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THE SIGNALING VALUE OF FOREIGN LANGUAGE PROFICIENCY: A MEDIATION ANALYSIS OF LABOR MARKET OUTCOMES IN SHENZHEN

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Abstract

Drawing on the economics of language, which conceptualizes language skills as a form of human capital, this study investigates the mechanisms through which foreign language proficiency (FLP) translates into labor market advantages in China's most globalized metropolis. While prior research has confirmed a positive correlation between FLP and earnings, the underlying pathways remain underexplored. Using survey data from 286 white-collar workers in Shenzhen, this study moves beyond bivariate correlation to test whether work-related foreign language use frequency mediates the FLP–income and FLP–promotion relationships. Results from path analysis reveal a theoretically intriguing pattern: for monthly income, the indirect effect via work-related usage is negligible (4.4% of total effect) and non-significant (Sobel $z = 0.79$, $p > 0.05$); for promotion, although partial mediation is observed (29.5% of total effect), the direct effect remains dominant. These findings challenge the intuitive “instrumental” assumption that FLP generates returns primarily through daily application, and instead foreground the signaling function of high-level language competence – employers reward FLP not merely as a tool for operational tasks, but as a credible signal of broader, hard-to-measure qualities such as cognitive agility, cultural adaptability, and future learning potential. This study contributes to language economics by disentangling two competing pathways, with implications for individual human capital investment, corporate talent management, and urban language policy.

Keywords: *Foreign language proficiency, Signaling theory, Human capital, Language economics, Mediation analysis, Shenzhen*

Introduction

The deepening of economic globalization has fundamentally reshaped labor markets, intensifying the demand for competencies that facilitate cross-border communication and collaboration (Grin, 2003; Graddol, 2006). Within this context, foreign language proficiency (FLP) has evolved from a primarily educational or cultural asset to a potentially critical factor for economic mobility, productivity, and career advancement. The paradigm of “language economics” provides a robust theoretical lens for this investigation, treating language skills as a form of human capital that requires investment and yields returns in the labor market, akin to education or training (Marschak, 1965; Chiswick & Miller, 2003, 2007).

Empirical studies, particularly in immigrant-receiving countries, have consistently documented a “wage premium” associated with proficiency in the host country’s dominant language (Dustmann & Fabbri, 2003; Dustmann & van Soest, 2002). However, research on the economic value of foreign language skills in major non-Western, rapidly developing economies remains less extensive. China presents a compelling case. Following decades of reform and opening-up, its leading metropolises – such as Shenzhen, Shanghai, and Beijing – have transformed into deeply integrated nodes of the global economy, characterized by dense concentrations of foreign trade, high-tech innovation, and multinational enterprise activity (Yeh & Chen, 2020). In these cities, English and other foreign languages serve as crucial tools for accessing global markets, knowledge, and networks.

Shenzhen provides an especially revealing context for testing the mechanisms of language returns. As China’s first Special Economic Zone, it has undergone a rapid transformation from a fishing village into a globally recognized technology and innovation hub, often described as “China’s Silicon Valley.” This development has been driven by a strategic combination of export-oriented industrialization, foreign capital inflows, and a vibrant digital economy – all of which have intensified the demand for internationally oriented human capital. At the same time, Shenzhen is characterized by a highly competitive labor market, where employers face

acute information asymmetries in identifying high-potential talent. This dual condition – high demand for global skills paired with intense competition in talent screening – makes Shenzhen an ideal setting for examining how language proficiency functions as a signal in the labor market, beyond its obvious instrumental value for communication. While prior econometric studies have documented positive returns to English proficiency in China’s urban labor markets (Liu & Zhang, 2015, 2016; Wang et al., 2017), these studies have focused on aggregate correlations and have not distinguished between the productive and signaling functions of language skills. Moreover, the specific dynamics of high-skilled workers in China’s most internationalized cities remain underexplored. This study addresses these gaps by situating the analysis in Shenzhen’s distinctive socioeconomic landscape and testing the relative explanatory power of instrumental versus signaling pathways.

Crucially, prior studies have largely treated FLP as a productive asset whose value is realized through its actual application in work tasks – what may be termed the “instrumental view.” However, an alternative perspective – signaling theory (Spence, 1973)—suggests that FLP may yield returns merely by certifying unobserved abilities, regardless of its daily usage frequency. The relative explanatory power of these two pathways remains untested in the Chinese metropolitan context. This study aims to disentangle these mechanisms by explicitly modeling work-related foreign language use frequency as a mediator between FLP and two key labor market outcomes: monthly income and promotion level.

