

From Rational Choice to Normative Pressure: The Structural Mechanisms and Psychological Transmission Paths of Obsessive Postgraduate Entrance Examination Intentions among University Students in Shandong Province

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Abstract

Against the backdrop of China's ongoing economic structural transformation and the persistently large scale of higher education graduates, postgraduate entrance examination participation among university students has gradually shifted from a rational pathway of educational advancement to a highly concentrated and exclusionary form of obsessive postgraduate entrance examination intention within certain groups. This phenomenon is particularly pronounced in Shandong Province, where employment competition is especially intense. This study focuses on undergraduate students and final-year graduates from universities in Shandong Province, China. It systematically investigates the influence mechanisms of four key external structural factors - employment friendliness, educational credential discrimination in the workplace, personal development expectations, and constraints imposed by traditional norms - on students' intentions. Specifically, the research centers on the obsessive tendency within these postgraduate examination intentions, aiming to unpack how the aforementioned factors collectively shape this phenomenon. A theoretical model is constructed by introducing self-motivation as a mediating variable. Using quantitative research design, data were collected via a questionnaire survey, yielding 386 valid responses. Partial least squares structural equation modelling (PLS-SEM) was conducted using SmartPLS for empirical analysis. The results indicate that employment friendliness exerts a significant negative effect on obsessive postgraduate examination intentions, whereas workplace educational credential discrimination, personal development expectations, and traditional normative constraints all have significant positive effects, with workplace educational credential discrimination demonstrating the strongest impact. Moreover, self-motivation plays a significant partial mediating role between these external factors and obsessive postgraduate examination intentions, revealing a critical pathway through which external structural pressures are internalized via individual psychological mechanisms and transformed into sustained examination-oriented investment. Further analysis suggests that, within China's specific sociocultural context, students' motivations for pursuing postgraduate studies exhibit a dual-track incentive structure that combines "self-development-oriented" motives with motivations driven by the need to respond to familial and societal expectations. This finding challenges the dominant single-track assumption of individual rationality embedded in existing theories of educational advancement motivation. Overall, the study not only deepens theoretical understanding of variations in the intensity and nature of postgraduate examination intentions but also provides targeted empirical evidence for mitigating the extreme intensification of such intentions and for improving university career guidance practices and employment system design.

Keywords

Obsessive postgraduate entrance examination intention, Employment friendliness, Workplace educational credential discrimination, Personal development expectations, Traditional normative constraints, Self-motivation

Introduction

Against the backdrop of China's ongoing economic structural adjustment and the profound restructuring of the labour market, university students' choices regarding further education and employment are undergoing systematic transformation. The persistently rising postgraduate entrance examination intentions among university students in Shandong Province represent a concentrated regional manifestation of this broader macro-level transition. As a major province in terms of both population size and higher education scale, Shandong has long faced a combination of a large supply of university graduates and pronounced structural employment pressure. According to information released at a press conference by the Information Office of the Shandong Provincial Government, the total number of higher education graduates in Shandong in 2024 exceeded 800,000, accounting for approximately 7% of the national total. In a context where the pace of regional job creation and industrial upgrading does not fully align with the scale of graduate output, the intensity of competition faced by bachelor's degree holders entering the labour market is more readily perceived as a situation of "many job seekers chasing few positions" [1].

Within this practical context, pursuing postgraduate studies has gradually shifted from an academically oriented choice made by a relatively small group of students to an important strategy adopted by a substantial proportion of university students to buffer employment shocks, enhance competitive signalling, and recalibrate career expectations. At the national level, this transformation is supported by a clear and sustained quantitative trend. Based on publicly reported statistics following the Ministry of Education's standards, the number of applicants for the national postgraduate entrance examination increased markedly over the past decade, rising from approximately 1.65 million in 2015 to 4.74

million in 2023. The China Daily reported, although a temporary decline was observed in 2024, the number of applicants remained as high as 4.38 million. It indicates that postgraduate examination participation has gradually evolved from a phase of rapid expansion into a form of long-term planning characterised by more explicit rational calculation. In Shandong Province, where the concentration of higher education graduates is particularly high and employment competition is more intense, this trend is further amplified. Structural shortages in employment opportunities and increasing differentiation in job quality have weakened the attractiveness of immediate labour market entry. Meanwhile, employers' efforts to reduce screening costs by reinforcing educational hierarchy and institutional background filters have led academic credentials to shift from signals of capability to quasi-entry thresholds. Implicit criteria such as "first degree background" and institutional pedigree have become increasingly explicit, thereby encouraging a growing number of undergraduate students to view postgraduate study as a realistic pathway for repositioning themselves competitively and postponing entry into a high-risk labour market. Correspondingly, research and public debate on "first-degree discrimination" suggest that such screening logics are not merely subjective perceptions, but are becoming institutionally embedded in talent selection and opportunity allocation processes [2].

At the same time, the trends of credential inflation and the strengthening of diploma-based signalling have received more systematic empirical support. For example, studies based on faculty recruitment data from Chinese universities reveal an upward shift in educational thresholds, with demonstrative spillover effects into the broader labour market, thereby indirectly increasing students' propensity to pursue further education while still enrolled [3]. When these realities are examined through an international comparative lens, the contextual

specificity of this phenomenon becomes even more pronounced. In most OECD countries, direct entry into employment after completing an undergraduate degree remains the dominant pathway, while postgraduate education primarily serves the functions of professional deepening and supplementary occupational qualification, rather than being widely constructed as a “necessary stage” of life planning. In this sense, further education in many countries is typically regarded as an “optional enhancement” rather than a highly exclusive form of security. By contrast, Chinese university students - particularly those in Shandong Province - exhibit a highly concentrated and sustained investment in postgraduate examination preparation, often continuing to retake the examination and delaying employment even after repeated failures. This pattern suggests that postgraduate study has gone beyond issues of skill enhancement or academic aspiration and has become deeply embedded in students’ life planning and risk management logics.

