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"Haste Makes Waste": Exploring the Hidden Cost of XiangQin for Marital Mental Health *

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Abstract

Marriage is closely connected to mental health. Yet we know less about whether the socially and culturally embedded ways in which people enter marriage shape mental health after marriage. This paper studies XiangQin, a traditional Chinese matchmaking practice in which family members or other intermediaries participate in partner search and marital matching. We treat XiangQin not merely as a local custom but as a modern marriage-formation channel shaped by social norms, family expectations, and cultural traditions. Using the China Family Panel Studies, we compare post-marriage mental health between individuals who married through XiangQin and those who entered free-love marriages. The results show a clear mental health penalty. Individuals in XiangQin marriages report significantly higher depressive symptoms. To explain this pattern, we introduce the unobservable mismatch as a mechanism. XiangQin may improve screening on visible family and socioeconomic traits, but this advantage can come at the cost of weaker premarital learning about less observable compatibility. These hidden differences may become psychologically costly after marriage. The heterogeneity results reinforce this interpretation. The penalty is stronger when individuals face tighter within-household constraints. It is also larger in urban and more individualistic settings, where mediated matching may conflict more sharply

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with expectations of personal choice and emotional compatibility. Further analysis develops a dynamic learning framework to explain why the psychological cost of XiangQin may widen over time as spouses gradually learn about unobserved incompatibilities. Overall, these results show how culturally embedded marriage-formation practices shape postmarital psychological well-being.

Keywords: XiangQin, matchmaking, mental health, marriage formation, spousal mismatch, learning model

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1. Introduction

Mental health is a global economic and social concern, with mental disorders affecting more than one billion people worldwide and generating nearly $1 trillion in annual productivity losses(WHO, 2022). At the same time, marriage remains one of the most important social institutions shaping psychological well-being (Horwitz et al., 1996; Holt-Lunstad et al., 2008; Persson and Rossin-Slater, 2018). Yet existing research has largely treated marriage as a realized marital status, focusing on how marital unions, household bargaining, and marital dissolution shape family outcomes (Chiappori, 1992; Browning et al., 1994; Wolfers, 2006). Much less is known about whether the path into marriage itself matters. This gap is especially relevant for XiangQin, a traditional form of third-party-mediated matchmaking in China. Because XiangQin, as a deep-rooted traditional Chinese custom, remains prevalent in China (Huang et al., 2017) and is one of the most important pathways to marriage alongside romantic love (Pettier, 2022). Marriages formed through XiangQin may satisfy visible family and socioeconomic criteria, whereas free-love couples are more likely to emphasize trust, emotional support, and daily companionship within the relationship (Huang et al., 2012; Xiaohe and Whyte, 1990). In this sense, XiangQin may affect mental health not simply because it changes who people marry, but because it changes what people know, expect, and give up before entering marriage. Against this backdrop, our study contributes to the literature by treating marriage formation itself as a distinct source of variation in mental health rather than focusing solely on marital status or post-marital outcomes. More specifically, we examine whether XiangQin affects psychological well-being through differences in premarital information, individual autonomy, and marital mismatch across both observable and less observable dimensions.

Matchmaking as a universal social practice is not unique to China. Forms such as assemblies, social receptions, family introductions, and professional matching services exist across different societies, all designed to facilitate romantic or marital bonds between individuals (Fisman et al., 2006). However, China's matchmaking, XiangQin, is deeply marked by the historical shadow and cultural context of Chinese society (Pettier, 2022). Following the passage of the 1950 Marriage Law, XiangQin evolved into a more self-directed practice, differing from the previous system of arranged marriages by offering some degree of individual autonomy. It is therefore neither traditional arranged marriage nor fully autonomous free love. It allows interpersonal contact and individual rejection, but the process remains strongly influenced by third parties such as parents, relatives, friends, and marriage agencies. This hybrid nature makes XiangQin a representative and analytically useful institution for studying how mediated marriage formation affects post-marital well-being.

Despite its distinctive nature, the widespread prevalence and enduring persistence of XiangQin in China also highlight its societal significance. According to data from the China Family Panel Studies (CFPS), 42 percent of married individuals in our sample formed their current unions through XiangQin, with higher proportions in rural areas. This is evidence that XiangQin has endured from ancient civilizations through to modern society, continuously evolved under contemporary social influences, and remains a widely accepted and favored marital pathway. This persistence in modern China creates an important and suitable empirical setting for marriage formation.

However, from a domestic perspective, existing studies on marriage and mental health in China have either focused on traditional arranged marriages (Xiaohe and Whyte, 1990) or generalized marital status effects (Zhai et al., 2024). From a global perspective, matchmaking has been studied in different regions (Banerjee et al., 2013; Hitsch et al., 2010; Belot and Francesconi, 2013). Overall, current research has neglected the verification of XiangQin's impact on mental health. This gap is important because matchmaking continues to be a major institution for Chinese marriage formation in many societies (Pettier, 2022). Therefore, in this study, we try to unpack XiangQin as a distinct modern marriage formation channel.

This paper examines whether XiangQin affects post-marital mental health using nationally representative CFPS data on China's married population. We find three main empirical facts. Firstly, XiangQin is associated with worse

mental health after marriage. Specifically, individuals in XiangQin marriages report a CESD-8 depressive-symptom score that is 0.118 points higher than comparable individuals in non-XiangQin marriages. Because higher CESD-8 values indicate worse mental health, this estimate represents a measurable psychological penalty associated with entering marriage through XiangQin. We also employ an instrumental-variable strategy based on local traditions of parental involvement in marriage formation (Huang et al., 2012), which supports the causal relationship. Second, mediation evidence suggests that the unobservable mismatch is one mechanism behind this effect. XiangQin may screen visible socioeconomic and family characteristics, but it can leave less room for premarital learning about emotional compatibility, trust, communication, and daily companionship. These hidden incompatibilities may become psychologically costly after marriage (Weiss and Willis, 1997; Brien et al., 2006; Liu and Mu, 2022; Li et al., 2022). Third, heterogeneity analyses show that the XiangQin penalty is shaped by both household roles and social environments. The penalty is stronger among individuals facing greater within-household constraints and in environments where local norms and social monitoring are more salient. These patterns suggest that XiangQin harms mental health most when compressed premarital learning is combined with limited adjustment margins after marriage.

After establishing this fundamental relationship, we then explore why XiangQin may generate psychological costs, which tries to provide evidence on a measurable channel that is closely tied to the nature of XiangQin itself. Previous studies have linked spousal mismatch, such as differences in education or social status, to marital dissatisfaction (Schwartz and Mare, 2005; Wang and Schwartz, 2018). However, they have not examined how mismatch may operate inside a mediated marriage-formation process. XiangQin may help families and individuals screen visible information, but the same process may leave less room for learning about emotional, psychological, and relational compatibility before marriage. This creates a fundamental tradeoff: XiangQin may improve observable matching while increasing the risk of hidden incompatibility.

As a further exploration, this paper incorporates a dynamic learning perspective. XiangQin is determined at the time of marriage, but the consequences of hidden incompatibility may not appear immediately. When premarital interaction is compressed and the matching process emphasizes observable conditions, couples may enter marriage without fully understanding each other's personality, values, emotional needs, or conflict styles (Brien

et al., 2006; Karney and Bradbury, 1995). These traits are gradually revealed through daily life, financial decisions, child-rearing, obligations to parents, and the management of household stress (Weiss and Willis, 1997). The dynamic evidence suggests that the negative effect of XiangQin does not fully emerge at the beginning of marriage but intensifies with marital duration. This pattern is consistent with a learning process in which hidden differences become more consequential as spouses discover what the premarital search process failed to reveal.

Combining the empirical findings with this interpretation, the paper makes three main contributions. First, it introduces XiangQin as a culturally distinctive and empirically important marriage-formation channel deeply rooted in Chinese society. Existing economics research on marriage and mental health has largely centered on marital status, free-love marriages, or traditional arranged marriages (Wolfers, 2006; Xiaohe and Whyte, 1990; Zhai et al., 2024), while systematic evidence on Chinese-style XiangQin remains limited despite its wide prevalence and deep embedding in family and social networks (Pettier, 2022). By treating XiangQin as a distinct marriage-formation channel, this paper enriches the literature on marriage formation patterns and cross-cultural marital institutions, showing how social norms and cultural institutions shape the way marriages are formed and the consequences they produce. Second, it documents a systematic negative association between XiangQin and post-marital mental health. Third, by introducing the concept of mismatch, this paper further shows how XiangQin amplifies a central trade-off in marriage formation.

Practically, the findings address pressing social realities in contemporary China. XiangQin is often associated with the commodification of marriage, where material conditions such as housing, income, family background, and social status are prioritized over emotional compatibility. Such dynamics can trigger anxiety and depression among participants and may discourage young people from marriage due to perceived emotional and economic risks. By clarifying the mental-health costs associated with XiangQin, this paper provides a basis for re-evaluating unhealthy marriage norms, developing psychological interventions for couples formed through intermediated matching, and informing policies aimed at improving the dating and marriage environment. Ultimately, understanding XiangQin is not only about one Chinese marriage practice. It is also about how social institutions shape the information, pressure, and expectations that people carry into family life.

The remainder of the paper is organized as follows. Section 2 reviews the

literature on marriage formation, spousal mismatch, and mental health, and identifies the main research gaps. Section 3 introduces the data, variable construction, sample, and empirical design. Section 4 presents the historical and geographic patterns of XiangQin, the baseline regression results, the instrumental-variable analysis, and the mediation analysis of spousal mismatch. Section 5 examines whether the XiangQin penalty varies across household roles and social environments, with heterogeneity analyses by gender, household financial decision-making, family size, urban-rural status, and regional individualism versus interdependence. Section 6 reports robustness checks. Section 7, as a further exploration, introduces a dynamic learning framework to examine how the psychological effects of XiangQin evolve over marital duration. Section 8 concludes with theoretical and practical implications.

2. Literature Review

2.1. The Heterogeneous Welfare Consequences of Marriage

Extensive literature establishes that social connections sustain psychological well-being (Kawachi and Berkman, 2001; Xue et al., 2020; Hamermesh, 2020; Bruni and Stanca, 2008). Among all social bonds, marriage is widely regarded as a protective institution, yet its mental health impacts are contingent on relational quality and structural dynamics (Holt-Lunstad et al., 2008; Zhai et al., 2024). Marriage enhances subjective well-being via multiple channels: spousal companionship, social validation, financial stability, and informal risk insurance (Waite and Gallagher, 2000). These mechanisms account for the well-documented mental health premium enjoyed by married people relative to single, divorced, or widowed individuals (Zhai et al., 2024).

Nevertheless, this protective narrative overlooks the heterogeneity of marital experiences. Marriages marked by frequent conflict, imbalanced intra-household bargaining power, insufficient emotional support, or fundamental value incompatibility instead act as chronic stressors (Li, 2023). Longitudinal evidence further confirms that marriage's mental health implications hinge not only on marital entry but also on enduring match quality (Horwitz et al., 1996; Holt-Lunstad et al., 2008).

Economically, this heterogeneity stems from marriage's dual nature as both a consumption good and a joint production framework (Becker, 1992). Couples pool time, earnings, housing resources, domestic responsibilities, and emotional labor within this partnership. High-quality matches generate

marital surplus through labor specialization, shared risk pooling, and affective companionship (Becker, 1992). By contrast, low-quality unions erode surplus via persistent interpersonal conflict, costly adaptation frictions, and impaired household cooperation (Chiappori et al., 2018b). Identical formal marital status can thus conceal vastly divergent individual welfare outcomes. Accordingly, scholarly inquiry must move beyond estimating average marriage effects to examine how marital quality and sorting mechanisms generate heterogeneous well-being trajectories.

The institutional and cultural context of China renders marital formation pathways uniquely relevant to this research agenda. Hu (2021) argues that the marriage-health nexus cannot be generalized without accounting for context-specific social institutions. China's marriage formation regime has undergone profound structural shifts. Pre-revolutionary arranged marriages prioritized familial authority and lineage interests over individual romantic preferences. The 1950 Marriage Law curtailed coercive arranged unions and codified free marital choice as a legal principle. Subsequent market reforms, urbanization, population mobility, and educational expansion expanded opportunities for self-initiated romantic matching. Family mediation, however, did not vanish entirely; it evolved into flexible intermediary practices such as XiangQin (matchmaking blind dates). Today's China concurrently hosts distinct marriage-formation channels observed in nationally representative survey data, providing a useful empirical setting for examining how matching pathways are associated with long-term mental health.

Existing Chinese empirical work corroborates that formation channels shape marital outcomes. Xiaohe and Whyte (1990) document higher marital satisfaction among love-based unions relative to arranged marriages in Chengdu, with larger gains for women. Recent research further links spousal heterogamy to elevated depressive symptoms (Zhang et al., 2024). While these studies highlight the significance of marital composition and matching processes, they fail to unpack how modern mediated matchmaking institutions like XiangQin produce mental health penalties. This study addresses this gap by analyzing information frictions during partner search and disentangling the welfare costs of observable versus unobservable spousal mismatch.

2.2. Institutional background: XiangQin as mediated matching

XiangQin is a socially and culturally embedded form of marital formation in China. It is rooted in a family-centered tradition in which marriage

is not treated solely as a private romantic choice, but also as a decision shaped by kinship networks, household interests, intergenerational expectations, and social recognition (Yan, 2003). Its defining feature is not simply third-party introduction. Rather, partner search is mediated by actors who carry social authority and normative expectations (Pettier, 2023; Chan and Chen, 2024). Various intermediaries, including family members and formal or informal matchmaking channels, do more than expand the set of potential spouses. They translate broader social and cultural standards into the matching process by evaluating whether two individuals are suitable in terms of family background, education, earnings, occupation, hukou registration, housing assets, age, and other publicly legible traits (Huang et al., 2012, 2017). In this sense, XiangQin differs from ordinary matching because it embeds individual marital choice within family involvement, social evaluation, and culturally defined marital suitability. This process may reduce search frictions and provide useful information about observable characteristics. Yet it may also narrow premarital learning by prioritizing traits that are visible, verifiable, and socially valued. XiangQin, therefore, represents not merely a matching technology, but a social institution through which cultural expectations shape who is considered an appropriate spouse and which dimensions of compatibility receive attention before marriage.

