"Quantifying"Love: Relational Mobility Promotes a Computational Mindset in Mate Selection

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Abstract

Contemporary society has witnessed an increasing tendency for individuals to "put a price tag" on themselves during mate selection. This study conceptualizes this phenomenon as a computational mindset in mate choice and proposes that in high relational mobility environments where interpersonal relationships can be established and terminated more freely, this cognitive strategy of converting mate selection information into fluent, easily processable quantitative indicators serves an adaptive function of cognitive offloading. Through text analysis of matchmaking websites, questionnaire surveys, and laboratory experiments, three studies (four sub-studies) reveal the correlational and causal relationships between relational mobility and computational mindset in mate selection at both regional and individual levels. The findings extend the psychological consequences of relational mobility to the personal domain of mate selection, thereby enriching theoretical understanding of how individuals adapt to specific socio-ecological environments on the one hand, and providing practical references for formulating policies or marketing strategies that align with public mate selection psychology during the period of social transformation on the other.

Full Text

Quantifying Love: Relational Mobility Promotes a Calculative Mindset in Mate Choice

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Abstract

In contemporary society, people increasingly "price tag" their attributes when seeking romantic partners. This study conceptualizes this phenomenon as a *calculative mindset in mate choice* and proposes that this cognitive strategy —transforming mate selection information into fluent, easily processed quantitative indices—serves an adaptive function of reducing cognitive burden in environments characterized by high relational mobility. Through analyses of dating website texts, questionnaire measurements, and laboratory experiments, three studies (comprising four sub-studies) examine the correlation and causal relationship between relational mobility and calculative mindset in mate choice at both regional and individual levels. The findings extend the psychological consequences of relational mobility to the domain of personal mate selection, enriching theoretical understanding of how individuals adapt to specific socio-ecological environments while providing practical insights for policies and marketing strategies aligned with public mate selection psychology during China' s social transformation.

Keywords: relational mobility, mate choice, calculative mindset, cognitive load
Classification: C91.6

In recent years, China' s marriage market has exhibited a clear trend toward marketization, with "price tagging" becoming a common approach to mate selection. For instance, media reports on "matchmaking corners" in urban parks have documented a "Chinese-style matchmaking price list" that quantifies criteria and conditions for prospective partners across dimensions such as occupation, income, and appearance, ultimately generating multiple tiers including "top-tier," "standard," and "basic" configurations. This entire process mirrors market purchasing procedures where products are evaluated based on indicators like raw materials and origin. This phenomenon suggests that people exhibit a tendency to decompose potential partners into a series of quantifiable parameters to guide mate selection decisions. Simultaneously, individuals have internalized this tendency, scoring and categorizing themselves when presenting their own profiles. This study conceptualizes this cognitive processing strategy—whereby information about others and the self is quantified through scoring or ranking to guide mate selection behavior—as a *calculative mindset in mate choice*. The rising prevalence of this mindset likely reflects profound social realities. We argue that increasing relational mobility during social transformation reshapes interpersonal environments, and the calculative mindset in mate choice may represent an adaptive cognitive response to this highly fluid interpersonal landscape.

Economic development and large-scale population migration have been major drivers of social change in China. Population mobility has made once-stable

interpersonal relationships more open and mutable. In such environments, individuals have greater opportunities to form new relationships and exit old ones, along with increased freedom to select relationships that suit their preferences. This degree of freedom in interpersonal relationship flow within a specific environment is termed *relational mobility* (Yuki & Schug, 2012). In high relational mobility environments, individuals are granted both the freedom and broad scope to choose interaction partners according to personal preferences, enabling them to "shop around" for desirable partners (Schug et al., 2010; Yuki & Schug, 2012). However, the abundance of options simultaneously demands greater efficiency in processing mate selection information and creates increased cognitive load, requiring individuals to adopt appropriate cognitive strategies (Lenton & Francesconi, 2010; Lenton & Stewart, 2008). The calculative mindset in mate choice, which reduces complex individuals to cognitively simple, fluent, and easily comparable quantifiable information, may precisely meet this need. Conversely, individuals also serve as "options" being selected by others. By the same logic, quantifying self-presentation strategies can "cater to others' preferences," helping individuals stand out among numerous candidates. Based on this reasoning, we propose that in socio-ecological environments characterized by high relational mobility, a calculative mindset may become a prevalent cognitive processing strategy in mate selection, manifesting both in decision-making about potential partners and in self-presentation processes.

1.1 Relational Mobility Increases Cognitive Load in Mate Choice

Mate choice refers to the selection of a spouse with the aim of establishing an intimate relationship. High-quality partnerships serve as important sources of support against life's hardships and positive social support (Collins et al., 2010); conversely, poor mate selection decisions rank high on lists of "life's greatest regrets" (Morrison & Roese, 2011). Consequently, people are typically highly selective and cautious when choosing partners. However, finding an ideal partner among vast numbers of people is no easy task. Mate selection constitutes a multi-attribute decision task, with its basic process involving the selection, evaluation, trade-off, and integration of information across numerous attributes of multiple options to ultimately complete the decision (Joel et al., 2013; Miller & Todd, 1998). Unlike simple, limited-range decision tasks in laboratory settings, mate selection is deeply embedded in real-world social contexts, involving complex and diverse information that inherently lacks an absolute optimal solution. Attempting to comprehensively analyze all relevant information would exhaust cognitive resources and ultimately lead to decision failure (Bruch & Feinberg, 2017). Given these constraints, people typically pursue efficiency in mate selection decisions. When environmental factors further increase the complexity of mate selection decisions, more efficient cognitive processing strategies emerge as preferred options.

As an important socio-ecological factor, relational mobility determines the number of opportunities individuals have to form new relationships within a given

social context (Yuki & Schug, 2012). In low relational mobility societies, interpersonal relationships and group identities are relatively fixed and stable; even when individuals wish to change their interpersonal circumstances, they find it difficult to exit existing relationships. Conversely, in high relational mobility societies, people have many opportunities to meet new people, can autonomously choose interaction partners and group affiliations, and can freely leave unsatisfactory relationships. In other words, compared to low relational mobility societies, high relational mobility societies feature a large number of alternative options, with interpersonal relationships and group identities characterized by greater freedom and flexibility, making social relationships more fluid (Li et al., 2018; Yuki & Schug, 2012, 2020). Essentially, the premise of relational mobility lies in individuals' broad opportunities for relationship selection (Yuki & Schug, 2012; Oishi et al., 2015; Sato & Yuki, 2014), with its core characteristic being the freedom to enter or exit relationships (Yuki & Schug, 2012; Kitayama & Salvador, 2024), which ultimately affects relationship stability (Sato & Yuki, 2014).

When engaging in mate selection in high relational mobility environments, the broad selection space and high degree of freedom lead people to continuously invest effort in evaluating and comparing potential partners from multiple perspectives to identify the most suitable candidates (Yuki & Schug, 2012; Awad et al., 2020; Falk et al., 2009; Schug et al., 2009; Komiya et al., 2019). However, this simultaneously means that the complexity of the mate selection decision task increases, prompting individuals to adopt more efficient cognitive strategies. First, high relational mobility environments provide abundant alternative options, significantly increasing the quantity and diversity of attribute information that must be processed during decision-making. This challenges limited cognitive resources and creates a preference for simplified information that facilitates efficient decision-making. Additionally, the existence of numerous options implies that choices may be highly novel, further increasing decision task complexity and highlighting the need for cognitive load reduction (Lenton & Stewart, 2008). Second, the increased number of mate selection options in high relational mobility environments raises demands for cross-option comparison. Individuals must effectively evaluate and contrast the characteristics and advantages of each option to make decisions that best align with their expectations and needs. Information that enables rapid and accurate horizontal comparison becomes particularly desirable. For example, Lenton and Francesconi (2010) analyzed mate selection characteristics in real speed-dating contexts and found that when faced with abundant choices, people paid less attention to textual features requiring time to analyze (such as occupational status and education level) and more attention to easily assessable numerical features (such as height and weight). Finally, the freedom to enter and exit relationships in high relational mobility environments provides error tolerance for mate selection decisions. Even when efficiency-seeking strategies sacrifice accuracy (Johnson & Payne, 1985), individuals can exit relationships after making poor choices and still have sufficient opportunities to explore and discover new partners, which to some extent pushes

individuals to prioritize efficiency over accuracy in this trade-off.