Against this background, the core objective of this study is to systematically uncover why postgraduate examination intentions among university students in Shandong Province are particularly prone to evolving into an “obsessive” state characterised by high intensity, difficulty of withdrawal, and strong exclusivity. This study initially focused on external structural factors, including employment opportunities, educational credential discrimination, income and development expectations, as well as traditional norms. On this basis, it further incorporated self-motivation as a core psychological variable into the analytical framework. This variable was employed to elucidate how external environmental pressures are continuously internalised via individual motivational mechanisms and ultimately solidified into stable, highly intensive postgraduate examination-oriented behavioural choices. In doing so, the study aims to provide a more explanatory empirical account of regional

differences and the internal logic underpinning university students’ educational decision-making in the Chinese context.

Problem statement

Further analysis suggests that the emergence of obsessive postgraduate entrance examination (PGEE) intentions among university students in Shandong Province does not stem from a single motive. Rather, it results from the cumulative interaction between multiple real-world constraints and layered psychological expectations embedded within specific regional socio-economic conditions.

First, from the perspective of the employment environment, Shandong has long maintained a persistently high scale of university graduates. In 2024 alone, the number of higher education graduates exceeded 800,000. However, the absorption capacity of high-quality local positions does not always expand in tandem with the growth of graduate supply, thereby making the regional labour market more prone to a “many job seekers competing for few opportunities” condition. Under recruitment contexts characterised by high competition density, employers often treat educational attainment as the most direct and time-saving signal for initial screening to reduce selection costs and uncertainty. As a result, bachelor’s degree holders - and even more so, associate degree holders - are frequently eliminated during the résumé screening stage. This practice further narrows the opportunity window for graduates to access “decent jobs” characterized by clear career development trajectories [4]. Such structural employment pressure not only increases the tendency to pursue postgraduate studies as a buffer but also exacerbates psychological anxiety among students, highlighting the urgency of targeted employment support and mental health interventions [5].

Second, even after individuals successfully enter the workplace, institutionally embedded stratification associated with educational

credentials does not disappear. Internal labour markets are often organised around differentiated promotion logics and wage gradients, forming a hierarchical allocation structure in which “education - position - promotion - salary” becomes tightly coupled. Such post-entry stratification mechanisms are readily perceived as unequal opportunities, which can trigger relative deprivation and psychological imbalance, thereby reinforcing the motivation to pursue further education as a form of “compensatory upward mobility” [6].

Third, from the standpoint of students’ own decision logics, personal development expectations tend to exhibit stronger instrumental rationality under uncertain environments. When a master’s degree continues to be endowed with higher probabilities of labour-market returns and income premiums, postgraduate examination participation is more likely to be interpreted by students as a pathway that is “more likely to yield better payoffs”, rather than merely an academic choice [7]. This judgement is highly consistent with expectancy-value-oriented decision mechanisms: When individuals simultaneously perceive both a higher likelihood of success and a higher value of outcomes, their behavioural investment and persistence are significantly amplified [8]. Finally, such rational calculation does not occur in a value-neutral vacuum, it is continually shaped by socio-cultural norms. In Shandong, where the influence of Confucian cultural traditions remains comparatively salient, “face”, “family reputation”, and external evaluation often become key constraints in educational decision-making. Postgraduate study therefore signifies not only competence enhancement, but also carries symbolic functions related to meeting family expectations and maintaining social recognition [9,10].

Accordingly, the combined effects of a structurally tense employment environment, credentialised screening in recruitment, educational stratification

within internal labour markets, credential-bound return expectations, and culturally embedded face-related pressures collectively elevate postgraduate examination participation into an option that is simultaneously rational in practical terms and legitimised in social terms. For some students, this gradually evolves into an obsessive intention characterised by high rigidity, difficulty of withdrawal, and sustained investment. Meanwhile, existing research remains relatively insufficient in explicating the mechanism through which external conditions are transformed - via individuals’ internal motivational systems - into persistent and extreme educational investment. This underscores the necessity of placing greater analytical emphasis on psychological transmission processes in subsequent modelling [11].

In this sense, research on obsessive postgraduate examination intentions among university students in Shandong should move beyond the surface-level question of “whether to pursue postgraduate study” and instead probe the internal logic through which such intentions are formed and consolidated. Empirically, it is observable that even under similar employment environments, credential-screening mechanisms, and social expectations, substantial differences exist across students in the degree of their examination-oriented investment and persistence. This indicates that external conditions alone cannot fully account for the tendency toward the extreme intensification of postgraduate examination intentions. Therefore, individual-level psychological mechanisms - particularly the role of self-motivation - constitute a crucial analytical entry point for understanding this phenomenon. Self-motivation not only shapes how individuals perceive and interpret external pressures, but also determines whether they can sustain strong goal orientation and continuous investment under conditions of long-term uncertainty. However, in existing empirical research on postgraduate examination intentions, this construction is often

treated in an overly simplified manner, or even assumed to be naturally present without rigorous testing.

Building upon this gap, the present study seeks to respond to the real-world concerns generated by the obsessive intensification of postgraduate examination intentions among university students in Shandong. Through empirical analysis, it systematically tests whether employment friendliness, workplace educational credential discrimination, personal development expectations, and constraints imposed by traditional norms constitute key external factors shaping postgraduate examination intentions, and further examines whether these factors indirectly facilitate the formation of highly rigid postgraduate examination orientations by influencing students' levels of self-motivation. By introducing self-motivation as a mediating variable, this study aims to unpack a psychological "black box" that has been insufficiently addressed in prior literature, thereby offering a more comprehensive explanatory framework for the mechanisms underlying the extreme intensification of postgraduate examination intentions in the Chinese context, while also providing empirically grounded evidence for mitigating its potential negative consequences.

Research hypotheses

Hypotheses on direct effects

Against the backdrop of the simultaneous expansion of higher education and the restructuring of regional employment systems, university students' decisions to pursue postgraduate studies are increasingly shaped by external environmental conditions. Existing studies generally argue that postgraduate examination intentions do not arise solely from individual interests or academic aspirations, but are embedded within concrete employment opportunity structures, institutionalised screening mechanisms, and prevailing social value norms. When external environments provide insufficient

support for direct employment, or when educational credentials are endowed with pronounced institutionalised return differentials, university students are more likely to cope with uncertainty and competitive pressure through continued education, thereby reinforcing their postgraduate examination intentions.

H₁: Employment friendliness has a significant negative effect on highly intensified postgraduate examination intentions among university students in Shandong Province.

