

Motivation for Learning to Speak English among Chinese Vocational Urban Transportation Students: A Self-Determination Theory Perspective

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Abstract

English proficiency has become increasingly crucial for vocational education students, particularly in specialized fields like urban transportation where international collaboration and technical documentation require strong language skills. However, limited research has examined motivation patterns among vocational students in specialized majors using comprehensive theoretical frameworks. This study investigates motivation for learning to speak English among Chinese urban transportation major students using Self-Determination Theory (SDT) as the theoretical framework. A structured questionnaire based on validated SDT instruments was administered to 277 urban transportation major students at a Chinese vocational college in Sichuan, China, with data analyzed using descriptive statistics, t-tests, ANOVA, and correlation analysis. The results revealed that external regulation was the most prominent motivational orientation (Per-item M = 3.79), followed by identified regulation (Per-item M = 3.67) and intrinsic motivation (Per-item M = 3.21), while introjected regulation showed the lowest levels (Per-item M = 2.76). Regarding basic psychological needs, relatedness demonstrated the highest satisfaction (Per-item M = 4.08), followed by autonomy (Per-item M = 3.79), with competence showing the lowest satisfaction (Per-item M = 3.48). Females scored higher than males across the four motivation types, and higher self-rated speaking proficiency aligned with stronger autonomous motivation and greater need satisfaction. The findings provide empirical insights into motivational patterns in Chinese vocational education contexts and suggest implications for English speaking instruction design.

Keywords: Self-Determination Theory, English Speaking Motivation, Vocational Education, Chinese Students, Basic Psychological Needs

Introduction

Amid accelerating globalization, English functions as the essential lingua franca for innovation and international collaboration, fundamentally shaping professional opportunities and career trajectories across industries worldwide. Among the four language skills, speaking is widely regarded as the most consequential for real-world communication (Chien et al., 2020; Rao, 2019), serving as the primary vehicle through which professionals engage in meaningful

dialogue, negotiate complex projects, and build cross-cultural partnerships. In practice, fluent and accurate spoken English is often treated as a visible marker of English mastery (Amoah & Yeboah, 2021), directly influencing professional credibility and collaborative effectiveness in international contexts.

In China's higher vocational sector, the Teaching Aim of English Course in Higher Vocational Education (Trial) stipulates that English instruction should enable simple oral and written communication in daily and foreign-related professional contexts, laying a basis for future communicative competence. However, significant systemic barriers prevent the achievement of these educational goals, particularly regarding speaking competency development. Many vocational students enter with a weak foundation—especially in speaking—partly because high-stakes assessments underemphasize oral performance, creating a fundamental mismatch between educational outcomes and professional requirements.

The examination-oriented culture creates particularly detrimental effects through washback (the influence of testing on teaching and learning), which channels effort toward what is tested (Salmani Nodoushan, 2021), positioning learners as passive consumers rather than active producers (Wu & Miller, 2021). In such contexts, reading and writing—along with some listening—dominate the test construct, while speaking is rarely required for success (Xing & Bolden, 2019), which systematically depresses practice time and motivation for oral skills.

Beyond assessment washback, vocational students face intertwined linguistic, pedagogical, and contextual challenges that compound learning difficulties. Foundational gaps traceable to earlier schooling are compounded by limited exposure to English in program-specific settings where technical training takes precedence (Du & Guan, 2016; Mao & Zhou, 2024). English often occupies a peripheral place in vocational curricula, constraining opportunities for sustained practice (Foung et al., 2022). Teacher-centered methods remain common and may not align with learners' communicative needs (Li & Pei, 2024; Xie, 2021). Content-task misalignment further weakens perceived relevance when classroom English diverges from workplace communication (He & Chiang, 2016), and a scarcity of supportive speaking environments outside class limits authentic use and constructive feedback (Pun & Jin, 2021).

These educational challenges are especially problematic for students majoring in urban transportation, where English speaking proficiency has become increasingly critical for professional success and industry advancement. The industry is increasingly international, with projects frequently involving foreign stakeholders and cross-border teams, where English operates as the *de facto* working language (Chern & Dooley, 2014; Hodge, 1990). Strong speaking skills improve collaboration, negotiation, and safety-critical communication, while also expanding access to multinational employers and mobility across labor markets (Tabatabaie et al., 2023; Rath & Chow, 2022). Spoken English further enables participation in global professional discourse and access to research, standards, and technical training predominantly delivered in English (Attoh, 2015; Danna et al., 2022). However, educational institutions must provide adequate support to ensure equitable access to these benefits for all students, as emphasis on English can marginalize lower-proficiency learners unless institutions provide adequate scaffolds (Cho & Kim, 2021; Kallioniemi et al., 2016).