XiangQin differs from old-style forced arranged marriages in two key respects. First, individuals hold the right to decline potential matches at any stage. They can turn down a candidate, stop subsequent dates, or pull out of the matching process entirely before marriage. Second, this matchmaking practice exists within today's marriage market, where education, migration experience, job status, and housing conditions are all critical matching criteria.

XiangQin is therefore not merely an outdated tradition carried over from earlier eras. Instead, it serves as a modern way of searching for partners while still rooted in long-standing family values (Pettier, 2022). It remains widely used because it effectively addresses practical obstacles in partner search: it helps people navigate large, fragmented marriage markets and lets families gather background information that individuals would struggle to verify on their own at a high cost.

At the same time, XiangQin carries several institutional features that are central to our argument. The first one is external pressure. Individuals participating in XiangQin often face pressure from parents, relatives, and local norms about timely marriage. This pressure can be especially strong for

women and for individuals who are considered close to or beyond the socially expected marriage age (Farrer and Zhongxin, 2003; Ji, 2015). The second feature is compressed search. XiangQin often moves quickly from introduction to evaluation of marriage feasibility. Compared with long self-initiated relationships, the process may allow less time for informal interaction and emotional learning. The third feature is reliance on hard indicators. Families and matchmakers can easily compare education, income, occupation, hukou, age, and family background, but they cannot observe latent compatibility with the same precision.

This institutional structure helps explain why XiangQin remains common despite the rise of love marriage. It is not only a cultural practice; it is also a response to search frictions. In urban areas, the relevant networks may include professional matchmakers, digital platforms, and organized matchmaking events. In rural areas and smaller cities, family and community networks remain especially important. In both cases, XiangQin formalizes partner search and makes the criteria explicit. It therefore provides a useful empirical setting for studying how a matching institution changes the relative weight placed on observable and unobservable traits.

The Chinese case also differs from other forms of intermediated marriage. In some Latin American contexts, courtship and family approval are embedded in dense kinship networks and long-term communal interaction, where emotional bonding and trust can develop before marriage (Hirsch, 2003). In contrast, Chinese XiangQin often emphasizes feasibility, family suitability, and socioeconomic compatibility. This difference matters because mediated marriage is not a single universal institution. The psychological consequences depend on what the mediator screens for, how much autonomy individuals retain, and how much time partners have to learn about each other before marriage.

2.3. The Trade-off of Matching: Observable Socioeconomic Traits vs. Unobservable Emotional Compatibility

The paper's mechanism is spousal mismatch. Observable feature mismatch refers to differences in traits that are relatively easy to verify before marriage, such as age, education, income group, hukou status, and other visible socioeconomic characteristics. These traits are central in marriage markets because they affect social approval, family bargaining, household resources, and expected living arrangements (Hitsch et al., 2010; Fisman et al.,

2006). A large literature studies assortative mating and the role of education, status, and institutional boundaries in marriage (Schwartz and Mare, 2005; Wang and Schwartz, 2018; Qian and Qian, 2017). In China, hukou is especially important because it is linked to access to urban welfare, housing, schooling, and local identity (Lui, 2017; Zhou, 2019). Age gaps and educational differences may also shape marital satisfaction and mental health by affecting bargaining, expectations, and family roles (Kim et al., 2015; Lei et al., 2014).

Unobservable feature mismatch refers to differences in traits that are difficult to assess in a short premarital period. These include trust, confidence, cognitive style, values, emotional regulation, communication style, and lifestyle habits. These traits are less visible to parents and matchmakers but central to daily marital life. They affect whether spouses can cooperate, resolve conflicts, provide emotional support, and adapt to shocks. Psychological and family studies show that stress, low relationship quality, and conflict are closely related to depressive symptoms (Bradbury et al., 2000; Karney and Bradbury, 1995; Gottman and Levenson, 1992; Colodro-Conde et al., 2018). In the language of economics, these traits affect marital surplus, but they are hard to price and hard to verify before the match is formed.

This distinction connects our paper to the broader economics of matching. Online dating and speed-dating studies show that individuals sort and choose partners based on both observed traits and preferences (Hitsch et al., 2010; Fisman et al., 2006). Work on caste and marriage in India shows that institutionally salient attributes can strongly shape mate selection even when they trade off against other desirable traits (Banerjee et al., 2013). Work on personality and marriage markets shows that latent traits also matter for sorting and surplus (Dupuy and Galichon, 2014). Our contribution is to connect these insights to mental health. If XiangQin shifts attention toward hard information and away from latent compatibility, then it may produce a particular form of mismatch: socioeconomic feasibility combined with hidden psychological incompatibility.

Social exchange theory offers a framework to explain this trade-off. Marriage constitutes a reciprocal exchange of material, social, and emotional resources between partners (Nakonezny and Denton, 2008). Within XiangQin matching markets, individuals and their families often compromise on emotional compatibility to secure better socioeconomic alignment, greater parental approval, or reduced search burdens. This trade-off can appear rational at the point of marriage, as unobservable emotional compatibility

cannot be fully assessed in advance. Hidden costs only emerge after marriage, as daily interactions expose persistent emotional and psychological mismatches. In short, XiangQin unions may achieve efficiency on easily observable socioeconomic metrics yet carry substantial hidden costs stemming from immeasurable emotional incompatibility.

Four key gaps remain in the existing literature. First, most research linking marriage to mental health centers on marital status or post-marital relationship quality, overlooking how pre-marital matching pathways generate long-term psychological risks. Second, prior Chinese studies contrasting arranged and self-selected marriages treat matching modes as broad categorical variables, without unpacking the distinct information structures behind each matching type. Third, scholarly discussions of spousal mismatch typically frame incompatibility as fixed, static differences between partners, ignoring that many emotionally damaging mismatches surface gradually over time. Fourth, existing work largely focuses on individual predictors of depression, with limited attention to how institutional matchmaking processes shape the shared relational environment of couples.

This paper fills the above research gaps through three distinct contributions. First, it conceptualizes XiangQin as a marriage market institution instead of merely a cultural custom. Second, we construct separate measurements for observable and unobservable spousal mismatch using matched couple data. This design enables us to examine whether XiangQin yields advantages along one dimension of matching at the expense of the other. Third, we build a dynamic learning framework that describes how hidden incompatibility gradually emerges after marriage. This theoretical framework provides testable empirical predictions: the psychological costs associated with XiangQin unions rise as marital duration lengthens.

3. Methodology and Data

In this section, we first introduce the data, variables, and main sample used in this study. We then describe the empirical strategy for estimating the impact of the XiangQin on mental health.

3.1. Data

3.1.1. China Family Panel Studies

The analysis uses the China Family Panel Studies (CFPS), a nationally representative longitudinal survey conducted by Peking University. The

CFPS follows individuals and households across waves and records demographic characteristics, marriage histories, household conditions, socioeconomic status, and health outcomes. We use the waves from 2016 to 2022 because the CESD-8 depressive symptom scale is consistently available in these waves.

The main dependent variable is the CESD-8 score, constructed from respondents' reported frequency of eight depressive symptoms over the past week, rescaled to range from 0 to 24, with higher values indicating more severe depressive symptoms. The CESD-8 has been widely used and validated in Chinese survey data (Siddaway et al., 2017; Bi et al., 2023; Jiang et al., 2024; Karim et al., 2015), allowing us to study subclinical psychological costs that may emerge within marriage.

3.1.2. XiangQin definition

The key explanatory variable is XQ, an indicator equal to one if the respondent entered the current marriage through XiangQin. We construct this variable from the CFPS question on how the respondent met the spouse. Following prior work on Chinese matchmaking (Huang et al., 2017), we code XQ as one when the spouse was met through relatives, parental arrangement, or a marriage agency. We classify meetings through school, work, friendship networks without explicit matchmaking, personal acquaintance, or other self-initiated channels as non-XiangQin.

This classification captures whether the match was structured by third-party mediation rather than by self-initiated partner search. The distinction is central to our analysis because XiangQin involves intermediaries who shape the search process and screen potential spouses before the marriage begins. A match introduced by relatives or arranged by parents is therefore treated as XiangQin, even when the respondent subsequently consents to the marriage. Because the meeting channel is determined at the start of the marriage, we carry the value forward within the same current-marriage spell when necessary. The analysis is restricted to currently married respondents with valid information on the spouse-meeting channel.

3.1.3. Construction of mismatch

After defining the core independent variable XiangQin that differentiates third-party mediated marriages from self-initiated love marriages, we now introduce spousal mismatch as our key mechanism. Our core theoretical

conjecture argues that XiangQin creates a unique trade-off in mate selection: matchmakers and families prioritize easily observable socioeconomic conditions while neglecting hard-to-assess emotional and psychological compatibility between partners. To empirically verify this theoretical mechanism and explain why XiangQin correlates with worse post-marital mental health, we construct two categorized mismatch indicators to quantify two types of incompatibility between spouses, which lays a foundation for the subsequent mediation analysis.

The mismatch measures are constructed from matched-couple information. For each dimension, we calculate the absolute difference between spouses and standardize the raw difference before aggregation. This standardization makes variables measured on different scales comparable and follows the index-construction logic used in studies that combine multiple outcomes or traits (Kling et al., 2007; Deming, 2009).

We distinguish between observable and unobservable mismatches according to the relative availability of information before marriage. This classification does not imply that some traits are perfectly observable or intrinsically hidden. Instead, it captures whether a trait is likely to be verifiable and discussable during premarital matching, especially when third-party intermediaries are involved. Observable mismatch includes differences in age, education or high-school status, income or income group, hukou status, and exercise behavior. These traits are relatively visible and can be collected, compared, or explicitly discussed by families and intermediaries during XiangQin. Unobservable mismatch refers to differences in traits that are harder to evaluate within a short premarital period, such as perceived social status, cognitive ability, trust versus suspicion, and confidence about the future. These dimensions are less likely to be fully revealed through observable screening, even though they may become important for marital interaction after marriage.

To assess whether this classification is empirically meaningful, we conduct component-level validation. We regress each standardized mismatch component on XiangQin, controlling for gender, self-rated health, and work status, with year and province fixed effects and standard errors clustered at the couple level. Figure 1 reports the XiangQin coefficient for each component. The pattern is consistent with the proposed distinction. XiangQin is associated with significantly lower mismatch in several observable dimensions, while it is associated with significantly higher mismatch in several less observable dimensions. This does not imply that XiangQin improves every

observable dimension or worsens every latent dimension. Rather, the evidence suggests a systematic trade-off in match quality. Mediated matching appears to perform better on several screenable traits, while leaving more hidden incompatibility in traits that are harder to learn before marriage.

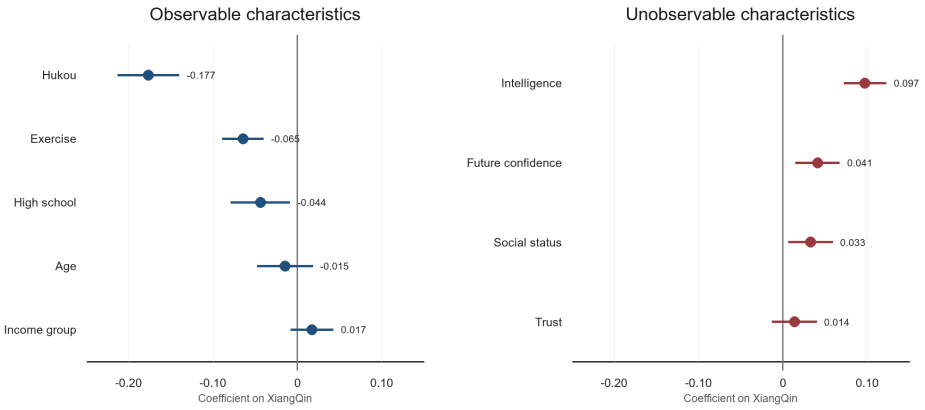


Figure 1: XiangQin and Spousal Mismatch by Dimension

Notes: The figure reports the XiangQin coefficient from separate regressions of each standardized spouse-mismatch component on XiangQin, gender, self-rated health, and work status, with province and year fixed effects. Standard errors are clustered at the couple level. Whiskers report 90% confidence intervals. Positive values indicate greater mismatch.

3.1.4. Tradition of parental involvement

Because unobserved premarital family involvement, search constraints, and individual characteristics may affect both entry into XiangQin and later mental health, OLS estimates may reflect non-random selection. To address this concern, we construct an instrument based on the local tradition of parental involvement in marriage matching, following Huang et al. (2012). The instrument uses XiangQin prevalence among the adjacent older cohort to capture inherited local matchmaking customs. Its relevance comes from the persistence of marriage practices across nearby cohorts. A higher prevalence of parental or third-party matching among older individuals reflects stronger local norms, denser matching networks, and lower social costs of using XiangQin for the next cohort. In China, the hukou system and relatively stable local social networks further support this persistence.

We construct the instrument by age cohort, province, survey year, and gender. Respondents are first assigned to age cohorts. For cohort (c), the tradition measure is defined as the share of XiangQin marriages among individuals in the adjacent older cohort (c+1) within the same province-year-gender cell:

$$TPI_{pgtc} = \frac{1}{N_{pgt,c+1}} \sum_{i:(p_i=p,g_i=g,t_i=t,c_i=c+1)} XQ_i. \tag{1}$$

The oldest cohort is excluded because no older reference cohort is available.

This measure captures the local prevalence of parental or third-party mediated matching among older individuals who faced a closely related marriage-market environment. It proxies for the social acceptability and network availability of XiangQin rather than the respondent's own marriage choice. The exclusion restriction is that the marriage-formation practices of the adjacent older cohort do not directly determine the mental health of the current cohort. Their most plausible influence operates through the local marriage environment, by shaping the probability that current respondents enter marriage through XiangQin.

3.1.5. Main Sample

The main analytical sample is drawn from the 2016–2022 waves of the CFPS and is restricted to married individuals aged 16 and above. Because the analysis relies on couple-level information, we further require both spouses to be observed in the survey. Observations with only one spouse recorded are excluded.