In summary, high relational mobility environments provide greater freedom in mate selection while simultaneously demanding higher decision-making efficiency. The latter prompts individuals to adopt measures to reduce information volume and seek comparable information to alleviate cognitive load and enable efficient decision-making. Additionally, relatively high error tolerance allows individuals to focus on efficiency without excessive pressure. Against this backdrop, the calculative mindset in mate choice may emerge as a cognitive strategy.

1.2 Calculative Mindset Reduces Cognitive Load in High Relational Mobility Environments

The concept of *calculative mindset* originates from organizational behavior, referring to the cognitive tendency to analyze non-quantitative problems (such as social values) using mathematical methods and convert them into monetary or numerical indicators (Wang et al., 2014). *Calculative mindset in mate choice* represents the manifestation of this concept in mate selection contexts and can be defined as a cognitive strategy that quantifies information about potential mates and the self through scoring or ranking to guide mate selection behavior.

As previously discussed, mate selection tasks in high relational mobility environments are more complex. Under the influence of a calculative mindset, individuals tend to transform information about potential partners into concise numbers or rankings. Compared to descriptive text, quantified information is not only more concise and fluent but can also be condensed and reduced to a unified scale, facilitating comparison across options (Liu et al., 2020). This approach demands fewer cognitive resources, helps decision-makers evaluate and compare multiple options, and offers advantages in processing speed, meeting the need for efficient decision-making. A similar process occurs in self-presentation. During mate selection, individuals must not only choose among numerous potential partners but also make themselves identifiable to others. Previous research indicates that the unstable and mutable characteristics of relationships in high relational mobility environments prompt individuals to continuously invest effort in catering to others' preferences to maintain relationships (Thomson, 2016; Falk et al., 2009). This implies that in mate selection contexts, beyond adopting appropriate strategies to reduce cognitive load when processing others' information, individuals must also develop corresponding strategies to make their self-information "stand out from the crowd" to attract others' attention. Given the concise, easily processed, and comparable nature of quantified information, individuals may also employ a calculative mindset when presenting self-information to attract potential mates and differentiate themselves from competitors.

Based on this reasoning, we propose that holding a calculative mindset during mate selection serves a unique adaptive function in high relational mobility environments. On one hand, when evaluating potential partners, a calculative mindset helps individuals make decisions efficiently among numerous options.

On the other hand, when presenting themselves to potential partners, a calculative mindset helps individuals increase their distinctiveness in fierce competition. Accordingly, we hypothesize that relational mobility positively predicts individuals' calculative mindset in mate choice, an effect that manifests both in evaluating others' information and in presenting self-information.

2 Overview of Studies

To test our hypotheses, we conducted three studies comprising four sub-studies. Study 1 focused on the relationship between regional-level relational mobility and individuals' calculative mindset in that region, using macro-level regional data and large-scale online data. The divorce-to-marriage ratio served as an indicator of regional relational mobility, while indices of calculative mindset were derived from text analysis of self-introductions and mate requirements on a dating website to explore their correlation. Study 2 shifted to the individual level, using questionnaires to measure individuals'perceived relational mobility in their environment and examining its correlation with calculative mindset regarding both others and the self during mate selection. Study 3 employed experimental methods to create virtual environments with high versus low relational mobility, simulating online dating contexts to further explore the causal relationship between relational mobility and calculative mindset regarding others (Study 3A) and the self (Study 3B).

3 Study 1: The Relationship Between Regional Relational Mobility and Calculative Mindset in Mate Choice

As a socio-ecological variable, relational mobility can be operationalized at the macro level as objective relationship flow within a specific region or at the micro level as individuals' perception of relational mobility in their environment (Kito et al., 2017), whereas calculative mindset in mate choice primarily manifests at the individual level. Study 1 aimed to combine macro and micro levels by analyzing macro-level regional data and big data from dating websites to explore the relationship between regional relational mobility and individuals' calculative mindset in that region.

3.1.1 Construction of Regional Relational Mobility Index

Based on the definition of relational mobility, this study adopted the divorce-to-marriage ratio within a specific region as an objective indicator of regional relational mobility. Compared to general interpersonal relationships, marital relationships are highly contractual and involve long-term commitment. If marital relationships in a society exhibit high fluidity, we can infer that general interpersonal relationships in that society likely exhibit even greater fluidity. Therefore, marital relationship fluidity can to some extent represent fluidity across various relationship types. Previous studies have suggested using divorce rates as a proxy for regional relational mobility (e.g., Kito et al., 2017; Komiya

et al., 2019). However, divorce rates only consider the dissolution of old relationships without addressing the formation of new ones. The divorce-to-marriage ratio is more comprehensive, reflecting the number of divorce events relative to marriage events within a specific region and time period. This metric reveals the stability and variability of marital relationships in a region and possesses theoretical 合理性. Moreover, the divorce-to-marriage ratio is a relative indicator that can partially control for population base and age structure effects, making data across different regions more comparable (e.g., Grossmann & Varnum, 2015).

The index construction process was as follows: First, mainland China was divided according to first-level administrative divisions, with 31 provinces, municipalities, and autonomous regions included in the analysis. Next, quarterly social service statistics by province published by the Ministry of Civil Affairs of the People' s Republic of China were collected. Corresponding to the time period for obtaining calculative mindset indices, the 2018 annual divorce-to-marriage ratio for each region was calculated by dividing the number of divorce registrations (pairs) by the number of marriage registrations (pairs), which served as the indicator of regional relational mobility.

3.1.2 Construction of Calculative Mindset Index

(1) Data Acquisition

Data were collected in 2018 using a Python web crawler to gather member information from a large domestic dating website based on the site' s random push mechanism. The collected information included gender, city, age, marital status, education level, and self-introduction text—all publicly available content. After excluding data from users in Hong Kong, Macau, Taiwan, overseas, or with unknown locations, we obtained data from 91,536 members across 31 provinces, municipalities, and autonomous regions in mainland China. Among these, 46,831 members' self-introduction texts contained no valid content (e.g., only ellipses) or used website-provided templates (e.g., "Waiting, just to meet you, from acquaintance to love to a distant future"), making calculative mindset assessment impossible. Additionally, 2 members' data were excluded due to completely missing demographic information. The final valid sample consisted of 44,703 individuals (23,939 females, 20,764 males) aged 18 to 41 years ($M = 24.36$, $SD = 2.29$), with 93.1% unmarried, 2.2% divorced or widowed, and the remainder unmarked.

(2) Index Construction

First, a psychology expert constructed a word list classification standard based on the concept of calculative mindset and characteristics of dating profiles. In personal self-introductions and mate preference descriptions, people tend to elaborate on their own traits in detail and specify requirements for desired partners' corresponding attributes. Accordingly, calculative mindset in these texts is primarily reflected through quantifiable attribute dimensions (e.g., height, age, education) and evaluation processes (e.g., "scoring" behavior) and outcomes

(e.g., using degree adjectives like "excellent"). Additionally, the texts contain culturally meaningful and socially evaluative labels (e.g., "civil servant," "tall-rich-handsome") that represent attributes assigned specific values within the social value system. Based on this, the word list can be subdivided into three core categories: calculative indicator words, calculative process and outcome words, and calculative label words.

1) **Calculative Indicator Words**: Words describing calculable characteristics, such as "height," "age," "education," etc. These words reflect individuals' tendency to use quantifiable attributes for self-description and mate preference specification.