Against this backdrop of clear professional importance but significant educational challenges, understanding and improving student motivation for English speaking becomes critically important. Self-Determination Theory (SDT) offers a particularly productive lens for this understanding because SDT posits that satisfaction of autonomy, competence, and relatedness fosters internalization and high-quality motivation that supports persistence and deeper learning (Deci & Ryan, 2000). Despite the clear importance of spoken English for vocational practice in urban transportation, empirical profiles of Chinese vocational students' speaking-related motivation—and its association with basic psychological needs—remain critically limited. This research gap has significant implications for educational practice, as effective interventions require comprehensive understanding of the motivational dynamics that influence student engagement with English speaking learning.

This study addresses that critical knowledge gap and provides valuable insights for multiple stakeholder communities. For educational institutions, the research provides evidence-based guidance for curriculum design, pedagogical approaches, and resource allocation decisions that can improve English speaking instruction effectiveness in vocational contexts. For students and future professionals, understanding motivational patterns enables the development of more supportive learning environments that enhance both engagement and competence in English speaking, ultimately improving career readiness for China's increasingly international transportation industry. For industry and workforce development, the study contributes to preparing graduates who possess the English speaking competencies necessary for effective participation in international transportation projects and collaborations. For academic research, this work provides cross-cultural insights into Self-Determination Theory applications in Chinese vocational education contexts and contributes methodological frameworks for examining language learning motivation in specialized professional domains.

Given the limited attention to vocational transportation students in the literature, clarifying their motivational orientations is both theoretically important and practically necessary for tailoring English instruction to industry needs. This study addresses the identified research imperative by (a) describing the patterning of motivational orientations for English speaking among urban transportation majors in Chinese vocational colleges, (b) examining differences across salient demographics (e.g., gender, self-rated proficiency), and (c) deriving instructional implications for vocational English curricula that strengthen speaking competence while supporting need satisfaction and value internalization within the SDT framework. Through these objectives, the research bridges the gap between theoretical understanding of motivation and practical improvement of English speaking instruction in Chinese vocational education, ultimately supporting the development of transportation professionals capable of effective participation in China's expanding international industry collaborations.

Literature Review

Self-Determination Theory in Language Learning

Self-Determination Theory (SDT) provides a comprehensive account of human motivation and personality by distinguishing types of motivation and identifying conditions that foster high-quality learning (Ryan & Deci, 2017). In education—and particularly in second language (L2) contexts—SDT has been widely used to interpret learners' engagement patterns and

outcomes (K. Noels et al., 2001). The theory has proven particularly valuable for understanding the complex motivational dynamics involved in language learning, where both instrumental and integrative factors interact to influence learner behavior and achievement.

SDT posits a continuum of self-determination comprising qualitatively different motivational regulations, each representing varying degrees of autonomy and internalization (Deci & Ryan, 1985, 2000). This continuum ranges from highly autonomous to highly controlled forms of motivation:

Intrinsic motivation represents engagement for inherent interest, enjoyment, or satisfaction, and is consistently associated with deeper involvement and superior learning outcomes (Alkan & Bümen, 2020). In language learning contexts, intrinsically motivated students demonstrate sustained engagement and willingness to take risks in communication.

Identified regulation involves personal valuing of the activity, where learners recognize the importance of language skills for their academic or professional goals. This form of motivation reflects internalized value recognition rather than mere compliance with external demands.

Introjected regulation describes action driven by internal pressures such as guilt, shame, or approval-seeking. While internally driven, this motivation type involves partial internalization and can create psychological tension for learners.

External regulation represents behavior controlled by external contingencies such as grades, requirements, or rewards. This represents the least autonomous form of motivation within the self-determination continuum.

Amotivation reflects the absence of intentionality, often occurring when value is not recognized and/or competence is doubted (Deci & Ryan, 2000; Bovermann et al., 2018). Amotivated learners lack clear goals and may question the purpose of their learning efforts.

The theoretical distinction between autonomous (intrinsic and identified) and controlled (introjected and external) motivational forms has significant implications for language learning outcomes, with research consistently demonstrating that more autonomous motivation predicts greater persistence, strategy use, and achievement in L2 contexts (Noels et al., 2001; Ryan & Deci, 2017).

Basic Psychological Needs and Internalization

SDT further posits three basic psychological needs—autonomy, competence, and relatedness—whose satisfaction facilitates the internalization of values and sustains high-quality motivation (Deci & Ryan, 2000; Ryan & Deci, 2017). L2 research links more autonomous motivation with stronger persistence, strategy use, and achievement (Mohamed, 2023; Noels et al., 2001).

Implications for L2 Speaking in Vocational Settings

Applied to English speaking, SDT suggests that learners practice more persistently and effectively when tasks afford choice and voice (autonomy), provide informative feedback and attainable challenge (competence), and involve supportive interpersonal interactions

(relatedness). In vocational contexts such as urban transportation, clear task relevance and pathways to employment can strengthen identified regulation; conversely, exam-driven external pressures may sustain controlled motivation unless accompanied by need-supportive instruction (Noels et al., 2001; Deci & Ryan, 2000; Ryan & Deci, 2017). This study therefore adopts SDT to (a) profile speaking-related motivational orientations among urban transportation majors, (b) examine group differences (e.g., gender, self-rated proficiency), and (c) derive pedagogical implications that support need satisfaction and the internalization of value in English-speaking instruction.