We ask: In Shenzhen’s internationally oriented labor market, does FLP generate economic returns primarily through instrumental channels (i.e., by enabling more frequent cross-border communication at work), or through signaling channels (i.e., by serving as a proxy for broader competencies that are valued independent of actual usage)? By addressing this question, we contribute to the literature on language economics by testing the mechanisms underlying the language premium – a dimension that remains largely unexplored in existing research. The findings

also carry pragmatic implications for individuals making human capital investment decisions, for companies competing for global talent, and for urban policymakers aiming to enhance their city's international competitiveness.

Literature review

The Economics of Language: Foundational Perspectives

The systematic study of language as an economic phenomenon emerged in the early 1960s, when Marschak (1965) first proposed that language possesses economic attributes comparable to other forms of human capital. This foundational insight laid the groundwork for what subsequently became known as the “economics of language”—a field that applies economic tools and techniques to analyze the determinants and consequences of language competence (Bellante & Kogut, 1998; Grin, 2003).

Early research in this tradition focused primarily on immigrant populations in Western developed countries. Carliner (1981) demonstrated that income gaps among different language groups in Canada were closely linked to the languages people used and their proficiency levels. In the United States, McManus and Gould (1983) found that English proficiency was a crucial determinant of earnings among Hispanic workers, with positive effects also observed for native-born Americans. These studies established a consistent empirical pattern: language skills, particularly proficiency in the dominant language of the host country, are positively associated with labor market outcomes (Chiswick & Miller, 2007; Kanas & Tubergen, 2014).

Subsequent research expanded the geographical scope of inquiry. Angrist and Lavy (1997) found that French competence positively affected the wages of Moroccans. In the Greater Mekong Subregion, Paul (2008) documented the multiple dimensions through which multilingual communication facilitates trade, water resource management, and education. More recently, Hussain and Mukhopadhyay (2023) confirmed that English competence in India yields significant economic returns. Across these diverse contexts, a consensus has emerged:

an individual's language competence affects employment and income, particularly in linguistically diverse societies where language skills mediate access to economic opportunities.

Language Premium in the Chinese Context

Chinese scholars have embarked on economic analyses of language with distinctive local characteristics. Given China's vast territory and diverse dialectal landscape, existing studies have primarily focused on the impact of dialect usage on wage income, economic growth, and identity recognition in Chinese urban labor markets (Liu et al., 2015; Hou & Chen, 2024). This includes the impact of the Shanghai dialect on the income of migrant workers in Shanghai (Cheng et al., 2016) and how Guangzhou's migrant population views the relationship between Cantonese and local belongingness (Liang, 2014).

In terms of foreign language research, Liu and Zhang (2015) employed propensity score matching to estimate the economic return rate of English competence among Chinese urban residents, concluding that overall English competence yields high economic returns in China. Liu (2014) further argued that high language proficiency can reduce transaction and information costs during job searches, bolster bargaining power in employment contract negotiations, and thereby increase the likelihood of obtaining higher payment. Jia and Yue (2019) demonstrated that English proficiency significantly boosts starting salaries for Chinese university graduates – those with higher English competence tend to earn higher starting salaries. Wang, Smyth, and Cheng (2017) provided comprehensive evidence of the economic returns to English proficiency in the broader Chinese urban labor market. Additionally, demand for other languages, such as Japanese, is also on the rise (Cai & Huang, 2024).

However, a critical gap persists in this literature. The specific impact and extent of foreign languages on China's labor market remain insufficiently understood, and quantitative research examining the mechanisms of this impact is scarce. Most existing studies have focused on establishing the existence of a language premium rather than

disentangling how that premium is generated. This study addresses this gap by distinguishing between two competing pathways through which FLP may influence labor market outcomes: the instrumental pathway and the signaling pathway.

Signaling Theory and Labor Market Credentials

Signaling theory, originally formulated by Spence (1973), offers a powerful framework for understanding how educational credentials and other observable attributes function in labor markets. The core insight of signaling theory is that employers face information asymmetries: they cannot directly observe many qualities relevant to job performance – such as cognitive ability, perseverance, cultural adaptability, and learning potential – at the point of hiring or promotion. To resolve this uncertainty, employers use observable attributes as proxies or “signals” for these unobservable qualities.

In the context of language proficiency, signaling theory suggests that FLP may function as a credible signal of broader worker qualities. Acquiring functional or fluent proficiency in a foreign language requires substantial investment of time, effort, and often financial resources. This investment may correlate with traits such as cognitive ability (learning a language requires significant intellectual engagement), perseverance (sustained effort over years), cultural openness (willingness to engage with other cultures), and future learning potential (demonstrated ability to acquire complex new skills). Employers, especially when screening candidates for roles with an international dimension, may interpret high FLP as a proxy for these desirable attributes (Grin, 2003).

Crucially, the signaling perspective implies that the economic value of FLP may be realized even without frequent daily usage. The mere possession of a high-level language credential – a certified proficiency – communicates something about the individual’s overall capability that transcends the specific skill itself. This stands in contrast to the instrumental perspective, which would predict that economic returns to FLP are contingent upon actual application in productive tasks.