2) **Calculative Process and Outcome Words**: Words describing decision-making pathways (verbs) and adjectives/adverbs expressing evaluation outcomes, such as "weigh," "tier," "superior," "high-tier," etc. These words reflect individuals' processes and outcomes of weighing various factors to form value judgments about themselves and potential partners.

3) **Calculative Label Words**: Words describing social hierarchies or cultural labels, such as "civil servant," "tall-rich-handsome," etc. These words are closely related to social values and cultural cognition, reflecting individuals' pursuit of specific social attributes.

Five researchers familiar with the study background independently generated relevant words based on the above classification and definitions. The researchers then discussed and evaluated all words, eliminating those that did not fit the conceptual definitions. The final list contained 205 words, including 82 calculative indicator words, 95 calculative process and outcome words, and 28 calculative label words.

The calculative mindset index was based on members' self-introduction texts, which members filled out themselves to present basic information and mate preferences (e.g., "I am a *** girl/boy, hoping my future partner will be ***"). All text was in Chinese. The jieba (Chinese text segmentation) Python package was used to segment the text and extract all words. Words were then matched against the established calculative mindset word list. Since the texts contained both self-descriptions and requirements for others, no distinction was made between calculative mindset regarding others versus the self in this study. The ratio of calculative mindset vocabulary to total vocabulary in the text served as the overall individual calculative mindset index. Table 1 provides examples of this process (one male and one female text each).

Table 1 Example of Calculative Mindset Index Construction Based on Self-Introduction Texts

Self-Introduction Content	Segmented Words	Calculative Mindset (Matched Words/Total Words)
1. “Hello everyone, I am an outgoing and straightforward girl working in a state-owned enterprise. For my partner, I hope he must have a house and stable job.”	‘Hello everyone’ , ‘I’ , ‘am’ , ‘an’ , ‘outgoing’ , ‘straightforward’ , ‘girl’ , ‘I’ , ‘work’ , ‘in’ , ‘state-owned enterprise’ , ‘work’ , ‘For’ , ‘my’ , ‘partner’ , ‘I’ , ‘hope’ , ‘he’ , ‘must’ , ‘have house’ , ‘have’ , ‘stable’ , ‘job’	‘state-owned enterprise’ , ‘have house’
2. “32 years old, from Shandong, attended university in Beijing, stayed in Beijing after master’ s graduation, average-looking. For my partner, I hope she is a domestic girl.”	‘32 years old’ , ‘hometown’ , ‘Shandong’ , ‘Beijing’ , ‘attended’ , ‘university’ , ‘master’ s’ , ‘graduation’ , ‘stayed’ , ‘Beijing’ , ‘work’ , ‘appearance’ , ‘very average’ , ‘For’ , ‘my’ , ‘partner’ , ‘I’ , ‘hope’ , ‘she’ , ‘is’ , ‘a’ , ‘domestic’ , ‘girl’	‘32 years old’ , ‘master’ s’ , ‘very average’

3.1.3 Other Data

To control for potential effects of other regional factors, regional population size and regional GDP were included in subsequent analyses. Regional population data came from 2018 population sampling survey estimates published by the National Bureau of Statistics, while regional GDP data came from the 2018 *China Statistical Yearbook*. Additionally, previous research has shown positive correlations between regional residential mobility and individuals' perceived relational mobility (e.g., Thomson et al., 2018). Therefore, regional residential mobility data were also collected for statistical control. Data were obtained from the most recent national census prior to 2018, taken from *Population Statistics by County and City in the People' s Republic of China (2011)* compiled by the Public Security Bureau' s Public Order Administration (2013). Registered population, inter-provincial in-migration, and inter-provincial out-migration figures were used to calculate total migration population divided by registered population, yielding a residential mobility rate for each region.

3.2.1 Descriptive Statistics and Correlation Analysis

Descriptive statistics and correlation analysis results for all variables are presented in Table 2 . Regional relational mobility showed a significant positive correlation with calculative mindset in mate choice ($r = 0.017$, $p < 0.001$). Additionally, variables including age, gender, education level, regional population size, regional GDP, and regional residential mobility showed significant associations with calculative mindset and were controlled in subsequent analyses.

Table 2 Descriptive Statistics and Correlation Analysis for Study 1

Variable	1	2	3	4	5	6	7	8
1. Regional relational mobility	1							
2. Age	0.05***	1						
3. Gender	-0.08***	0.10***	1					
4. Education level	0.02***	0.53***	0.18***	1				
5. Regional population size	-0.19***	-0.10***	-0.05***	-0.04***	1			
6. Regional GDP	0.01*	-0.20***	-0.21***	-0.06***	0.85***	1		
7. Regional residential mobility	-0.08***	-0.03***	-0.05***	0.02***	0.02***	0.03***	1	

Variable	1	2	3	4	5	6	7	8
8. Calculative mindset in mate choice	0.17**	0.13*	0.25***	0.22***	0.21***	0.28***	0.17**	1

Note: $p < .05$, ***p < .01,*** $p < .001$, two-tailed tests; gender coded 0 = female, 1 = male; higher education values indicate more education; relational mobility, population size (unit: 10,000 persons), GDP (unit: 100 million yuan), and residential mobility are region-level data.

3.2.2 Relationship Between Regional Relational Mobility and Calculative Mindset

Given that relational mobility was a region-level variable while calculative mindset was an individual-level variable, a hierarchical linear regression model was constructed as follows:

Individual level: Calculative mindset = + × (individual-level predictors) + r
Region level: = + × (regional relational mobility) + × (regional population size) + × (regional residential mobility) + u

The lmer function from R' s lme4 package was used for statistical analysis. Results are presented in Table 3 . The intraclass correlation coefficient (ICC) for calculative mindset in the null model was 0.19%. Full model analysis revealed that after controlling for age, gender, and education at the individual level and population size, total GDP, and residential mobility at the regional level, regional relational mobility still significantly and positively predicted calculative mindset (= 7.20, t = 3.42, p = 0.002). That is, higher regional relational mobility was associated with stronger calculative mindset among dating website users in that region, as reflected in greater use of calculative vocabulary in self-introductions and mate preference descriptions.

Table 3 Parameter Estimates for Multilevel Regression Models of Calculative Mindset in Study 1

Predictor	M1: Individual-level variables only	M2: Adding regional-level variables
Intercept	0.17***	0.17***
Age	0.01***	0.01***
Gender	0.01***	0.01***
Education level	0.01***	0.01***

Predictor	M1: Individual-level variables only	M2: Adding regional-level variables
Regional population size		-0.01
Regional GDP total		0.01
Regional residential mobility		-0.01
Regional relational mobility		0.01**

Note: $p < .05$, ***p < .01***, $p < .001$, two-tailed tests; r represents Level 1 residuals, u represents intercept residuals.

3.3 Discussion

Study 1 combined macro-level regional data with micro-level individual data, using the divorce-to-marriage ratio as an indicator of regional relational mobility and employing information from self-introductions and mate requirements on dating websites as indicators of individual calculative mindset. The study preliminarily explored their relationship and found that higher regional relational mobility was associated with stronger calculative mindset among users in that region, as evidenced by greater use of calculative vocabulary in self-descriptions and mate preference expressions. This initial finding supports our hypothesis. Study 2 will shift from the regional to the individual level, using questionnaires to measure individuals' perceived relational mobility and calculative mindset to further examine their relationship.

4 Study 2: Correlation Between Perceived Relational Mobility and Calculative Mindset

Individuals can perceive the level of relational mobility in their environment and guide their behavior accordingly (Yuki & Schug, 2020). Study 2 used questionnaire methods to examine the relationship between individuals' perception of relational mobility in their environment and their calculative mindset in mate choice. We expected that individuals who perceived higher relational mobility in their surroundings would exhibit stronger cognitive tendencies to calculate both others' and their own information during mate selection.