Research Questions and Objectives

This study addresses three specific research questions:

RQ1: What are the current levels and patterns of motivational orientations (intrinsic, identified, introjected, and external regulation) for English speaking learning among Chinese urban transportation major students?

RQ2: To what extent are the basic psychological needs (autonomy, competence, and relatedness) satisfied in English speaking learning contexts among these students?

RQ3: How do demographic variables (gender, self-rated proficiency) relate to motivational orientations and basic psychological needs satisfaction?

Methodology

Research Design

This study employed a quantitative cross-sectional survey design to examine motivation levels among urban transportation major students. The design was chosen to provide a comprehensive snapshot of current motivation patterns and allow for statistical analysis of relationships between variables.

Participants

The sample consisted of a total of 343 students enrolled in the first year of the urban transportation major at a vocational college in Sichuan province, China. After data screening procedures to remove invalid responses (straight-lining patterns), the final sample consisted of 277 valid responses, representing an 80.7% response rate.

Table 1

Demographic Variables Frequency Analysis

Variable	Category	Frequency	Percentage
Gender	Male	125	45.1%
	Female	152	54.9%
Age	17 or below	1	0.4%
	18 years old	64	23.1%
	19 years old	171	61.7%
	20 or above	41	14.8%

As shown in Table 1, the sample included 152 female students (54.9%) and 125 male students (45.1%), with the majority of participants being 19 years old (61.7%).

Instruments

Questionnaire items were adapted from two validated instruments grounded in Self-Determination Theory (SDT): the Basic Psychological Needs in Second Language Scale (BPN-

L2) and the Self-Determination Theory in Second Language Scale (SDT-L2). The BPN-L2 Scale (Alamer, 2022), originally based on Ilardi et al. (1993), was used to assess learners' basic psychological needs—autonomy, competence, and relatedness—while the SDT-L2 Scale (Alamer, 2022), originally adapted from Noels et al. (1999), was used to measure four motivational orientations: intrinsic, identified, introjected, and external regulation.

The final questionnaire consisted of 30 items: 18 items measuring motivational orientations and 12 items assessing basic psychological needs. To ensure content validity, questionnaire items were adapted from validated instruments and contextualized specifically for English speaking skills rather than general English learning. Several items were either merged, reworded, or removed to ensure clarity and alignment with students' practical learning experience. The motivation scale contained 18 items: 5 items each for intrinsic motivation, identified regulation, and introjected regulation, and 3 items for external regulation, reflecting a purposeful reduction from the original structure to reduce redundancy and enhance scale focus. The basic psychological needs section included 12 items: 4 items each measuring autonomy, competence, and relatedness. All items were rated on a 5-point Likert scale.

To ensure clarity and cultural appropriateness, a bilingual version of the questionnaire (Chinese-English) was developed. The initial version was reviewed by three domain experts specializing in applied linguistics, educational psychology, and vocational English instruction. The reviewers evaluated the items for content relevance, theoretical alignment, linguistic clarity, and contextual appropriateness. Minor revisions were made based on their feedback to improve clarity and simplify wording without altering the conceptual meaning of the items.

Data Collection and Analysis

Data were collected through an online survey platform (Wenjuanxing). Statistical analyses included descriptive statistics, reliability analysis (Cronbach's alpha), exploratory factor analysis (EFA), independent samples t-tests, ANOVA, and Pearson correlation analysis using IBM SPSS Statistics 30.0. Assumption checks indicated acceptable normality and homogeneity of variances (Levene's tests); Tukey HSD was used for post-hoc comparisons. When assumptions were not met, Welch-adjusted tests and Games – Howell were applied.

Following established data screening procedures for online surveys, responses were carefully examined for data quality issues. Specifically, questionnaires that exhibited straight-lining patterns, where participants selected identical responses across all items, were identified and excluded from the analysis as invalid responses. Data quality screening removed straight-lining responses (final N=277; response rate 80.7%)

Ethical Considerations

The study received ethical approval from the institutional review board. All participants provided informed consent, and anonymity and confidentiality were maintained throughout data collection and analysis.