Although the dependent variable and covariates used in the main analysis come from the 2016–2022 waves, the XiangQin indicator is constructed retrospectively using all available CFPS marriage-channel information beginning with the 2010 baseline survey, the first wave of the CFPS. This procedure allows us to recover whether a marriage was formed through XiangQin as completely as possible before linking the marriage-formation channel to later mental-health outcomes.

Table 1 reports descriptive statistics for the outcome variable, main independent variables, and control variables for the matched sample, as well as separately for individuals from the XiangQin group and the non-XiangQin group. The control variables include gender, age, urban residence, self-rated health, high-school-or-above education, employment status, perceived income level, and perceived social status. These variables capture demographic, socioeconomic, and health-related differences that may affect both marriage

formation and mental health. The descriptive differences between XiangQin and non-XiangQin respondents motivate the use of controls, fixed effects, and the IV strategy in the main analysis.

Table 1: Descriptive Statistics by Marriage Channel

	Full sample			XiangQin		Non-XiangQin	
VARIABLES	Obs.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Panel A: Outcome and treatment							
CESD-8	29,829	5.438	3.908	5.612	4.053	5.310	3.794
XQ	29,829	0.423	0.494	–	–	–	–
Panel B: Mechanism variables							
Observable mismatch	29,824	-0.001	0.498	-0.010	0.488	0.005	0.506
Unobservable mismatch	28,080	-0.004	0.529	0.024	0.539	-0.024	0.521
Panel C: Individual characteristics							
Female	29,829	0.479	0.500	0.491	0.500	0.471	0.499
Age	29,827	44.220	14.432	48.191	14.569	41.308	13.614
Urban	29,264	0.530	0.499	0.462	0.499	0.579	0.494
Health condition	29,826	2.906	1.165	3.004	1.224	2.834	1.115
High school or above	29,829	0.342	0.474	0.235	0.424	0.420	0.494
Currently working	29,818	0.779	0.415	0.774	0.419	0.783	0.412
Income level	29,095	2.790	1.045	2.809	1.095	2.777	1.008
Social status	29,761	2.949	1.064	3.046	1.099	2.879	1.032

Notes: XiangQin, denoted as XQ, equals one if the respondent married through matchmaking and zero otherwise. CESD-8 is the measure of depressive symptoms. The main sample comprises 29,829 observations, including 12,620 XiangQin observations and 17,209 non-XiangQin observations. The number of observations varies across variables due to missing values.

3.2. Empirical design

In this study, we begin with a baseline model that relates mental health to marriage formation:

$$MH_{ipt} = \alpha + \beta XQ_i + \mathbf{X}'_{it}\gamma + \epsilon_{ipt}, \tag{2}$$

where MH_{ipt} is the CESD-8 score of individual i in province p and survey year t, and XQ_i equals one if the respondent met the spouse through XiangQin. Because the meeting channel is determined at marriage formation, XQ_i is

time-invariant within a given marriage. The vector $\mathbf{X}_{it}$ includes demographic, socioeconomic, and health controls. The coefficient β captures the mental health gap between individuals in XiangQin and non-XiangQin marriages, conditional on observed characteristics.

Our preferred specification adds province and year fixed effects:

$$MH_{ipt} = \alpha + \beta XQ_i + \mathbf{X}'_{it}\gamma + \mu_p + \lambda_t + \epsilon_{ipt}, \tag{3}$$

where μ_p absorbs time-invariant provincial differences and λ_t absorbs common survey-year shocks. Province fixed effects matter because provinces differ in marriage customs, economic development, migration patterns, and mental health environments. Year fixed effects matter because CFPS waves cover a period of rapid social change, including changes in labor markets, marriage norms, and the COVID-19 period.

Because XiangQin is not randomly assigned, we complement the fixed-effects estimates with the instrumental-variable strategy described above. The first stage equation is

$$XQ_{ipgtc} = \pi_0 + \pi_1 TPI_{pgtc} + \mathbf{X}'_{it}\pi_2 + \mu_p + \lambda_t + \nu_{ipgtc}, \tag{4}$$

where TPI_{pgtc} is the tradition of parental involvement for province p, gender g, year t, and cohort c. The second stage is

$$MH_{ipt} = \alpha + \beta\widehat{XQ}_{ipgtc} + \mathbf{X}'_{it}\gamma + \mu_p + \lambda_t + \epsilon_{ipt}. \tag{5}$$

The relevance condition is that inherited local traditions predict the probability of entering XiangQin. This is plausible because parents in regions with stronger matchmaking traditions have lower information costs and stronger social norms supporting intervention in children's marriage (Huang et al., 2012; Bloch and Ryder, 2000; Cheung, 1972). The exclusion restriction is that, conditional on controls and fixed effects, the local parental-involvement tradition affects adult mental health through the marriage-formation channel rather than through alternative channels.

To examine the mechanism of mediation analysis, we estimate two equations. First, we test whether XiangQin predicts mismatch:

$$Mismatch^r_{ipt} = \alpha + \delta_r XQ_i + \mathbf{X}'_{it}\gamma + \mu_p + \lambda_t + u_{ipt}, \tag{6}$$

where r indexes observable or unobservable mismatch. A negative δ_r means that XiangQin reduces that type of mismatch; a positive δ_r means that XiangQin increases it. Second, we add mismatch to the mental health equation:

$$MH_{ipt} = \alpha + \beta' XQ_i + \rho_r Mismatch^r_{ipt} + \mathbf{X}'_{it}\gamma + \mu_p + \lambda_t + e_{ipt}. \tag{7}$$

The indirect effect is $\delta_r \rho_r$. We report the Sobel test as a statistical check of the mediation path, while interpreting mediation cautiously because the mismatch is not randomly assigned. The purpose is to assess whether the empirical pattern is consistent with the proposed mechanism.

4. Results

This section presents the main empirical evidence in three steps. First, we document the temporal and geographic evolution of XiangQin. Second, we estimate the baseline relationship between XiangQin and mental health and assess the robustness of the main association using the instrumental-variable strategy. Finally, we turn to mismatch as the central mechanism, showing how XiangQin is associated with different patterns of spousal sorting and how unobservable mismatch helps account for the mental-health gap documented in the baseline results.

4.1. Temporal and geographic evolution of XiangQin

Figure 2 compares the provincial distribution of XiangQin marriages before and after 1981. Before 1981, XiangQin was widespread across many provinces, while after 1981, the prevalence declined substantially. This decline is consistent with the long transition away from arranged and parent-dominated marriage after the 1950 Marriage Law, the expansion of education and non-kin social networks, and the rise of individual choice in mate selection (Xiaohe and Whyte, 1990; Yu and Xie, 2015; Yan, 2003). Prior CFPS-based work also identifies a two-stage transition in Chinese mate selection, in which arranged marriages were largely replaced by introduced marriages before 1980, followed by the expansion of self-initiated marriages thereafter (Liu and Mu, 2022).

The important point is that XiangQin does not disappear. Figure 3 shows a clear decline across marriage cohorts, but the decline is incomplete. Contemporary XiangQin is neither the old arranged marriage system nor a negligible residual category, but rather a hybrid institution operating within modern marriage markets that generates empirically meaningful variation. This persistence implies coexistence: some people marry through mediated introductions, while others enter marriage through less mediated channels within the same period and broad social environment.

The spatial pattern in Figure 2 shows substantial unevenness across provinces, with the decline in XiangQin after 1981 being uneven. This unevenness sug-

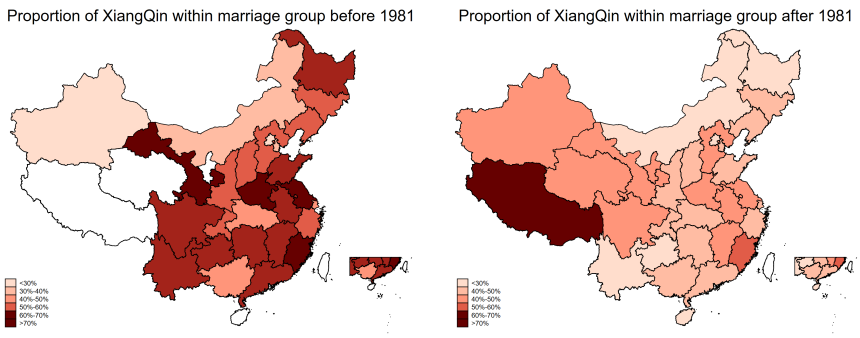


Figure 2: Provincial Distribution of XiangQin Marriages Before and After 1981

Notes: The maps report provincial shares of marriages formed through XiangQin before and after 1981, based on respondents' marriage year and reported spouse-meeting channel. Darker colors indicate a higher XiangQin share.

gests that XiangQin is influenced not only by national modernization but also by local marriage-market conditions, kinship norms, rural–urban boundaries, and the persistence of family networks. This interpretation is consistent with studies that Chinese marriage markets remain structured by hukou, education, family background, and local social closure even as romantic choice expands (Lui, 2017; Qian and Qian, 2017; Zhou, 2019). In this sense, XiangQin depends on local traditions and the value families place on screenable traits.

This historical and geographic evidence also prepares the identification strategy. Older cohorts reveal local traditions of parental involvement; younger cohorts face a marriage market in which XiangQin is more selective and more likely to reflect family pressure, search frictions, or constraints in partner markets. The empirical analysis treats XiangQin as a changing institution with persistent local roots and examines whether its surviving mediated channel of spouse search is associated with measurable psychological consequences.

4.2. Baseline results

Table 2 reports the baseline relationship between XiangQin and mental health. Conditional on observed characteristics and fixed effects, individuals who entered marriage through XiangQin report systematically worse mental health than comparable individuals who did not.

Panel A begins with OLS specifications. Column (1), without covariates, shows that XiangQin is positively associated with CESD-8 depressive symptoms. Column (2) adds individual controls; the coefficient falls but remains positive and significant. Columns (3) and (4) add province and year fixed

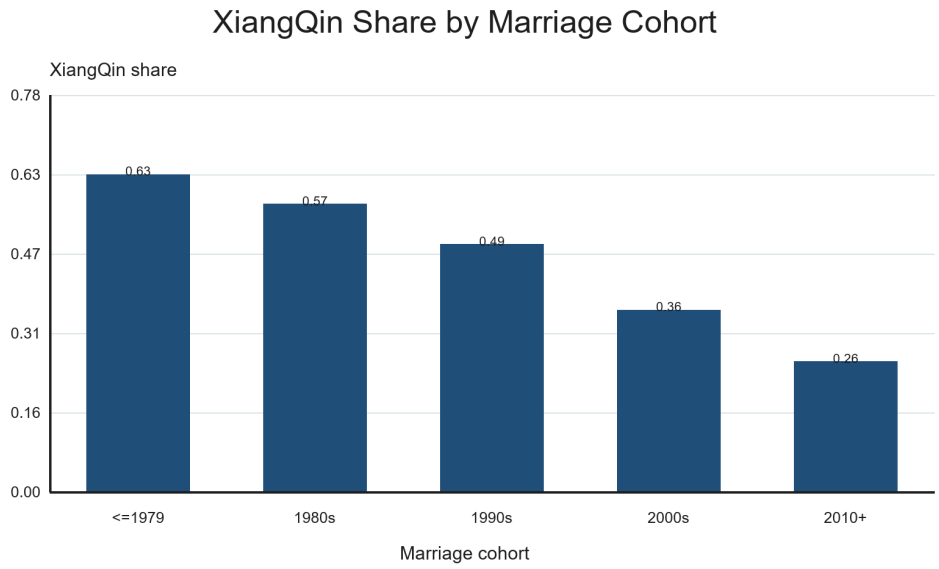


Figure 3: XiangQin Share by Marriage Cohort

Notes: The bars show the share of married respondents whose current marriage was formed through XiangQin, grouped by marriage cohort. The downward pattern shows that XiangQin has declined across cohorts but remains a non-negligible marriage-formation channel.

effects. The preferred specification in Column (4) shows that XiangQin is associated with a 0.118 point increase in CESD-8. Since higher values indicate worse mental health, this implies a persistent mental health penalty associated with XiangQin marriage formation.

This result is not mechanically implied by the general marriage literature, which documents average well-being gains from marriage through companionship, social integration, and informal insurance (Horwitz et al., 1996; Holt-Lunstad et al., 2008; Hu, 2021; Chiappori et al., 2018a; Blundell et al., 2016). However, these benefits depend on marital quality, and psychological evidence shows that marital strain is strongly associated with poorer health outcomes (Proulx et al., 2007; Kiecolt-Glaser and Newton, 2001). The baseline result should therefore be read as evidence about a particular way of entering marriage, not as evidence against marriage itself.

The decline in the coefficient after adding controls suggests that part of the raw XiangQin-mental health gap reflects observable differences between

Table 2: Baseline Regression Results

VARIABLES	(1) cesd8	(2) cesd8	(3) cesd8	(4) cesd8
Panel A: Baseline regressions				
XQ	0.302***	0.094**	0.285***	0.118**
	(0.046)	(0.046)	(0.061)	(0.058)
Constant	5.310***	4.287***	5.317***	4.465***
	(0.029)	(0.136)	(0.039)	(0.161)
Observations	29,831	28,490	29,831	28,490
R-squared	0.001	0.113	0.032	0.141
Controls	NO	YES	NO	YES
Year FE	NO	NO	YES	YES
Province FE	NO	NO	YES	YES
Couple cluster	NO	NO	YES	YES
Panel B: 2SLS				
	(5) XQ *(first stage)*	(6) cesd8	(7) XQ *(first stage)*	(8) cesd8
XQ		1.781***		6.654*
		(0.351)		(3.524)
Parental involvement	0.416***		0.062***	
	(0.021)		(0.022)	
Observations	28,929	28,929	27,691	27,691
Controls	NO	NO	YES	YES
Year FE	YES	YES	YES	YES
Province FE	YES	YES	YES	YES
Couple cluster	YES	YES	YES	YES
SW Chi-sq	387.17		7.85	
SW F	386.68		7.84	

Notes: Columns (1) and (2) are OLS regressions without and with control variables, respectively; columns (3) and (4) are fixed-effects regressions (province and year fixed effects) without and with control variables, respectively. Panel B reports two-stage least squares (2SLS) estimates where *XQ* is treated as endogenous and instrumented by *Parental involvement*. Columns (5) and (7) present the first-stage results with *XQ* as the dependent variable, while columns (6) and (8) report the second-stage results with *cesd8* as the dependent variable. SW Chi-sq and SW F are Sanderson–Windmeijer weak-instrument test statistics for the excluded instrument. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

individuals. This is expected because XiangQin is not randomly assigned, and respondents may differ by age, education, residence, work status, health, and local family norms. However, the coefficient remains positive after controls and fixed effects, indicating that the marriage-formation channel itself, or unobserved factors associated with it, matters for mental health.