4.1.1 Participants

Following Schönbrodt and Perugini' s (2013) recommendation that at least 250 participants are needed to obtain robust correlation results, this study collected data from 320 unmarried adults through a third-party online survey platform. Nine participants failed attention check items (two items, e.g., "Please select option 6 for this question") and were excluded, yielding a final sample of 311 valid participants (175 females, M age = 27.74 ± 4.23 years).

4.1.2 Materials

(1) Perceived Relational Mobility
We used the Relational Mobility Scale developed by Yuki et al. (2007) to measure perceived relational mobility. The original scale contains 12 items. To reduce potential negative effects of reverse-coded items on scale reliability and validity (see Weijters & Baumgartner, 2012) and to minimize fatigue effects, we selected only 6 positively worded items reflecting individuals' subjective perceptions of others' opportunities to select new relationships (e.g., "They have many opportunities to meet other people"), freedom (e.g., "They can choose whom to interact with in daily life according to their preferences"), and freedom to leave old relationships (e.g., "If they dislike their current circle, they can choose to leave and join a better one"). Participants rated each item on a 7-point scale (1 = strongly disagree, 7 = strongly agree), with higher scores indicating higher perceived relational mobility. The scale showed good internal consistency reliability (Cronbach' s = 0.80). Confirmatory factor analysis indicated good structural validity ($^2(7) = 16.809$, $p < 0.001$, RMSEA = 0.067, CFI = 0.984, TLI = 0.965, SRMR = 0.026), with factor loadings ranging from 0.53 to 0.97.

(2) Calculative Mindset in Mate Choice
Based on Kim's (2016) scale for calculative mindset in interpersonal interactions, we adapted it for mate selection contexts (asking participants to imagine they are on a blind date and have obtained some information about the other person) and distinguished between calculative mindset regarding others and the self.

Calculative mindset regarding others: Eight items reflecting individuals' cognitive tendency to calculate, score, and rank various types of information about potential partners during mate selection (e.g., "I will comprehensively evaluate this person based on some calculable indicators"). Participants imagined they were about to participate in a matchmaking activity and rated each item on a 7-point scale, with higher scores indicating stronger cognitive tendency to calculate others' information during mate selection. The scale showed good internal consistency reliability (Cronbach' s = 0.90).

Calculative mindset regarding the self: Eight items reflecting individuals' cognitive tendency to calculate, score, and rank various types of information about themselves during mate selection (e.g., "I will use scoring or rating to evaluate my own conditions to demonstrate my value"). Participants imagined they were about to participate in a matchmaking activity and rated each item on a 7-point

scale, with higher scores indicating stronger cognitive tendency to calculate self-information during mate selection. The scale showed good internal consistency reliability (Cronbach' s = 0.90).

(3) Control Variables
These included participants'age, gender, education level, relationship status, and subjective socioeconomic status, which were controlled in subsequent analyses.

4.2.1 Descriptive Statistics and Correlation Analysis

Correlation analyses (Table 4) revealed that perceived relational mobility was significantly positively correlated with calculative mindset regarding others (r = 0.17, p = 0.003) and the self (r = 0.14, p = 0.015).

Table 4 Descriptive Statistics and Correlation Analysis for Study 2

Variable	1	2	3	4	5	6	7	8
1. Relational mobility	1							
2. Age	0.05	1						
3. Gender	-0.04	0.13*	1					
4. Education level	0.17**	0.25***	0.22***	1				
5. Subjective SES	0.14*	0.21***	0.28***	0.17**	1			
6. Relationship status	-0.12*	-0.04	-0.12*	-0.12*	-0.04	1		
7. Calculative mindset (others)	0.17**	0.13*	0.25***	0.22***	0.21***	-0.12*	1	
8. Calculative mindset (self)	0.14*	0.12*	0.17**	0.14*	0.12*	-0.12*	0.71***	1

Note: $p < .05$, $\boldsymbol{p < .01}$, p < .001, two-tailed tests; gender coded 0 = female, 1 = male; higher education values indicate more education; subjective socioeconomic status coded: 1 = low income, 2 = lower-middle income, 3 = middle income, 4 = upper-middle income, 5 = high income; relationship status coded: 1 = unmarried and single, 2 = unmarried but in a relationship.

4.2.2 Relationship Between Perceived Relational Mobility and Calculative Mindset

Hierarchical regression analyses (Table 5) controlling for other variables revealed that perceived relational mobility significantly and positively predicted calculative mindset regarding others (= 0.16, t = 2.78, p = 0.006, 95% CI

[0.059, 0.346], $R^2 = 0.024$) and the self (= 0.12, t = 2.06, p = 0.040, 95% CI [0.006, 0.270], $R^2 = 0.013$), with small effect sizes.

Table 5 Regression Analysis of Perceived Relational Mobility Predicting Calculative Mindset in Study 2

Predictor	Calculative mindset (others)	Calculative mindset (self)
Step 1: Control variables		
Age	0.01	0.01
Gender	0.16***	0.12**
Education level	0.12**	0.08*
Subjective SES	0.08*	0.09*
Relationship status	-0.11*	-0.12*
Step 2: Adding relational mobility		
Relational mobility	0.16**	0.12*
ΔR^2	0.024**	0.013*

Note: *p < .05,* ***p < .01,*** p < .001, two-tailed tests.

4.3 Discussion

Building on Study 1, Study 2 results further demonstrated that individuals who perceived higher relational mobility in their environment showed stronger cognitive tendencies to calculate both others' and their own information during mate selection, confirming our hypothesis at the individual level. When people realize their environment offers numerous interaction opportunities and freedom to enter and exit relationships, they tend to adopt quantification and calculation strategies to evaluate others and present themselves. Building on this, Study 3 will further examine the causal relationship between relational mobility and calculative mindset.

5 Study 3A: Causal Relationship Between Relational Mobility and Calculative Mindset Regarding Others

Study 3A employed a single-factor between-subjects design to examine how relational mobility affects calculative mindset regarding others. To avoid inter-

ference from real-world social conditions, a virtual society paradigm was used to prime relational mobility perceptions, and a dating website system preference task assessed calculative mindset regarding others.

5.1.1 Participants

Previous research indicates that associations between relational mobility and other psychological outcomes typically show small to medium effect sizes (e.g., Martin et al., 2019). Accordingly, we set the expected effect size at 0.50. Using G*Power 3.1 (Faul et al., 2007) to estimate minimum sample size with = 0.05, power (1 -) = 80%, and d = 0.50, the analysis indicated a need for 128 participants. We recruited 138 unmarried, single college students. Two participants were excluded for guessing the experimental purpose, and six for failing to complete the study as instructed, yielding a final sample of 130 valid participants (105 females, M age = 21.87 ± 2.81 years).

5.1.2 Procedure

(1) Material Validation for Calculative Mindset Regarding Others
Based on the definition of calculative mindset, we created four versions of dating profiles (male and female versions, each with low- and high-calculative formats) as experimental materials (Figure 1

). High-calculative materials used explicit numerical scoring (e.g., "appearance: 8 points"), while low-calculative materials used less explicit tier descriptions (e.g., "above average," corresponding to a predetermined 7-8 point range), which were more general and required some conversion.

We recruited 27 college students (20 females, M age = 24.78 ± 1.37 years) to evaluate the effectiveness of experimental materials—that is, to verify whether high- and low-calculative materials differed in their degree of information calculation. Using a single-factor within-subjects design, evaluators viewed four experimental materials (two calculative and two non-calculative) in random order. After viewing each material, they answered three questions (7-point scale, 1 = "not at all quantified/reflected/decomposed," 7 = "completely quantified/reflected/decomposed"): "To what extent do you think this person quantified their conditions?" "To what extent do you think this person reflected the level/tier of their conditions?" and "To what extent do you think this person decomposed their information?" To exclude interference from other variables, we also measured perceived competitiveness and attractiveness of target persons using two items: "How competitive do you think this person is in the long-term mate selection market?" and "How attractive do you think this person is to the opposite sex?" (7-point scale, 1 = "not at all competitive/attractive," 7 = "very competitive/attractive").