Results

Reliability and Validity

Table 2

Reliability Coefficients for All Dimensions

Dimension	Items	Cronbach's α	Reliability Assessment
Intrinsic Motivation	5	0.944	Excellent
Identified Regulation	5	0.906	Excellent
Introjected Regulation	5	0.855	Good
External Regulation	3	0.807	Good
Autonomy	4	0.847	Good
Competence	4	0.924	Excellent
Relatedness	4	0.916	Excellent
Overall Motivation Scale	18	0.896	Good
Basic Psychological Needs Scale	12	0.916	Excellent

All dimensional reliability coefficients exceeded the minimum acceptable threshold of 0.70, with most achieving excellent levels (Table 2). Intrinsic motivation demonstrated the highest internal consistency ($\alpha = 0.944$), followed by competence ($\alpha = 0.924$) and identified regulation ($\alpha = 0.906$). External regulation showed the lowest, but still acceptable, reliability ($\alpha = 0.807$). The overall motivation scale achieved good reliability ($\alpha = 0.896$), and the basic psychological needs scale demonstrated excellent reliability ($\alpha = 0.916$).

Table 3

KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.913
Bartlett's Test of Sphericity	Approx. Chi-Square	6838.856
	df	435
	Sig.	<.001

Exploratory factor analysis revealed adequate construct validity (Table 3). The Kaiser-Meyer-Olkin measure yielded a coefficient of .913, substantially exceeding established standards for factor analysis. Bartlett's test of sphericity was highly significant ($\chi^2 = 6838.856$, $df = 435$, $p < .001$), confirming the appropriateness of factor analysis.

Table 4A

Total Variance Explained (6-Factor Solution)

Total Variance Explained (Six-Factor Solution)						
Component	Initial Eigenvalues Total	% of Variance	Cumulative %	Extraction Sums of Squared Loadings Total	% of Variance	Cumulative %
1	11.359	37.86	37.86	11.359	37.86	37.86
2	3.566	11.89	49.75	3.566	11.89	49.75
3	3.075	10.25	60.00	3.075	10.25	60.00
4	1.453	4.84	64.85	1.453	4.84	64.85
5	1.368	4.56	69.41	1.368	4.56	69.41
6	1.246	4.16	73.56	1.246	4.16	73.56

Table 4B

Total Variance Explained (7-Factor Solution)

Total Variance Explained (Seven-Factor Solution)						
Component	Initial Eigenvalues Total	% of Variance	Cumulative %	Extraction Sums of Squared Loadings Total	% of Variance	Cumulative %
1	11.359	37.86	37.86	11.359	37.86	37.86
2	3.566	11.89	49.75	3.566	11.89	49.75
3	3.075	10.25	60.00	3.075	10.25	60.00
4	1.453	4.84	64.85	1.453	4.84	64.85
5	1.368	4.56	69.41	1.368	4.56	69.41
6	1.246	4.16	73.56	1.246	4.16	73.56
7	0.905	3.02	76.58	0.905	3.02	76.58

Note: All percentages are rounded to two decimals; totals to three decimals.

Cumulative percentages reported here are from the extraction solution (six-factor: 73.56%; seven-factor: 76.58%). The seventh factor's eigenvalue (0.905) falls just below 1, but interpretability and theory consistency were prioritized over the Kaiser criterion.

Both empirical six-factor and theory-driven seven-factor solutions were examined (Tables 4A and 4B). The six-factor solution accounted for 73.56% of total variance and revealed cultural adaptations: Factor 1 comprised intrinsic motivation items with one competence item, suggesting intrinsic enjoyment and achievement are closely intertwined; Factor 2 included relatedness items and teacher-provided autonomy support items, indicating that social connection and teacher-facilitated choice jointly contribute to social support and belonging. This pattern suggests partial blending of autonomy and competence constructs in Chinese vocational contexts.

The seven-factor solution explained 76.58% of variance and demonstrated structure highly consistent with established SDT framework (four motivational regulations plus three basic psychological needs). Although the seventh factor's eigenvalue (0.905) fell marginally below the Kaiser >1 criterion, the pattern of factor loadings and inter-factor correlations (stronger

associations among IM/IR and A/C/R, weaker with IJR/ER) indicated theoretically coherent structure comparable to prior SDT research.

For theoretical coherence, international comparability, and interpretative clarity, this study adopts the seven-factor SDT structure for all subsequent analyses. This choice situates findings within broader L2-motivation literature while allowing critical reflection on context-specific adaptations observed in the six-factor solution. The empirical-theoretical divergence is revisited in the Discussion with implications for cross-cultural validation and refinement of SDT constructs in Chinese vocational education settings.

