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Employment quality and mental health in China under the policy of expanding jobs and benefiting people's livelihood: gender differences between low-quality employment and work-family values

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Background: With the rapid development of China's social economy, the state has introduced a number of social security and employment policies, which are centered on the principles of stabilizing employment, ensuring people's livelihood, and supporting key groups. Empirical research often employs cross-sectional data to examine the impact of low-quality employment on the mental health of workers, but the evidence regarding the correlation between employment quality and mental health remains insufficient.

Methods: This study aims to analyze the potential long-term impact of low-quality employment on mental health. By applying the employment arrangement typology method, we utilized the survey data from the China Family Longitudinal Survey (CFPS) from 2016 to 2018 to explore the association between employment quality and mental health, and further investigated whether the strength of work-family values (i.e., the emphasis on career success and child-rearing) and gender differences led to differences in this association pattern.

Conclusion: Through potential category clustering analysis of representative Chinese panel data, we identified six types of employment quality: standard employment, unstable and unsustainable employment, full-time but unstable employment, mild standard employment, mixed employment, and protected parttime employment. After controlling for sociodemographic characteristics, the research results show that compared with the standard employment pattern, men engaged in unstable and unsustainable jobs, as well as women in full-time unstable jobs, have significantly lower mental health levels two years later. Although protected part-time jobs have a more negative impact on the mental health of people with middle and high working family values, the interaction analysis shows that the moderating role of values in the relationship between employment quality and mental health does not present a clear pattern among different gender groups.

Discussion: It is suggested that future research should replicate these findings in different countries to verify the correlation.

KEYWORDS

employment quality, standard employment, mental health, China, gender differences

1 Introduction

With the rapid development of the social economy, the state has also introduced a variety of social security and employment policies, which integrate the core principles of stabilizing jobs, ensuring people's livelihood and supporting key groups. An increasing number of men and women in the Chinese workplace have assumed multiple roles, serving not only as the primary breadwinners but also playing crucial roles in family caregiving (1). In the digital economy era, the gender gap in labor force participation rates has significantly narrowed. According to data from the National Bureau of Statistics, China's female labor force participation rate has long been higher than the global average. In 2022, the proportion of female employed homo sapiens reached 43% (compared to 57% for males), showing a notable increase from two decades ago. Additionally, the widespread access to higher education in China has been a key driving force, with female students accounting for 52% of college enrollments in 2023, propelling more women into the workforce. According to data from the National Bureau of Statistics, the proportion of dual-income households continues to rise, while public attention toward fathers' involvement in domestic affairs has significantly increased (2). Research indicates that contemporary Chinese men and women exhibit similarities in their motivations for entering the workforce, career aspirations, and the knowledge and skills they possess (3). Although gender convergence in attitudes toward work and family has gradually emerged, structural barriers persist in the labor market (4). Female workers, in particular, often face challenges such as poor working conditions and job instability (5). Many women experience shifts in their career trajectories after childbirth, primarily because they still bear the majority of household responsibilities (6). Low-quality employment not only limits career advancement but may also conflict with family values—for instance, when individuals prioritize family time but struggle to achieve it due to irregular work schedules. Such contradictions between values and employment conditions can trigger psychological stress, impair mental functioning, and exacerbate mental health issues (Yang (7)).

With the rise of low-quality employment models, increasing attention has been paid by homo sapiens to their (psychological) health impacts. Unstable or low-quality employment may be associated with adverse mental health conditions, as such employment is often accompanied by hazardous working environments, material and social resource deprivation, and negative psychological experiences such as feelings of powerlessness and insecurity. This study focuses on the constituent elements of employment quality in China and explores its intrinsic relationship with mental health status 2 years later. Simultaneously, it analyzes how family values and work values (i.e., perceptions of career achievement and the importance of childcare) influence the relationship between different types of employment quality and subsequent mental health. Considering potential gender differences in the strength of the studied relationships (5), this research conducts separate analyses for men and women. The study is based on data from the China Family Panel Studies (CFPS). As the world's largest developing country, China's labor market features flexible and diverse employment forms while also facing the issue of polarization in employment quality—core employees enjoy relatively good protections, whereas the flexible employment group continues to expand in size but lacks stability (Ma and (4)). Additionally, China's family policies partly perpetuate

traditional family division-of-labor models while gradually emphasizing the role of family caregivers. This unique policy environment provides a typical sample for research (8).

This study employs a multidimensional analysis method to construct a typology of employment patterns (9, 10), an approach that has not been widely applied in related Chinese studies. Adopting a longitudinal design, the research aims to supplement evidence in a currently understudied field (11–15). By linking employment quality types with mental health outcomes 2 years later, the study can more deeply reveal dynamic relationships between variables compared to cross-sectional research. At present, few studies have examined the negative health impacts of misalignment between work and personal values (7, 16). Given the converging trends in family and work values among Chinese men and women, gender distribution characteristics in the labor market (17, 18), and the significant role of practicing personal values in mental health (19), investigating how values influence the relationship between employment quality and mental health may offer new insights and references for policymakers, human resource management professionals, and health practitioners.

