrospective reporting dyadic couple data (if the former is unfeasible). When these data are available in the future, we could investigate directly assortative mating on wealth and its subsequent influences on wealth inequality across households. Currently I make conclusions based on only one partner's characteristics. Secondly, the studies in the first and second empirical studies have a common assumption—the uniform symbolic meaning of wealth for people of varied social groups. However, people of different social groups (e.g., race/ethnicity and socioeconomic status) may have varied attitudes towards the same wealth component (assets or debt), it thus essential to explore the varied symbolic meanings of wealth for people of different social backgrounds in the future. This may also

be a promising direction to distinguish symbolic and practical functions of wealth in shaping first marriage. Thirdly, the links between wealth and union formation (e.g., *hukou* status and gender in China) and between union dissolution and (psychological) consequences (e.g., race and gender in the United States) are contingent upon social identities. The moderations of different social identities are not linearly additive. Actually, different social identities are interlaced and interdependent with each other contextualized in multi-dimensional and multi-layered social hierarchies. Therefore, using an intersectional perspective (Collins 2015; Hill Collins 2019) to examine how different social identifies jointly moderate the links between wealth and union formation and between union dissolution and (psychological) consequences is theoretically legitimate and even essential, though methodological challenges exist. Fourthly, as intimate relationships have become more diverse and heterogeneity within the same form of intimate relationship has increased, we need to investigate their varied functions and meanings for individuals of different backgrounds. For instance, cohabitation has many functions, encompassing an intimate sexual relationship, intermediate stage for marriage, or an alternate for marriage. Their different functions or meanings, often distributed unevenly across people of different social backgrounds, may be associated with individual outcomes (e.g., mental health) differently.

Implications

Notwithstanding these limitations, these studies collectively offer several broad substantive implications for researchers interested in economic and other precursors and consequences of marital behaviors. Firstly, this dissertation provides the perspective of wealth inequality in shaping marriage and cohabitation formation patterns in the United States and China.

Beyond labor market performance (e.g., education and income), wealth also plays distinctive and independent roles in explaining marriage (cohabitation) formation patterns for practical and symbolic reasons. Secondly, this dissertation combines two theoretical perspectives—structuralism and interactionalism[23] and by so doing theorizes the practical and symbolic functions of wealth in marriage (cohabitation) formation. Thirdly, this dissertation, to some extent, contribute to our knowledge of the reciprocal link between marriage and wealth inequality and how marriage may function as a mechanism for intergenerational stratification from an angle of wealth inequality. Based on the current study, the natural next research priority is to examine how marriage impacts wealth inequality and then contributes to intergenerational wealth stratification. Fourthly, this dissertation points out that family wealth inequality provides a new way of understanding the marriage squeeze among rural men in China and the potential negative influences on their mental health due to unvoluntary single life. Fifthly, this dissertation also indicates that gendered marriage practices and their associated family wealth arrangements may lead to women's disadvantaged position in wealth possession. Sixthly, this dissertation suggests that cohabitation dissolution intertwined with parenthood is harmful to mental health, especially for young women.

Aside from guiding future research, this dissertation may also have important policy implications. Union formation and dissolution are in nature individual or couple decision. However, the social and institutional configurations surrounding them make union formation and dissolution unevenly distributed and disparately influential for the outcomes

[23] The structuralism perspective emphasizes the practical functions of wealth for union formation, particularly its importance in guaranteeing good and stable economic conditions. The interactionalism perspective accentuates the symbolic functions of wealth for union formation, particularly its social meanings for establishing a family.

individuals of different social backgrounds. Innately distinguished from marriage promotion programs (e.g., George W. Bush's marriage promotion law in the 2000s), policy implications of this dissertation aim to promote a supportive and inclusive social environment for individual free choice in terms of intimate relationships. Firstly, in order to build a stable and solid wealth foundation for a family of all kinds, governments should provide more affordable housing and design financial policies to build healthy housing and credit market in both the United States and China. Secondly, promoting student loan debt relief programs, significantly reducing or canceling student loans, will largely eliminate difficulties and handicaps for establishing families for young adults in the United States. Thirdly, improving and advocating for women's equal rights in intergenerational wealth transfers, wealth possession within marriage, and wealth division and compensation after divorce is essential for mitigating the gendered influences of wealth on marriage and vice versa in China. Fourthly, though cohabitation has become a common experience for young adults in the United States, the surrounding social and institutional support for it is still disparate from that for marriage. Unlike other western societies in Europe, cohabitation in the United States has not been largely viewed as a stable alternate for marriage but a "poor man's" marriage, a temporary arrangement or a holding station for the "real thing" (Sassler and Lichter 2020), because cohabitation in the United States is usually portrayed as a stepping stone to marriage and is more prevalent among disadvantaged social groups. The legislation and social policies on cohabiting relationships are often unclear and inconsistent across states and by sexual orientation, especially in terms of property distribution, remedies in the event of divorce or death, and child custody. Reformation on legislation and social policies are necessary to recognize the rights of unmarried cohabitants by

granting legal rights to cohabitants and by creating a new registration status that will clearly spell out their rights and obligations (Bowman 2004; Culhane 2020).

Future Research Agenda

Moving forward, I will continue to shed light on the link between wealth and demographic behaviors by delving deeper into how individual and family wealth influences marital behaviors (cohabitation, marriage, and divorce) and fertility decisions and examining how demographic behaviors further shape individual and family wealth trajectories and then intergenerational wealth stratification. I also intend to continue comparing the link between wealth and demographic behaviors in various social settings, such as between the United States and China. For instance, the different patriarchy histories, family policies (e.g., fertility policy), and institutional configurations have provided an opportunity to examine the gender differences the link between wealth and demographic behaviors. I will also continue investigating how the increased relationship instability and family diversity influences broader individual's well-being, including mental and physical health. My aim is that combined, these studies' considerations of determinants and consequences of demographic behaviors will provide insights for researchers and policymakers about how demographic behaviors are shaped by and at the same reproduce social inequality and the potential solutions to intervene on these connections.

References

Bowman, Cynthia Grant. 2004. “Legal Treatment of Cohabitation in the United States*.” *Law & Policy* 26(1):119–51. doi: https://doi.org/10.1111/j.0265-8240.2004.00165.x.

Collins, Patricia Hill. 2015. “Intersectionality’s Definitional Dilemmas.” *Annual Review of Sociology* 41:1–20.

Culhane, John G. 2020. “Cohabitation, Registration, and Reliance: Creating A Comprehensive and Just Scheme for Protecting the Interests of Couples’ Real Relationships.” *Family Court Review* 58(1):145–56. doi: 10.1111/fcre.12460.

Fincher, Leta Hong. 2016. *Leftover Women: The Resurgence of Gender Inequality in China*. London: Zed Books Ltd.

Hill Collins, Patricia. 2019. *Intersectionality as Critical Social Theory*. Durham: Duke University Press.

Ji, Yingchun, Xiaogang Wu, Shengwei Sun, and Guangye He. 2017. “Unequal Care, Unequal Work: Toward a More Comprehensive Understanding of Gender Inequality in Post-Reform Urban China.” *Sex Roles* 77(11–12):765–78.

Sassler, Sharon, and Daniel T. Lichter. 2020. “Cohabitation and Marriage: Complexity and Diversity in Union-Formation Patterns.” *Journal of Marriage and Family* 82(1):35–61. doi: 10.1111/jomf.12617.