Table 4C

Pattern Matrix from Exploratory Factor Analysis (PAF, Direct Oblimin, N=277)

Pattern Matrix from Exploratory Factor Analysis										
Item	IM	IR	IJR	ER	A	C	R	h ²	Primary	Cross
IM1	0.82							0.73	IM	
IM2	0.88							0.84	IM	
IM3	0.77							0.77	IM	
IM4	0.87							0.80	IM	
IM5	0.81							0.78	IM	
IR6		0.77						0.70	IR	
IR7		0.83						0.74	IR	
IR8		0.73						0.68	IR	
IR9		0.68						0.65	IR	
IR10		0.49						0.63	IR	
IJR11			0.73					0.59	IJR	
IJR12			0.76					0.64	IJR	
IJR13			0.51					0.42	IJR	
IJR14			0.84					0.69	IJR	
IJR15			0.79					0.65	IJR	
ER16				0.86				0.76	ER	
ER17				0.73				0.56	ER	
ER18				0.69				0.56	ER	
A1					0.65			0.60	A	
A2					0.92			0.81	A	
A3					0.44		0.35	0.65	A	√
A4							0.51	0.65	R	
C5						0.69		0.75	C	
C6						0.76		0.84	C	
C7						0.76		0.81	C	
C8						0.59		0.68	C	
R9							0.81	0.70	R	
R10							0.94	0.86	R	
R11							0.73	0.63	R	
R12							0.89	0.77	R	

Table 4C presents the oblique-rotated pattern matrix for the final seven-factor solution. As shown in Table 4C, oblique-rotated pattern loadings ($\geq .30$) were satisfactory: IM .77–.88; IR .49–.83; IJR .51–.84; ER .69–.86; A .44–.92; C .59–.76; R .35–.94. Communalities ranged .42–

.86. One autonomy item (A3) showed a small cross-loading ($A=.44$; $R=.35$) and was retained for construct coverage and content validity.

Motivational Profile Analysis

Table 5

Descriptive Statistics for Motivation Dimensions

Descriptive Statistics for Motivation Dimensions							
Variable	N	Min	Max	Mean	Per-item Mean	SD	Per-item SD
Intrinsic Motivation	277	5	25	16.06	3.21	4.514	0.903
Identified Regulation	277	5	25	18.36	3.67	3.748	0.750
Introjected Regulation	277	5	25	13.81	2.76	4.201	0.840
External Regulation	277	3	15	11.38	3.79	2.242	0.747

Note: For comparable analysis across dimensions with different item numbers, mean scores were calculated by dividing total scores by number of items.

External regulation demonstrated the highest mean levels (Per-item $M = 3.79$, Per-item $SD = 0.747$), followed by identified regulation (Per-item $M = 3.67$, Per-item $SD = 0.750$), intrinsic motivation (Per-item $M = 3.21$, Per-item $SD = 0.903$), and introjected regulation (Per-item $M = 2.76$, Per-item $SD = 0.840$). This pattern indicates that students are primarily driven by external requirements and personal value recognition, with moderate intrinsic interest and limited ego-involved pressure.

Among intrinsic motivation items, "I learn English speaking for the satisfaction I feel when I express myself clearly in English" recorded the highest mean score ($M = 3.41$), indicating that students are particularly motivated by achievement-oriented satisfaction rather than process-related enjoyment.

For identified regulation, all items demonstrated relatively high and consistent scores, with "Speaking English well is important for my current and future studies/work" showing strong recognition of instrumental value ($M = 3.79$).

External regulation items revealed a prevention-focused orientation, with "I learn English speaking because I don't want to fail the final exam" showing the highest mean ($M = 3.92$), indicating that students are more motivated by avoiding negative outcomes than pursuing excellence.

Basic Psychological Needs Satisfaction

Table 6

Descriptive Statistics for Basic Psychological Needs

Descriptive Statistics for Basic Psychological Needs							
Variable	N	Min	Max	Mean	Per-item Mean	SD	Per-item SD
Autonomy	277	4	20	15.17	3.79	2.643	0.661
Competence	277	4	20	13.91	3.48	3.203	0.801
Relatedness	277	4	20	16.3	4.08	2.828	0.707

Among the three psychological needs, relatedness demonstrated highest satisfaction (Per-item M = 4.08, Per-item SD = 0.707), followed by autonomy (Per-item M = 3.79, Per-item SD = 0.661), and competence (Per-item M = 3.48, Per-item SD = 0.801). The relatedness finding reflects strong teacher-student relationships, while the lower competence satisfaction suggests potential intervention opportunities.

Within the relatedness dimension, “My English teacher is friendly and cordial with me” received the highest mean score (M = 4.29), while “My English teacher cares about my progress in spoken English” scored lowest (M = 3.93), suggesting that while general teacher-student relationships are strong, individualized attention to learning progress could be enhanced. For competence, “I feel I am capable of learning spoken English well” showed the highest score (M = 3.63), while “I feel a sense of accomplishment in my spoken English classes” scored lowest (M = 3.36), revealing a gap between students' perceived potential and their actual classroom success experiences. Autonomy satisfaction was characterized by higher scores on teacher-supported choice items compared to self-directed autonomy items, reflecting the importance of teacher facilitation in Chinese educational contexts.