2 Theoretical background

2.1 Gender disparities in access to high-quality employment opportunities

Since the reform and opening-up, China's economic structure has undergone a profound transformation from a planned economy to a market economy, accompanied by significant changes in the labor market (20). The once-dominant “iron rice bowl” employment model, characterized by state-owned enterprises and comprehensive benefits, has gradually transitioned into a more diversified and market-oriented employment landscape. The stable, welfare-rich jobs represented by the Standard Employment Relationship (SER) have increasingly been challenged by decentralized and flexible employment forms amid rapid economic growth and industrial restructuring (21). Precarious employment, encompassing temporary work, labor dispatch, and new forms of employment under the platform economy, has shown rapid growth (22).

In the context of Chinese society, the traditional gender division of labor encapsulated in the phrase “men as breadwinners, women as homemakers” remains deeply entrenched (23). This mindset creates structural barriers for women in the labor market, making it difficult for them to access high-quality employment opportunities equally, even as educational attainment continues to rise. Family care responsibilities disproportionately fall on women, subjecting them to the “motherhood penalty” in career development (24) and often forcing them into more flexible but lower-quality jobs. Although female labor force participation in China has significantly increased since the 1990s, occupational gender segregation remains pronounced, with women concentrated in lower-paying and less stable industries (25).

2.2 Low-quality employment and poor mental health

With the expansion of low-quality employment, its impact on workers' mental health has increasingly become a focus of academic

research. Low-quality jobs are often associated with high-intensity work pressure, poor working conditions, and lack of compensation and benefits, all of which directly or indirectly harm workers' mental health (26). Studies indicate that precarious employment can trigger negative emotions such as anxiety and depression, weakening psychological resilience (27).

To comprehensively assess the impact of employment quality on mental health, scholars have adopted a multidimensional analytical framework, encompassing dimensions such as job stability, compensation, labor rights protection, and career development opportunities (28). This approach more accurately reveals the complex relationship between different employment characteristics and mental health. Based on this multidimensional perspective, researchers have developed a comprehensive evaluation system to identify various employment patterns and their health impacts (29). Empirical studies in China have found that gig economy workers, due to irregular working hours and fluctuating incomes, exhibit significantly lower mental health levels compared to stably employed groups (30). In contrast, jobs resembling standard employment relationships (SER), with their robust protection systems and stable work environments, have a positive protective effect on mental health (31).

Currently, domestic research on the relationship between employment quality and mental health predominantly relies on single-dimensional analysis, with no studies employing typological methods to explore the differential impacts of various employment types on the mental health of men and women. While existing studies acknowledge the association between precarious employment and mental health issues, they lack systematic gender-differentiated analyses (32). In light of this, this study will adopt a typological approach to uncover the combined types of employment quality in China's labor market and investigate their mechanisms of influence on the mental health of different genders.

Values, Employment Quality, and Mental Health Values, as the intrinsic guide for individual behavior, profoundly influence the perception and evaluation of the work environment (33). According to the Person-Environment Fit (P-E Fit) theory, the degree of alignment between employees and their work environment directly affects their job satisfaction and overall well-being (34). When employment quality is low, employees struggle to achieve harmony between their work and personal values, leading to psychological conflicts.

Low-quality employment severely constrains career development pathways. In China's labor market, frequent job-hopping for temporary work is perceived by employers as a negative signal, resulting in wage stagnation and limited career advancement opportunities (35). This "career predicament" traps employees in long-term unstable employment, exacerbating psychological stress. Thus,

Hypothesis 1: When employees experience low employment quality, strong work values intensify the association between low-quality employment and mental health issues.

Simultaneously, low-quality employment exerts a profound impact on family life. Unstable employment delays critical life decisions such as marriage and childbearing, particularly posing dual challenges for women in balancing career development and family roles (36). Increased family caregiving burdens and financial pressures lead to frequent domestic conflicts, further deteriorating mental health. Therefore,

Hypothesis 2: In contexts of low employment quality, strong family values amplify its linkage with mental health problems.

Furthermore, gender differences play a moderating role in the relationship between employment quality, values, and mental health. Based on the "cross-domain compensation" theory, when individuals face setbacks in one life domain, engagement in other domains can serve as an emotional regulator (37). Chinese women invest substantial time and effort in family roles (38), making them more reliant on the family domain for psychological compensation when experiencing work-family conflicts. Consequently,

Hypothesis 3: The mismatch between low employment quality and strong work values has a more negative impact on men's mental health than on women's.

Hypothesis 4: Compared to men, women's mental health is more vulnerable to the adverse effects of the mismatch between low employment quality and strong family values.

3 Materials and methods

3.1 Data

The data for this study were derived from the 2016–2018 survey waves of the China Family Panel Studies (CFPS). The CFPS is a nationally representative longitudinal survey conducted by the Institute of Social Science Survey at Peking University, which has been collecting detailed information on household structure, demographic characteristics, economic activities, health status, and other aspects since 2010 (39). This study focused on the survey data from the three waves of 2016–2018. The 2016 questionnaire introduced new questions related to personal value orientations, providing a data foundation for examining work-family values. Using 2016 as the baseline, respondents' mental health status was measured and linked to follow-up data from 2018. Since the 2017 survey did not include mental health measurements, data from that year were only used as a transitional time dimension.