Employment friendliness - an indicator capturing the absorptive capacity of regional labour markets and the accessibility of available positions - directly affects students' assessments of the feasibility of the "graduate-to-employment" pathway. Prior research suggests that the less favourable the employment environment, the more inclined university students are to postpone labour market entry through further education and to enhance their competitiveness via credential upgrading [12]. In regions such as Shandong Province, where the scale of university graduates is large and job competition is particularly intense, declining employment friendliness is more likely to transform postgraduate study from an alternative option into a priority choice, thereby fostering highly intensified postgraduate examination intentions.

H₂: Workplace educational credential discrimination has a significant positive effect on highly intensified postgraduate examination intentions among university students in Shandong Province.

The presence of educational credential discrimination in the Chinese labour market has gradually transformed academic qualifications from signals of capability into access thresholds and bases for internal stratification. Existing studies indicate that upward shifts in educational thresholds and preferences for "first-degree background" significantly reshape individuals' educational investment behaviours, prompting them to pursue higher-level degrees to compensate for potential

opportunity disadvantages. Under such conditions, the stronger university students' perceptions of workplace educational credential discrimination, the more likely they are to regard postgraduate examination participation as a compulsory pathway, thereby driving their intentions toward exclusivity and rigidity.

H₃: Personal development expectations have a significant positive effect on highly intensified postgraduate examination intentions among university students in Shandong Province.

At the individual decision-making level, personal development expectations reflect students' subjective assessments of future career returns and developmental opportunities. Drawing on expectancy theory and the expectancy - value model, individuals tend to choose pathways that are perceived as having both a higher probability of success and greater outcome value [13]. Empirical evidence likewise demonstrates that when students believe a master's degree can yield higher starting salaries and broader career options, their intention to pursue postgraduate studies increases significantly [14,15]. Accordingly, among university students in Shandong Province, more positive personal development expectations are more likely to reinforce postgraduate examination intentions.

H₄: Traditional normative constraints have a significant positive effect on highly intensified postgraduate examination intentions among university students in Shandong Province.

Constraints imposed by traditional norms, as enduring sources of social regulation, influence educational choices through family expectations and systems of social evaluation. Based on the Theory of Planned Behavior, subjective norms have been shown to exert a significant impact on individuals' intentions toward continued education [16]. In Shandong, where Confucian cultural traditions remain influential and credential-oriented values are relatively salient, normative beliefs emphasising "upward mobility

through education" and "the respectability of academic credentials" are more likely to enhance the social legitimacy of postgraduate study and elevate its priority in students' decision-making processes.

Hypotheses on mediating effects

Although the aforementioned external structural factors can directly influence university students' postgraduate examination intentions, substantial individual differences persist even under similar environmental conditions. This suggests that external factors do not operate through a simple "mechanical response", but rather require transformation through individuals' internal psychological mechanisms. Self-motivation, defined as the intrinsic drive that enables individuals to maintain goal-directed effort, withstand setbacks, and sustain action under uncertainty, is widely regarded as a key psychological resource linking external pressure to long-term behavioural persistence.

Existing research indicates that employment pressure, institutionalised screening, and social norms often affect continuing education decisions indirectly by reshaping individuals' motivational levels and belief systems. Within the postgraduate examination context, when employment environments are less friendly, credential discrimination is more salient, future returns are perceived as higher, or social norms place greater emphasis on educational advancement, university students are more likely to strengthen their self-motivation in order to sustain prolonged examination preparation, thereby reinforcing their postgraduate examination intentions.

More specifically, lower employment friendliness may undermine individuals' confidence in direct labour market entry, compelling them to enhance self-motivation to cope with uncertainty along the postgraduate pathway; workplace educational credential discrimination may stimulate sustained effort aimed at compensating for perceived disadvantages; positive personal development

expectations strengthen the perceived linkage between effort and reward, thereby elevating self-motivation; and traditional normative constraints, operating through normative pressure, intensify individuals' commitment to postgraduate examination goals. Through these processes, self-motivation further propels postgraduate examination intentions from a general preference toward a highly intensified priority choice. On this basis, the following mediating hypotheses are proposed:

H₅: Self-motivation mediates the relationship between employment friendliness and highly intensified postgraduate examination intentions.

H₆: Self-motivation mediates the relationship between workplace educational credential discrimination and highly intensified postgraduate examination intentions.

H₇: Self-motivation mediates the relationship between personal development expectations and highly intensified postgraduate examination intentions.

H₈: Self-motivation mediates the relationship between traditional normative constraints and highly intensified postgraduate examination intentions.

Research methods

Research design and variable measurement

This study adopts a quantitative research approach to empirically examine the formation mechanisms of obsessive postgraduate entrance examination intentions among university students in Shandong Province. The overall research design follows a descriptive research framework, with data collected through a cross-sectional questionnaire survey. The choice of a quantitative paradigm is primarily motivated by the study's focus on the structural relationships and causal pathways among multiple latent variables, particularly the direct and mediating effects linking employment environments, workplace institutional factors, individual psychological mechanisms, and postgraduate examination intentions. Such

relationships are more appropriately and rigorously tested through quantitative measurement and statistical modelling techniques. Cross-sectional data enables a concentrated capture, at a specific point in time, of students' subjective perceptions of external conditions - including employment friendliness, educational credential discrimination, development expectations, and social norms - and their corresponding postgraduate examination intention states, thereby ensuring alignment with the research objectives while maintaining strong practical feasibility.

The survey population consists of undergraduate students currently enrolled in, as well as final-year graduates from, general higher education institutions in Shandong Province, China. This group is situated at a critical juncture in which decisions regarding postgraduate examination participation and labour market entry are most salient, rendering their attitudes and behavioural choices particularly relevant to the research questions. Measurement of all latent variables was grounded in well-established scales from both domestic and international literature, which were appropriately adapted to the Chinese university student context to form a structured questionnaire. Specifically, the measurement of employment friendliness drew on approaches used in studies of employment perception and labour market environment assessment, focusing on job availability and employment support [17]. Workplace educational credential discrimination was measured by referencing scale designs used in research on credential screening and qualification inflation, particularly those capturing perceptions of educational thresholds and opportunity inequality. Personal development expectations were operationalised based on classical dimensions of return expectations and perceived probability of success derived from expectancy theory and the expectancy-value model. Traditional normative constraints were measured following the subjective norm dimension of the Theory of Planned

Behavior, with emphasis on family and societal expectations regarding continued education. Self-motivation was assessed using established motivational scale dimensions related to goal persistence and intrinsic drive. Obsessive postgraduate examination intention was measured by extending existing postgraduate intention scales to emphasise exclusivity, priority, and difficulty of withdrawal.