Demographic Variations

Table 7

Independent Samples t-Test of Gender Differences

Independent Samples t-Test of Gender Differences in English Speaking Motivation Dimensions							
Variable	Gender	N	Mean	SD	t	Sig.	Cohen's d
Intrinsic Motivation	Male	125	15.23	4.60	-2.795	0.006**	0.34
	Female	152	16.74	4.34			
Identified Regulation	Male	125	17.62	3.79	-2.996	0.003**	0.36
	Female	152	18.96	3.61			
Introjected Regulation	Male	125	12.97	4.25	-3.080	0.002**	0.37
	Female	152	14.51	4.04			
External Regulation	Male	125	10.99	2.29	-2.634	0.009**	0.32
	Female	152	11.70	2.16			
Autonomy	Male	125	14.88	2.78	-1.638	0.102	0.20
	Female	152	15.40	2.51			
Competence	Male	125	13.56	3.27	-1.670	0.096	0.20
	Female	152	14.20	3.13			
Relatedness	Male	125	16.42	3.01	0.682	0.496	0.08
	Female	152	16.19	2.67			

Note: N = 277; Independent samples t-test (two-tailed); Effect size interpretation based on Cohen's d: 0.20 = small effect, 0.50 = medium effect, 0.80 = large effect.

*p < .05, **p < .01, ***p < .001

Significant gender differences emerged across all motivational regulation types, with female students consistently showing higher levels: intrinsic motivation ($t = -2.795$, $p = .006$, $d = 0.34$), identified regulation ($t = -2.996$, $p = .003$, $d = 0.36$), introjected regulation ($t = -3.080$, $p = .002$, $d = 0.37$), and external regulation ($t = -2.634$, $p = .009$, $d = 0.32$). No significant differences were found for basic psychological needs.

Table 8

ANOVA Results of English Proficiency Self-Rating

ANOVA Results of Differences in English Proficiency Self-Rating Across All Dimensions

Variable	Group	N	Mean	SD	F	Sig.	Post Hoc Comparison
Intrinsic Motivation	Low	90	13.02	4.542	52.178	<.001	1<2<3
	Medium	135	16.7	3.496			
	High	52	19.63	3.424			
Identified Regulation	Low	90	16.53	4.402	23.41	<.001	1<2<3
	Medium	135	18.73	2.915			
	High	52	20.54	2.967			
Introjected Regulation	Low	90	13.52	4.53	3.321	0.038	1<3,2<3
	Medium	135	13.49	3.789			
	High	52	15.15	4.439			
External Regulation	Low	90	11.23	2.436	0.639	0.529	/
	Medium	135	11.36	2.047			
	High	52	11.67	2.391			
Autonomy	Low	90	14.71	3.021	11.019	<.001	1<3,2<3
	Medium	135	14.9	2.322			
	High	52	16.65	2.213			
Competence	Low	90	12.01	3.462	43.983	<.001	1<2<3
	Medium	135	14.18	2.506			
	High	52	16.52	2.147			
Relatedness	Low	90	15.69	3.482	4.737	0.009	1<3
	Medium	135	16.36	2.532			
	High	52	17.17	1.958			

Note: Post hoc comparisons conducted using Tukey HSD;

1 = Low English Proficiency (Strongly Disagree/Disagree)

2 = Medium English Proficiency (Neutral)

3 = High English Proficiency (Agree/Strongly Agree)

Note: Low = Combined Strongly Disagree/Disagree responses; Medium = Neutral; High = Combined Agree/Strongly Agree responses. Post-hoc comparisons used Tukey HSD.

Self-perceived English proficiency showed significant relationships with motivational variables (Table 8). Students with higher self-rated proficiency reported stronger intrinsic motivation ($F = 52.178$, $p < .001$) and identified regulation ($F = 23.41$, $p < .001$), with clear upward trends across proficiency levels (Low < Medium < High). Similar patterns emerged for competence satisfaction ($F = 43.983$, $p < .001$) and autonomy ($F = 11.019$, $p < .001$). Notably, external regulation showed no significant differences across proficiency groups ($F = 0.639$, $p = .529$), suggesting that externally imposed motivations remain constant regardless of students' perceived English levels.

Correlational Patterns

Table 9

Correlation Matrix of Study Variables

Inter-factor Correlation Matrix for the Seven-Factor Solution								
Variable	Correlation	IM	IR	IJR	ER	A	C	R
IM		1						
IR		.677**	1					
IJR		.231**	.298**	1				
ER	Pearson's Correlation	0.067	.206**	.310**	1			
A		.414**	.542**	.217**	.334**	1		
C		.695**	.666**	.188**	0.11	.569**	1	
R		.319**	.414**	.146*	.340**	.623**	.389**	1

Note. $p < .05^*$, $p < .01^{**}$. Correlations are Pearson's r coefficients. Abbreviations: IM = Intrinsic Motivation; IR = Identified Regulation; IJR = Introjected Regulation; ER = External Regulation; A = Autonomy; C = Competence; R = Relatedness.

