

## Perception of Involution Reduces Individuals' Fertility Intention: The Mediating Role of Basic Psychological Need Satisfaction

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### Abstract

To investigate the influence mechanism of involution perception on fertility intention, an involution scenario task was utilized to activate the involution perception among 473 participants, who were subsequently measured using the Involution Perception Questionnaire, Fertility Intention Scale, and Basic Psychological Needs Scale. The results indicated that: (1) The involution scenario task successfully activated participants' involution perception and reduced both their fertility intention and basic psychological need satisfaction. (2) Involution perception and its psychological stress dimension negatively predicted fertility intention, with basic psychological need satisfaction serving as a complete mediator. This study represents the first exploration of the relationship and underlying mechanism between involution perception and fertility intention, offering valuable insights for addressing population-related challenges.

### Full Text

#### Preamble

**Neijuan Perception Reduces Individuals' Fertility Intention: The Mediating Role of Basic Psychological Needs Satisfaction**

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This study found that individuals' perception of neijuan (involution) in their environment reduces their fertility intention by hindering the satisfaction of basic psychological needs. These results suggest that in policy practices aimed at increasing fertility rates, in addition to liberalizing fertility policies and providing childcare subsidies, it is also necessary to optimize social structures and work environments to reduce individuals' neijuan pressure. Furthermore, workplace-level flexible work arrangements and reasonable promotion mechanisms should be implemented to promote the satisfaction of individuals' basic psychological needs, thereby enhancing fertility intention.

To explore the mechanism through which neijuan perception influences fertility intention, a neijuan priming task was used to activate neijuan perception among 473 participants, who then completed the Neijuan Perception Questionnaire, Fertility Intention Scale, and Basic Psychological Needs Scale. Results indicated: (1) The neijuan priming task successfully activated participants' neijuan perception and reduced both their fertility intention and basic psychological needs satisfaction. (2) Neijuan perception and its psychological pressure dimension negatively predicted fertility intention, with basic psychological needs satisfaction serving as a full mediator. This study is the first to examine the relationship and underlying mechanism between neijuan perception and fertility intention, offering valuable insights for addressing population-related challenges.

**Keywords:** neijuan perception, fertility intention, basic psychological needs satisfaction

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## Abstract

To explore the mechanism through which the perception of neijuan influences fertility intention, 473 participants were exposed to a neijuan priming task and subsequently completed the neijuan perception scale, fertility intention scale, and basic psychological needs scale. The results indicated that: (1) The neijuan priming task effectively induced neijuan perception among participants, while also reducing their fertility intention and satisfaction of basic psychological needs. (2) Neijuan perception and its psychological pressure dimension negatively predicted fertility intention, with basic psychological needs satisfaction serving as a full mediator. This study was the first to examine the relationship and underlying mechanism between neijuan perception and fertility intention, and offered valuable insights for addressing population-related challenges.

**Key words:** neijuan perception, fertility intention, basic psychological needs satisfaction

## Introduction

In recent years, China's total fertility rate has shown a continuous downward trend. To address this demographic challenge, China has adjusted its fertility policies in a timely manner, successively introducing the "Selective Two-Child Policy," "Universal Two-Child Policy," and "Three-Child Policy." However, a gap remains between the actual effects of these policy adjustments and expected goals; rather than increasing, China's fertility rate has continued to decline [?, ?].

Previous studies have found that social and psychological factors influence individuals' fertility intention to varying degrees [?, ?]. "Neijuan," as a concept with both social and psychological attributes, has attracted widespread scholarly attention [?, ?]. Although the dominant view in sociology suggests that it is one factor reducing individuals' fertility intention [?, ?, ?], existing research suffers from two major limitations: First, at the theoretical level, most studies are limited to describing the phenomenon without constructing a systematic framework. Second, there is a lack of operational measurement tools, preventing effective empirical testing in academia. Based on this, the present study draws upon the psychological connotations and characteristic dimensions of neijuan first constructed by [?, ?], employing experimental design and quantitative analysis methods to examine the impact of neijuan on fertility intention and its underlying mechanism.

### 1.1 The Effect of Neijuan Perception on Fertility Intention

The phenomenon of "neijuan" refers to a situation where, in an environment of limited resources, individuals exhibit maladaptive psychological states and non-beneficial competitive behaviors under the combined influence of social norms and internal/external pressures [?, ?]. This phenomenon comprises four dimensions: resource scarcity, competitive behavior, psychological pressure, and social norms. "Neijuan perception" is the process by which individuals subjectively recognize and evaluate neijuan phenomena in their environment. When individuals perceive high levels of resource scarcity in their environment, strong competitive behaviors among surrounding groups, and competition gradually evolving into widely accepted behavioral norms, while simultaneously experiencing substantial psychological pressure, their level of "neijuan perception" increases accordingly [?, ?, ?].