All measurement items were rated on a five-point Likert scale, a widely accepted format for quantifying motivational and intentional constructs in educational research [18]. The formal questionnaire included explicit screening items, such as whether respondents were enrolled in higher education institutions in Shandong Province and whether they were at a decision-making stage regarding postgraduate examination participation - to ensure a high degree of alignment between the sample and the target research population.

Sample design and data collection

About sample design, this study first defines the target population as undergraduate students currently enrolled in, as well as those who have graduated within the past year from, general higher education institutions in Shandong Province. According to data released by the provincial education authorities, the combined number of undergraduate students and recent graduates in Shandong exceeded 2 million in 2024, providing a clearly defined population context for the present research. In terms of sampling strategy, given the wide geographical dispersion of the target population, its large overall size, and the lack of a complete and accessible sampling frame, convenience sampling was adopted for data collection. This approach is widely used in social science and educational research, particularly in questionnaire-based studies involving university students, as it allows researchers to balance sample accessibility and research efficiency under realistic constraints.

In the implementation process, an online

questionnaire was designed and distributed via the Wenjuanxing platform, and disseminated through WeChat. The questionnaire was primarily circulated within online communities closely aligned with the target population, including university student WeChat groups, postgraduate examination preparation groups, graduate job-search groups, and selected QQ student communities, thereby enhancing the precision with which the survey reached the intended respondents. Members of these channels are typically at the stage of making decisions regarding postgraduate study or transitioning into employment, and are therefore able to provide relatively accurate reflections of Shandong university students' attitudes and behavioural tendencies in relation to postgraduate examination participation and employment choices. To further enhance sample quality, screening questions were placed at the beginning of the questionnaire, explicitly restricting participation to undergraduate students enrolled in Shandong universities or those who had graduated within the past year, thereby ensuring consistency between the sample and the research population.

In determining sample size, this study followed commonly adopted estimation principles in structural equation modelling research. On the one hand, according to the "ten-times rule" of PLS-SEM, the minimum sample size should be at least ten times the maximum number of structural paths directed at any latent variable in the model. On the other hand, recommendations from statistical power analysis suggest that a sample size of no fewer than 300 observations is more conducive to the stability of parameter estimation and the reliability of hypothesis testing. Based on these considerations, approximately 450 questionnaires were distributed to account for potential invalid responses and missing data. A total of 412 questionnaires were returned. After excluding incomplete responses, questionnaires with abnormal response patterns, and those failing

to meet the screening criteria, 386 valid questionnaires were retained for analysis. Both the final sample size and the effective response rate meet the basic requirements for subsequent structural equation modelling analysis.

Data analysis methods and ethical considerations

At the data analysis stage, this study employed SmartPLS software to conduct Partial least squares structural equation modelling (PLS-SEM). SmartPLS was selected as the primary analytical tool due to its relatively low requirements regarding data normality and its robustness in handling models with multiple mediating variables and complex structural relationships, making it particularly suitable for research designs oriented toward prediction and mechanism explanation. The data analysis procedure consisted of three main stages: data preparation and cleaning, measurement model assessment, and structural model evaluation (see Table 1).

During the data preparation stage, systematic checks were conducted for missing values, extreme values, and abnormal response patterns to ensure data quality. In the measurement model assessment, internal consistency reliability was first evaluated using Cronbach's α and composite reliability. Convergent validity was assessed through average

variance extracted (AVE) and standardised factor loadings, while discriminant validity among latent variables was examined using the Fornell-Larcker criterion and the Heterotrait-Monotrait (HTMT) ratio. In the structural model analysis, emphasis was placed on evaluating path coefficients, significance levels, and indicators of explanatory power, followed by an overall assessment of model quality. For the analysis of mediating effects, a bootstrapping procedure with repeated resampling was employed to test the mediating role of self-motivation, thereby enhancing the stability and reliability of mediation effect estimates. All research hypotheses were ultimately subjected to systematic testing, and the corresponding results were reported.

Throughout the entire research process, this study strictly adhered to academic ethical standards. The questionnaire survey was conducted anonymously, and all data was used exclusively for academic research purposes, with no collection of personally identifiable information. The first page of the questionnaire clearly stated the research objectives, data usage, and participants' rights, ensuring that all respondents participated on an informed and voluntary basis, thereby minimising potential ethical risks.

Table 1. Overview of research methods and analytical procedures.

Research stage	Key components	Description
Research design	Methodological approach	Quantitative research design with a descriptive, cross-sectional survey framework
	Research purpose	To examine structural relationships and mechanisms among external environments, psychological factors, and obsessive postgraduate examination intention
Population & Sample	Target population	Undergraduate students and recent graduates (within one year) from general higher education institutions in Shandong Province, China
	Sampling method	Convenience sampling due to large population size, wide dispersion, and lack of a complete sampling frame
	Population size	Over 2 million undergraduates and recent graduates in Shandong Province (2024)

Research stage	Key components	Description
	Sample size determination	Based on PLS-SEM ten-times rule and statistical power recommendations (minimum $\geq$ 300)
	Final valid sample	386 valid responses (from 412 returned questionnaires; approx. 450 distributed)
Data collection	Survey platform	Online questionnaire administered via Wenjuanxing
	Distribution channels	WeChat student groups, postgraduate examination groups, graduate job-search groups, and selected QQ student communities
	Screening criteria	Restricted to Shandong university students or recent graduates currently at a postgraduate decision stage
Variable measurement	Measurement basis	Established international and domestic scales adapted to the Chinese university context
	Key variables	Employment friendliness; workplace educational credential discrimination; personal development expectations; traditional normative constraints; self-motivation; obsessive postgraduate examination intention
Data analysis	Scale format	Five-point Likert scale
	Analytical software	SmartPLS
	Analytical technique	Partial least squares structural equation modelling (PLS-SEM)
	Data preparation	Screening for missing values, outliers, and abnormal response patterns
Measurement model evaluation	Reliability	Cronbach's α and composite reliability
	Convergent validity	Standardised factor loadings and average variance extracted (AVE)
	Discriminant validity	Fornell-Larcker criterion and HTMT ratio
Structural model evaluation	Path analysis	Assessment of path coefficients and significance levels
	Model quality	Evaluation of explanatory power and overall model fit
Mediation analysis	Mediation testing	Bootstrapping procedure to test the mediating role of self-motivation
Ethical considerations	Research ethics	Anonymous participation; no collection of identifiable personal information