One-sample t-tests (test value = 4) on ratings from the 27 participants showed that both high-calculative (M = 5.85, SD = 1.03; t(26) = 9.35, p < .001, 95% CI [1.44, 2.26], d = 1.80) and low-calculative (M = 4.59, SD = 0.96; t(26) =

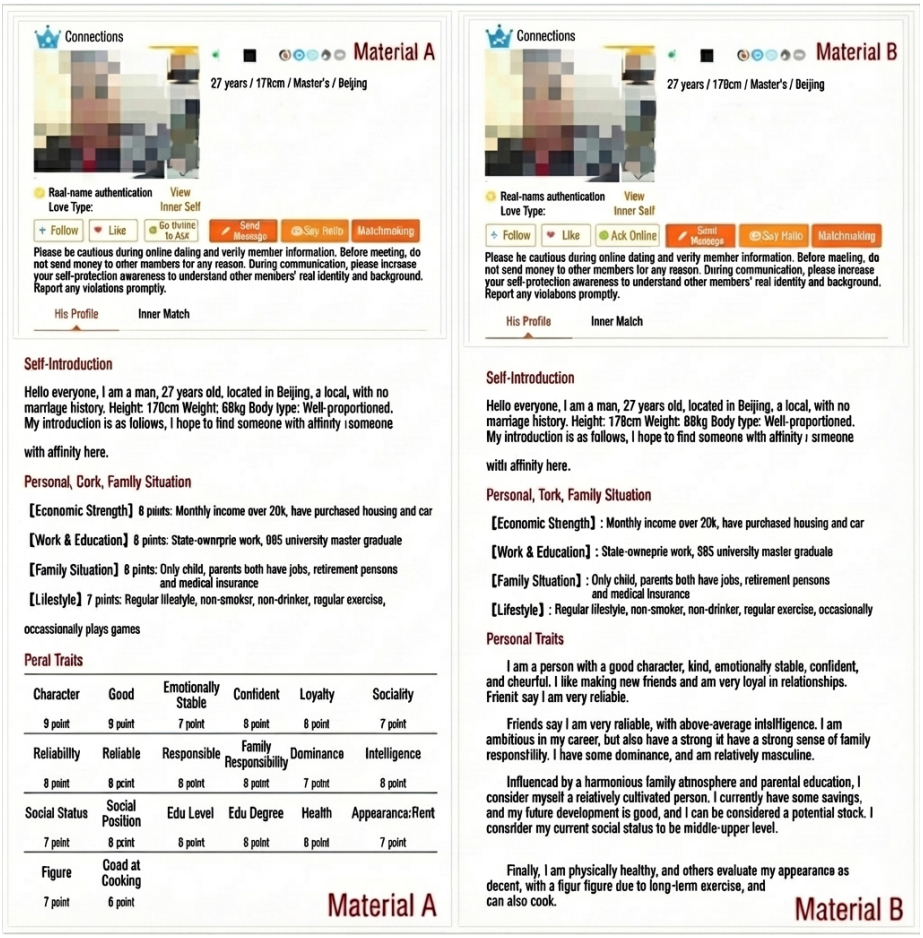

Figure 1: Figure 1

3.20, $p < 0.001$, 95% CI [0.21, 0.97], $d = 0.61$) materials scored significantly above the theoretical midpoint, indicating both possessed calculative features to some extent. Paired samples t-tests revealed that high-calculative materials ($M = 5.85$, $SD = 1.03$) were rated as significantly more calculative than low-calculative materials ($M = 4.59$, $SD = 0.96$; $t(26) = 4.42$, $p < 0.001$, 95% CI [0.67, 1.85], $d = 1.27$). However, no significant differences emerged in perceived competitiveness ($t(26) = -0.31$, $p = 0.76$) or attractiveness ($t(26) = -1.48$, $p = 0.15$), confirming the validity of experimental materials.

(2) Formal Experimental Procedure

Participants arrived at the laboratory and were randomly assigned to either the high relational mobility group ($n = 64$) or low relational mobility group ($n = 66$). They completed relational mobility priming tasks and calculative mindset regarding others tasks on computers.

The relational mobility priming task was adapted from commonly used virtual society imagination and writing tasks (Li et al., 2015). Participants first read a textual manipulation primarily designed to influence three aspects of relational mobility: (1) the foundation—opportunities for relationship selection; (2) the core—freedom to enter and exit relationships; and (3) the outcome—relationship stability. Specifically, high relational mobility group participants were asked to imagine living long-term in a virtual city where residents have many opportunities to make new friends, can freely choose desired friends, and can freely exit unsatisfactory old relationships, making interpersonal relationships unstable. Conversely, low relational mobility group participants imagined living in a city with few opportunities to meet new people, where residents have difficulty freely choosing desired friends and exiting unsatisfactory relationships, making interpersonal relationships relatively stable. After the imagination exercise, to strengthen the priming effect, participants completed three writing tasks reflecting on how this fluid (or non-fluid) interpersonal environment would affect the development of romantic/marital relationships, with each response requiring at least 50 characters. Participants then completed the relational mobility scale (adapted from Study 2, 4 items, Cronbach' s $= 0.92$) to check manipulation effectiveness.

Next, participants were told they were invited to test user experience for a dating website in the hypothetical city and would see two member information presentation formats, then provide feedback on their usage intentions. Participants viewed two sets of personal profile pages (male and female groups), with each set simultaneously displaying Material A (high-calculative) and Material B (low-calculative). After viewing each set, they answered two questions: "If you were searching for a partner on this website, which format would you prefer for presenting potential partners' information?" and "Which presentation format would make you more willing to use this website?" (11-point scale, -5 = "strongly prefer Material A," 5 = "strongly prefer Material B"). Scores were reverse-coded and averaged, with higher scores indicating stronger calculative mindset regarding others (Cronbach' s $= 0.96$). Finally, demographic

information was collected (same as Study 2).

5.2 Results and Discussion

First, independent samples t-tests confirmed the effectiveness of relational mobility manipulation: high relational mobility group participants (M = 5.73, SD = 0.65) reported significantly higher perceived relational mobility in the virtual city than low relational mobility group participants (M = 2.26, SD = 0.93; $t(128) = 24.84$, $p < 0.001$, 95% CI [3.20, 3.75], d = 4.31).

Second, independent samples t-tests revealed that high relational mobility group participants showed significantly stronger preference for Material A (high-calculative; M = 1.02, SD = 3.37) compared to low relational mobility group participants (M = -0.55, SD = 3.31; $t(128) = 2.69$, $p = 0.008$, 95% CI [0.41, 2.73], d = 0.47), representing a medium effect size.

Study 3A manipulated relational mobility and simulated dating website usage to explore the causal relationship between relational mobility and calculative mindset regarding others. Results supported our hypothesis: when imagining themselves in a high relational mobility social environment, individuals preferred reading quantified information about others during mate selection, as this helps them quickly understand, compare, and evaluate potential partners to make efficient, low-load mate selection decisions.

6 Study 3B: Causal Relationship Between Relational Mobility and Calculative Mindset Regarding the Self

Study 3B used a similar method to Study 3A to test the causal relationship between relational mobility and calculative mindset regarding the self.

6.1.1 Participants

Consistent with Study 3A, G*Power sample size estimation indicated a need for 128 participants. We recruited 140 unmarried, single college students. Eight participants were excluded for failing to complete the study as instructed, yielding a final sample of 132 valid participants (94 females, M age = 22.54 ± 2.86 years).