Panel B further reports the IV estimates. The first stage shows that parental involvement strongly predicts XiangQin, and the Sanderson–Windmeijer statistics indicate a proper instrument. The second-stage estimates are positive and significant, with a coefficient of 6.654. These estimates should be interpreted as local average treatment effects for individuals whose marriage-formation channel is affected by local parental-involvement traditions. These estimates also show the negative relationship between XiangQin and mental health.

This interpretation is consistent with direct evidence on parental matchmaking in China. Huang et al. (2012) argue that parents may be willing to substitute economic suitability for romantic attraction because the economic returns from a child's marriage can be shared within the extended family more easily than the private emotional surplus of the couple. Their later work also emphasizes that parental matchmaking reflects trade-offs between love, money, and parental goods (Huang et al., 2017). Our IV estimates also fit this logic: the channel appears most costly when it is activated by stronger parental traditions rather than by the individual's own search preference.

Overall, the baseline results establish a robust association between XiangQin marriage formation and worse mental health relative to non-XiangQin marriages. The proposed answer is not that all mediated marriages are harmful. It is that XiangQin changes the information used in matching. The next subsection examines the mechanisms underlying this gap.

4.3. Mechanism: mismatch and mediation

Having established the main XiangQin penalty, we examine whether differences in spousal mismatch help explain this pattern. Table 3 presents evidence on the mismatch mechanism. Columns (1) and (2) first test whether XiangQin predicts the two mismatch indices. XiangQin is associated with lower observable mismatch (-0.017) but higher unobservable mismatch (0.016). This pattern suggests that mediated marriage formation improves matching on verifiable characteristics while worsening alignment on latent traits that are more difficult to assess prior to marriage.

Table 3: Mismatch Formation and Mediation Analysis

	Mismatch formation		Mediation for CESD8	
	(1)	(2)	(3)	(4)
VARIABLES	Observable mismatch	Unobservable mismatch	CESD8	CESD8
Panel A: Regression-based mediation analysis				
Unobservable mismatch				0.602***
				(0.047)
XQ	-0.017*	0.016*	0.112*	0.102*
	(0.009)	(0.009)	(0.058)	(0.058)
Constant	-0.156***	0.001	4.439***	4.438***
	(0.025)	(0.024)	(0.165)	(0.164)
Observations	28,485	26,859	26,859	26,859
R-squared	0.029	0.031	0.139	0.146
Control Variables	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Province FE	YES	YES	YES	YES
Couple cluster	YES	YES	YES	YES
Panel B: Effect decomposition				
Total effect				0.112
Direct effect				0.102
Indirect effect				0.010
Effect proportion				8.86%
Sobel test (p-value)				0.065*

Notes: This table reports the relationship between XiangQin, mismatch formation, and mental health. Columns (1) and (2) show how XiangQin is associated with two different types of mismatch. Column (1) shows that XiangQin is negatively associated with observable mismatch, while Column (2) shows that XiangQin is positively associated with unobservable mismatch. Column (2) also serves as the mediator equation in the mediation analysis. Column (3) reports the total effect of XiangQin on CESD8, and Column (4) adds the unobservable mismatch to estimate the direct effect. Panel B decomposes the total effect into direct and indirect effects. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

This result fits both the institutional setting and the existing literature. Parents, relatives, and matchmakers can collect and compare information about hukou, education, age, income group, residence, family background, and employment, which are typically disclosed and compared during the matching process. They are also central to Chinese marriage markets because they shape housing, migration opportunities, welfare access, and family status (Lui, 2017; Qian and Qian, 2017; Zhou, 2019). By contrast, latent characteristics are harder to observe before marriage, and they need time to be revealed. This distinction is consistent with prior work on the "love and money" trade-off emphasized in Huang et al. (2012, 2017): when parents and intermediaries help select spouses, they may place more weight on material and family-level suitability than on the private emotional surplus of the couple. Our evidence adds a mental-health implication to that trade-off.

Columns (3) and (4) connect unobservable mismatch to mental health. Unobservable mismatch is positively associated with depressive symptoms, and the XiangQin coefficient declines slightly from 0.112 to 0.102 after its inclusion. Panel B decomposes the effect and shows that the indirect path through unobservable mismatch accounts for 8.86% of the total effect, with the Sobel test significant at the 10 percent level.

The economic interpretation is that the unobservable mismatch reflects latent interpersonal frictions that operate as persistent stressors within marriage. Differences in trust, expectations about the future, and perceived social status can affect daily interaction, intra-household bargaining, and emotional support. This interpretation is consistent with evidence that marital quality is closely linked to personal well-being (Proulx et al., 2007), that stressful marital interaction can affect health and psychological outcomes (Kiecolt-Glaser and Newton, 2001), and that marital experiences matter for depression even in arranged-marriage settings (Zhang and Axinn, 2021). It is also consistent with evidence from an arranged-marriage society that spouse choice and marital duration are important correlates of marital quality (Allendorf and Ghimire, 2013).

The mediation share is not large enough to explain the entire XiangQin penalty, and that is exactly what we should expect. The mismatch variables only proxy a subset of latent compatibility. They do not fully capture affection, sexual compatibility, conflict style, in-law relations, autonomy in the decision to marry, or the pressure to remain in a socially approved marriage. XiangQin may therefore affect mental health through several channels: hidden mismatch, reduced autonomy, family pressure, bargaining asymmetry,

and social expectations. The mediation result should be read as evidence that hidden incompatibility is one measurable pathway, not as a complete accounting exercise.

These findings connect to the literature on assortative mating (Schwartz and Mare, 2005; Wang and Schwartz, 2018; Qian and Qian, 2017; Becker, 1973; Choo and Siow, 2006; Dupuy and Galichon, 2014) by showing that improvements in observable matching need not translate into better psychological outcomes when latent dimensions of compatibility are misaligned. Our results show why focusing only on observable sorting can miss an important welfare cost. Unobservable mismatch is learned through repeated interaction. The next section, therefore, asks whether the XiangQin mental-health gap grows with marriage duration and whether the unobservable mismatch becomes more psychologically costly as the marriage reveals information over time.

5. Heterogeneity

The baseline results show that XiangQin is associated with worse mental health on average. Since XiangQin is closely related to social norms and traditions, we then explore how this penalty is distributed across household roles and social environments. This provides more detailed insights into our main findings because XiangQin is not merely an individual search technology. It is embedded in family expectations, gender roles, household responsibilities, and local marriage markets. If the psychological cost of XiangQin comes from pressure, limited autonomy, and hidden incompatibility, then the cost should be larger where individuals bear greater relational responsibilities or face stronger external social evaluation.

As shown in Table 4, we organize the heterogeneity analysis in two steps. First, we examine within-household heterogeneity: gender, household financial decision-making, and family size. These dimensions capture who bears emotional and economic responsibility within the family, and whether the household has enough support capacity to absorb marital stress. Second, we examine heterogeneity across social environments. These dimensions capture local social norms behind XiangQin.

5.1. Within-household heterogeneity

5.1.1. Gender Differences

We begin with gender because XiangQin is often organized through family expectations that are not gender-neutral (Raiber et al., 2023). Women may face stronger pressure regarding marriage timing, family approval, and post-marital emotional labor (Ji, 2015; Erickson, 2005). Gender therefore provides the first test of whether the XiangQin penalty is distributed unequally across social positions. Columns (1) and (2) of Table 4 report the results for female and male samples, respectively. Women who entered marriage through XiangQin exhibit a significant increase in depressive symptoms (0.269, $p<0.01$), whereas the coefficient for men is small and statistically insignificant (0.070, $p>0.1$). This finding is consistent with the existing literature on gender and marital mental health, which suggests that women are generally more vulnerable to emotional strain arising from unequal household responsibilities, social expectations, and limited autonomy within marriage (Simon, 2002). In the context of XiangQin, where partner selection is more strongly shaped by family pressure and external criteria, women are more likely to occupy a passive role in marital decision-making and to bear greater emotional and relational responsibilities after marriage. As a result, the lack of emotional compatibility and psychological mismatch associated with XiangQin may impose disproportionately greater psychological burdens on women.

This gender pattern is important because it connects the average XiangQin penalty to the gendered organization of marriage formation. XiangQin is often presented as a family strategy for finding a socially acceptable match, but the emotional adjustment after marriage is not borne symmetrically. Women may face stronger pressure to accept family-screened matches, greater responsibility for maintaining household harmony, and higher social costs from marital dissatisfaction. The gender result therefore suggests that the mental health cost of XiangQin is partly produced by the interaction between mediated matching and unequal marital expectations.

5.1.2. Financial Information Advantage

Beyond gendered emotional responsibility, XiangQin may also create unequal exposure to economic responsibility within the household. XiangQin often evaluates marriage through the exchange and comparison of visible conditions, including income, housing, family resources, occupation, and expected household responsibilities (Huang et al., 2012). After marriage, however, these material expectations must be reconciled with actual budget con-

straints and household financial responsibilities. Individuals who understand or manage household finances may therefore be more directly exposed to this mismatch, as financial stress arises when household financial constraints become salient and absorb time and cognitive resources through worrying about and dealing with household finances (Sergeyev et al., 2025). We therefore examine whether the effect of XiangQin differs by household financial responsibility status.

Here, financial responsibility reflects who is most familiar with and responsible for the family's financial situation. It not only affects the allocation of resources but also profoundly shapes power structures and psychological feelings in marriage (Majlesi, 2016). Regarding financial responsibility in Table 4, Columns (3) and (4) report the results for primary household financial responsible persons and irresponsible persons, respectively. We find that the mental health penalty of XiangQin is more pronounced among individuals who are responsible for financial information in the household (0.175, $p<0.10$), while the coefficient for others, although still significant, is relatively smaller (0.158, $p<0.05$).

Existing literature generally emphasizes that household financial power reflects autonomy, bargaining power, and perceived control within marriage (Majlesi, 2016). Individuals who lack financial power are often less informed about household income sources, financial stability, and future planning, which may increase feelings of uncertainty, helplessness, and psychological vulnerability (Anderson and Eswaran, 2009; Bou Malhab et al., 2021). Studies have further shown that lower household autonomy is associated with higher levels of stress, anxiety, and depression, particularly among women (Lee et al., 2022; Antabe et al., 2025).

However, the situation is different in XiangQin context. Our findings suggest that in XiangQin marriages, possessing financial power does not necessarily protect individuals from psychological distress. Instead, individuals who take primary responsibility for household finances may bear additional emotional and practical burdens associated with maintaining family stability and fulfilling economic expectations. In many XiangQin marriages, partner selection is strongly tied to material conditions such as housing, income, and family background. As a result, financial responsibilities are often expected to coordinate long-term economic planning, manage intergenerational responsibilities, and sustain the outward stability of the marriage. When emotional intimacy and deep psychological compatibility are insufficient, these responsibilities may substantially intensify psychological strain.

Therefore, the stronger effect observed among financially responsible persons suggests that the mental health costs of XiangQin may operate not only through reduced autonomy, as highlighted in previous literature, but also through the accumulated stress of balancing economic obligations, family expectations, and unresolved relational tensions within marriage. This analysis provides a deeper insight that it is not merely the act of XiangQin that impacts the mental health of both parties; the extent to which one feels constrained by the process also exacerbates this burden.

5.1.3. Family Size

After examining who bears emotional and economic responsibility, we next ask whether the household has the support capacity to absorb marital stress. If financial decision-making captures who bears economic responsibility within the household, family size captures whether the household has alternative sources of emotional and practical support.

A XiangQin marriage does not enter an empty household. It enters a family structure that can either absorb marital stress or leave the couple to face it alone. In smaller families, the spouse relationship is more likely to play a central role in daily life and household functioning. In larger or multigenerational families, by contrast, practical responsibilities and informal care may be distributed across more household members, as extended-family networks provide livelihood support (Cheng et al., 2017; Compton and Pollak, 2014; Cox and Fafchamps, 2007). This distinction is important for XiangQin marriages. When a marriage is formed through a mediated and condition-oriented process, the emotional foundation between spouses may be weaker or less fully developed at the beginning (Huang et al., 2012). Family size, therefore, might offer a useful way to examine whether the mental health cost of XiangQin is buffered by broader household support structures.

To capture the role of household size in shaping the psychological impact of XiangQin marriage, we classify the sample based on family size. Specifically, in Table 4, we divide households into two groups: those with more than 4 members (column 5) and those with fewer than or equal to 4 members (column 6). We use 4 as a criterion for grouping because it is close to the transition point between nuclear and multigenerational families in contemporary China. According to national census data, the average household size in China steadily decreased from 3.94 persons in 1990 to 3.10 in 2010 (Zeng and Wang, 2018). Our dataset also shows that the average size of a current Chinese family is between 3 and 4 persons, i.e., a couple with 1-2

children. Generally, households with more than 4 members remain indicative of multigenerational arrangements often including grandparents or extended relatives, whereas households with 4 or fewer members typically represent nuclear or smaller family units.

Finally, Columns (5) and (6) present the results for large-family and small-family households, respectively. We find substantial heterogeneity across family size. XiangQin significantly increases depressive symptoms among individuals living in small families (0.240, $p<0.01$), whereas the coefficient for large-family households is statistically insignificant (0.095, $p>0.1$). These imply that the mental health associated with XiangQin marriage is strongly related to household demographic context. The results reflect the relationship between family size and mental health. Other empirical studies in China also support these views. In small families, especially those with limited adult social interactions, the lack of a romantic basis for marriage may lead to diminished emotional companionship, which may cause feelings of loneliness or dissatisfaction. For example, living in a multigenerational family is associated with fewer depressive symptoms in older adults due to stronger emotional and instrumental support (Sun et al., 2022). These environments can provide individuals with alternative emotional support and share family responsibilities, all of which can help to reduce the psychological stress that can come with less emotionally driven marital bonds.