Research stage	Key components	Description
	Informed consent	Clear explanation of research purpose, data usage, and participant rights prior to survey participation

Empirical results

Descriptive statistical analysis

A total of 386 valid questionnaires were retained for the final analysis. This sample size substantially exceeds the minimum requirements for Partial least squares structural equation modelling (PLS-SEM), thereby providing sufficient statistical power to support the estimation of models incorporating multiple latent variables and mediating pathways. All respondents satisfied the predefined screening criteria, confirming that they were either undergraduate students currently enrolled in, or graduates within the past year from, general higher education institutions in Shandong Province. Accordingly, a high degree of alignment was ensured between the sample and the target research population as Table 2. With respect to demographic characteristics, male respondents accounted for 44.3% of the sample (n=171), while female respondents comprised 55.7% (n=215). In terms of age distribution, 24.6% of respondents were aged 18-20 (n=95), 41.2% were aged 21-22 (n=159), 27.5% were aged 23-24 (n=106), and 6.7% were aged 25 or above (n=26). Overall, the sample was concentrated within the core age range associated with postgraduate examination preparation and employment decision-making. Regarding academic standing, third-year undergraduates constituted 29.0% of the sample (n=112), fourth-year undergraduates accounted for 38.6% (n=149), and recent graduates represented 32.4% (n=125). In terms of fields of study, 34.2% of respondents were from the humanities and social sciences (n=132), 41.5% from science and engineering disciplines (n=160), 18.9% from economics and management (n=73), and 5.4% from other fields (n=21).

Further examination of family and developmental

background variables indicates that 58.8% of respondents came from urban families (n=227), while 41.2% were from rural backgrounds (n=159). With regard to parental education levels, 46.1% of respondents reported that their parents' highest educational attainment was senior high school or below (n=178), 29.5% reported junior college education (n=114), and 24.4% reported a bachelor's degree or above (n=94). In terms of self-assessed family economic status, 18.4% perceived their family as "financially constrained" (n=71), 57.5% reported an "average" level (n=222), and 24.1% perceived their family as "relatively well-off" (n=93). In addition, 52.6% of respondents (n=203) identified themselves as the first member of their family to receive higher education, while the remaining 47.4% (n=183) were not first-generation college students.

Regarding variables directly related to postgraduate examination decision-making, 61.1% of respondents (n=236) indicated that they had clearly considered or were actively preparing for the postgraduate entrance examination, 24.9% (n=96) reported that they had not yet reached a final decision, and 14.0% (n=54) indicated that they were not currently considering postgraduate study. In terms of prior examination experience, 69.2% of respondents (n=267) had never taken the postgraduate entrance examination, 21.8% (n=84) had taken it once, and 9.0% (n=35) had taken it two or more times. With respect to employment outcomes, 28.2% of respondents (n=109) reported having already received a definite job offer, while 71.8% (n=277) had not yet secured one.

Overall, these descriptive statistics demonstrate that the sample provides broad and balanced coverage across key dimensions, including gender, age, academic stage, disciplinary background, family characteristics, and postgraduate

examination-related experiences. This comprehensive coverage establishes a robust empirical foundation for the subsequent structural equation modelling analyses.

Table 2. Sample profile and descriptive statistics (n=386).

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	171	44.3
	Female	215	55.7
Age (years old)	18-20	95	24.6
	21-22	159	41.2
	23-24	106	27.5
	≥25	26	6.7
Educational stage	Junior (3rd year)	112	29.0
	Senior (4th year)	149	38.6
	Recent graduates	125	32.4
Field of study	Humanities & Social Sciences	132	34.2
	Science & Engineering	160	41.5
	Economics & Management	73	18.9
	Other disciplines	21	5.4
Hometown background	Urban	227	58.8
	Rural	159	41.2
Parents' highest education level	High school or below	178	46.1
	College diploma	114	29.5
	Bachelor's degree or above	94	24.4
Self-reported family economic status	Relatively difficult	71	18.4
	Average	222	57.5
	Relatively affluent	93	24.1
First-generation College Student	Yes	203	52.6
	No	183	47.4
Postgraduate entrance examination intention	Preparing / seriously considering	236	61.1
	Undecided	96	24.9
	Not considering	54	14.0
Postgraduate exam experience	Never attempted	267	69.2
	Attempted once	84	21.8
	Attempted twice or more	35	9.0
Job offer status	Already received an offer	109	28.2
	No offer received	277	71.8

Reliability and validity assessment of the measurement model

Prior to conducting structural model analysis, this study systematically examined the reliability and validity of the measurement model to ensure that

all latent constructions were measured in a stable and valid manner. The relevant assessment results are summarised in Table 3 and Table 4. With respect to internal consistency reliability, Cronbach's α coefficients for all latent variables

ranged from 0.812 to 0.904, while Composite reliability (CR) values ranged from 0.846 to 0.926. All values exceeded the recommended threshold of 0.700, indicating that the measurement scales exhibit strong internal consistency and satisfactory measurement stability.

Regarding convergent validity, the standardised factor loadings of all measurement items reached statistical significance, with the majority exceeding

0.700. The lowest load was 0.681, which remains within an acceptable range. In addition, the Average variance extracted (AVE) values for all latent constructions ranged from 0.548 to 0.731, surpassing the recommended benchmark of 0.500 (see Table 3). These results suggest that each construct is able to explain a substantial proportion of variance in its corresponding indicators, thereby providing support for convergent validity.

Table 3. Reliability and convergent validity of the measurement model.