The sample consisted of salaried employees aged 18–64 (as of 2016). To ensure consistency and stability in employment status, individuals who were retired, in vocational training, military service, or volunteer work, as well as self-employed workers and temporary employees without fixed labor contracts, were excluded. Additionally, individuals who changed jobs between 2017 and 2018 were removed, as job transitions could confound mental health assessments. After screening, the final analytical sample included 3,501 males and 3,905 females, totaling 10,105 respondents. Except for the dependent variable (mental health data), which was sourced from the 2016 and 2018 surveys, all independent and control variables were drawn from the 2016 survey data.

3.2 Variables

3.2.1 Mental health

The mental health level was assessed using the Mental Component Summary (MCS) from the Chinese version of the SF-36 scale (40). The MCS comprises four dimensions: vitality, role limitations due to

emotional problems, social functioning, and general mental health. Among these, the vitality and social functioning dimensions each contain one measurement item, while the role limitations due to emotional problems and general mental health dimensions each contain two items. The scale score ranges from 0 to 100, with higher scores indicating better mental health status. Using 2010 Chinese data as a reference, the MCS scores were standardized, with the mean set at 50 and the standard deviation at 10, to enhance data comparability and analytical validity.

3.2.2 Construction of the employment quality classification system

The selection of dimensions and corresponding indicators for employment quality (employment quality) was based on relevant domestic and international research findings (41), with adjustments made to align with the characteristics of China's labor market (Table 1).

A legally recognized entity that represents employees within a specific organization, typically consisting of elected employee representatives. It differs from a labor union, which operates as an external organization relative to the company.

In the CFPS 2016 survey data, six core indicators that effectively reflect employment quality were selected. These indicators distinguish between conventional employment characteristics and deviant employment statuses based on aspects such as job stability, compensation and benefits, and career development opportunities. Although it is difficult to cover all dimensions of employment quality, the selected indicators can comprehensively construct a classification system of employment quality applicable to China's employment environment, and they highly align with key dimensions of domestic and international research on precarious employment.

3.2.3 Family and work values

Through the question in the CFPS questionnaire, "Different things may be important to different people. How important are the following things to you?", two specific items were designed, corresponding to work values (succeeding at work) and family values (having children). The response options were set to four levels: "very important," "important," "not very important," and "not important at all." Given the small sample sizes for the "not very important" and "not important at all" options, they were merged into "mildly important"; "very important" was categorized as "strong values," and "important" as "moderate values." This measurement scale was adapted from the value orientation measurement tool proposed by Kluckhohn and Strodtbeck (42). After localization adjustments by the CFPS research team, it has been applied in multiple domestic studies related to life satisfaction, but its application in research on the relationship between mental health and work-family values remains to be further explored.

3.2.4 Control variables

The analysis incorporated several control variables to account for the fact that respondents with different employment arrangements often exhibit distinct socioeconomic characteristics and are exposed to varying work environments (43). These characteristics may confound the relationship between employment quality (employment quality) and outcome variables. The model controlled for the following variables: place of residence (eastern region, western region), education level (no vocational training, vocational training, higher education), Chinese nationality (yes/no), household composition (single-person household, single-parent household, childless couple, couple with children), and part-time status (yes/no). According to the latest authoritative standards in China, occupations in China are classified into eight major categories. These eight categories are: Party and government organs, state organs, mass organizations and social

TABLE 1 Employment quality indicators.

Dimension	CFPS 2016 indication	Categories
Employment stability	Type of labor contract	Three distinct categories (1): Permanent (2), Temporary, and (3) Temporary agency work.
Material remuneration	Wages Benefits	Income is divided into three tiers based on employees' monthly net wages (lowest, middle, and highest). A dummy variable = 1 indicates that the respondent answered "yes" to one of the following non-wage benefits: 13th-month salary, 14th-month salary, additional holiday bonuses, paid leave, profit-sharing (or bonuses), and others. 0 = indicates no affirmative response to any of the above items.
Social Rights and Protection	Compensation for special work	The 2016 survey is unavailable
Work time quality	Working hours	(1) Full-time employment (≥ 35 h) (2); Part-time (< 35 h) (3); Involuntary part-time: Working fewer than 35 h per week but desiring increased hours (4); Long working hours: Working more than 48 h per week.
Collective (Non-) Organization	Type of working hours configuration process. Among the possibilities listed below, which one aligns most closely with your professional requirements?	Four categories (1): Fixed working hours (2); Shift work system; (3) Self-determined working hours (4); Working time accounts (or time banking system).
	Representation	Is there a work council? Yes or no
Interpersonal Power Dynamics	I received the recognition I deserved from my superiors.	Data missing
Training	Employer-provided training	Data for 2016 is unavailable.

organizations, enterprise and public institution managers, professional and technical personnel, clerical and related workers, social production service and living service personnel, agricultural, forestry, animal husbandry and fishery production and related workers, production and manufacturing and related workers, military personnel, and a small number of other special occupations not included. Age was divided into four groups: “early career” (under 30 years), “early middle age” (30–39 years), “late middle age” (40–49 years), “late career” (50–60 years), and over 60 years.