5.2. Social-environment heterogeneity

5.2.1. Urban-rural Divide

We then move from the household interior to the broader social environment in which XiangQin takes place. Since the underlying social norms and cultural constraints associated with these settings often differ, this may lead to variations in people's attitudes toward XiangQin. In Table 4, columns (7) and (8) present the heterogeneity results for urban and rural residents. The negative mental health effect of XiangQin is concentrated among urban individuals. In urban areas, XiangQin significantly increases depressive symptoms (0.194, $p<0.05$), while the coefficient in rural areas is statistically insignificant (0.105, $p>0.1$).

The urban-rural difference may reflect variation in how distinct XiangQin is from the local norm of marriage formation. In urban areas, where individualized courtship and self-choice are more salient, XiangQin may stand out as a more conditional and evaluative form of partner search (Huang et al., 2012,

2017). This contrast may make the process more psychologically costly, especially when spouses perceive the marriage as shaped by external evaluation rather than gradual emotional learning, because the utility cost of a behavior depends partly on its fit with prevailing social prescriptions and identity norms (Akerlof and Kranton, 2000). In rural areas, by contrast, family involvement and socially mediated introductions are more deeply embedded in customary marriage practices (Liu and Mu, 2023), making XiangQin less distinct from other forms of marriage formation.

5.2.2. Individualism and Interdependence

Finally, within the external environment, we examine rice cultivation intensity as a historical-cultural measure of social interdependence. Prior research argues that historical rice cultivation fostered more interdependent social relations because paddy rice required intensive labor coordination and shared irrigation, whereas wheat cultivation was associated with more independent social organization (Talhelm et al., 2014). correspond to provinces with lower and higher rice-cultivation intensity, respectively. We find that the psychological penalty of XiangQin is concentrated in less rice-intensive provinces, where the coefficient is positive and significant (0.175, $p<0.05$), while the effect in rice-intensive provinces is smaller and statistically insignificant.

This pattern suggests that the mental health consequences of XiangQin depend on how strongly the practice contrasts with the local norm of marriage formation. In rice-intensive areas, stronger interdependence may make family involvement, relational coordination, and socially mediated decision-making more familiar features of intimate life. Under such conditions, XiangQin may be perceived less as an exceptional or externally imposed marriage channel and more as one form of socially embedded partner search (Zhou, 2019). This weaker contrast between XiangQin and local marriage norms may reduce the additional psychological cost associated with being matched through family-mediated arrangements.

By contrast, in less rice-intensive areas, where social relations are historically more individualistic, XiangQin may stand out more sharply from ideals of personal choice and emotional compatibility. When marital dissatisfaction or hidden incompatibility emerges after marriage, individuals may be more likely to experience the marriage as condition-based and insufficiently self-chosen. The stronger effect in less rice-intensive provinces, therefore, supports a normative-contrast interpretation. XiangQin becomes more psy-

chologically costly when it conflicts more strongly with the local cultural expectation that marriage should be based on individual choice and gradual emotional learning.

Table 4: Heterogeneous Effects of XiangQin

Panel A. Within-Household Heterogeneity

	Gender		Finance		Family Size	
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Female	Male	Responsible	Irresponsible	Large family	Small family
XQ	0.269***	0.070	0.175*	0.158**	0.095	0.240***
	(0.087)	(0.079)	(0.093)	(0.071)	(0.083)	(0.083)
Observations	13,432	15,061	10,483	17,620	13,472	14,978
R-squared	0.059	0.064	0.070	0.071	0.080	0.068
Controls	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Province FE	YES	YES	YES	YES	YES	YES
Couple Cluster	YES	YES	YES	YES	YES	YES

Panel B. Social-Environment Heterogeneity

	Urban-rural		Rice Cultivation Intensity	
	(7)	(8)	(9)	(10)
VARIABLES	Urban	Rural	Non-intensive	Intensive
XQ	0.194**	0.105	0.175**	0.138
	(0.082)	(0.088)	(0.077)	(0.098)
Observations	15,093	13,400	18,589	9,761
R-squared	0.067	0.075	0.071	0.062
Controls	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Province FE	YES	YES	YES	YES
Couple Cluster	YES	YES	YES	YES

Notes: Panel A reports heterogeneity by respondent gender, household financial decision-making status, and family size. Panel B reports heterogeneity by urban-rural status and rice cultivation intensity. The dependent variable is CESD-8. All specifications control for gender, age, urban residence, employment status, income level, self-rated social status, as well as year and province fixed effects. Standard errors clustered at the couple level are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Taken together, the heterogeneity results show that the XiangQin penalty is not a uniform psychological cost attached to matchmaking itself. Instead, it varies with both the roles individuals occupy after marriage and the social environments in which the marriage is formed. These patterns support the interpretation of XiangQin as a socially embedded marriage-formation institution. Its mental health consequences depend not only on whether a marriage was formed through matchmaking, but also on the social environment in which that match is evaluated, maintained, and lived.

6. Robustness

6.1. DiD Evidence on XiangQin

First, we exploit the timing of marriage entry and estimate an event-based difference-in-differences specification. This analysis compares changes in CESD-8 before and after marriage between individuals who entered marriage through XiangQin and those who entered marriage through other pathways. The purpose is to examine whether the baseline association between XiangQin and poorer mental health is driven only by time-invariant differences across individuals, or whether a similar pattern emerges when mental health changes are traced around the transition into marriage. The main sample here differs from the baseline sample because it is restricted to individuals who transition from unmarried to married during the observation window and have at least one non-missing CESD-8 observation both before and after marriage entry. The estimating equation is

$$MH_{it} = \alpha + \beta Marriage_{it} + \delta\left(Marriage_{it} \times XQ_i\right) + \gamma' X_{it} + \mu_i + \lambda_t + \varepsilon_{it}, \quad (8)$$

where MH_{it} denotes the CESD-8 score for individual (i) in survey wave (t), $Marriage_{it}$ indicates whether the individual has entered marriage by wave (t), and XQ_i indicates whether the current marriage was formed through XiangQin. Individual fixed effects μ_i absorb time-invariant differences across individuals, while year fixed effects λ_t control for common shocks across survey waves. The coefficient of interest is δ, which captures whether the change in mental health after marriage differs between XiangQin and non-XiangQin marriages.

Table 5 reports results of DID analysis, which supports the baseline findings. Marriage entry is associated with a lower CESD-8 score among non-XiangQin individuals, which is consistent with previous studies, while the

interaction between marriage entry and XiangQin is positive and statistically significant. This implies that the mental health improvement associated with marriage entry is substantially weaker for individuals whose marriages were formed through XiangQin.

Table 5: DID around Marriage Entry

VARIABLES	(1) cesd8	(2) cesd8
Marriage	-0.663***	-0.625***
	(0.194)	(0.203)
Marriage × XQ	0.617**	0.686***
	(0.245)	(0.251)
Constant	5.169***	4.107
	(1.106)	(2.790)
Observations	3,145	2,878
R-squared	0.611	0.633
Controls	NO	YES
Year FE	YES	YES
Individual FE	YES	YES

Notes: This sample is restricted to individuals who transition from unmarried to married during the observation window and have at least one nonmissing CESD-8 observation both before and after marriage entry. Marriage equals one after the respondent enters marriage and zero otherwise. XQ equals one if the respondent entered the current marriage through XiangQin and zero otherwise. The coefficient on Marriage × XQ captures the differential change in CESD-8 after marriage entry for XiangQin marriages relative to non-XiangQin marriages. Standard errors are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

In addition, to examine the dynamic pattern around marriage entry, we further estimate an event-study version of the specification

$$MH_{it} = \alpha + \sum_{k \neq -1} \beta_k D_{it}^k + \sum_{k \neq -1} \delta_k \left(D_{it}^k \times XQ_i \right) + \mu_i + \lambda_t + \varepsilon_{it}, \qquad (9)$$

where D_{it}^k is an indicator equal to one if individual (i) in survey wave (t) is observed at event time (k), measured as the number of survey waves relative to marriage entry, with (k=-1) omitted as the reference period. The coefficients δ_k trace the differential evolution of CESD-8 for XiangQin marriages relative to other marriages before and after marriage entry.

The event-study estimates show a similar pattern, as shown in Figure 4. The pre-entry coefficients do not display a clear upward trend, while the post-entry coefficients become positive, suggesting that the XiangQin-related mental health gap emerges after marriage rather than mechanically reflecting a comparable pre-marriage increase.

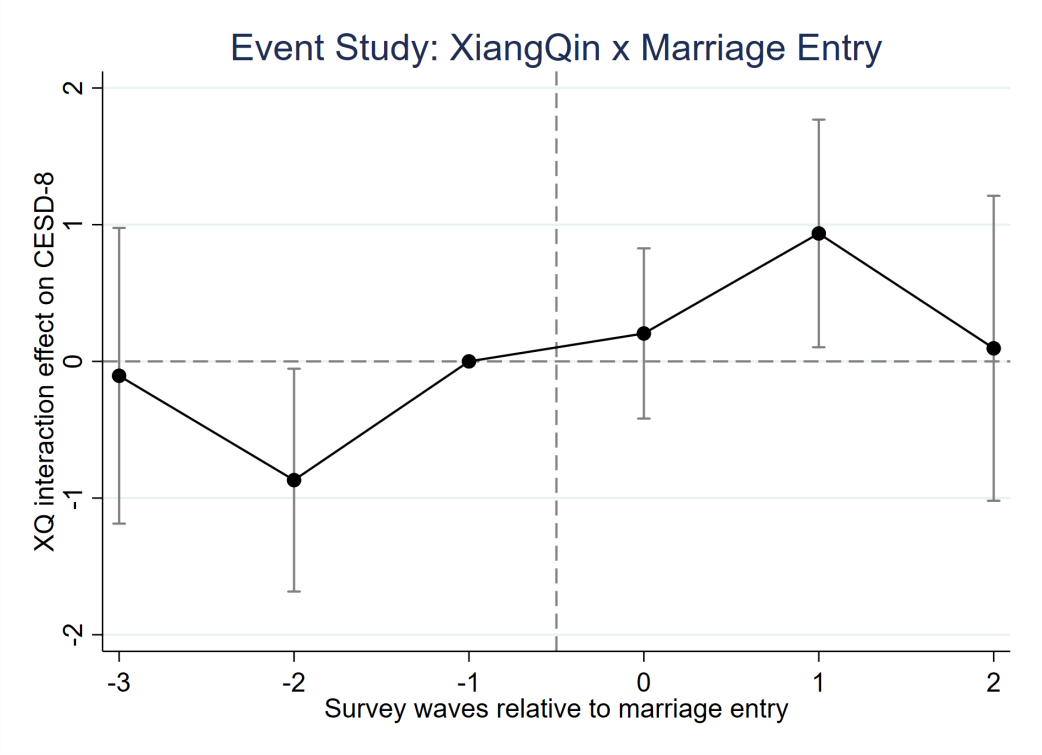


Figure 4: Event study on XiangQin

Notes: The horizontal axis denotes event time measured in survey waves relative to marriage entry, with (k=-1) omitted as the reference period. The sample is restricted to individuals who are continuously observed, transition from unmarried to married during the observation window, and have observations both before and after marriage entry. Vertical bars report 95 percent confidence intervals.

6.2. Supplementary tests

Table 6 reports several robustness checks. Column (1) adds marriage-cohort fixed effects to address the possibility that the baseline results are driven by generational differences in both XiangQin prevalence and mental health. Older cohorts are more likely to have used XiangQin, and mental

health also varies by cohort. Absorbing marriage-cohort fixed effects therefore imposes a demanding comparison within cohort groups. The XiangQin coefficient remains positive and statistically significant.

Table 6: Robustness Checks

VARIABLES	(1) Cohort FE	(2) Duration FE	(3) z-CESD	(4) PCA	(5) CEM
XQ	0.111**	0.120**	0.030**	0.107*	0.118**
	(0.057)	(0.056)	(0.014)	(0.058)	(0.056)
Unobservable mismatch PCA				0.333***	
				(0.024)	
Constant	4.460***	4.415***	-0.249***	4.420***	4.462***
	(0.263)	(0.251)	(0.040)	(0.164)	(0.157)
Observations	27,930	28,490	28,490	26,571	28,474
R-squared	0.142	0.144	0.141	0.147	0.141
Controls	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Province FE	YES	YES	YES	YES	YES
Couple cluster	YES	YES	YES	YES	NO
Marriage cohort FE	YES	NO	NO	NO	NO
Duration FE	NO	YES	NO	NO	NO

Notes: This table reports robustness checks for the baseline relationship between XiangQin and mental health. Standard errors are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Column (2) adds marriage-duration fixed effects to absorb flexible life-cycle patterns within marriage. This is important because depressive symptoms may vary systematically over the marriage life cycle due to childbearing, household formation, aging, or retirement. The result remains positive, suggesting that the baseline association is not simply a duration effect. Column (3) uses the standardized CESD-8 score as the outcome. The coefficient remains positive and significant, showing that the result is not an artifact of the scale of the dependent variable.

Column (4) reconstructs the unobservable mismatch using principal component analysis. The PCA-based mismatch measure remains strongly associated with CESD-8, supporting the mechanism result. Column (5) uses a coarsened exact matching (CEM) sample to improve comparability between XiangQin and non-XiangQin respondents. The coefficient remains positive and significant. Taken together, these tests reduce concerns that the results are driven by a particular coding choice, scale choice, fixed-effect structure, or sample-composition difference.

6.3. Placebo test

Figure 5 presents a placebo exercise. We randomly reassign XiangQin status among married respondents and re-estimate the baseline regression 1,000 times. The simulated coefficients are centered near zero, whereas the original estimated coefficient lies away from the placebo distribution. This result reduces the concern that the baseline finding is mechanically generated by the regression design or by random differences between groups. Instead, the observed XiangQin effect is tied to the actual marriage-formation channel.