Although direct evidence is currently lacking, existing research suggests that neijuan perception reduces individuals' fertility intention. From the resource scarcity dimension, when individuals perceive limited resources, they carefully evaluate social resources and childbearing costs in their environment, making rational choices regarding fertility timing and quantity [?, ?]. In such contexts, individuals may have to suppress their fertility intention [?, ?]. In the competition dimension, individuals' perception of competitive behaviors in their surrounding groups creates a trade-off between personal development needs and actual

fertility [?, ?]. To cope with competitive pressure and maintain or enhance their advantages in a given domain, individuals tend to adopt strategies of excessive resource investment in that domain [?, ?], which reduces resources available for childbearing and consequently suppresses fertility intention. In the psychological pressure dimension, a meta-analysis revealed that work- or occupation-related psychological pressure reduces individuals' fertility intention [?, ?]. In the social norms dimension, when individuals perceive that an increasing number of group members exhibit neijuan behaviors, such neijuan-type social norms influence individuals. Under this influence, individuals often strengthen their competitive behavioral tendencies and bear heavier psychological pressure based on group pressure [?, ?], which further reduces their fertility intention. Based on this, we propose Hypothesis 1: Increased neijuan perception reduces individuals' fertility intention.

## 1.2 The Mediating Role of Basic Psychological Needs Satisfaction

Self-Determination Theory posits that individuals have three basic psychological needs: autonomy, relatedness, and competence [?, ?]. Previous studies have found that individuals' behavioral intentions are largely driven by the satisfaction of these three basic psychological needs [?, ?], while external environments critically influence the satisfaction of individuals' basic psychological needs. This study speculates that basic psychological needs satisfaction may serve as a mediator between neijuan perception and fertility intention for the following reasons.

On the one hand, when individuals perceive high levels of resource scarcity, strong competition, intense psychological pressure, and strict social norms in their environment, this perceived alienating environment may hinder the satisfaction of their basic psychological needs. Research has found that high levels of neijuan perception are associated with excessive depletion of self-control resources, which impedes basic psychological needs satisfaction [?, ?, ?]. Conversely, a favorable environmental atmosphere provides conditions for satisfying basic psychological needs [?, ?]. Therefore, high levels of neijuan perception hinder individuals' basic psychological needs satisfaction.

On the other hand, the satisfaction of basic psychological needs serves as a driving force for enhancing individuals' fertility intention. Since the costs of childbearing are borne by individuals while the benefits accrue to society in the long term, childbearing is considered a prosocial behavior [?, ?]. Research from the work motivation domain provides indirect evidence, showing that when employees' basic psychological needs are satisfied, they are more likely to engage in prosocial behaviors [?, ?]. Additionally, when individuals' basic psychological needs are satisfied, they experience positive emotional states and well-being [?, ?, ?], which are important factors promoting higher fertility intention [?, ?, ?]. Based on these findings, we have reason to believe that basic psychological needs satisfaction is an important driving force for promoting individuals' fertility intention. Therefore, we propose Hypothesis 2: Basic psychological needs satisfaction mediates the relationship between neijuan perception and fertility

intention.

## Method

### 2.1 Participants

We collected questionnaires through the online platform “Credamo.” After initial screening (excluding responses with excessively short completion times and those failing two attention-check items), we received 496 questionnaires. Following further screening and referencing previous research, we excluded 12 participants older than 35 [?, ?] and 11 extreme values, resulting in a final sample of 473 valid responses. The experimental group comprised 229 participants (139 females, 90 males) with a mean age of 24.27 years ( $SD = 4.57$ ). The control group comprised 244 participants (145 females, 99 males) with a mean age of 24.30 years ( $SD = 4.43$ ).

### 2.2 Measures

**2.2.1 Neijuan Priming Task** Following the neijuan priming task developed by [?, ?], participants in the experimental group first read a case description about neijuan, then wrote about a personal experience of “neijuan” they had encountered in work or study, along with their evaluations and psychological feelings at that time. Participants in the control group were asked to recall foods they had eaten in recent days and briefly describe the characteristics of these foods and their evaluations.

**2.2.2 Neijuan Perception Questionnaire** We adopted the neijuan perception measurement questionnaire developed by [?, ?]. The questionnaire contains 18 items divided into four dimensions: resource scarcity (4 items), social norms (4 items), psychological pressure (5 items), and competitive behavior (5 items). Items were rated on a 5-point scale from 1 (very uncharacteristic) to 5 (very characteristic), with higher scores indicating higher perceived neijuan. In this study, the scale’s Cronbach’s  $\alpha$  coefficient was 0.80.