3.3 Analysis

First, the Latent Class Cluster Analysis (LCCA) method was employed to categorize China's employed population based on six employment quality indicators (44). Using Mplus 8.8 software and incorporating survey weights for data processing, samples with missing values in certain indicators were allowed to participate in model estimation to maximize the retention of sample information. LCCA groups individuals with similar employment quality characteristics into the same category by analyzing the distribution patterns of these indicators across the sample. The optimal number of clusters was determined by comprehensively evaluating model fit indices and theoretical interpretability. Starting with a single-class model, the number of classes was incrementally increased, and the Akaike Information Criterion (AIC), Bayesian Information Criterion (BIC), and adjusted AIC (CAIC) were compared to assess model complexity. When adding new classes no longer significantly improved model fit, the final clustering solution was determined by examining the conditional probability relationships between clusters and employment quality indicators.

One-way ANOVA and F-tests were used to compare changes in respondents' mental health status between 2016 and 2018, with the sample stratified by gender to describe basic characteristics such as means and percentages of variables. Cross-tabulation analysis was conducted to examine the distribution of socio-demographic characteristics and work-family values across different employment quality categories, followed by multiple comparison tests using the Bonferroni correction to control significance levels.

Gender-stratified lagged regression models were constructed to analyze the relationship between 2018 mental health scores and 2016 employment quality types. To address reverse causality, baseline mental health scores from 2016 were included as controls. In the regression models, the probabilities of individuals belonging to each employment quality category served as predictor variables, with each individual assigned six predictor scores (summing to 1) reflecting their alignment with different employment quality types. Model 1 included only baseline mental health scores and employment quality type scores; Model 2 gradually incorporated control variables; Models 3 and 4 introduced work values and family values, respectively; Model 5 explored the interaction between work values and employment quality types; Model 6 analyzed the interaction between family values and work values; finally, the full sample was used to test the three-way interaction among employment quality types, gender, and work-family values. All statistical analyses were performed using SPSS 25.0 and R 4.2.1 software, with sampling weights provided by CFPS applied

to ensure the generalizability of findings to the national employed population.

4 Result

4.1 EQ types in China

In [Appendix Table C](#) and [Figure A](#), a striking observation emerges: the cessation of significant changes in BIC, AIC, and CAIC commences with the 7-cluster model (e.g., $\Delta \text{BIC} = -458.6$). The decline in fit indices for the 7-cluster model mirrors that of the 6-cluster model (e.g., $\Delta \text{BIC} = -475.5$). Consequently, we deduce that the 6-cluster model represents the most parsimonious solution. Upon scrutinizing the theoretical interpretations of these models, it becomes evident that transitioning from the 5-cluster to the 6-cluster solution introduces a profoundly distinct profile. However, advancing from the 6-cluster to the 7-cluster solution yields a profile characterized by an exceedingly small cluster size (5%) and lacking any markedly different characteristics. Therefore, a typology encompassing six employment arrangements is deemed both the most parsimonious and meaningful. Drawing upon the distribution of cluster conditional probabilities across the six manifest EQ-indicators outlined in [Table 2](#), and informed by prior research (45, 46), descriptive labels are assigned to each of the six types. The typology's first employment arrangement is termed ‘SER-like jobs,’ distinguished by an overall high level of job security, such as permanent contracts and generous remuneration. The second category, labeled ‘precarious unsustainable jobs,’ is marked by predominantly unfavorable employment traits, particularly the likelihood of low income and (involuntary) part-time work. The third cluster, ‘precarious full-time jobs,’ exhibits similarly adverse characteristics but features a high probability of fixed and full-time schedules. The fourth type is designated ‘SER-light jobs,’ reflecting stable full-time employment yet with less advantageous conditions regarding collective organization and flexible working time arrangements (low probabilities of enjoying working time accounts or self-determined schedules). The fifth arrangement, ‘portfolio jobs,’ is characterized by substantial income, permanent contracts, a high likelihood of extended working hours, alternating schedules, and self-determined timing, albeit with limited access to working time accounts. Lastly, ‘protected part-time jobs’ are defined by generally favorable employment qualities, though they often involve part-time hours and relatively modest income levels.

The descriptive statistical analysis [Table 3](#) and [Appendix D](#), respectively, present the distribution of types of employment quality in Chinese families among Chinese men and women under different socioeconomic characteristics and values. The data in [Table 3](#) show that among male groups with weaker work values, the proportion of high-quality and stable (SER) employment is higher than that among male groups with stronger work values. However, for female groups, the situation is exactly the opposite. Among women with stronger work values, the proportion of SER employment is higher than that among women with weaker work values. For men with stronger family values, the proportion of SER employment is different from that of men with moderate family values. In contrast, among female workers, the popularity rate of SER jobs is higher among women with moderate family values.

TABLE 2 Distribution of cluster conditional probabilities on employment quality indicators for Chinese households.