6.1.2 Procedure

Participants were randomly assigned to high relational mobility (n = 65) or low relational mobility groups (n = 67) and completed the same relational mobility priming task as Study 3A in the laboratory, followed by manipulation check items (Cronbach' s = 0.88). Next, participants were similarly told they were invited to test a matching system for a dating website in the hypothetical city. The system' s feature was to analyze, quantify, and generate a total score from users' self-introduction texts. Participants first viewed an example (Material A

from Study 3A, i.e., high-calculative self-introduction) and then answered two questions: "If you were going on a blind date on this website and this system was officially launched, to what extent would you want to use this system to generate a score for yourself?" and "If you were going on a blind date on this website, would you prefer this scoring method over direct text description?" (7-point scale, 1 = "no willingness at all," 7 = "very strong willingness"). Subsequent Spearman correlation analysis showed the two items were significantly positively correlated ($r = 0.51$, $p < 0.001$) and were summed and averaged, with higher scores indicating stronger calculative mindset regarding the self. Finally, participants completed demographic information forms.

6.2 Results and Discussion

First, independent samples t-tests confirmed the effectiveness of relational mobility manipulation: high relational mobility group participants ($M = 5.41$, $SD = 1.04$) reported significantly higher perceived relational mobility in the virtual city than low relational mobility group participants ($M = 2.76$, $SD = 1.07$; $t(130) = 14.41$, $p < 0.001$, 95% CI [2.29, 3.01], $d = 2.51$).

Subsequently, independent samples t-tests revealed that high relational mobility group participants showed significantly stronger preference for Material A (high-calculative; $M = 4.72$, $SD = 2.72$) compared to low relational mobility group participants ($M = 3.84$, $SD = 1.39$; $t(130) = 2.37$, $p = 0.019$, 95% CI [0.15, 1.63], $d = 0.41$), representing a small-to-medium effect size.

Study 3B again manipulated relational mobility and simulated dating website usage to explore the causal relationship between relational mobility and calculative mindset regarding the self. Results similarly supported our hypothesis: when imagining themselves in a high relational mobility social environment, individuals preferred to present self-information in quantified ways during mate selection, as this helps increase their distinctiveness from potential competitors and allows potential partners to efficiently process their information—a strategy that caters to others' preferences in such environments.

7 General Discussion

Over the past four decades of reform and opening up, population mobility has promoted social transformation in China while making originally stable interpersonal relationships increasingly open and mutable. Individuals' opportunities for interpersonal selection have increased, and the formation and dissolution of relationships have become more flexible and free. This increasing relational mobility prompts individuals to adopt specific interpersonal strategies to seek environmental adaptation, such as treating mate selection problems as mathematical problems to be quantified and calculated. This "calculative mindset in mate choice" can simplify information processing in mate selection, reduce cognitive load, and improve decision-making efficiency.

From a socio-ecological psychology perspective and employing diverse research

paradigms and measurement methods, this study systematically examined, for the first time, how relational mobility influences decision-making and self-presentation strategies in mate selection contexts. The research focused on whether relational mobility prompts individuals to prefer calculative or quantified approaches when processing others' information and presenting themselves during mate selection—that is, whether they exhibit a calculative mindset. Specifically, Study 1 demonstrated that regional-level relational mobility positively predicted individuals' calculative mindset in that region. Study 2 showed that individuals' perception of relational mobility in their environment positively correlated with their cognitive tendency to calculate both others' and their own information during mate selection. Study 3 manipulated relational mobility to further test its causal relationship with calculative mindset: Study 3A found that participants primed with high (vs. low) relational mobility showed stronger preference for high-calculative presentation systems for others' mate selection information, while Study 3B found that participants primed with high (vs. low) relational mobility showed stronger preference for high-calculative presentation systems for their own mate selection information. In summary, high relational mobility environments are associated with stronger calculative mindset in mate choice.

7.1 Theoretical Implications

First, this study extends the concept of calculative mindset from organizational behavior to interpersonal relationships and reveals its adaptive cognitive function in high relational mobility environments. This concept not only reflects contemporary social phenomena but also broadens understanding of cognitive strategies in mate selection. Due to environmental complexity and limited processing capacity, social decisions like mate selection cannot rationally process all information, nor do objective optimal solutions exist (Hertwig & Hoffrage, 2013). Consequently, people often aim to conserve cognitive resources by adopting simple heuristic strategies that prune information and enable rapid processing to complete decisions (Gigerenzer & Gaissmaier, 2011). Previous research on mate selection strategies primarily focused on five strategies proposed by Payne et al. (1993), which differ in the amount of information processed. For example, the "satisficing" strategy involves selecting the first candidate who meets certain key criteria for an ideal partner, while the "weighted averaging" strategy involves comprehensively considering all attributes of each potential partner and weighting them according to personal preferences to identify the best match (Lenton & Stewart, 2008). The calculative mindset in mate choice, driven by efficiency needs, focuses on transforming complex information into more comparable quantitative forms while retaining some information, distinguishing it from strategies that simply ignore or include certain information. Moreover, the adaptive function of calculative mindset confirms the notion that simplified information decision strategies possess ecological rationality (Hertwig & Hoffrage, 2013). Consequently, calculative mindset in mate choice can be considered a unique and important mate selection strategy worthy of future

in-depth research and discussion.

Second, this study extends the impact of relational mobility on interpersonal relationships to intimate relationships, supplementing the psychological and behavioral consequences of this important socio-ecological factor. Previous research has primarily focused on how relational mobility affects friend or enemy relationships, demonstrating that high relational mobility prompts more positive interpersonal behaviors toward friends, such as providing and seeking more social support from close friends (Chen et al., 2012; Kim et al., 2008). Conversely, low relational mobility makes individuals more vigilant toward enemies, such as perceiving greater threat from enemies and paying more attention to them (Li & Masuda, 2016). This study demonstrates that beyond general interpersonal relationships, relational mobility also importantly influences cognitive processes during intimate relationship selection and formation. Additionally, this study implies another side of the relational freedom brought by relational mobility: higher cognitive load and decision-making efficiency pressure. Understanding relational mobility' s role from the perspective of social decision-making and cognitive strategies also expands research themes in relational mobility studies.

Finally, this study demonstrates the effects of relational mobility at different levels. Previous research has found that relational mobility can explain certain cultural differences; for example, a large-scale survey across 39 countries and regions found a negative association between relational mobility and collectivism (Thomson et al., 2018). Meanwhile, relational mobility research can also be conducted at smaller social units, such as examining how different socio-ecological contexts within the same society (e.g., urban vs. rural areas within the same cultural background) influence psychological and behavioral processes (Kito et al., 2017). This study explored relational mobility effects at different levels: specifically, it examined relationships between regional relational mobility differences across various regions in China and calculative mindset among individuals within those regions (Study 1), measured how different individuals' perceptions of relational mobility in their immediate environment affected their calculative mindset (Study 2), and experimentally created immediate contexts to verify relational mobility' s impact on individuals' mate selection mindset (Study 3). Results consistently supported the conclusion that high relational mobility shapes calculative mindset in mate choice. In summary, this study focused on relational mobility across different environmental contexts within the same culture, 弥补了以往研究只关注国家或文化层面差异的不足. Additionally, the experimental approach 弥补了跨文化研究只能验证相关性的不足 and excluded confounding from other socio-ecological factors.

7.2 Practical Implications

This study' s revelation of how relational mobility influences calculative mindset helps understand changes in individual psychology and behavior under social transformation and provides practical suggestions for the healthy development of the marriage market. Chinese society is currently in a period of rapid de-

velopment and transformation, with greatly increased fluidity and mutability in interpersonal relationships. Our findings offer a new perspective for interpreting social phenomena such as the "Chinese matchmaking price list" —it may represent a strategic adaptation to the special socio-ecological environment of the transformation period. Furthermore, this study reveals how micro-level interpersonal interactions are profoundly influenced by macro-level environmental factors, which not only enhances understanding of information selection and processing mechanisms during mate selection in specific social environments but also provides reference for understanding and promoting interpersonal communication: the seemingly cold quantified numbers may not entirely reflect indifference and lack of care but may simply be expedient processing strategies for handling massive amounts of information. Finally, this study found that relational mobility levels vary across different cities and regions, which could guide dating platforms to incorporate this factor into user research to improve user experience based on deeper understanding of individuals' mate selection psychology.