The Instrumental Pathway:

Human Capital and Productivity

The human capital perspective, as articulated by Becker (1993), offers an alternative account of the relationship between language skills and labor market outcomes. From this viewpoint, FLP is a productive asset that directly enhances a worker’s productivity in tasks involving international interaction. Proficiency reduces communication costs and errors, facilitates quicker access to and comprehension of foreign-language information (e.g., technical documentation, market reports, academic research), and enables direct, nuanced engagement with overseas clients, partners, and colleagues.

In sectors like international trade, finance, technology R&D, and professional services – all well-represented in Shenzhen – these productivity gains are directly valuable to employers, who may compensate them through higher wages. The instrumental perspective therefore predicts that the economic value of FLP is realized through its application: it is only when employees actually use foreign languages in their daily work that the productivity gains materialize. Under this view, work-related foreign language use frequency should serve as a significant mediator between FLP and labor market outcomes.

The Present Study: Bridging the Gap

The above review reveals a significant gap in the language economics literature, particularly in the Chinese metropolitan context. While numerous studies have confirmed the existence of a language premium, few have systematically distinguished between the productivity-enhancing effect (realized through actual work communication) and the signaling effect (independent of actual usage). This distinction is critical for both theory and policy. If the premium is purely instrumental, training programs should focus on task-specific communication skills, and employers should prioritize candidates with demonstrated work experience using foreign languages. If it is primarily signaling-based, then certification and advanced proficiency – even without extensive practical application – deserve greater emphasis.

This study addresses this gap by explicitly modeling work-related FL use frequency as

a mediator between FLP and two key labor market outcomes: monthly income and promotion level. By testing the relative explanatory power of the instrumental and signaling pathways, we contribute to a more nuanced understanding of how language capital generates economic returns in the rapidly globalizing context of Chinese metropolises.

Theoretical Framework and Hypotheses

Our analysis is grounded in two interconnected theoretical pillars – human capital theory and signaling theory – as applied within the economics of language. These theories offer competing yet complementary predictions about the mechanisms through which FLP might influence labor market outcomes.

The Signaling Hypothesis

Drawing on Spence's (1973) signaling framework, we posit that FLP serves as a credible signal of unobservable worker qualities that employers value. High-level language proficiency requires sustained investment and correlates with cognitive ability, cultural openness, perseverance, and future learning potential. In Shenzhen's competitive, globally oriented labor market, employers may interpret FLP as a proxy for these attributes, leading to better job offers, higher compensation, and faster promotion tracks. The signaling hypothesis implies that the economic value of FLP is realized through its symbolic function – independent of how frequently the skill is actually deployed in work tasks.

The Instrumental Hypothesis

Drawing on human capital theory, we also posit that FLP enhances worker productivity in internationally oriented tasks. Proficiency enables effective cross-border communication, reduces transaction costs, and facilitates access to foreign-language information. In sectors well-represented in Shenzhen – international trade, finance, technology R&D, and professional services – these productivity gains are directly valuable to employers. The instrumental hypothesis implies that the economic value of FLP is realized through its application: workers who use foreign languages more frequently on the job derive greater productivity benefits and,

consequently, higher earnings and faster promotion.

Hypotheses

Based on the above theoretical considerations, we derive the following hypotheses:

H1: Foreign language proficiency is positively correlated with monthly income among the labor force in Shenzhen.

H2: Foreign language proficiency is positively correlated with job promotion level among the labor force in Shenzhen.

H3: Work-related foreign language use frequency mediates the relationship between FLP and monthly income.

H4: Work-related foreign language use frequency mediates the relationship between FLP and promotion level.

If H3 and H4 are supported (significant indirect effects), the instrumental pathway is validated. If the direct effects (FLP → outcome, controlling for usage) remain large and significant, the signaling pathway is also substantiated. The relative magnitude of direct versus indirect effects will indicate which pathway dominates.

Methods

Research Design and Sample

This study employed a cross-sectional survey design. Data were collected in December 2022 via a paper-based questionnaire distributed at workplaces and professional networks within Shenzhen. We targeted industries where foreign language use was anticipated to be relevant: technology enterprises, foreign trade companies, professional service firms (e.g., law, finance, consulting), and the IT sector. A convenience sampling method was used, with screening to primarily include white-collar workers (e.g., professionals, managers, engineers, technicians) who had completed tertiary education. This focus is justified as this cohort is most directly engaged in the knowledge-intensive, internationally connected work where language skills are theorized to have economic value.

The final sample comprised 286 valid responses. While sufficient for conducting preliminary correlational and path analyses, we explicitly acknowledge that this constitutes a convenience sample. It is not representative of Shenzhen's entire diverse labor force

of over 10 million, which includes vast numbers in manufacturing, logistics, and domestic services. This limitation is discussed in detail later. All participants provided written informed consent, and the study protocol received ethical approval from the Institutional Review Board of Chongqing Sanxia University of Science and Technology (Ref: 2022-SFL-LLPZ-11003).