	SER-like jobs	Unstable and unsustainable employment	Unstable full-time employment	SER-light jobs	Portfolio Career	Protected part-time jobs	Overall distribution
Cluster Size (%)	0.2581	0.2927	0.1565	0.1512	0.1990	0.0850	
Indication							
Contract type							
Permanent	0.92456	0.7307	0.7979	0.9391	0.9180	0.8174	0.8368
Temporary	0.0385	0.2046	0.2152	0.0259	0.0585	0.1568	0.1134
Tem.agency	0.0142	0.0318	0.0548	0.0123	0.0008	0.0040	0.0171
Tertile of net wage							
Lowest tertile	0.0013	0.9182	0.2073	0.0413	0.0020	0.5024	0.2707
Medium tertile	0.2034	0.0698	0.7224	0.7107	0.2376	0.4771	0.3706
High tertile	0.7836	0.0002	0.0476	0.2153	0.7507	0.0099	0.3261
Non-wage benefits							
No	0.1682	0.7664	0.7434	0.0006	0.5111	0.1713	0.4023
Yes	0.8199	0.2118	0.2348	0.9886	0.4671	0.8069	0.5859
Working hours							
Full time	0.8416	0.0689	0.8186	0.9531	0.2677	0.1213	0.5708
Part-time	0.0245	0.6617	0.0004	0.0038	0.0351	0.7427	0.2141
Inv. Part-time	0.0013	0.1643	0.0058	0.0023	0.0000	0.1029	0.0381
Long hours	0.1089	0.0615	0.1525	0.0172	0.6645	0.0003	0.1335
Type hours							
Fixed	0.1739	0.4641	0.5878	0.6199	0.1778	0.3665	0.4291
Alternating	0.1001	0.2609	0.2339	0.2374	0.3007	0.2649	0.2127
Self-determined	0.0857	0.1879	0.0124	0.0297	0.4147	0.0399	0.1114
Time account	0.6065	0.0464	0.1222	0.1003	0.0732	0.3051	0.2402
Employment council							
No	0.1032	0.7797	0.6874	0.4095	0.5064	0.1747	0.4286
Yes	0.8849	0.2085	0.3008	0.5787	0.4818	0.8035	0.5596

4.2 Lagged regression models

4.2.1 Results for men and women

The findings regarding the relationship between mental health in 2018 and the EQ typology of 2016 for men are presented in [Table 4](#). In the initial model, it is revealed that precarious unsustainable employment correlates with significantly poorer mental health 2 years later when compared to SER-like jobs ($b = -2.446$). The positive association of portfolio employment with mental health, as well as the negative correlation of SER-light jobs, approaches statistical significance. Upon incorporating all control variables (Model 2), the significant negative link between precarious unsustainable employment and subsequent mental health persists. In Model 3, a robust positive relationship emerges between strong work values and subsequent mental health ($b = 0.969$). Conversely, in Model 4, moderate and strong family values exhibit a statistically significant and negative association with subsequent mental health ($b = -1.543$ and $b = -1.002$, respectively). In Model 5, we delve into the

interactions between work values and EQ types. While most interactions between the EQ typology and work values fail to reach statistical significance, an intriguing exception arises: the mental health of protected part-time workers appears more vulnerable when they possess moderate work values ($b = -6.429$) as opposed to mild work values. Finally, in Model 6, we explore the interactions between family values and EQ types. The results suggest that the mental health of precarious unsustainable, SER-light, and portfolio workers becomes less vulnerable when they hold moderate or strong family values. However, the mental health of protected part-time workers proves more fragile under conditions of moderate family values ($b = -7.147$).

In [Table 5](#), the intricate relationships between women's mental health in 2018 and their employment quality (EQ) typology in 2016 are meticulously presented. The initial model reveals that precarious full-time employment is profoundly linked to a decline in mental health 2 years later ($b = -2.595$), as compared to self-employment or entrepreneur-like (SER-like) roles. Upon incorporating all control variables in Model 2, the significant negative correlation between

TABLE 3 Prevalence of employment arrangement typologies across work/family values and socio-demographic characteristics (row percentages and Bonferroni-adjusted *p*-values), categorized by gender.

	Men						Women					
	SE	PU	PF	SL	PO	PP	SE	PU	PF	SL	PO	PP
Over all	42	4	16	19	12	1	20	28	10	13	3	21
Work value orientation												
Mild	48+	6	11	16	10	3	16	34	7	10	1	28
Moderate	43	4	16	19	12	1	21	26	10	14	3	20
Strong	34	4	19	21	16	1	22	22	17	16	5	11
Family value												
Mild	38	6	18	20	11	3	39	16	10	18	4	8
Moderate	40	5	18	18	11	1	17	26	13	15	3	20
Strong	44	3	14	19	14	1	18	30	11	11	2	23
Age												
Under 30	19	14	32	19	7	3	16	24	22	23	2	6
30–39	39	4	19	21	10	1	18	31	13	10	2	20
40–49	45	2	13	19	13	1	18	28	9	12	2	36
50–59	46	3	12	19	14	1	23	25	8	15	4	20
60+	48	5	15	14	11	1	27	29	8	11	3	16
Nationality												
Not China	25	9	30	22	9	0	9	43	17	10	2	13
China	44	3	14	19	13	1	21	26	10	13	3	18
Region												
East region	46	4	13	18	12	1	20	29	8	12	3	23
West region	27	6	26	22	11	2	20	21	19	18	3	13
ISCO												
Upper service class	64	1	4	6	20	1	51	11	6	5	7	15
Lower service class	56	2	6	12	15	2	32	16	7	12	5	23
Routine	38	6	14	24	9	3	10	32	12	16	1	24
(un)skilled manual	25	6	27	28	7	1	4	47	17	14	1	11
Educational attainment												
No vocational training	17	14	29	25	10	0	2	55	15	7	0	16
Vocational training	37	4	19	24	9	1	14	30	12	15	1	22
High education	60	2	5	6	20	2	38	15	6	10	7	18
Household composition												
Single household	33	9	22	22	5	3	25	18	14	20	4	13
Single parent	16	26	19	27	1	6	19	27	14	12	1	22
Partner	42	4	16	20	11	1	25	23	11	18	4	14
Children, partner	45	3	14	17	15	1	14	35	8	7	2	29
Second job												
No	42	4	16	20	12	1	20	27	11	13	2	20
Yes	44	7	12	13	15	4	17	31	6	11	4	26

