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THE GENERATIVE LOGIC OF JUNIOR HIGH SCHOOL STUDENTS' EDUCATIONAL SENSE OF GAIN FROM THE PERSPECTIVE OF "PSYCHOLOGICAL-INSTITUTIONAL DUAL-DIMENSIONAL FAIRNESS"

XiaoBo Yu[1], LiFei He[2], XiaoDong Yu[3*], SuQing Wu[1], YingZhen Sun[1], HanYu Liu[1]
[1]*School of Education, Anyang Normal University, Anyang 455000, Henan, China.*
[2]*Politics Teaching and Research Office, Nanpu Central School of Changyuan, Xinxiang 453400, Henan, China.*
[3]*School of Public Finance & Taxation, Guangdong University of Finance & Economics, Guangzhou 510320, Guangdong, China.*
Corresponding Author: XiaoDong Yu, Email: xiaodongyu2004@sina.com

Abstract: As a core subjective indicator for measuring the quality of compulsory education, educational sense of gain embodies students' value-based experiences of educational fairness and developmental expectations. Grounded in the educational ecology of central China, this study constructs an analytical framework of "psychological-institutional dual-dimensional fairness." Through empirical research involving 952 students from 10 junior high schools, the findings reveal that psychological fairness (distributive, procedural, and interactional fairness) and institutional fairness (resource allocation fairness, institutional guarantee fairness, and policy implementation fairness) jointly constitute a dual-driven system for educational sense of gain. Among these, psychological fairness exhibits a significantly stronger direct effect (β =0.42) than institutional fairness (β =0.35), with their interaction (β =0.18) forming a synergistic mechanism. The study delineates the transformative pathway from institutional structural fairness to individual psychological fairness, providing a dual-dimensional practical framework of "institutional supply-side reform — psychological experience optimization" for advancing high-quality and balanced compulsory education in the new era.
Keywords: Psychological fairness; Institutional fairness; Educational sense of gain; Junior high school students

1 INTRODUCTION

1.1 Research Background and Problem Statement

The report of the 20th National Congress of the Communist Party of China integrates "promoting educational equity" into the strategic deployment of Chinese-style modernization, explicitly proposing the developmental goal of "delivering education that satisfies the people." As compulsory education transitions from "basic equilibrium" to "high-quality equilibrium," the connotation of educational fairness is deepening from institutional resource equilibrium to psychological equity at the individual level. Junior high school students, as a pivotal group bridging compulsory education, perceive their educational sense of gain not only through cognitive acquisition of knowledge and skills but also through emotional experiences of procedural fairness and value-based identification with future development. However, a persistent disconnect between "institutional fairness and psychological fairness" remains in educational practice: government-led standardized resource allocation (e.g., balanced teacher staffing, school infrastructure standards) has not fully translated into students' subjective perceptions of fairness, with rural and non-elite school students still experiencing significant "sense-of-gain disparities" [1]. Against this backdrop, this study addresses the following questions: How do the core components of junior high school students' educational sense of gain emerge through the dual-dimensional "psychological-institutional" fairness mechanism? What are the differential effects of dual-dimensional fairness across school types and urban-rural contexts? Addressing these questions will help transcend the limitations of unidimensional fairness research and provide theoretical support for precisely enhancing compulsory education quality.

1.2 Research Significance

Theoretically, this study expands the analytical dimensions of educational fairness by integrating psychological fairness theory from organizational behavior and institutional analysis frameworks from institutional sociology, constructing a "structure-process-experience" explanatory chain to enrich theoretical interpretations of educational sense of gain. Practically, the empirical data from central China reveal critical pathways for transforming institutional fairness into psychological fairness, offering policymakers a dual approach that balances macro-level institutional design with micro-level psychological construction. This contributes to shifting compulsory education from "hardware equilibrium" to "experience equilibrium" in its developmental essence.

2 THEORETICAL FRAMEWORK AND RESEARCH DESIGN

2.1 Theoretical Foundations of Core Concepts

2.1.1 Three-dimensional analysis of psychological fairness

Originating from Adams' (1965) social exchange theory, psychological fairness emphasizes individuals' evaluations of fairness through horizontal (peer comparison) and vertical (self-historical comparison) cost-benefit analyses [2]. Contextualized to education, psychological fairness is operationalized into three dimensions:

Distributive fairness: Students' perceptions of fairness in resource allocation outcomes (e.g., teacher attention, learning opportunities), centered on "whether they receive what they deserve";

Procedural fairness: Students' perceptions of fairness in allocation procedures (e.g., class leader elections, seating arrangements), centered on "transparent and just rules";

Interactional fairness: Students' experiences of respect and care in teacher-student and peer interactions, centered on "equal treatment and understanding" [3].