The correlation analysis revealed theoretically consistent patterns among study variables (Table 9). Within the SDT motivational continuum, intrinsic motivation demonstrated a strong positive correlation with identified regulation ($r = .677$, $p < .01$), supporting their conceptual proximity as autonomous forms of motivation. The relationship with introjected regulation was significantly weaker ($r = .231$, $p < .01$), while the correlation with external regulation was non-significant ($r = .067$, $p > .05$).

Regarding relationships between motivational orientations and basic psychological needs, distinctive patterns emerged. Intrinsic motivation showed particularly strong correlation with competence ($r = .695$, $p < .01$), suggesting that enjoyment of English speaking is closely tied to feelings of effectiveness and capability. Identified regulation demonstrated even stronger associations with psychological needs: autonomy ($r = .542$, $p < .01$), competence ($r = .666$, $p < .01$), and relatedness ($r = .414$, $p < .01$).

Inter-correlations among basic psychological needs were all positive and substantial, with the strongest relationship between autonomy and relatedness ($r = .623$, $p < .01$), suggesting that in Chinese vocational education, student autonomy is closely linked to supportive relationships, particularly with teachers.

The exceptionally strong correlation between intrinsic motivation and competence ($r = .695$) indicates that enjoyment of English speaking is closely tied to confidence in speaking abilities, suggesting that competence-building interventions may be particularly effective for enhancing intrinsic motivation.

The positive correlations between external regulation and both autonomy ($r = .334$) and relatedness ($r = .340$) challenge traditional SDT assumptions, possibly reflecting a cultural adaptation where external requirements are internalized as personally chosen paths and reinforced through social relationships in collectivistic educational settings. Effect sizes for correlations were interpreted following Cohen's guidelines: small ($r = .10$), medium ($r = .30$), and large ($r = .50$) effects.

Discussion

Motivational Patterns in Vocational Education

The finding that external regulation emerged as the highest motivational orientation (Per-item $M = 3.79$) reveals the predominant influence of institutional requirements and assessment pressures in Chinese vocational education contexts. This pattern reflects the examination-oriented nature of the educational system, where academic requirements, grades, and course completion mandates significantly drive student engagement with English speaking learning. According to Self-Determination Theory, external regulation represents the least autonomous form of motivation, driven by external contingencies such as rewards and punishments (Deci & Ryan, 2000).

Closely following external regulation, identified regulation demonstrated substantial levels (Per-item $M = 3.67$), indicating that students also recognize the instrumental value of English speaking skills for their academic and career trajectories. This finding suggests that while students are primarily motivated by external contingencies, they simultaneously internalize the personal importance and goal relevance of English speaking competency. Identified regulation represents a more autonomous form of extrinsic motivation where individuals engage in behaviors because of their perceived importance and value alignment with personal goals (Ryan & Deci, 2017).

The coexistence of high external regulation with substantial identified regulation represents a significant finding that challenges traditional Self-Determination Theory assumptions about motivational crowding-out effects. Deci and Ryan (2008) have suggested that external pressures can undermine intrinsic motivation, yet this study reveals that controlled and autonomous motivations can operate simultaneously in vocational education contexts. This pattern suggests that institutional requirements, when students can perceive their career relevance, may not necessarily diminish personal value recognition but can coexist with it.

Intrinsic motivation showed moderate levels (Per-item $M = 3.21$), indicating that while students experience some inherent satisfaction from English speaking activities, this autonomous form of motivation is less prominent than value-based and requirement-driven motivations. According to SDT, intrinsic motivation represents engagement in activities for inherent satisfaction and enjoyment (Deci & Ryan, 2000). The moderate levels suggest that while students do find some enjoyment in English speaking, this is secondary to more instrumental motivations.

Introjected regulation exhibited the lowest levels (Per-item $M = 2.76$), suggesting that students are relatively less driven by internal pressures such as guilt, shame, or ego-involvement. Introjected regulation reflects partially internalized motivation driven by internal pressures to maintain self-worth or avoid guilt (Ryan & Deci, 2017). This finding is positive from a psychological well-being perspective, as it indicates that students are not primarily motivated by negative affective drivers or excessive internalized pressure to meet others' expectations.

Psychological Needs in Chinese Educational Contexts

The highest satisfaction of relatedness, particularly in teacher-student relationships, reflects the hierarchical and relationship-oriented nature of Chinese educational cultures. The strong teacher-student connections may serve as a crucial foundation for motivational support in vocational settings. The integration of teacher autonomy-support with relatedness suggests that in Chinese contexts, perceived choice and social connectedness operate together rather than as separate constructs.

The relatively lower satisfaction of competence needs suggests that students may not be receiving sufficient success experiences or constructive feedback to develop confidence in their English speaking abilities. This finding has important implications for instructional design, suggesting the need for more scaffolded learning experiences and competence-building activities. The gap between perceived learning ability and classroom accomplishment experiences indicates potential for targeted interventions.