[†]*p*-value is < 0.05 for Bonferroni-corrected comparison within the cluster type, reference is SER-like jobs. SE, SER-like jobs; PU, Precarious unsustainable jobs; PF, Precarious full-time jobs; SL, SER-light jobs; PO, Portfolio jobs; PP, protected part-time.

TABLE 4 Lagged regression analysis results predicting MCS of male workers at T2 (95% confidence interval).

	M1	M2b	M3b	M4b	M5b	M6b
Intercept	25.554 (23.862–27.246)***	25.547 (23.683–27.4)***	25.326 (23.432–27.219)***	26.759 (24.805–28.714)***	25.219 (23.211–27.227)***	27.175 (24.086–29.264)***
Employment quality type						
SER-like						
Precarious	–2.556	–2.588	–2.53	–2.608	–1.678	–4.502
Unsustainable	(–3.863–1.25)***	(–3.983–1.193)***	(–3.926–1.134)***	(–3.91–1.217)***	(–4.112–0.976) n.s.	(–6.98–2.024)***
Precarious full time	–0.149 (0.913–0.99) n.s.	–0.184 (–1.249–0.997) n.s.	–0.199 (–1.264–0.987) n.s.	–0.225 (–1.288–0.959) n.s.	–1.64 (–3.871–0.8) n.s.	0.283 (–1.861–2.208) n.s.
SER-light	–0.986 (–1.981–0.229) (*)	–0.970 (–2.172–0.255) (*)	–0.96 (–2.205–0.221) (*)	–1.129 (–2.232–0.193) (*)	–0.996 (–3.268–1.274) n.s.	–2.323 (–4.328–0.319)*
Portfolio	1.128 (–0.226–2.263)(*)	0.953 (–0.308–2.192) n.s.	0.906 (–0.463–1.955) n.s.	0.913 (–0.349–2.15) n.s.	1.409 (–1.479–3.978) n.s.	–0.899 (–3.506–1.929) n.s.
Protected part	1.683	–0.981	–0.737	–1.177	3.525	0.457 (–2.912–3.706)
Time	(3.745–0.60) n.s.	(–2.98–1.231) n.s.	(–2.838–1.386) n.s.	(–3.285–1.15) n.s.	(–0.259–6.96)*	n.s.
Mental health 2016	0.63 (0.599–0.66)***	0.633 (0.603–0.664)***	0.629 (0.598–0.659)***	0.632 (0.601–0.662)***	0.628 (0.597–0.659)***	0.635 (0.605–0.666)***
Important of work success						
Moderate			0.576 (–0.284–1.215) n.s.		0.567 (–0.833–1.748) n.s.	
Strong			0.980*		2.167*	
Importance to have children						
Moderate				–1.653 (–2.365–0.942)***		–1.73 (–2.958–0.404)*
Strong				–1.112 (–1.836–0.387)**		–2.193 (–3.484–0.902)**
Interactions EQ types and value						
Precariousunsustainable*Mo derate					–1.746 (–4.637–1.585) n.s.	3.464 (0.141–6.786)*
Precarious unsustainable*Strong					–1.236 (–5.203–2.951) n.s.	2.131 (–1.334–5.376) n.s.
Precarious full- time*Moderate					2.306(–0.391–4.783)(*)	0.14 (–2.529–2.588) n.s.
Recarious full-time*Strong					–0.876 (–3.944–2.731) n.s.	–0.930(–3.434–1.816) n.s.
SER-light*Moderate					–0.251 (–2.736–2.455) n.s.	0.617 (–2.461–3.255) n.s.
SER-light*Strong					–0.847 (–3.465–2.912) n.s.	6.781(0.299–5.622)*
Portfolio*Moderate					0.718 (–2.568–3.784) n.s.	0.205 (–3.363–3.553) n.s.
Portfolio*Strong					–3.536 (–6.992–0.252)(*)	3.476 (0.427–6.526)*
Protected part- time*Moderate					–6.539 (–10.983–1.996)**	–7.257 (–12.183–2.33)**
Protected part-time*Strong					–2.993 (–13.275–7.28) n.s.	2.525(–2.798–7.628) n.s.
R2	0.356	0.373	0.374	0.377	0.380	0.383

* $p \leq 0.1$; ** $p \leq 0.05$; *** $p \leq 0.01$; **** $p \leq 0.001$. ^aInteractions Model 5: EQ types and Importance of work success; Model 6: EQ types and Importance of having children. ^bModels are controlled for: age group, nationality, region, education, occupational class, family composition and second job.

TABLE 5 Lagged regression analysis results predicting MCS (95% confidence interval) of female workers at T2.