Construct	Items	Cronbach's α	Composite reliability	AVE
Employment friendliness (EF)	5	0.812	0.846	0.548
Workplace educational discrimination (WED)	5	0.884	0.912	0.673
Personal development expectation (PDE)	5	0.871	0.901	0.654
Traditional norm constraints (TNC)	5	0.839	0.876	0.589
Self-motivation (SM)	5	0.904	0.926	0.731
Obsessive PGEE intention (OPEI)	5	0.892	0.918	0.708

Discriminant validity was assessed using both the Fornell-Larcker criterion and the Heterotrait-Monotrait (HTMT) ratio. The results show that the square roots of the AVE for all constructs were greater than the correlations between each construct and all other constructs, providing initial evidence of adequate discriminant validity. Furthermore, as reported in Table 4, all HTMT ratios were below the conservative threshold of 0.850, with none approaching the

critical value, thereby further confirming the robustness of the measurement model in terms of discriminant validity. Taken together, these findings indicate that the measurement model meets the fundamental requirements of Partial least squares structural equation modelling in terms of internal consistency, convergent validity, and discriminant validity. This provides a reliable measurement foundation for subsequent structural model estimation and hypothesis testing.

Table 4. HTMT ratios for discriminant validity assessment.

Constructs	EF	WED	PDE	TNC	SM	OPEI
Employment friendliness (EF)	/	/	/	/	/	/
Workplace educational discrimination (WED)	0.412	/	/	/	/	/
Personal development expectation (PDE)	0.536	0.621	/	/	/	/
Traditional norm constraints (TNC)	0.487	0.598	0.643	/	/	/
Self-motivation (SM)	0.459	0.574	0.612	0.588	/	/
Obsessive PGEE intention (OPEI)	0.521	0.694	0.708	0.662	0.739	/

Control and assessment of Common Method Bias

Given that this study employed a cross-sectional, self-reported questionnaire design, the potential

issue of Common Method Bias (CMB) was explicitly considered at the research design stage. At the procedural level, multiple measures were

implemented to mitigate the risk of systematic bias arising from common data sources. Specifically, the questionnaire was administered and collected anonymously, and the instructions clearly emphasised that there were no “right” or “wrong” answers, thereby reducing respondents’ evaluation apprehension and social desirability bias. In addition, neutral wording was used in item construction to avoid leading expressions, and selected items were presented in random order to minimise consistency motifs in responses. With regard to questionnaire structure, deliberate efforts were made to avoid clustering or sequencing independent and dependent variable items together, thereby reducing the likelihood of method-induced consistency effects caused by similar measurement contexts. The implementation of these procedural remedies is summarised in Table 5.

At the statistical level, this study further employed a full collinearity assessment based on Partial least squares structural equation modelling to

empirically evaluate the presence of common method bias. The results indicate that the Variance Inflation Factor (VIF) values for all latent variables range from 1.21 to 2.34, all of which are well below the recommended threshold of 3.30. This suggests that the model does not suffer from severe multicollinearity and does not exhibit characteristics indicative of substantial common method bias. In addition, as a supplementary test, Harman’s single-factor analysis revealed that the first unrotated factor accounted for 32.80% of the total variance, which is clearly below the commonly cited warning threshold of 40.00%, further supporting the conclusion that the sample data are not dominated by a single latent method factor. Taking together, the procedural remedies and statistical test results (see Table 5) indicate that common method bias does not pose a substantive threat to the empirical findings of this study. Accordingly, the results can be regarded as methodologically robust and reliable.

Table 5. Procedural and statistical assessment of common method bias.

Category	Method / Indicator	Construct / Test	Statistical value	Recommended threshold	Assessment
Procedural remedies	Anonymity	Anonymous questionnaire administration	/	/	Implemented
	Reduced evaluation apprehension	Emphasis on no right or wrong answers	/	/	Implemented
	Reduced social desirability bias	Neutral wording and instruction framing	/	/	Implemented
	Item randomization	Partial random ordering of items	/	/	Implemented
	Questionnaire structure	Separation of independent and dependent variables	/	/	Implemented
Statistical test	Full collinearity VIF (PLS-SEM)	Employment Friendliness	1.21	<3.3	Passed
		Workplace educational discrimination	2.34	<3.3	Passed
		Personal development expectation	1.98	<3.3	Passed

Category	Method / Indicator	Construct / Test	Statistical value	Recommended threshold	Assessment
		Traditional norm constraints	1.76	<3.3	Passed
		Self-motivation	2.11	<3.3	Passed
		Obsessive PGEE intention	2.05	<3.3	Passed
	Harman's single-factor test	Variance explained by the first factor	32.80%	<40.00%	Passed

Structural model evaluation and hypothesis testing results

In the structural model assessment, this study employed SmartPLS to estimate and test the significance of all direct effect paths specified in the model. The corresponding results are summarised in Table 6. The findings indicate that employment friendliness exerts a significant negative effect on obsessive postgraduate examination intention, with a standardised path coefficient of -0.214 ($p < 0.001$). This suggests that, holding other conditions constant, a more favourable employment environment is associated with a lower likelihood of university students developing highly obsessive postgraduate

examination intentions [19].

In contrast, workplace educational credential discrimination, personal development expectations, and traditional normative constraints all demonstrate significant positive effects on obsessive postgraduate examination intention [20]. Among these factors, workplace educational credential discrimination exhibits the strongest effect ($\beta = 0.268$, $p < 0.001$), followed by personal development expectations ($\beta = 0.231$, $p < 0.001$), while traditional normative constraints also reach statistical significance ($\beta = 0.179$, $p < 0.01$). Collectively, these results provide statistical support for Hypotheses H_1 through H_4 .

Table 6. Structural path coefficients and hypothesis testing results.

Hypothesis	Structural path	Standardized Coefficient	t-value	p-value	Result
H_1	Employment friendliness → Obsessive PGEE intention	-0.214	4.62	<0.001	Supported
H_2	Workplace educational discrimination → Obsessive PGEE intention	0.268	5.71	<0.001	Supported
H_3	Personal development expectation → Obsessive PGEE intention	0.231	4.98	<0.001	Supported
H_4	Traditional norm constraints → Obsessive PGEE intention	0.179	2.84	<0.01	Supported

With respect to the overall explanatory power of the model, the structural model accounts for 58.7% of the variance in obsessive postgraduate examination intention ($R^2 = 0.587$). This indicates that employment friendliness, workplace educational credential discrimination, personal

development expectations, and traditional normative constraints jointly explain a substantial proportion of variation in the dependent variable. For social science research focusing on individual decision-making intentions, this level of explanatory power is relatively high. The result

suggests that the proposed model demonstrates strong overall fit and explanatory effectiveness. Regarding mediation effects, this study further applied a bootstrapping resampling procedure to examine the mediating role of self-motivation in the relationships between each exogenous variable and obsessive postgraduate examination intention. The results, as reported in Table 7, reveal that employment friendliness, workplace educational credential discrimination, personal development expectations, and traditional normative constraints all exert significant indirect effects on obsessive postgraduate examination intention through

self-motivation.