**2.2.3 Fertility Intention Scale** We used the fertility intention scale developed by [?, ?]. The scale consists of 6 items rated on a 5-point scale from 1 (strongly disagree) to 5 (strongly agree), with higher scores indicating stronger fertility intention. In this study, the scale’s Cronbach’s  $\alpha$  coefficient was 0.91.

**2.2.4 Basic Psychological Needs Satisfaction Scale** We adopted the Basic Psychological Needs Scale developed by [?, ?] and revised by [?, ?]. The scale contains 21 items rated on a 5-point scale from 1 (very uncharacteristic) to 5 (very characteristic), with higher scores indicating higher basic psychological needs satisfaction. In this study, the scale’s Cronbach’s  $\alpha$  coefficient was 0.93.

## 2.3 Procedure

This study was conducted using the online platform “Credamo.” Participants were randomly assigned to either the experimental or control group and completed the corresponding neijuan priming task. Following the priming task, participants sequentially completed the neijuan perception questionnaire, fertility intention scale, and basic psychological needs satisfaction scale, followed by demographic variables.

## Results

### 3.1 Manipulation Check

As shown in Table 1, participants in the experimental group reported significantly higher levels of neijuan perception, psychological pressure, social norms, and resource scarcity compared to the control group, with competitive behavior showing marginal significance ( $p = 0.060$ ). Simultaneously, participants in the experimental group reported significantly lower fertility intention and total basic psychological needs satisfaction than the control group.

**Table 1** Descriptive Statistics of Variables Across Experimental Conditions

Variable	Experimental Group (n=229) M (SD)	Control Group (n=244) M (SD)	t
Neijuan Perception	3.03 (0.48)	2.75 (0.45)	6.42***
Total Psychological Pressure	2.89 (0.94)	2.50 (1.01)	4.31***
Social Norms	3.05 (0.56)	2.74 (0.58)	5.84***
Resource Scarcity	3.26 (0.79)	2.98 (0.78)	3.83***
Competitive Behavior	2.15 (0.58)	2.04 (0.66)	-2.06*
Fertility Intention	3.45 (1.03)	3.64 (1.03)	-3.12**

Variable	Experimental Group (n=229) M (SD)	Control Group (n=244) M (SD)	t
Basic Psychological Needs Satisfaction	3.44 (0.68)	3.63 (0.63)	-3.12**

Note:  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . The same applies below.\*

### 3.2 Correlations Among Core Variables

As shown in Table 2, all variables were significantly correlated. Since fertility intention was significantly positively correlated with gender and age, these variables were controlled for in subsequent analyses.

**Table 2** Correlations Among Core Variables (n=473)

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### 3.3 Mediation Effect of Neijuan Perception

We used Model 4 of the SPSS macro PROCESS for analysis. The experimental group was coded as 1 and the control group as 0. After controlling for gender and age, the results shown in Figure 1 [Figure 1: see original paper] indicate that basic psychological needs satisfaction fully mediated the effect of neijuan perception on fertility intention, with a 95% confidence interval of [-0.26, 0.06].

**Figure 1** The Mediating Role of Basic Psychological Needs Satisfaction in the Relationship Between Neijuan Perception and Fertility Intention

### 3.4 Mediation Analysis for Neijuan Perception Dimensions

Correlation analysis revealed that the dimensions of neijuan perception differed in strength and direction of their relationships with basic psychological needs satisfaction and fertility intention. To further examine the mechanism through which neijuan perception dimensions influence basic psychological needs and fertility intention, we constructed a structural equation model linking each dimension to basic psychological needs satisfaction and fertility intention (Figure 2 [Figure 2: see original paper]). After controlling for gender and age, the results indicated good model fit ( $\chi^2/df = 3.48$ , GFI = 0.88, CFI = 0.89, AGFI = 0.84, RMSEA = 0.07).

**Figure 2** Structural Equation Model of Neijuan Dimensions, Basic Psychological Needs, and Fertility Intention

*Note: Single-headed arrows represent standardized regression coefficients  $\beta$ ; solid lines indicate significant effects, dashed lines indicate non-significant effects.*

Additionally, the mediation effects for each neijuan dimension are summarized in Table 3. Basic psychological needs satisfaction fully mediated the relationship between psychological pressure and fertility intention. As [?, ?] noted, when the total effect is non-significant while direct and indirect effects have opposite signs, this should be interpreted as a suppression effect, reporting the absolute value of the ratio of indirect to direct effect  $|ab/c'|$ . The indirect effect of resource scarcity on fertility intention through basic psychological needs represents a suppression effect, accounting for 43.69% of the direct effect. Similarly, the indirect effect of social norms on fertility intention through basic psychological needs constitutes a suppression effect, with the indirect effect exceeding the direct effect. Competitive behavior showed no significant effects on basic psychological needs or fertility intention.