	M1	M2b	M3b	M4b	M5b	M6b
Intercept	26.059 (25.418–28.70)***	26.083 (25.177–28.987)***	27.133 (25.166–28.101)***	26.109 (25.114–28.103)***	26.85 (24.429–29.271)***	26.093 (24.926–29.259)***
EQ Types						
ER-like (ref.)						
Precarious	−0.92 (−1.88–0.26)	−0.368	−0.392 (−1.48–0.915)	−0.355	−0.436	0.551 (−1.941–2.823)
Unsustainable	(*)	(−1.452–0.936) n.s.	N.s.	(−1.454–0.947) n.s.	(−2.474–1.822) n.s.	n.s.
Precarious full	−2.815	−1.938	−1.923	−1.934	−1.73 (−4.608–1.588)	−2.878
Time	(−3.916–1.405)***	(−3.217–0.439)*	(−3.193–0.412)*	(−3.189–0.42)*	n.s.	(−5.59–0.165)*
SER-light	0.393 (−1.202–1.767) n.s.	0.999 (−0.681–2.457) n.s.	0.997 (−0.683–2.457) n.s.	0.908 (−0.679–2.473) n.s.	0.175 (−2.990–3.333) n.s.	0.55 (−2.66–3.245) n.s.
Portfolio	−1.92 (−3.896–0.276)(*)	−1.369 (−3.365–0.847) n.s.	−1.322 (−3.323–0.898) n.s.	−1.358 (−3.355–0.859) n.s.	1.112 (−5.216–7.221) n.s.	−4.155 (−7.53–0.78)*
Protected part	0.914	0.992 (−0.3–2.271) n.s.	0.964 (−0.342–2.247)	0.993 (−0.317–2.282)	1.931 (−0.471–4.253)	3.409 (0.622–6.197)*
Time	(−0.313–2.119) n.s.		n.s.	n.s.	(*)	
Mental health 2016	0.596 (0.567–0.625)***	0.594 (0.565–0.623)***	0.595 (0.566–0.625)***	0.594 (0.564–0.623)***	0.596 (0.567–0.625)***	0.597 (0.568–0.626)***
Importance of work success Mild (ref.)						
Moderate			−0.193 (−0.853–0.688) n.s.		−0.343 (−2.217–1.882) n.s.	
Strong			−0.53 (−1.473–0.633) n.s.		−1.444 (−1.419–3.986) n.s.	
Importance to have children Mild (ref.)						
Moderate				−0.231 (−0.989–0.867) n.s.		0.459 (−1.902–2.601) n.s.
Strong				0.122 (−0.904–0.926) n.s.		−0.567 (−2.267–1.353) n.s.
Interactions EQ types and values a						
Precarious unsustainable*Moderate					0.685 (−1.852–2.932) n.s.	−0.9 (−3.858–2.458) n.s.
precarius unsustainable*Strong					−2.605 (−2.945–0.955) n.s.	−0.885 (−3.506–1.958) n.s.
Precarious full-time*Moderate					0.387 (−3.146–3.70) n.s.	0.502 (−3.403–4.187) n.s.
Precarious full-time*Strong					−2.653 (−6.835–1.749) n.s.	1.919 (−1.482–5.28) n.s.
SER-light*Moderate					0.957 (−2.625–4.516) n.s.	−1.467 (−5.24–2.746) n.s.
SER-light*Strong					1.14 (−3.283–5.882) n.s.	1.705 (−1.841–4.932) n.s.
Portfolio*Moderate					−2.624 (−9.161–4.133) n.s.	3.186 (−2.386–8.538) n.s.
Portfolio*Strong					−3.234 (−10.916–4.668) n.s.	4.988 (0.569–9.606)*
Protected part-time*Moderate					−0.865 (−3.483–1.973) n.s.	−3.593 (−7.391–0.205) (*)
Protected part-time*Strong					−5.119 (−9.333–0.918)*	−2.262 (−5.404–0.99) n.s.
R2	0.335	0.346	0.346	0.346	0.350	0.350

* $p \leq 0.1$; * $p \leq 0.05$ ** $p \leq 0.01$; *** $p \leq 0.001$. ^aInteractions Model 5: EQ types and Importance of work success; Model 6: EQ types and Importance of having children. ^bModels are controlled for: age group, nationality, region, education, occupational class, family composition and second job.

precarious full-time employment and subsequent mental well-being persists. In Models 3 and 4, no substantial associations emerge between mental health and either work values or family values, respectively. However, in Model 5, which introduces interactions between work values and EQ types, it becomes evident that most of these interactions lack statistical significance. Notably, the mental health of protected part-time workers appears more fragile when they possess strong work-centric values ($b = -5.009$). In Model 6, where interactions between family values and EQ types are incorporated, an intriguing pattern emerges: the mental resilience of portfolio workers is bolstered by robust family values ($b = 4.977$). Lastly, the mental health of protected part-time workers benefits from moderate family values, showing reduced vulnerability ($b = 3.299$).