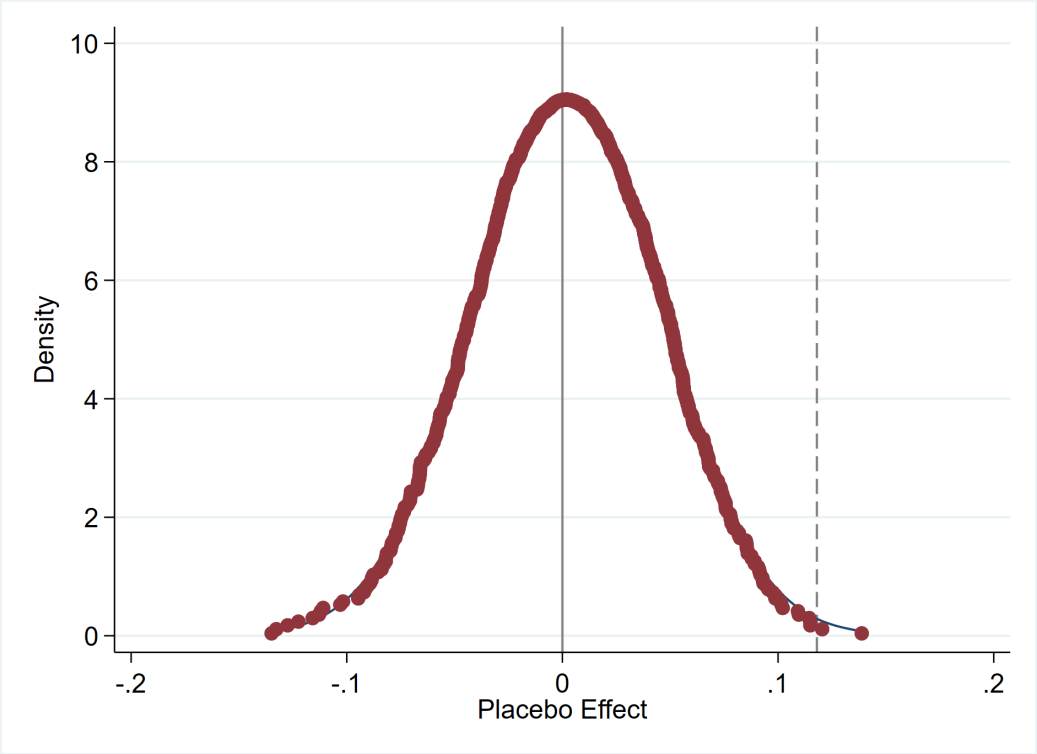


Figure 5: Placebo Test

Notes: The histogram reports coefficients from 1,000 placebo regressions in which XiangQin status is randomly reassigned among married respondents. The vertical reference line marks the original estimate.

The placebo test is not a substitute for identification, but it is useful as a diagnostic tool. If the regression design tended to produce positive XiangQin effects even under random assignment, the placebo distribution would resemble the original estimate. Combined with the fixed-effect results,

IV estimates, mechanism evidence, dynamic learning pattern, and robustness checks, the placebo exercise strengthens the interpretation that XiangQin is systematically associated with worse mental health through the proposed information and mismatch channels.

7. Further Exploration: Dynamic Learning

The previous sections have established the main findings of the paper, showing that XiangQin significantly increases depressive symptoms through heightened unobservable mismatch between spouses. However, the baseline and mechanism analyses mainly capture the average psychological consequences of XiangQin at a given point in time, while providing limited insight into how these effects may unfold and accumulate throughout married life. As an additional extension, this section further explores whether the psychological consequences of XiangQin evolve over the course of marriage. By introducing a dynamic perspective, we seek to provide a deeper understanding of how post-marital interaction, information revelation, and long-term relational adjustment may gradually reshape the mental health outcomes associated with XiangQin marriages.

This section develops and tests the paper's dynamic mechanism. We first present descriptive evidence showing that the mental-health gap between XiangQin and non-XiangQin marriages widens with marriage duration. We then introduce a simple learning framework in which spouses gradually discover unobservable incompatibilities after marriage. Finally, we test the model's predictions by estimating how the effect of XiangQin and the role of unobservable mismatch evolve over marriage duration.

7.1. Motivation and model

7.1.1. Motivation

The baseline results document a negative association between XiangQin and mental health, but this average effect may conceal an important dynamic process after marriage. Marriage is not only a static status. Household decisions, spousal roles, and intra-household adjustments evolve over the marital life cycle, as couples gradually reorganize labor supply, family responsibilities, and expectations within marriage (Mazzocco et al., 2014). Consistent with this broader dynamic view, Clark et al. (2008) show that the well-being consequences of marriage display important lead and lag patterns around

the marital transition. These findings suggest that the mental-health consequences of marriage formation may also unfold gradually after marriage rather than appearing only as a one-time level difference. Motivated by this perspective, Figure 6 plots mean mental health by marriage duration for XiangQin and non-XiangQin marriages. The figure shows that the gap is not fixed at the beginning of marriage. Instead, especially among women and in the overall sample, the mental-health gap becomes more visible as marriage duration increases. This pattern suggests that the XiangQin penalty documented in the baseline estimates may reflect not only a static disadvantage, but also a dynamic process through which the psychological costs of marriage formation accumulate over time. Since the mediation results in Table 3 have already identified an unobservable mismatch as a key mechanism, and the marriage-formation channel is already fixed at the beginning of marriage, a widening gap might point to a process that changes over time, which is the information received by spouses about each other and the way in which this information is absorbed into daily family life.

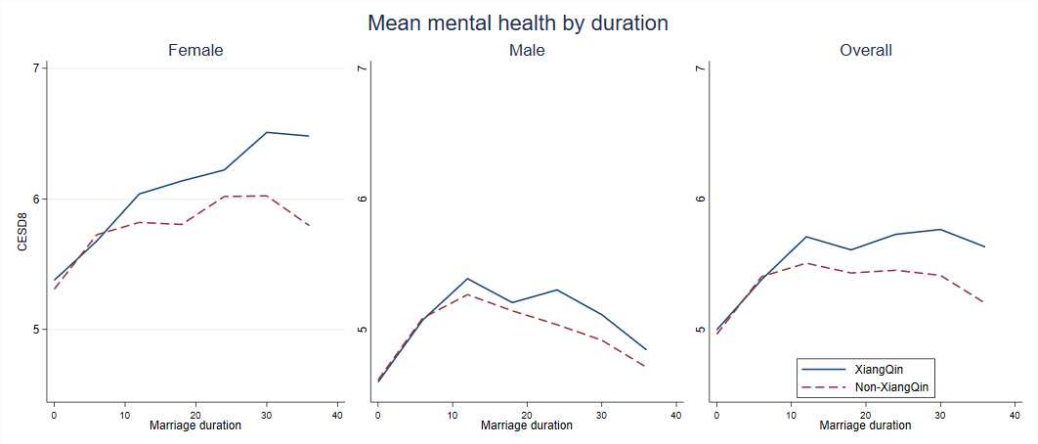


Figure 6: Mental Health Gap between XiangQin and Non-XiangQin

Notes: The figure motivates the dynamic analysis by comparing the mental health gap between XiangQin and non-XiangQin marriages over marriage duration. Higher CESD-8 values indicate worse mental health. Marriage duration is calculated as the difference between the survey year and the respondent's year of marriage.

This dynamic fact can confirm a learning mechanism after marriage. Couples may enter marriage with an incomplete estimate of match quality; as they live together, they observe new signals about trust, patience, conflict style, emotional support, spending behavior, fertility preferences, relation-

ships with in-laws, and expectations about gender roles. Some signals confirm the initial match. Others reveal hidden incompatibility. The key claim is that XiangQin makes the second type more likely because the premarital process places more weight on screenable traits and less weight on latent compatibility, leading to the higher uncertainty of unobservable characteristics.

The idea that marriage is formed under uncertainty is central to family economics. Becker et al. (1977) model marital instability as partly arising from uncertainty about the gains from marriage. Weiss and Willis (1997) explicitly links marital dissolution to match quality and new information. Brien et al. (2006) develop a model in which cohabitation, marriage, and divorce reflect learning about partner match quality; in their framework, one reason couples cohabit is to learn about potential partners and ensure against unfavorable future shocks. Our setting is different because XiangQin is a mediated search channel rather than cohabitation, but the information problem is the same: the quality of a spouse match is only partly known before the relationship becomes a long-term household arrangement.

The same logic appears in labor economics. In job-matching models, worker–firm productivity is not fully known at the beginning of a match, and tenure reveals match quality over time (Jovanovic, 1979). Employer-learning models similarly emphasize that observable signals receive high weight early, while hidden productivity is gradually inferred from later performance (Altonji and Pierret, 2001). We adapt this logic to marriage. The analogy is not that marriage is a labor contract. The analogy is informational: an initial match is made using observable signals, and the hidden quality of the match is learned through repeated interaction.

Relationship science also supports a dynamic interpretation. Longitudinal studies show that marital quality is not fixed at the time of marriage; it changes as spouses encounter stress, adapt to each other, and revise beliefs about the relationship (Karney and Bradbury, 1995; Bradbury et al., 2000). Newlywed studies find substantial heterogeneity in marital satisfaction trajectories, with declines concentrated among couples who begin with weaker foundations or encounter unresolved problems (Lavner and Bradbury, 2010). Huston et al. (2001) emphasizes disillusionment in the newlywed years: a decline in affection, perceived responsiveness, and confidence in the partner can predict later distress and divorce. These findings are directly related to our mechanism. XiangQin may produce marriages that satisfy family and socioeconomic criteria at the start, but the emotional quality of the match

is learned only as the marriage is lived.

The nature of XiangQin points to the unobservable mismatch as the dynamic factor. A mediated and accelerated search process may allow families and spouses to observe hard indicators before marriage, but it cannot fully reveal emotional compatibility, trust, confidence, lifestyle habits, and other soft traits. These traits are learned through cohabitation, family obligations, financial decisions, illness, childbearing, and daily conflict resolution. The psychological cost of the mismatch, therefore, need not appear immediately. It can accumulate as expectations are revised downward and as adaptation becomes more costly. This does not imply that all XiangQin marriages deteriorate. Some couples may learn positive information, adapt successfully, and build affection over time. The model focuses on the case predicted by our empirical mechanism: when XiangQin leaves more hidden incompatibility at the start, later learning can convert that hidden incompatibility into psychological stress.

We therefore use a second descriptive exercise to ask whether the unobservable mismatch becomes increasingly informative for mental health over marriage duration. If the unobservable mismatch is the relevant dynamic channel, then its ability to explain mental health should increase with marriage duration among XiangQin couples. To examine this idea, we compare the residual explanatory power of observable mismatch alone with the explanatory power of observable and unobservable mismatch together. For each marriage-duration window d and each group $g \in \{XQ, Non\text{-}XQ\}$, we estimate two auxiliary regressions:

$$MH_{it}^{family} = a_{gd} + b_{gd} ObMismatch_{it} + e_{it}^{Ob}, \tag{10}$$

$$MH_{it}^{family} = a'_{gd} + b'_{gd} ObMismatch_{it} + c'_{gd} UnobMismatch_{it} + e_{it}^{Full}. \tag{11}$$

The duration window for target duration d includes marriages with duration $d-1$, d, and $d+1$, with endpoints truncated at 0 and 25. We then define the residual-variance reduction share as

$$RVR_{gd} = \frac{\mathrm{Var}(e_{it}^{Ob}) - \mathrm{Var}(e_{it}^{Full})}{\mathrm{Var}(e_{it}^{Ob})}. \tag{12}$$

A larger value of RVR_{gd} means that unobservable mismatch explains more of the remaining mental-health variation after observable mismatch has already been accounted for.

Figure 7 plots this measure by marriage duration. Among XiangQin couples, the residual-variance reduction share rises with duration. Among non-XiangQin couples, the fitted trend is flat or slightly declining. It shows that the information contained in unobservable mismatches becomes increasingly useful for explaining mental health in XiangQin marriages precisely as marriages age. This descriptive pattern links the dynamic mental-health gap in Figure 6 to the mismatch mechanism: the growing penalty appears to be related to latent incompatibility rather than to observable sorting alone.

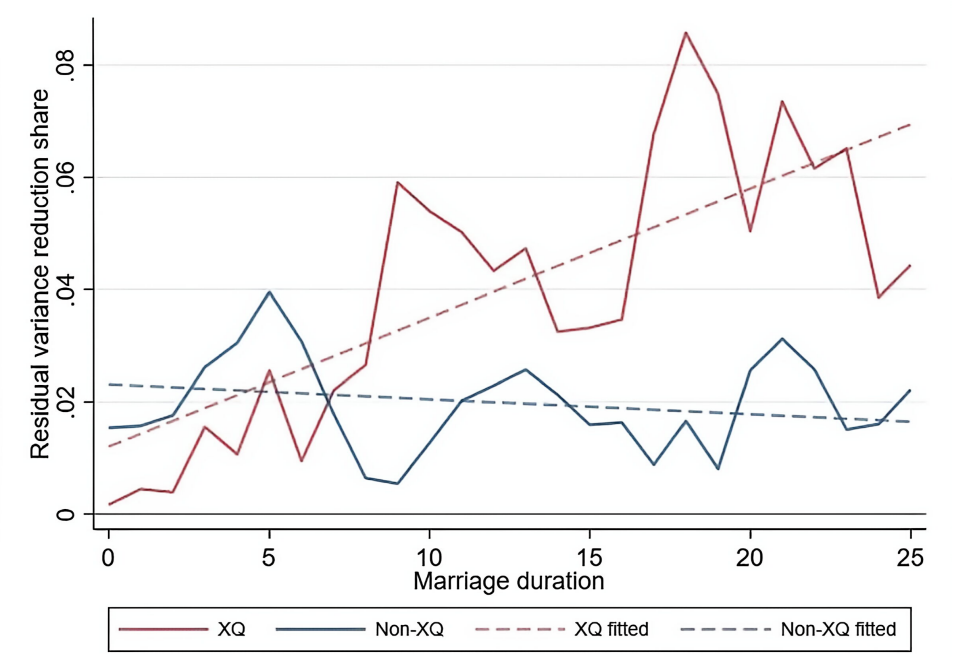


Figure 7: Additional Explanatory Power of Unobservable Mismatch by Marriage Duration

Notes: The figure plots RVR_{gd} from Equation 12, separately for XiangQin and non-XiangQin couples. For each target duration d, the calculation uses a bandwidth-one window containing durations $d-1$, d, and $d+1$, with endpoints truncated at 0 and 25. RVR_{gd} is the proportional reduction in residual variance when the unobservable mismatch is added to a regression of couple-level CESD-8 on observable mismatch. Dashed lines are fitted linear trends weighted by cell size.