7.3 Limitations and Future Directions

First, measurement methods for relational mobility and calculative mindset require further validation and expansion. Study 1 innovatively used the divorce-to-marriage ratio as a regional relational mobility indicator. While marital relationships are important social relationships, and because they are the most contractually binding relationship type, their stability and variability can largely represent stability and variability across relationship types, social relationships extend beyond marital relationships. Future research could expand regional relational mobility measurement indicators; for example, social activity participation and friendship stability could reflect fluidity in informal social relationships, while job change frequency could reflect fluidity in professional relationships. The relational mobility manipulation method used in Study 3 could also be further innovated. For instance, Oishi et al. (2007) primed residential mobility by changing partner fluidity in laboratory micro-environments to induce perceptions of interpersonal relationship turnover speed. Future research could emulate this approach by, for example, changing the freedom to choose partners in cooperative games to create micro-environments with high versus low relational mobility, thereby deepening understanding of relational mobility' s impact on individual behavior and psychological states. Additionally, this study used personal introduction texts from dating websites and simulated webpages as indicators of calculative mindset, which has high ecological validity, but its construct validity requires further validation in future research.

Second, while this study confirmed relational mobility' s effect on calculative mindset, it remains unclear whether this effect is moderated by factors such as individuals' mate selection motivations, preferences, values, or environmental susceptibility. For example, individuals' or their significant others' mate selection preferences determine attentional focus on mate selection information (as

in park matchmaking corners where parents most value easily quantifiable indicators like age, occupation, education, housing, residency, income, and height). The likelihood of different attributes being calculated would then differ, with preferred indicators receiving higher degrees of calculation. Furthermore, evolutionary psychologists have noted that differences in environmental susceptibility levels lead to individual differences in plasticity, which in turn affect person-environment interaction patterns (Ellis & Del Giudice, 2019). Accordingly, high susceptibility may strengthen the relationship between relational mobility and calculative mindset. Future research could further clarify individual differences and boundary conditions for relational mobility' s effect on calculative mindset.

Third, by elucidating relational mobility' s influence on calculative mindset, this study explored how socio-ecological environments shape human psychology and behavior. However, complex interactions exist between environments and people (Oishi, 2014). Although this study focused on relational mobility' s effect on calculative mindset, it can be expected that when individuals universally adopt calculative mindsets for mate selection decisions, this may in turn drive further increases in environmental relational mobility. Therefore, future research could advance to examine the reciprocal effects of calculative mindset on interpersonal environments, aiming to reveal bidirectional interaction processes between environment and person.

Finally, in the context of highly fluid social relationships, calculative mindset in mate choice emerges in response to demands and, to some extent, represents individuals' autonomy, freedom, and 选择权 in mate selection. However, the popularity of calculative mindset may also overturn romantic imagination about love and even alienate intimate relationships into exchange or instrumental relationships. This warrants individual vigilance, as deep emotional connection is the essence of intimate relationships. Previous research has shown that calculative mindset may lead individuals to neglect social consequences of decisions (Bennis et al., 2010). For example, using calculative approaches to solve non-quantitative problems (such as moral decisions in social interactions) in business organizations reduces interpersonal, social, and moral considerations (Hsee & Rottenstreich, 2004). Economics students (frequently exposed to profit maximization and mathematical calculation assumptions) behave more selfishly (Wang et al., 2011) and engage in more unethical behavior (Small et al., 2007). People performing calculation tasks engage in more deception (Zhong, 2011; Wang et al., 2014), and calculative mindset activated by economic inequality leads to interpersonal objectification (Cheng et al., 2024). Admittedly, the tendency to decompose and calculate complex, multifaceted individuals into numbers or labels has certain environmental adaptability. However, when vivid, three-dimensional people are reduced to fragmented information and "shopped around" like commodities, the unique subtlety of human nature may simultaneously dissolve. Based on this, future research could further investigate the effects of using calculative mindset in high relational mobility environments on subsequent establishment and maintenance of intimate relationships.

This article conducted three studies comprising four sub-studies, comprehensively and systematically examining the influence of relational mobility on calculative mindset in mate choice from macro-regional level (Study 1) to micro-individual level (Studies 2 and 3), and from correlation (Studies 1 and 2) to causation (Study 3). The findings reveal that higher relational mobility in one' s environment is associated with stronger calculative mindset during mate selection. This research not only broadens the research perspective in the relational mobility domain but also provides a new lens for interpreting matchmaking phenomena in Chinese society.

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Appendix A: Calculative Mindset Word List for Study 1

[Calculative Indicators]
Height: height, ***cm/CM, one meter* , centimeters,** meters, stature
Weight: weight, **kg/KG, kilograms, jin (Chinese unit)**
Age: age, years old, year, post- generation
Body type: figure, physique
Class/stratum/status/family background: class, stratum, status, family background, second-generation official, second-generation red, second-generation military, second-generation rich, scholarly family, "red roots," farmer, aristocratic family, family circumstances, rural, family
Education: education level, primary school, middle school, high school, vocational college, bachelor' s, master' s, doctorate, Ivy League, overseas returnee, key institutions, 985, 211, first-tier, second-tier, third-tier, top student, poor student, intellectual, highly educated
Conditions/capital/abilities: conditions, capital, abilities, house, car, career-oriented, potential stock, house, car, has car, has house, car and house, ambition, wealthy, has car, has house, no car, no house, car and house
Income: income, hourly wage, daily wage, monthly wage, annual salary, compensation, remuneration, salary, middle class, annual income, monthly income

[Calculative Process and Outcome]
Process: calculation process, weigh, measure, calculate, trade-off, evaluate, differentiate, assess, estimate, score, calculate
Nouns: level, standard, tier, scale, degree, grade, value
Scores/tiers: top, low, high, short, low, weak, strong, good, bad, poor, superior, good, decent, average, advanced, outstanding, standard, upper class, lower class, high quality, excellent, average, premium, medium, relatively large, relatively small, high-tier, low-tier, **points, *-point man,* -point woman, older, young, wealthy, rich, poor, stable, well-proportioned, plump, fat, thin, small, ugly, good-looking, relatively high, relatively low, very high, very good, very average, very strong, very good, very poor, very small, very bad, very large, not very good, not high, not bad, not small, not good, not short
Degree adverbs: somewhat, very, relatively, comparatively, not very, slightly, around, about, quite

[Calculative Labels]
Occupation/title: occupation, civil servant, financial elite, research personnel, university teacher, military personnel, professional title, manager, professor, cadre, public institution, permanent position, state-owned enterprise, SOE, teacher
Appearance and other: appearance rating, tall-rich-handsome, fair-rich-beautiful, loser
Chastity: virgin, male virgin, non-virgin
Personality: little woman, big man, domestic, girl next door, male chauvinism, homemaking

Appendix B: Relational Mobility Scale (Study 2)

To what extent do the following statements accurately describe the situation of people in your current environment (including your classmates, colleagues, neighbors, or acquaintances)? Please indicate your true feelings about these statements describing people around you. "1" represents "strongly disagree," "7" represents "strongly agree" (Note: The term "circle" in the items refers to a group of people who know each other, such as friends, colleagues, relatives, or other acquaintances).

1. They (people around you) have many opportunities to meet other people.
2. For them, it is common to talk with people they have never met before.
3. They can choose whom to interact with in daily life according to their preferences.
4. If they dislike their current circle, they can choose to leave and join a better one.
5. They can easily meet new friends.
6. They can freely choose which circle to join according to their own ideas.