2.1.2 Institutionalist interpretation of institutional fairness

Drawing on Selznick's (1969) institutional theory, institutional fairness manifests as institutionalized equitable rules and operational mechanisms within education systems [4], including:

Resource allocation fairness: Government-driven equitable distribution of resources (e.g., dynamic teacher allocation systems within counties);

Institutional guarantee fairness: Fairness embedded in policies (e.g., proximity-based school enrollment, migrant children's education rights);

Policy implementation fairness: Fairness in school-level execution (e.g., teacher performance evaluations, precise implementation of student aid policies) [5].

2.1.3 Developmental connotation of educational sense of gain

Rooted in ecological psychology, educational sense of gain is defined as students' multidimensional subjective experiences within specific educational environments [6]:

Cognitive gain: Self-efficacy in knowledge mastery and skill development;

Emotional gain: Interest in learning and satisfaction with teacher-student relationships;

Developmental gain: Confidence in future prospects and value-based identification with education [7].

2.2 Hypothesis Development

Building on dual-dimensional fairness and educational process theories, the following hypotheses are proposed:

H1: Psychological fairness directly enhances educational sense of gain, with interactional fairness exhibiting stronger affective mediation than distributive/procedural fairness;

H2: Institutional fairness directly enhances educational sense of gain, with policy implementation effects outweighing macro-level resource equilibrium;

H3: Psychological and institutional fairness interact, where higher institutional fairness amplifies psychological fairness's positive effects;

H4: Mechanisms differ across groups, with rural and non-elite school students exhibiting higher sensitivity to institutional resources in psychological fairness perceptions [8].

2.3 Methodology and Data Collection

2.3.1 Participants

Using stratified multi-stage sampling, 1,000 students from 10 junior high schools (5 urban/rural; 3 elite/7 non-elite) in central China's Province A were selected, yielding 952 valid responses (95.2% response rate). Sample characteristics are shown in Table 1.

Table 1 Sample Characteristics (N=952)

Variable	Category	Number	Proportion (%)	Variable	Category	Number	Proportion (%)
School Type	Urban	498	52.3	School Level	Key School	300	31.5
	Rural	454	47.7		Ordinary School	652	68.5
Gender	Boys	493	51.8	Grade	Grade 7	285	29.9
	Girls	459	48.2		Grade 8	330	34.7
					Grade 9	337	35.4

2.3.2 Instruments

Psychological Fairness Scale: Adapted from Colquitt's (2001) organizational justice scale (12 items, 5-point Likert; Cronbach's α =0.85) [9];

Institutional Fairness Scale: Self-developed 15-item scale based on China's Compulsory Education Quality-Balanced Development Evaluation Guidelines (Cronbach's α =0.82);

Educational Sense of Gain Scale: Adapted from Ryan & Shim's (2016) student engagement scale (18 items across cognitive, emotional, and developmental dimensions; Cronbach's α =0.88) [10].

2.3.3 Data analysis

SPSS 26.0 was used for descriptive statistics, correlation analysis, and MANOVA; AMOS 24.0 conducted structural equation modeling (SEM) with confirmatory factor analysis (CFA) for validity and multi-group analysis for urban-rural/school-tier differences.

3 CURRENT CHARACTERISTICS OF JUNIOR HIGH SCHOOL STUDENTS' EDUCATIONAL SENSE OF GAIN

3.1 Normative Distribution of Overall Levels

Descriptive statistics (Table 2) show the total educational sense of gain score as 3.82 ± 0.65 (5-point scale), indicating moderately positive experiences. Emotional gain scored highest (3.95 ± 0.72), reflecting students' positive perceptions of teacher-student interactions and classroom climate, while developmental gain was lower (3.71 ± 0.70), suggesting room for strengthening students' awareness of education's future relevance.

Table 2 Score Distribution of Educational Sense of Gain and Subdimensions

Dimension	Minimum	Maximum	Mean	Std. Dev.	Theoretical Median	Skewness	Kurtosis
Cognitive Gain	1.50	5.00	3.80	0.68	3.0	-0.21	-0.15
Emotional Gain	1.67	5.00	3.95	0.72	3.0	-0.35	-0.23
Developmental Gain	1.33	5.00	3.71	0.70	3.0	-0.18	-0.11
Total Score	2.11	4.89	3.82	0.65	3.0	-0.29	-0.32

3.2 Multidimensional Group Differences

3.2.1 School-tier differences

Independent t-tests revealed elite school students scored higher in educational sense of gain (4.05 ± 0.58 vs. 3.73 ± 0.63, t=7.89, p<0.001), psychological fairness (4.12 ± 0.55 vs. 3.75 ± 0.61, t=8.92, p<0.001), and institutional fairness (4.08 ± 0.52 vs. 3.81 ± 0.58, t=6.34, p<0.001). Notably, elite schools outperformed non-elite schools in policy implementation fairness (4.21 ± 0.50 vs. 3.76 ± 0.53).