Gender and Proficiency Effects

The consistent gender differences across all motivational types, with females showing higher motivation levels, may reflect cultural expectations and socialization patterns that encourage female students to be more compliant and engaged with academic requirements. However, the absence of gender differences in psychological needs satisfaction suggests that the motivational differences may stem from differential responses to similar environmental conditions rather than different need satisfaction levels.

The strong positive relationship between self-perceived proficiency and autonomous motivation underscores the importance of competence development for fostering intrinsic interest in English speaking learning. The finding that external motivation remains constant across proficiency levels suggests that institutional pressures operate independently of individual competence perceptions, highlighting the systematic nature of external regulation in Chinese educational contexts.

Implications for Educational Practice

The findings suggest several specific implications for English speaking instruction in Chinese vocational contexts:

Competence-Building Focus: Given the lowest satisfaction of competence needs and its strong correlation with intrinsic motivation, instructors should implement: (a) scaffolded speaking tasks with clear success criteria, (b) regular formative feedback focusing on progress rather than deficits, and (c) frequent opportunities for students to experience success in manageable speaking challenges.

Leveraging Relatedness: The high levels of relatedness satisfaction should be maintained and leveraged through: (a) peer collaboration activities that build on strong social connections, (b) teacher-mediated autonomy support that respects hierarchical relationships, and (c) group-based speaking projects that foster collective achievement.

Supporting Value Internalization: The prominence of identified regulation suggests opportunities for: (a) explicit connections between English skills and career advancement in

urban transportation, (b) authentic workplace communication scenarios, and (c) industry professional guest speakers to reinforce instrumental value.

Gender-Responsive Approaches: The consistent gender differences suggest the need for differentiated strategies that account for varying motivational patterns while ensuring equitable learning opportunities for all students.

Limitations and Future Research

This study has several limitations that should be acknowledged. First, the cross-sectional design provides only a snapshot of motivational patterns at a single time point, limiting our understanding of how motivation develops and changes over time. The single-institution sample from one vocational college in Sichuan province may limit the generalizability of findings to other Chinese vocational colleges or different geographical regions, as institutional cultures and regional educational policies may influence motivational patterns.

The study's reliance on self-report measures introduces potential biases, including social desirability responding and subjective interpretation of scale items. Additionally, the use of a single data collection method (questionnaire) raises concerns about common method variance, which may artificially inflate correlations between variables measured from the same source.

The factor analysis revealed cultural adaptations of SDT constructs, particularly the integration of autonomy and competence needs in the six-factor solution, which challenges the universal applicability of Western-derived motivational frameworks. This finding warrants further investigation to understand how cultural contexts shape the manifestation and measurement of psychological constructs.

Future research directions should address these limitations through several approaches. Longitudinal designs are needed to examine how motivational orientations and psychological needs satisfaction evolve throughout students' academic progression and transition to the workforce. Multi-site studies across different vocational colleges and regions would enhance the generalizability of findings and allow for examination of contextual factors that influence motivation.

Methodological diversification should include objective measures of English speaking proficiency, classroom observations, and teacher interviews to triangulate self-report data and reduce common method bias. Confirmatory factor analysis (CFA) or Structural Equation Modeling (SEM) approaches should be employed to validate the factor structure and test theoretical models of relationships between motivational orientations and outcomes. Exploratory Structural Equation Modeling (ESEM) could provide more nuanced understanding of the complex relationships between SDT constructs in Chinese educational contexts.

Mixed-methods research incorporating qualitative interviews would provide deeper insights into the cultural mechanisms underlying the observed motivational patterns and help explain the integration of autonomy and competence constructs. Future studies should also investigate the effectiveness of interventions designed to support psychological needs

satisfaction and promote autonomous motivation in Chinese vocational English speaking instruction.

Finally, cross-cultural comparative studies between Chinese vocational students and their counterparts in other cultural contexts would illuminate the cultural specificity versus universality of SDT constructs and inform the development of culturally responsive motivational theories and pedagogical approaches.

Conclusion

This study provides empirical insights into the motivational landscape of English speaking learning among urban transportation major students in Chinese vocational colleges. The findings reveal a complex motivational profile characterized by high external regulation, substantial identified regulation, and moderate intrinsic motivation, alongside strong relatedness satisfaction but lower competence satisfaction.

The results contribute to understanding motivation in Chinese vocational education contexts and provide a foundation for developing more effective and culturally appropriate English speaking instruction approaches. The strong correlations between competence satisfaction and autonomous motivation, combined with the career-oriented nature of identified regulation, suggest that interventions focusing on skill-building within meaningful professional contexts may be particularly effective for this population.

The study also highlights the importance of teacher-student relationships in Chinese educational contexts and suggests that autonomy support may operate differently in collectivistic cultures, where social connections and individual choice are more integrated than in individualistic contexts.

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