7.1.2. Model

We develop a stylized model of mismatch formation and postmarital information revelation. The model is not intended to characterize the complete

process of marriage formation, bargaining, or divorce. Instead, it formalizes the mechanism developed in the preceding sections and generates empirical predictions for the subsequent dynamic analysis. The framework combines three ideas. First, spouse matching is multidimensional: couples can match well on characteristics that are easy to screen before marriage while remaining poorly matched on relational traits that are difficult to observe. Second, marriage is an experience good. Daily interaction gradually reveals dimensions of match quality that were not fully known before marriage. Third, mental health responds to the mismatch that spouses actually experience inside marriage rather than only to the mismatch that exists in principle. This setup follows the informational logic of match-quality learning in Jovanovic (1979); Altonji and Pierret (2001) and its application to intimate relationships in Brien et al. (2006).

Mismatch formation.. Let $m_i \in \{0, 1\}$ denote the marriage-formation channel, where $m_i = 1$ indicates a XiangQin marriage. Couple i has mismatches along two broad dimensions. Let Q_i denote the mismatch in characteristics that can be assessed relatively easily before marriage, such as age, education, income group, and hukou status. Let U_i denote the stock of latent mismatch in characteristics that are difficult to assess before marriage, including trust, communication, emotional regulation, expectations about family responsibilities, and conflict style. Total underlying mismatch is

$$Z_i = \lambda Q_i + U_i, \qquad \lambda > 0. \tag{13}$$

The institutional argument developed above implies the following screening trade-off:

$$E(Q_i \mid m_i = 1) \leq E(Q_i \mid m_i = 0), \quad \mu_1 \equiv E(U_i \mid m_i = 1) > \mu_0 \equiv E(U_i \mid m_i = 0) \geq 0. \tag{14}$$

The first inequality allows XiangQin to improve matching on characteristics that parents and intermediaries can verify. The second states that XiangQin marriages begin with a larger stock of latent mismatch. This trade-off is consistent with Huang et al. (2012): mediated matching can improve socioeconomic feasibility without maximizing the private relational surplus of the couple.

Equation 14 describes the information environment faced by spouses at marriage. It does not require the researcher to observe premarital information. The mismatch indices used in the empirical analysis provide postmarital proxies for Q_i and U_i.

Postmarital information revelation.. Not every latent incompatibility is recognized when marriage begins. Let p_m denote the share of latent compatibility that spouses have already learned or experienced before marriage, in formation channel m. Compressed premarital interaction implies

$$0 \leq p_1 < p_0 \leq 1. \tag{15}$$

Thus, a smaller share of latent compatibility is known when a XiangQin marriage begins. After marriage, previously hidden incompatibilities become relevant when couples encounter financial decisions, illness, childbearing, relationships with parents, household responsibilities, and daily conflict. We model the arrival of these situations as a Poisson process with rate $r > 0$. The expected share of latent mismatch that has become revealed and psychologically salient by marriage duration t is

$$s_m(t) = 1 - (1 - p_m)\exp(-rt). \tag{16}$$

The function satisfies $s_m(0) = p_m$ and converges to one as marriage duration increases. Its derivative is

$$s'_m(t) = r(1 - p_m)\exp(-rt) > 0, \qquad s'_1(t) - s'_0(t) = r\exp(-rt)(p_0 - p_1) > 0. \tag{17}$$

The second inequality does not assume that XiangQin spouses have a greater ability to learn. The arrival rate r is common across marriage channels. Latent mismatch becomes salient more rapidly among XiangQin couples because a larger share of compatibility-relevant information remains unresolved at marriage.

The expected mismatch experienced by couple i at duration t is

$$R_{it} = \lambda Q_i + s_{m_i}(t)U_i. \tag{18}$$

The distinction between U_i and R_{it} is central. The former is the underlying stock of latent incompatibility, whereas the latter is the portion that has entered the couple's lived experience.

Mental health.. Revealed mismatch reduces marital surplus by generating conflict, disappointment, weaker emotional support, and more difficult household cooperation. Because higher CESD-8 values indicate worse mental health, we write

$$MH_{it} = \alpha + \delta m_i + g(t) + \beta R_{it} + \varepsilon_{it}, \qquad \beta > 0. \tag{19}$$

The function $g(t)$ captures changes in mental health associated with marriage duration that are common to both marriage channels. The term δm_i allows XiangQin to affect mental health through duration-invariant channels other than mismatch, including family pressure, reduced autonomy, and bargaining arrangements. The model therefore does not require latent mismatch to explain the entire XiangQin penalty.

Empirical predictions.. The model generates two predictions. First, the mental-health gap between XiangQin and non-XiangQin marriages should widen with marriage duration. Define

$$\Delta(t) = E(MH_{it} \mid m_i = 1, t) - E(MH_{it} \mid m_i = 0, t).$$

As shown in Appendix Appendix A,

$$\Delta'(t) = \beta r \exp(-rt)\left[(1 - p_1)\mu_1 - (1 - p_0)\mu_0\right] > 0. \tag{20}$$

XiangQin marriages begin with both a larger stock of latent mismatch and a larger fraction of that stock remaining unresolved. Consequently, more mismatch enters the couple's lived experience as marriage duration increases. This prediction motivates the interaction between XiangQin and marriage duration.

Second, the mental-health relevance of unobservable mismatch should increase more rapidly with duration among XiangQin couples. The marginal effect of latent mismatch is

$$\frac{\partial E(MH_{it} \mid Q_i, U_i, m_i, t)}{\partial U_i} = \beta s_{m_i}(t).$$

Therefore,

$$\begin{aligned} &\frac{\partial^2 E(MH_{it})}{\partial U_i\, \partial t}\bigg|_{m_i=1} - \frac{\partial^2 E(MH_{it})}{\partial U_i\, \partial t}\bigg|_{m_i=0} \\ &\quad = \beta r \exp(-rt)(p_0 - p_1) > 0. \end{aligned} \tag{21}$$

This is the sharper mechanism-specific prediction. It motivates estimating whether the association between unobservable mismatch and mental health

grows more strongly with duration among XiangQin couples. The Appendix also shows how the same mechanism explains why the unobservable mismatch accounts for an increasing share of residual mental-health variation as XiangQin marriages mature.

7.2. Marriage duration

We test the first prediction using the following dynamic specification:

$$MH_{ipt} = \alpha + \beta XQ_i + \delta Duration_{it} + \rho(XQ_i \times Duration_{it}) + \mathbf{X}'_{it}\gamma + \mu_p + \lambda_t + \epsilon_{ipt}. \tag{22}$$

The marginal effect of XiangQin at marriage duration d is $\beta + \rho d$. Table 7 Column (1) shows that $XQ \times Duration$ is positive and significant[1]. Figure 8 further plots the implied marginal effect over durations between 0 and 25. The effect is limited at the beginning of marriage but becomes progressively larger, consistent with a widening mental health gap.

This result is the first piece of evidence that the XiangQin penalty is not only a selection effect at the wedding date. The comparison is within marriage duration: as the two marriages age, the XiangQin marriage shows a steeper mental-health deterioration relative to the non-XiangQin marriage. This does not mean that duration itself is harmful. Marriage duration can also bring relationship-specific capital, shared routines, children, kinship ties, and economic cooperation. The coefficient instead says that the trajectory differs by formation channel. The same passage of time seems to reveal or activate different information in XiangQin marriages.

The result also connects the Chinese evidence to broader research on marital trajectories. Longitudinal marriage research emphasizes that early relationship quality and subsequent changes are both predictive of later distress (Karney and Bradbury, 1995; Huston et al., 2001). Our evidence adds a marriage-market explanation for why some trajectories deteriorate. The source of later decline may be partly embedded in the formation process itself. If premarital matching underweights latent compatibility, then the marriage

[1]The estimates are based on observed married individuals and therefore describe mental health among marriages that remain observed in the data. If the most incompatible XiangQin marriages are more likely to dissolve or leave the sample, the estimates may understate the full cost of hidden mismatch. We therefore interpret the dynamic coefficient as evidence of a widening psychological penalty among surviving observed marriages, rather than as a complete measure of all welfare losses from poor match quality.

Table 7: Dynamic Effect Regressions

	(1) Full sample CESD-8	(2) XQ CESD-8	(3) Non-XQ CESD-8
XQ	0.018		
	(0.097)		
XQ × duration	0.006*		
	(0.004)		
Duration	0.005	0.000	0.010
	(0.004)	(0.017)	(0.010)
Unobservable mismatch		0.541***	0.620***
		(0.191)	(0.126)
Unobservable mismatch × duration		0.030**	-0.002
		(0.014)	(0.010)
Constant	6.631***	6.494***	6.752***
	(0.186)	(0.507)	(0.291)
Observations	28,493	5,646	11,459
R-squared	0.070	0.092	0.074
Controls	YES	YES	YES
Year FE	YES	YES	YES
Province FE	YES	YES	YES
Couple cluster	YES	YES	YES

Notes: The dependent variable is CESD-8. Duration is measured in years since marriage. Columns (2) and (3) restrict the sample to a duration between 0 and 25 by XiangQin status. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

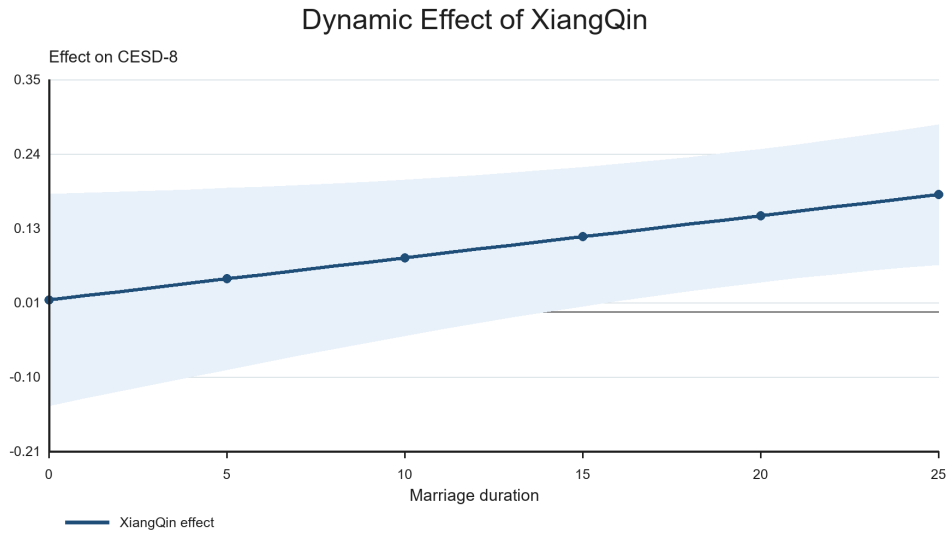


Figure 8: Estimated Dynamic Effect of XiangQin

Notes: The figure plots the marginal effect of XiangQin on CESD-8 by marriage duration, based on the interaction specification in Equation 22. The shaded band reports the 90% robust confidence interval. Controls, province fixed effects, and year fixed effects are included.

begins with an information deficit that is only resolved after spouses have already made costly commitments.

We test the second prediction using a dynamic mismatch specification, separately for XiangQin and non-XiangQin marriages:

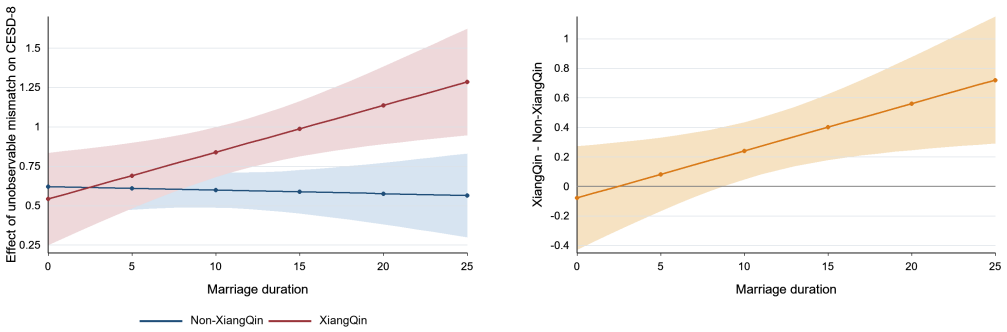
$$MH_{ipt} = \alpha_g + \beta_g U_{it} + \delta_g D_{it} + \rho_g (U_{it} \times D_{it}) + \mathbf{X}'_{it}\gamma + \mu_p + \lambda_t + \epsilon_{ipt}, \quad g \in \{XQ, Non\text{-}XQ\}. \tag{23}$$

where U_{it} denotes unobservable mismatch. The coefficient ρ_g measures whether the mental-health relevance of unobservable mismatch changes with marriage duration within group g. The dynamic-learning mechanism predicts that ρ_g should be larger for XiangQin marriages than for non-XiangQin marriages.

Table 7 Columns (2) and (3) present results of this logic. Among XiangQin couples, the interaction between unobservable mismatch and duration is positive and significant. Among non-XiangQin couples, the corresponding interaction is small and statistically insignificant. This distinction is central. Unobservable mismatch is harmful in both groups, but it becomes increasingly harmful over time only in XiangQin marriages. That is exactly

what the learning model predicts.

Figure 9 reports the marginal effects from Equation 23. The effect of unobservable mismatch rises with duration for XiangQin couples, while it remains relatively flat for non-XiangQin couples. The right panel plots the difference between the two marginal effects and shows that the gap increases over time. This visual result makes the mechanism clear. In non-XiangQin marriages, more premarital interaction may allow partners to learn about soft traits before marriage or to internalize known incompatibilities when deciding whether to marry. In XiangQin marriages, the same traits are more likely to remain hidden at the start and to become salient only after daily cohabitation and family responsibilities begin.