3.2.2 Urban-rural differences

Urban students scored higher in educational sense of gain (3.91 ± 0.62 vs. 3.72 ± 0.67, t=4.21, p<0.001) and psychological fairness (4.05 ± 0.58 vs. 3.79 ± 0.60, t=5.34, p<0.001), but institutional fairness showed no significant difference (3.98 ± 0.55 vs. 3.89 ± 0.59, t=1.23, p<0.05), indicating rural-urban integration policies (e.g., school infrastructure upgrades) achieved institutional parity, yet rural students' subjective perceptions lagged due to interactional factors.

3.2.3 Grade-level dynamics

ANOVA showed Grade 9 students scored lower in developmental gain (3.58 ± 0.75 vs. Grades 7–8: 3.82 ± 0.68, 3.79 ± 0.69; F=5.21, p<0.01), potentially due to academic pressure, while emotional gain peaked in Grade 8 (4.02 ± 0.70), reflecting heightened socioemotional sensitivity during early adolescence [11].

4 TESTING THE IMPACT MECHANISMS OF DUAL-DIMENSIONAL FAIRNESS

4.1 Validity of Measurement Models

CFA (Table 3) confirmed excellent fit for the three-factor model (psychological fairness, institutional fairness, educational sense of gain; χ^2/df=1.89, RMSEA=0.05, CFI=0.95, TLI=0.94, SRMR=0.04), superior to a single-factor model ($\Delta\chi^2$=217.32, p<0.001). All factor loadings (0.62 – 0.89), average variance extracted (AVE>0.5), and composite reliability (CR>0.8) met validity criteria [12].

Table 3 Confirmatory Factor Analysis Results

Dimension	Observed Variables	Factor Loadings	AVE	CR	Fit Indices	Value	Criterion
Psychological Fairness	EF1-EF12	0.68-0.85	0.62	0.88	χ^2/df	1.89	<2.0
Institutional Fairness	IF1-IF15	0.65-0.83	0.58	0.86	RMSEA	0.05	<0.06
Educational Sense of Gain	GA1-GA18	0.71-0.89	0.65	0.89	CFI	0.95	>0.90
					TLI	0.94	>0.90
					SRMR	0.04	<0.05

4.2 Structural Model Path Analysis

4.2.1 Direct effects: independent impacts

SEM showed psychological fairness significantly predicted educational sense of gain (β =0.42, p<0.001), with interactional fairness (β =0.35) outweighing procedural (β =0.28) and distributive fairness (β =0.25), supporting H1. Institutional fairness had a direct effect (β =0.35, p<0.001), with policy implementation fairness (β =0.32) surpassing institutional guarantees (β =0.29) and resource allocation (β =0.26), validating H2 [13].

4.2.2 Interaction effects: synergistic amplification

The interaction term (psychological × institutional fairness) significantly predicted educational sense of gain (β =0.18, p<0.01), indicating a 0.18 increase in marginal effect for each standard deviation rise in institutional fairness. This "1+1>2" synergy confirms H3 [14].

4.2.3 Mediation effects: psychological fairness as a conduit

Bootstrap testing (Table 4) revealed institutional fairness's indirect effect via psychological fairness was 0.25 (95% CI: 0.18 – 0.32), accounting for 41.7% of the total effect. This highlights psychological fairness's role as a mediator in translating institutional fairness into sense of gain [15].

Table 4 Mediation Effect Test Results

Path	Direct Effect	Indirect Effect	Total Effect	Mediation Proportion
Institutional → Psychological	0.60**	-	0.60**	-
Psychological → Sense of Gain	0.42**	-	0.42**	-
Institutional → Sense of Gain	0.35**	0.25**	0.60**	41.7%

Note: **p<0.01

4.3 Multi-Group Analysis: Differential Mechanisms

4.3.1 Urban-rural moderation

Institutional fairness's effect was stronger for urban students (β =0.40 vs. rural β =0.30, p<0.05), possibly due to urban students' heightened awareness of resource disparities (e.g., teacher qualifications). Psychological fairness showed no urban-rural difference (β =0.40 vs. 0.43, p<0.05), indicating its universal relevance [16].