Appendix C: Calculative Mindset Regarding Others Scale (Study 2)

Please imagine you need to develop a long-term romantic or marital relationship and are going on a blind date. You have several potential partners to choose from and have opportunities to date them. Before the blind date, you have obtained basic information about these people (including age, zodiac sign, job content, education level, income level, family situation, car and house ownership, appearance characteristics, hobbies, personality traits, etc.). After meeting one of them, how would you evaluate this person? Below are some attitudinal tendencies. Please rate the extent to which you agree with these views. "1" represents "strongly disagree," "7" represents "strongly agree."

1. I will comprehensively evaluate this person based on some calculable indicators.
2. I will score their various conditions to assess this person.
3. I think it is important to quantify the advantages and disadvantages of this person' s various conditions.
4. I will determine whether to continue contacting this person based on

their scores on various conditions.

5. I think this person' s performance on various conditions is an important factor affecting our relationship development.

6. I think it is necessary to precisely calculate each blind date partner' s value in the matchmaking market.

7. I will compare each blind date partner' s scores on various indicators to decide whom to establish a relationship with.

8. I will estimate each blind date partner' s conditions to measure his/her competitiveness in the matchmaking market.

Appendix D: Calculative Mindset Regarding Self Scale (Study 2)

Please imagine you need to develop a long-term romantic or marital relationship and are going on a blind date. You have several potential partners to choose from and have opportunities to date them. Before the blind date, you need to provide your own basic information (including age, zodiac sign, job content, education level, income level, family situation, car and house ownership, appearance characteristics, hobbies, personality traits, etc.). During this blind date process, how would you view yourself? Below are some attitudinal tendencies. Please rate the extent to which you agree with these views. "1" represents "strongly disagree," "7" represents "strongly agree."

1. I think it is necessary to present my various conditions in a quantified way in the matchmaking market.

2. I will use scoring or rating to evaluate my own conditions to demonstrate my value.

3. I think what level my various conditions are at is crucial for successful matchmaking.

4. I think clear tier rating of myself helps me find a more ideal partner.

5. I will estimate my own conditions to measure my competitiveness in the matchmaking market.

6. The main factor affecting whether I can find an ideal partner is my personal conditions and their relative position compared to others.

7. When searching for a long-term partner, presenting my various conditions is very important.

8. I think others mainly judge whether to develop a relationship with me based on my performance on various conditions.

Appendix E: Relational Mobility Priming Materials (Studies 3A and 3B)

Please spend the next 10 minutes imagining yourself in the following scenario and answer subsequent questions as detailed as possible.

[High Relational Mobility Priming]
Imagine you will live long-term in a city called YUTE. This city has a large population, and interpersonal relationships in the city are not fixed. People have many opportunities to meet strangers and make new friends. At the same time, people can freely choose the friends they want and can freely exit unsatisfactory old relationships. In other words, people socialize in non-repetitive friend circles, with circle members frequently changing, and people often have opportunities to meet and communicate with different individuals. For example, if people want to find a long-term partner here, they will have many opportunities to meet potential partners and can freely search for potential partners according to their preferences. Even after developing a new romantic relationship, if they feel dissatisfied, they can relatively easily abandon the relationship. Similarly, their partners can also relatively easily abandon unsatisfactory relationships and have more opportunities to pursue new relationships.

Please think from this perspective:
(1) If you lived in such an environment, what impact would it have on your development of romantic or marital relationships? Please think carefully and answer seriously, with your response requiring 50 characters.
(2) If you lived in such an environment, what benefits and drawbacks would it bring to your development of romantic or marital relationships? Please think carefully and answer seriously, with your response requiring 50 characters.
(3) If you lived in such an environment, how would it affect your attitude toward potential partners and your relationship with each other? Please think carefully and answer seriously, with your response requiring 50 characters.

[Low Relational Mobility Priming]
Imagine you will live long-term in a city called YUTE. This city does not have a large population, and interpersonal relationships in the city are stable. People rarely have opportunities to meet strangers or make new friends. At the same time, people have difficulty freely choosing the friends they want, mainly socialize with old friends, and have difficulty exiting unsatisfactory interpersonal relationships. In other words, people socialize in relatively repetitive friend circles, with circle members being relatively fixed, and people often meet and communicate with acquaintances. For example, if people want to find a long-term partner here, they don' t have many opportunities to meet potential partners and have difficulty freely searching for potential partners according to their preferences. After developing a new romantic relationship, if they feel dissatisfied, they have

difficulty abandoning the relationship and can only maintain it. Similarly, their partners also have difficulty abandoning unsatisfactory relationships and don' t have many opportunities to pursue new relationships.

Please think from this perspective:
(1) If you lived in such an environment, what impact would it have on your development of romantic or marital relationships? Please think carefully and answer seriously, with your response requiring 50 characters.
(2) If you lived in such an environment, what benefits and drawbacks would it bring to your development of romantic or marital relationships? Please think carefully and answer seriously, with your response requiring 50 characters.
(3) If you lived in such an environment, how would it affect your attitude toward potential partners and your relationship with each other? Please think carefully and answer seriously, with your response requiring 50 characters.

[**Relational Mobility Manipulation Check**]
To what extent do you agree with the following statements? "1" represents "strongly disagree," "7" represents "strongly agree."

1. In such an environment, people have many opportunities to meet others who could become their partners.

2. In such an environment, people can freely choose the partners they want.

3. In such an environment, if they are dissatisfied with their current partner relationship, they can easily end it.

4. In such an environment, their current or potential partners match their mate selection preferences.

Appendix F: Calculative Mindset Regarding Others Measurement (Study 3A)

Instructions: Hello! We are testing user experience functions for a certain dating website in YUTE city. The website provides two different information presentation formats. The first format uses precise scoring of member information, while the second format uses text descriptions of member information. Next, you will see 2 sets of webpage screenshots, with Material A and Material B in each set corresponding to the two information presentation formats. Please experience and evaluate these two website information presentation methods.

[**First Set**]
(1) If you were searching for a partner on this website, which format would you prefer for presenting potential partners' information? "-5" represents "strongly prefer Material A," "5" represents "strongly prefer Material B."
(2) Which presentation format would make you more willing to use this website? "-5" represents "strongly prefer Material A' s method," "5" represents "strongly

prefer Material B' s method."

[**Second Set**]
(1) If you were searching for a partner on this website, which format would you prefer for presenting potential partners' information? "-5" represents "strongly prefer Material A," "5" represents "strongly prefer Material B."
(2) Which presentation format would make you more willing to use this website? "-5" represents "strongly prefer Material A' s method," "5" represents "strongly prefer Material B' s method."

Appendix G: Calculative Mindset Regarding Self Measurement (Study 3B)

Instructions: We are testing user experience functions for a certain dating website in YUTE city. Please, as a resident of YUTE city, evaluate this website.

This dating website is developing a new information processing system to improve matching rates. When a dater fills in information on the website, the system can perform text analysis and digital processing of the dater' s self-introduction. First, it decomposes the text content into categories such as personal, work, family situation, and personal traits. Then, the system scores the described content based on the average level of dating website members. For example, if you mention your education is bachelor' s degree, the system generates an indicator (Education Level: 6 points). Similarly, after you input your height and body type, it generates a body score (Body: 7 points). Finally, the system generates a composite score for the dater and indicates their tier among dating website members to facilitate better matching with others of similar scores.

(1) If you were going on a blind date on this website and this system was officially launched, please evaluate the extent to which you would want to use this system to generate a score for yourself. "1" represents "no willingness at all," "7" represents "very strong willingness."

(2) If you were going on a blind date on this website and this system was officially launched, would you prefer this scoring method over text description? "1" represents "completely disagree," "7" represents "completely agree."