(a) Marginal effects by marriage channel

(b) Difference in marginal effects

Figure 9: Dynamic Effect of Unobservable Mismatch by XiangQin Status

Notes: Panel (a) plots the marginal effect of unobservable mismatch on CESD-8 by marriage duration separately for XiangQin and non-XiangQin marriages. Panel (b) plots the difference between the two marginal effects. Marginal effects are calculated from the split-sample dynamic mismatch regressions in Table 7, Columns (2) and (3), as $\widehat{\beta}_g + \widehat{\rho}_g d$, where $g \in \{XQ, Non\text{-}XQ\}$. Shaded bands report 90% robust confidence intervals.

These results are important because they distinguish the paper's mechanism from a purely static mismatch story. If an unobservable mismatch were simply another fixed spouse characteristic, it would predict mental health but would not necessarily become more important with duration. If the XiangQin penalty were entirely driven by cohort, region, or individual composition, the duration interaction would also be difficult to explain. The evidence instead suggests a dynamic learning process: XiangQin creates or preserves hidden incompatibility; hidden incompatibility is gradually revealed; and the psy-

chological cost grows as the revelation process continues.

The dynamic section is therefore the bridge between the paper's empirical mechanism and its economic interpretation. The baseline estimates show that XiangQin is associated with worse mental health. The mediation results show that the unobservable mismatch is one pathway. The duration results show why this pathway is distinctively powerful: hidden mismatch is not fully priced at the time of marriage. It becomes costly after the household is formed, when spouses learn what the premarital search process failed to reveal.

8. Conclusion

In this paper, we study XiangQin as a distinct and empirically important marriage-formation channel in China. XiangQin is neither a traditional arranged marriage nor a fully autonomous free-love search. It is a hybrid institution in which family members, relatives, friends, agencies, or other intermediaries help introduce and screen potential spouses. Although XiangQin remains widely practiced, its consequences for post-marital well-being have received limited attention. This paper brings XiangQin into the economics of marriage and mental health by asking whether the way people enter marriage matters for their psychological well-being after marriage.

Using nationally representative CFPS data, we document a clear empirical pattern: individuals who entered marriage through XiangQin report worse mental health than comparable individuals in non-XiangQin marriages. The result remains positive and robust across many different specifications. Instrumental-variable estimates based on local traditions of parental involvement further support the causal interpretation. The central contribution of the paper is therefore to establish XiangQin as a meaningful and measurable marriage-formation institution with hidden mental-health costs.

The mechanism provides one explanation for why this penalty may arise. XiangQin appears to improve matching on several observable traits, such as socioeconomic and family-screened characteristics, while increasing mismatch in less observable psychological and relational dimensions. This trade-off is consistent with the nature of mediated marriage formation, that is, parents and intermediaries can compare visible conditions more easily than they can evaluate trust, emotional compatibility, values, communication style, and everyday companionship. Mediation results suggest that the unobservable

mismatch accounts for part of the XiangQin penalty. We therefore interpret mismatch as one measurable pathway rather than the only channel.

The heterogeneity results show that the XiangQin penalty is socially patterned rather than uniform. Within households, the penalty is larger for women, financial decision-makers, and individuals in smaller families, suggesting that the hidden mismatch becomes more costly when marital roles involve greater responsibility and fewer sources of support. Across social environments, the penalty is stronger in urban and more individualistic settings. This pattern suggests that XiangQin becomes more psychologically costly when mediated matching conflicts with stronger expectations of personal choice, emotional compatibility, and marital autonomy. These findings reinforce that XiangQin is not only a matching channel that screens observable traits, but also a culturally embedded institution whose consequences depend on the household roles and social meanings through which the match is experienced after marriage.

The dynamic results show that the cost of XiangQin unfolds over time. The mental health gap between XiangQin and non-XiangQin marriages widens with marriage duration. Moreover, the effect of unobservable mismatch grows over time among XiangQin couples but not among non-XiangQin couples. This pattern is consistent with our learning mechanism, in which hidden incompatibilities that were not fully observed before marriage become psychologically costly as couples spend more time together. If XiangQin compresses premarital emotional learning, some incompatibilities may become visible only after spouses begin to share daily life, financial responsibilities, child-rearing, and obligations to parents. The dynamic analysis, therefore, extends the main empirical finding by showing how hidden incompatibility may become psychologically costly after marriage.

This study carries clear policy implications. First, premarital counseling should focus more on psychological compatibility rather than socioeconomic conditions to reduce hidden spousal mismatch. Second, raising public awareness of latent incompatibility in rapid matchmaking may help mitigate its long-term mental health costs. Third, gender disparities in the mental health consequences of marriage deserve greater attention in family policy design. For future research, it would be valuable to explore how digital matchmaking platforms reshape the information trade-off between observable socioeconomic traits and unobservable psychological compatibility in partner selection. Our findings suggest that modern matchmaking platforms should move beyond verifying "hard" socioeconomic traits and incorporate

more soft personality compatibility tools to mitigate long-term mental health risks. Future research could measure latent compatibility more directly and evaluate whether premarital interaction, counseling, or changes in family involvement affect postmarital mental health. It could also examine whether digital matchmaking platforms reproduce or mitigate the trade-off between screening verifiable socioeconomic traits and learning about emotional and relational compatibility.

Appendix A. Derivation of the Dynamic Learning Predictions

This appendix provides the microfoundation for the revelation function and derives the two empirical predictions stated in the main text.

Appendix A.1. Multidimensional latent mismatch

Suppose that couple i has latent mismatch along J relational dimensions. Let $u_{ij} \geq 0$ denote the severity of mismatch in dimension j. The couple's total latent-mismatch stock is

$$U_i = \sum_{j=1}^{J} u_{ij}. \tag{A.1}$$

Let $D_{ij}(0)$ equal one if dimension j has already been learned or experienced before marriage. Conditional on the marriage channel m_i,

$$D_{ij}(0) \sim \text{Bernoulli}(p_{m_i}). \tag{A.2}$$

The assumption $p_1 < p_0$ captures compressed premarital learning in XiangQin marriages.

For a dimension that remains hidden at marriage, let T_{ij} denote the first postmarital situation in which that dimension becomes relevant. We assume

$$T_{ij} \sim \text{Exponential}(r), \qquad r > 0. \tag{A.3}$$

Conditional on the marriage channel, the initial revelation indicator $D_{ij}(0)$ and the postmarital arrival time T_{ij} are assumed to be independent of mismatch severity u_{ij}. Revelation processes are also identically distributed across latent dimensions. These assumptions allow the expected revelation share to be separated from the underlying severity of the mismatch.

Hence,

$$\Pr(T_{ij} \leq t) = 1 - \exp(-rt). \tag{A.4}$$

Define the postmarital revelation indicator as

$$D_{ij}(t) = D_{ij}(0) + [1 - D_{ij}(0)]\, \mathbf{1}\{T_{ij} \leq t\}. \tag{A.5}$$

Taking expectations conditional on the marriage channel gives

$$
\begin{aligned}
E[D_{ij}(t) \mid m_i = m] &= p_m + (1 - p_m)\Pr(T_{ij} \le t) \\
&= p_m + (1 - p_m)\left[1 - \exp(-rt)\right] \\
&= 1 - (1 - p_m)\exp(-rt) \equiv s_m(t). \qquad \text{(A.6)}
\end{aligned}
$$

The revelation function satisfies

$$
s_m(0) = p_m, \qquad \lim_{t\to\infty} s_m(t) = 1, \qquad s'_m(t) = r(1 - p_m)\exp(-rt) > 0. \quad \text{(A.7)}
$$

Because $p_1 < p_0$,

$$
s'_1(t) - s'_0(t) = r\exp(-rt)(p_0 - p_1) > 0. \qquad \text{(A.8)}
$$

Thus, the share of latent mismatch entering marital life grows more rapidly among XiangQin couples, even when the underlying arrival rate r is common across marriage channels.

The realized mismatch experienced by couple i is

$$
R^*_{it} = \lambda Q_i + \sum_{j=1}^{J} D_{ij}(t)u_{ij}. \qquad \text{(A.9)}
$$

Taking expectations conditional on the underlying mismatch stock gives

$$
\begin{aligned}
E(R^*_{it} \mid Q_i, U_i, m_i) &= \lambda Q_i + \sum_{j=1}^{J} E[D_{ij}(t) \mid m_i]u_{ij} \\
&= \lambda Q_i + s_{m_i}(t)U_i, \qquad \text{(A.10)}
\end{aligned}
$$

which is Equation 18 in the main text.

Appendix A.2. Marital surplus and mental health

Let the flow marital surplus of couple i at duration t be

$$
V_{it} = \overline{V}_i - \chi R^*_{it}, \qquad \chi > 0, \qquad \text{(A.11)}
$$

where $\overline{V}_i$ denotes the material and relational benefits of the marriage in the absence of revealed mismatch. Suppose depressive symptoms decline with marital surplus:

$$MH_{it} = a + \delta m_i + g(t) - \psi V_{it} + \nu_{it}, \qquad \psi > 0. \tag{A.12}$$

Substituting Equation A.11 into Equation A.12 gives

$$MH_{it} = \widetilde{a}_i + \delta m_i + g(t) + \beta R^*_{it} + \nu_{it}, \qquad \beta = \psi\chi > 0, \tag{A.13}$$

where $\widetilde{a}_i = a - \psi\overline{V}_i$. Taking conditional expectations gives the mental-health equation used in the main text.

Appendix A.3. Prediction 1: the XiangQin gap widens with duration

Let

$$\overline{Q}_m = E(Q_i \mid m_i = m), \qquad \mu_m = E(U_i \mid m_i = m).$$

Using Equation A.10, expected mental health by marriage channel is

$$E(MH_{it} \mid m_i = m, t) = C_m + g(t) + \beta\lambda\overline{Q}_m + \beta s_m(t)\mu_m, \tag{A.14}$$

where C_m collects duration-invariant terms. The XiangQin mental-health gap is therefore

$$\begin{aligned} \Delta(t) &= E(MH_{it} \mid m_i = 1, t) - E(MH_{it} \mid m_i = 0, t) \\ &= C_1 - C_0 + \beta\lambda(\overline{Q}_1 - \overline{Q}_0) + \beta\left[s_1(t)\mu_1 - s_0(t)\mu_0\right]. \end{aligned} \tag{A.15}$$

The observable-mismatch difference and the other direct channels do not vary with duration. Differentiating gives

$$\begin{aligned} \Delta'(t) &= \beta\left[s_1'(t)\mu_1 - s_0'(t)\mu_0\right] \\ &= \beta r \exp(-rt)\left[(1 - p_1)\mu_1 - (1 - p_0)\mu_0\right]. \end{aligned} \tag{A.16}$$

Because $\beta > 0$, $\mu_1 > \mu_0 \geq 0$, and $p_1 < p_0$,

$$(1 - p_1)\mu_1 > (1 - p_0)\mu_0,$$

and hence

$$\Delta'(t) > 0.$$

The model therefore predicts that the mental-health gap between XiangQin and non-XiangQin marriages widens with marriage duration.

Appendix A.4. Prediction 2: latent mismatch becomes more consequential

Conditional expected mental health can be written as

$$E(MH_{it} \mid Q_i, U_i, m_i, t) = A_{it} + \beta\lambda Q_i + \beta s_{m_i}(t) U_i, \tag{A.17}$$

where A_{it} collects the remaining terms. The marginal effect of latent mismatch is

$$\frac{\partial E(MH_{it} \mid Q_i, U_i, m_i, t)}{\partial U_i} = \beta s_{m_i}(t). \tag{A.18}$$

Differentiating with respect to marriage duration gives

$$\left.\frac{\partial^2 E(MH_{it})}{\partial U_i \, \partial t}\right|_{m_i=m} = \beta r(1 - p_m)\exp(-rt). \tag{A.19}$$

The difference between marriage channels is

$$\begin{aligned} &\left.\frac{\partial^2 E(MH_{it})}{\partial U_i \, \partial t}\right|_{m_i=1} - \left.\frac{\partial^2 E(MH_{it})}{\partial U_i \, \partial t}\right|_{m_i=0} \\ &\quad = \beta r \exp(-rt)(p_0 - p_1) > 0. \end{aligned} \tag{A.20}$$

Thus, the mental-health association of latent mismatch increases more rapidly with duration among XiangQin couples.

Appendix A.5. Residual explanatory power

The descriptive residual-variance exercise can also be connected to the model. After observable mismatch and other covariates have been partialled out, suppose mental health satisfies

$$Y_{it}^{\perp} = \beta s_m(t) U_i + \varepsilon_{it}, \qquad \mathrm{Cov}(U_i, \varepsilon_{it}) = 0. \tag{A.21}$$

A regression excluding U_i has residual variance

$$\beta^2 s_m(t)^2 \sigma_{U,m}^2 + \sigma_{\varepsilon,m}^2,$$

whereas a regression including U_i has residual variance $\sigma_{\varepsilon,m}^2$. The proportional reduction in residual variance is therefore

$$RVR_m(t) = \frac{\beta^2 s_m(t)^2 \sigma_{U,m}^2}{\beta^2 s_m(t)^2 \sigma_{U,m}^2 + \sigma_{\varepsilon,m}^2}. \tag{A.22}$$

Because $RVR_m(t)$ is increasing in $s_m(t)$, the explanatory power of latent mismatch increases as more incompatibility becomes psychologically salient. The increase is expected to be more visible among XiangQin couples because they have a larger latent-mismatch stock and a larger initially unresolved share.

Appendix A.6. Mapping the latent stock to the empirical measure

The empirical unobservable-mismatch index should be interpreted as a proxy for the theoretical stock U_i. Let

$$U_{it}^{obs} = U_i + \omega_{it}, \qquad E(\omega_{it} \mid U_i, m_i, t) = 0. \tag{A.23}$$

Classical measurement error attenuates the estimated coefficient on the unobservable mismatch. If the reliability of the index does not systematically decline with marriage duration, it does not reverse the prediction that the coefficient grows more strongly with duration among XiangQin couples. The model therefore does not require direct measurement of premarital beliefs or information. It requires only that the postmarital index contain information about the underlying latent-mismatch stock.

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