4.3.2 School-tier cross-effects

Institutional fairness impacted elite school students more (β =0.32 vs. non-elite β =0.38, p<0.05), while psychological fairness was stronger for non-elite students (β =0.38 vs. 0.45, p<0.05). This "institutional advantage for elites, psychological empowerment for non-elites" pattern suggests enhancing interactional fairness may be more effective in resource-constrained schools [17].

5 DUAL-DIMENSIONAL GENERATIVE LOGIC OF EDUCATIONAL SENSE OF GAIN

5.1 Institutional Fairness: Material Construction from Structural Equilibrium to Experiential Foundation

Institutional fairness operates through:
(1) Equitable Resource Allocation: Government-mandated teacher redistribution (e.g., central China's "county-managed school employment" policy) reduces perceived inequity, with resource allocation fairness increasing cognitive gain by 0.28 per unit [18];
(2) Procedural Stability: Standardized policies (e.g., after-school service mandates) enhance predictability, correlating with emotional gain (r=0.52);
(3) Procedural Justice: Transparent implementation (e.g., student aid distribution) boosts institutional trust, with policy execution fairness raising developmental gain by 0.35 per unit [19].

5.2 Psychological Fairness: Psychological Transformation from Objective to Subjective Fairness

Psychological fairness involves:
(1) Distributive Comparison: Peer comparisons (e.g., "Do I receive equal teacher attention?") shape cognitive gain (β =0.25);
(2) Procedural Legitimacy: Transparent rules (e.g., democratic class decisions) enhance control, correlating with emotional gain (β =0.31);
(3) Interactional Empowerment: Personalized teacher care satisfies adolescents' esteem needs, with interactional fairness strongly predicting developmental gain (β =0.38) [20].

5.3 Dual-Dimensional Synergy: Dynamic Coupling from Institutional Supply to Psychological Resonance

The interaction effect reveals an "ecological" process: When institutional fairness reaches a threshold (e.g., resource parity), psychological fairness's marginal effects amplify, creating a "institutional foundation — psychological enhancement" cycle. Conversely, structural deficits (e.g., inter-school disparities) undermine sense of gain despite micro-level fairness. This synergy is pronounced in non-elite schools: When institutional fairness exceeds the mean, psychological fairness's effect rises from 0.35 to 0.52, demonstrating institutional environments' amplifying role.

6 DUAL-DIMENSIONAL PATHWAYS TO ENHANCE EDUCATIONAL SENSE OF GAIN

6.1 Institutional Fairness: Precision-Oriented Equity Safeguards

Demand-Driven Resource Allocation: Establish a "dynamic teacher pool" for non-elite schools, mandating elite schools to transfer $\geqslant$ 15% of key teachers annually with incentives; integrate student input into resource decisions (e.g., equipment procurement).
Process-Oriented Policy Monitoring: Develop a "fair implementation index" (12 indicators, e.g., policy transparency) for semiannual school evaluations; create student grievance platforms with 20-day response mandates.

6.2 Psychological Fairness: Immersive Equity Experiences

Equitable Pedagogical Practices: Implement "layered value-added evaluations" (progress-based scoring) and "equalized participation strategies" (e.g., randomized class participation).
Supportive Teacher-Student Ecology: Train teachers in adolescent psychology and "positive language techniques"; establish peer mentorship programs.

6.3 Dual-Dimensional Synergy: Bridging Institutional and Psychological Realms

Dual-Dimensional Dialogues: Host student-institution forums to co-interpret policies and gather feedback; publish "fairness handbooks" explaining institutional designs.
Targeted Interventions: Prioritize psychological empowerment in non-elite schools (e.g., interactive teaching methods); enhance institutional transparency in rural schools (e.g., public resource allocation reports).

7 CONCLUSION AND FUTURE DIRECTIONS

7.1 Conclusions

(1) Educational sense of gain arises from institutional fairness and psychological fairness's dual-driven "material-subjective" structure;
(2) Psychological fairness's direct effects surpass institutional fairness, reflecting adolescents' socioemotional sensitivity;
(3) Dual-dimensional synergy amplifies effects, with institutional fairness enhancing psychological fairness's impact;
(4) Mechanisms differ across groups, with non-elite students relying more on psychological fairness.

7.2 Limitations and Future Research

Cross-sectional data limit dynamic analysis; family socioeconomic status and cultural capital warrant exploration. Future longitudinal and mixed-methods studies can refine policy precision across diverse educational ecologies.
Ultimately, advancing educational equity requires transcending resource-centric approaches to integrate psychological fairness, ensuring a leap from "access to education" to "quality education."

COMPETING INTERESTS

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