4.2.2 Three-way interactions

To investigate whether there were significant differences in the research results between male and female groups, we analyzed the three-way interactions: gender, emotional intelligence type, and work values (Model 1 in [Appendix Table E](#)), as well as gender, emotional intelligence type, and family values (Model 2 in [Appendix Table E](#)). The results confirmed statistically significant differences between males and females. When holding moderate work values, secured non-full-time employment significantly improved women's mental health compared to men (coefficient $b = 5.235$); whereas when holding moderate family values, unstable and unsustainable employment led to a marginally significant deterioration in women's mental health compared to men in similar circumstances (coefficient $b = -3.998$).

5 Discussion

Our research reveals new perspectives on the relationship between employment, personal values, and mental health. In China, we identified six classifications of employment quality: standard employment relationships, light standard employment relationships, protected part-time work, unsustainable precarious work, full-time precarious work, and composite employment. Subsequently, we analyzed the associations between these employment types and mental health outcomes 2 years later. The findings indicate that, even after adjusting for baseline mental health levels and sociodemographic characteristics, men engaged in unsustainable precarious work and women in full-time precarious work exhibited significantly lower mental health levels 2 years later compared to those in standard employment relationships. The analysis shows that individuals with moderate-to-high-intensity values experienced more pronounced negative mental health effects when engaged in protected part-time work compared to those with milder values (partially supporting Hypotheses 1 and 2). However, contrary to Hypotheses 1 and 2, holders of moderate-to-strong family values exhibited mitigated negative mental health impacts when facing unsustainable precarious work (men only), light standard employment relationships (men only), and composite employment. The three-way interaction among gender, employment type, and values revealed that men with moderate work values in protected part-time roles experienced more severe mental health issues than women (partially supporting Hypothesis 3), while women with moderate family values were more sensitive to the mental health impacts of unsustainable precarious

work than men (partially supporting Hypothesis 4). However, contrary to Hypotheses 3 and 4, most interactions among employment quality, values, and gender were not statistically significant.

Overall, we observed that the negative correlation between mental health and non-standard employment forms is not as pronounced as indicated by previous cross-sectional studies (47). However, our findings align with those of—who also conducted follow-up health tracking and found only two non-standard employment forms to have significant correlations with health outcomes. In our analysis, we excluded individuals whose employment status changed during the two-year observation period. Given that individuals with poorer health are more likely to become unemployed (48), the sample may have retained a relatively healthier “non-standard” employed population. Even so, two precarious employment forms remained associated with poorer mental health 2 years later. Consistent with prior research (49), both men and women's mental health proved vulnerable to different types of low-quality employment. Due to societal norms pressuring men to assume breadwinning responsibilities and women to shoulder primary household duties (50), men suffered more from insufficient and unstable working hours (i.e., unsustainable precarious work), while women were more severely affected by full-time precarious employment that could trigger work-family conflicts (51–54).

Our study also sparked discussions about potential moderating factors between employment quality and mental health. The interaction between certain employment types and values suggests that strong values have a protective effect under non-standard employment (contrary to Hypotheses 1 and 2). Nevertheless, consistent with Hypotheses 1 and 2, strong work or family values exacerbated mental health issues among those in protected part-time employment. Similarly, we found little evidence supporting Hypotheses 3 and 4 (which were based on cross-domain compensation theory). The lack of clear patterns in the study may indicate that counteracting forces are obscuring the relationship between contemporary employment and mental health. This study has several limitations. First, there exists a bidirectional relationship between values and behaviors (55, 56). Values may reflect an individual's current situation (e.g., already having children) or economic needs (e.g., requiring work success to sustain livelihood) (57, 58). Future longitudinal studies could explore how values change with an individual's emotional intelligence capital (EQ). Adopting more refined measurements of work and family values (including gender role attitudes) in subsequent research would help further understand the complex underlying psychological mechanisms. Early studies also indicate that a partner's employment status regulates its relationship with mental health (e.g., *Homo sapiens*) (59, 60). Although this study controlled for family structure (*Broussonetia papyrifera*) and partner relationships, it did not account for partners' emotional intelligence capital. Moreover, evidence of regulation effects appeared in smaller sample size classifications of male groups, which may lead to underestimation of association strength. The findings may be influenced by age.

A significant strength of this study lies in its adoption of latent class cluster analysis (LCCA) to construct employment quality typologies for *Broussonetia papyrifera*. The distribution across various dimensions creates nuanced characteristic profiles for each type. Had a total score calculation method been employed, it would have yielded different and

less informative results. Notably, existing research on employment quality has not evaluated the regulatory role of values in analyzing their association with mental health. Furthermore, few scholars have conducted gender-stratified analyses when examining the health impacts of precarious employment. This study innovatively utilizes data from the China Family Panel Studies (CFPS) to conduct a representative longitudinal investigation of Chinese employees. Although CFPS data possess the potential to examine cumulative disadvantages of employment quality on mental health, our two-year observational study has already revealed significant associations between employment quality and mental health even within this limited timeframe. Given that health constitutes a crucial resource for seeking (new) employment opportunities, such “short-term” health associations may likely jeopardize future employment prospects.

Data availability statement

The original contributions presented in the study are included in the article/[Supplementary material](#), further inquiries can be directed to the corresponding author.

Author contributions

WZ: Formal analysis, Investigation, Writing – review & editing, Supervision, Funding acquisition, Writing – original draft, Software, Validation, Data curation, Resources, Visualization, Methodology, Conceptualization, Project administration.

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Supplementary material

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