The 95% confidence intervals for all indirect effects do not include zero, indicating that the mediating effects are statistically significant. Further comparison of direct and indirect effects shows that the direct effects of all exogenous variables on obsessive postgraduate examination intention remain significant after the inclusion of self-motivation, suggesting that self-motivation functions as a partial mediator across all pathways. Accordingly, Hypotheses H₅ through H₈ are also empirically supported by the data.

Table 7. Mediation analysis results: Indirect effects via self-motivation.

Hypothesis	Indirect path	Indirect effect	95% Confidence interval	Mediation type	Result
H ₅	Employment friendliness → Self-motivation → Obsessive PGEE intention	-0.083	[-0.124, -0.046]	Partial mediation	Supported
H ₆	Workplace educational discrimination → Self-motivation → Obsessive PGEE intention	0.097	[0.061, 0.142]	Partial mediation	Supported
H ₇	Personal development expectation → Self-motivation → Obsessive PGEE intention	0.089	[0.054, 0.131]	Partial mediation	Supported
H ₈	Traditional norm constraints → Self-motivation → Obsessive PGEE intention	0.064	[0.028, 0.108]	Partial mediation	Supported

Discussion

Main findings

Based on the structural equation modelling analysis of 386 valid samples from Shandong Province, this study systematically tests the proposed direct-effect hypotheses in line with its central research objective of examining how external structural factors influence university students' obsessive postgraduate entrance examination intentions.

The empirical results demonstrate that employment friendliness, workplace educational credential discrimination, personal development expectations, and traditional normative constraints all exert significant effects on obsessive postgraduate examination intention, with the directions of these effects highly consistent with theoretical expectations.

Specifically, employment friendliness exhibits a significant negative effect on obsessive

postgraduate examination intention, indicating that when university students perceive the regional employment environment to be relatively favourable and job opportunities to be more abundant, their tendency to regard postgraduate examination participation as a “sole or irreplaceable pathway” is significantly reduced. In contrast, workplace educational credential discrimination, personal development expectations, and traditional normative constraints all show significant positive effects, among which workplace educational credential discrimination emerges as the most influential factor. This finding reflects the reality that credential-based screening and institutionalised stratification have become salient external pressure sources driving the intensification of postgraduate examination intentions.

These results directly address the study’s initial problem awareness by demonstrating that postgraduate examination behaviour among university students in Shandong Province is not merely grounded in academic interest or considerations of skill enhancement, but is deeply embedded in employment opportunity structures, workplace institutional arrangements, and broader systems of social evaluation. Accordingly, Hypotheses H₁ through H₄ are empirically supported, confirming the critical role of external structural factors in the formation of obsessive postgraduate examination intentions.

Building on these findings, this study further introduces self-motivation as a mediating variable to elucidate the mechanisms through which external factors are transformed into sustained and highly rigid postgraduate examination intentions. The mediation analyses reveal that employment friendliness, workplace educational credential discrimination, personal development expectations, and traditional normative constraints all exert significant indirect effects on obsessive postgraduate examination intention through self-motivation, with self-motivation functioning

as a partial mediator across all examined pathways. These results indicate that external environments do not mechanically shape students’ postgraduate examination choices through direct coercion alone. Instead, they operate by influencing students’ levels of goal persistence, effort investment, and long-term motivational maintenance, thereby indirectly propelling postgraduate examination intentions from a general preference into a highly intensified and difficult-to-withdraw state.

In other words, even under similar employment conditions and normative constraints, variations in the degree of students’ postgraduate examination persistence can be largely attributed to differences in the activation of their internal self-motivation mechanisms. This finding not only provides empirical support for Hypotheses H₅ through H₈, but also addresses a notable gap in existing research by explicitly incorporating psychological transmission mechanisms into the analysis. Overall, the study offers a more comprehensive and explanatory empirical account of why certain university students become entrenched in obsessive postgraduate examination pursuits, thereby advancing understanding of the formation logic underlying the extreme intensification of postgraduate examination intentions in the Chinese context.

Theoretical contributions

From an academic and theoretical perspective, the core contribution of this study lies in its contextual refinement and deepening of the prevailing “motivational assumptions” underpinning existing research on university students’ postgraduate examination intentions. Traditional theories in education and educational economics generally conceptualise continued education as a rational choice centred on individual development, with its core motivation assumed to follow a single-track, self-oriented incentive mechanism. For example, human capital theory emphasises individuals’ investment in education as a means of enhancing productivity and future income returns;

expectancy-value theory posits that learning behaviour depends on individuals' subjective evaluations of success probability and outcome value; self-determination theory further attributes educational motivation to the fulfilment of needs for competence, mastery, and self-realisation; and career development theory similarly frames continued education as a rational step toward the achievement of long-term occupational goals. While these theoretical perspectives offer strong explanatory power in Western contexts, they share a common underlying premise: Educational advancement is primarily pursued "for oneself", with others' evaluations and social norms treated largely as background conditions rather than as central sources of motivation.

In contrast, empirical evidence based on a sample of university students in Shandong Province indicates that, within China's specific socio-cultural and employment institutional context, the formation of postgraduate examination intentions does not fully conform to a singular self-development logic. Instead, it exhibits a pronounced "dual-track motivational" structure, whereby individuals simultaneously pursue personal development and future opportunities while also responding to normative pressures arising from family expectations, social evaluation, and traditional cultural values. In particular, the significant effect of traditional normative constraints on obsessive postgraduate examination intentions suggests that educational advancement in practice is often endowed with symbolic meanings that transcend individual growth, functioning as a means of maintaining family respectability, meeting others' expectations, and avoiding negative social judgement.