**Table 3** Summary of Mediation Effects for Different Dimensions of Neijuan Perception

Path	95% CI
Psychological Pressure $\rightarrow$ Basic Needs $\rightarrow$ Fertility Intention	[-0.50, -0.12]
Resource Scarcity $\rightarrow$ Basic Needs $\rightarrow$ Fertility Intention	[-0.38, 0.04]
Social Norms $\rightarrow$ Basic Needs $\rightarrow$ Fertility Intention	[-0.25, -0.07]
Competitive Behavior $\rightarrow$ Basic Needs $\rightarrow$ Fertility Intention	[-0.11, 0.26]

## Discussion

This study provides the first psychological empirical evidence that neijuan perception reduces fertility intention through quantitative research, based on the psychological connotations and characteristic dimensions of neijuan proposed by [?, ?]. The results demonstrate that neijuan perception negatively affects individuals' fertility intention. According to traditional economic theory [?, ?], childbearing occupies parents' time and energy, reducing work investment. As the work environment becomes more involuted, individuals deeply perceive the severity of employment situations and the value of work. After weighing the potential uncertainties that childbearing may bring to their work, individuals may tend to reduce their fertility intention to avoid potential negative impacts on their current employment.

Mediation analysis revealed that basic psychological needs satisfaction fully mediates the relationship between neijuan perception and fertility intention, indicating that the negative effect of neijuan perception on fertility intention is

entirely realized through the pathway of hindering individuals' basic psychological needs satisfaction. On the one hand, this supports the core proposition of Self-Determination Theory: individuals' willingness and motivation to pursue goals (such as childbearing) highly depend on the satisfaction of their basic psychological needs [?, ?]. In an involuted environment, individuals' perception of neijuan hinders the satisfaction of basic psychological needs, thereby affecting their fertility intention. On the other hand, this suggests that we should not merely attribute declining fertility intention to superficial explanations of economic costs or time pressure; rather, we should attend to deeper psychological mechanisms—basic psychological needs. While traditional pro-fertility policies (such as economic subsidies and extended maternity leave) are important, this study strongly recommends that policymakers pay equal attention to reducing the neijuan atmosphere in social environments and individuals' neijuan perception, thereby satisfying individuals' basic psychological needs. For example, promoting the coordinated development of supportive communication systems and regulatory communication systems can effectively satisfy individuals' autonomy and relatedness needs [?, ?]. Simultaneously, improving the vocational qualification certificate system helps construct a social atmosphere that values skills and creates a favorable skill-learning environment, enhancing workers' self-learning abilities and ultimately satisfying their competence need [?, ?].

Structural equation modeling results indicate that neijuan perception primarily influences basic psychological needs satisfaction and fertility intention through the psychological pressure dimension. On the one hand, compared with macro-level resource scarcity, group-level social norms, and competitive behavior, psychological pressure—as a negative emotional state induced by individuals' psychological perception of the neijuan environment [?, ?]—represents a proximal factor leading to subsequent negative behaviors and psychology [?, ?]. On the other hand, individuals are not entirely passive recipients of external environments. The Job Demands-Resources model posits that to adapt to work environments, individuals actively adopt strategies such as job crafting to obtain resources and enhance adaptability, thereby reducing negative environmental impacts [?, ?]. Therefore, compared with other dimensions, psychological pressure plays a more critical role in explaining the mechanism through which neijuan perception affects individuals' basic psychological needs and fertility intention. Although the other three dimensions did not show significant effects in the model, their significant correlations with the psychological pressure dimension suggest that their potential influence may be realized through exacerbating individuals' psychological pressure.

Despite providing the first empirical evidence that neijuan perception reduces fertility intention, this study has several limitations. On the one hand, this study did not differentiate types of neijuan perception. Specifically, university students primarily face academic neijuan perception [?, ?], whereas working professionals face more work-related neijuan perception. Do these two forms of neijuan perception differentially affect fertility intention? Future research should

further explore this question. On the other hand, this study did not examine differences and applicability of the findings across occupational and age groups. Future research could use stratified sampling to investigate heterogeneity in the pathways through which neijuan perception affects fertility intention across different occupational groups and age stages.

In conclusion, this study found that: (1) Neijuan perception and its psychological pressure dimension reduce individuals' fertility intention; (2) Basic psychological needs satisfaction fully mediates the relationship between neijuan perception (and its psychological pressure dimension) and fertility intention.

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