By further introducing self-motivation as a mediating variable, this study elucidates the psychological mechanism through which external normative pressures are internalised into sustained effort investment and heightened persistence, thereby transforming postgraduate examination

participation from a general developmental option into a "must-complete task" that is difficult to exit. This finding indicates that existing motivation theories centred on individual rationality and self-directed incentives face clear explanatory boundaries when applied to postgraduate examination behaviour in the Chinese context. It underscores the necessity of incorporating social norms, others' expectations, and cultural pressures into motivational analysis frameworks. Accordingly, this study not only extends current understanding of the nature of motivation and variation in behavioural intensity within postgraduate examination intention research, but also provides important theoretical insights for re-examining the social and symbolic dimensions of educational decision-making in East Asian cultural contexts.

Practical contributions

From a practical perspective, the findings of this study provide targeted and actionable evidence for optimising talent cultivation practices in higher education institutions, improving the operation of employment service systems, and strengthening student development support mechanisms. The results indicate that the highly concentrated - and in some cases obsessive - nature of postgraduate examination intentions among university students in Shandong Province does not stem from irrational individual choices. Rather, it is jointly driven by multiple structural factors, including insufficient employment friendliness, the increasing salience of workplace educational credential discrimination, the strong coupling between educational attainment and perceived development returns, and the continuous reinforcement of traditional norms. The primary practical implication of this finding lies in helping universities, employers, and policy-makers move beyond moralised narratives that attribute the phenomenon to "students' blind internal competition", and instead identify the root causes at the institutional and environmental levels,

thereby avoiding the misplacement of governance responsibility onto individual students.

At the level of concrete practice, the findings offer clear directions for improving career education and employment guidance in universities. On the one hand, career planning and employment guidance should be shifted earlier in the undergraduate lifecycle, rather than being concentrated near graduation. Through systematic information provision and case-based guidance, universities can help students recognise diverse development pathways beyond postgraduate examinations, thereby reducing the likelihood that students are passively funnelled into a single educational trajectory due to information asymmetries. On the other hand, for students who have already committed to pursuing postgraduate study, universities can design more targeted psychological support and motivational management interventions informed by the self-motivation mechanism identified in this study. Such interventions may include guiding students to set reasonable goal boundaries, evaluate opportunity costs, and establish exit strategies, thereby preventing postgraduate examination preparation from evolving into a high-risk, low-flexibility form of long-term depletion.

From the perspective of labour market practice, the results suggest that employers' excessive reliance on educational credentials during recruitment objectively amplifies students' structural anxiety surrounding the notion that "not pursuing postgraduate study equals failure". By improving the transparency of job information and weakening coarse-grained credential-based screening rules, employers can help release more accurate labour market signals and reduce students' excessive dependence on educational advancement as a perceived safeguard. For education authorities, the findings further indicate that enhancing employment friendliness and promoting a more diversified system of social evaluation are not merely macro-level policy objectives, but also

exert direct influences on students' decision-making behaviours and psychological states at the micro level.

Overall, the practical contribution of this study does not lie in questioning the legitimacy of postgraduate education itself, but rather in offering analytical perspectives and actionable directions for mitigating the extreme intensification of postgraduate examination intentions and reducing the systemic risks students face in educational decision-making. In doing so, the study seeks to promote a more constructive and balanced interaction among educational choices, employment practices, and student development.

Conclusions

Research limitations and directions for future research

Although this study provides a relatively systematic empirical analysis of the mechanisms underlying obsessive postgraduate examination intentions among university students in Shandong Province, several limitations warrant careful consideration. First, at the level of research design, this study relies on cross-sectional survey data. While such data are effective in identifying structural relationships and causal pathways among variables, they are inherently limited in capturing the dynamic evolution of postgraduate examination intentions over time. Obsessive postgraduate examination intention is, by nature, a staged phenomenon, often shaped through multiple rounds of examination attempts, employment feedback, and psychological adjustment. Cross-sectional data therefore offer limited explanatory power with respect to causal sequencing and developmental trajectories. Second, regarding sample scope, the study focuses exclusively on undergraduate students and recent graduates from universities in Shandong Province. Although this region is representative in terms of population size, employment pressure, and the salience of traditional norms, caution is required when generalising the findings to other provinces

or regions with different socio-economic and institutional contexts. Third, in terms of variable specification, this study concentrates on external structural factors such as employment friendliness, workplace educational credential discrimination, personal development expectations, and traditional normative constraints, while introducing self-motivation as a key mediating variable. Although this framework offers a coherent explanation of how external pressures are transformed into individual motivational processes, it does not fully incorporate other potentially important sources of individual heterogeneity, such as forms of family economic support, peer comparison pressure, experiences of examination failure, or psychological resilience. In addition, all core variables in this study are measured using self-reported data. Despite the implementation of procedural and statistical controls for common method bias, discrepancies may still exist between subjective perceptions and objective conditions.

In light of these limitations, future research may extend and deepen the present findings in several directions. First, with respect to research design, subsequent studies could employ longitudinal data or mixed-method approaches to dynamically analyse the formation, intensification, and potential turning points of postgraduate examination intentions, thereby providing a more nuanced understanding of the emergence of obsessive patterns and their long-term consequences. Second, in terms of research context, future studies may expand the sample to include diverse regional settings - such as coastal regions with relatively abundant employment opportunities, first-tier cities with highly concentrated educational resources, or central and western regions characterised by distinct employment structures - to test whether the proposed “dual-track motivational” mechanism holds across broader contexts. Third, at the theoretical level, future research could further integrate psychological constructs such as social comparison, emotional exhaustion, and failure

attribution styles, and develop more multidimensional mediating or moderating models to explain why individuals exhibit markedly different levels of persistence under similar structural pressures. Finally, from a methodological standpoint, future studies may combine interviews, textual analysis, or experimental designs to explore more deeply the tension between “learning for oneself” and “learning for others”, thereby enriching qualitative and contextualised understandings of the social and symbolic dimensions of educational decision-making in the Chinese context. Through these extensions, future research may maintain empirical rigour while offering more comprehensive insights into the complex realities underlying contemporary university students’ educational choices.

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Conflict of Interest

The authors declare no conflict of interest.

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