Measures

Foreign Language Proficiency (FLP): The key independent variable was measured by a single item: “What is your current level of proficiency in your first foreign language (the one you use most or are most confident in)?” Responses were on a 4-point ordinal scale: 1 = “Cannot use at all”, 2 = “Can barely speak a few words”, 3 = “Can have daily conversations”, 4 = “Can use fluently.” Self-assessed language proficiency, while subjective, is widely used in major social surveys and has been shown to correlate reasonably well with objective test scores (Blöndal et al., 2020).

Monthly Income (INC): Respondents reported their average monthly pre-tax income in RMB. For analysis, responses were categorized into three ordered groups reflecting local income distribution: 1 = “10,000 yuan or less”, 2 = “10,001–20,000 yuan”, 3 = “20,001 yuan or more”.

Promotion Level (PROM): Career advancement was approximated by the respondent’s current job title/position, coded as an ordinal variable: 1 = “Ordinary staff/non-managerial”, 2 = “Middle-level management/team leader”, 3 = “Senior-level management/department head or above”.

Foreign Language Use at Work (FL_Use): To serve as the mediator, respondents indicated the frequency of using their FLP in 10 common professional scenarios (e.g., “reading work emails,” “participating in international conference calls,” “writing reports”) on a 5-point scale from “Never” to “Very often.” An average composite score was calculated. Internal consistency was high (Cronbach’s $\alpha = 0.89$).

Control/Demographic Variables: Data on gender, age, highest education level, and industry sector were collected for sample description and control purposes.

Data Analysis

Data were analyzed using SPSS (Version 26). Descriptive statistics characterized the sample and FLP use patterns. Given the ordinal nature of the key variables (FLP, INC, PROM), Spearman’s rank-order correlation coefficient (ρ) was employed to test the monotonic relationships posited in H1 and H2. A significance level of $p < .05$ (two-tailed) was applied.

To test the mediation hypotheses (H3 and H4), path analysis based on the correlation matrix was conducted following the procedures recommended by Wen and Ye (2014). Standardized path coefficients were derived, and the significance of indirect effects was assessed using the Sobel test (Sobel, 1982). While full raw-data bootstrapping was not feasible due to data accessibility constraints, the mathematical consistency between the correlation-matrix approach and raw-data regression ensures the reliability of the estimated path coefficients. Future research with full access to raw data should replicate these findings using bootstrapping techniques (e.g., PROCESS Model 4 with 5,000 resamples; Hayes, 2017) to provide more robust confidence intervals for the indirect effects. This limitation is addressed in the discussion section.

Potential common method bias (CMB) was addressed through both procedural and statistical considerations. Procedurally, the questionnaire was designed with temporal and psychological separation of measures: the independent variable (FLP) was placed in the demographic section, the mediator (FL_Use) in a separate section on work behaviors, and the outcome variables (income and promotion) in a later section on career outcomes. Additionally, different scale formats (4-point, 5-point, and 3-point) were used across sections to reduce consistency artifacts, and respondent anonymity was guaranteed to minimize social desirability bias (Podsakoff et al., 2003).

Results

Descriptive Statistics

The sample consisted of 61.5% males and 38.5% females, with an average age of 32.4 years ($SD = 6.7$). Educational attainment was high: 32.3% held a postgraduate degree and 47.4% held a bachelor’s degree. Regard-

ing income, 18.2% earned above 20,000 RMB/month, 39.5% earned 10,000–20,000 RMB/month, and 42.3% earned 10,000 RMB/month or less. In terms of positions, 15.7% were in senior management, 33.9% in middle management, and 50.3% were ordinary staff.

English was the dominant first foreign language (89.2%), followed distantly by Japanese (2.5%) and French (4.2%). On the 4-point proficiency scale, 24.1% reported being able to use their first foreign language “fluently,” 43.0% for “daily conversation,” 22.0%

“barely speak a few words,” and 10.8% “cannot use at all.” The average score for foreign language use at work was 3.12 (SD = 0.89) on the 5-point scale, indicating a moderate level of practical application. The most frequent uses were introducing one’s company/work (M = 3.88), reading instructions/documents (M = 3.79), and participating in training/lectures in a foreign language (M = 3.28).

Correlation Analysis

The results of the Spearman correlation analyses are presented in Table 1.

Table 1. *Spearman’s Rank Correlations Between Key Variables*

Variable	1. FLP	2. Income	3. Promotion	4. FL_Use
1. Foreign Lang. Prof. (FLP)	–			
2. Monthly Income	.70**	–		
3. Promotion Level	.77**	.65**	–	
4. FL Use at Work	.81**	.58**	.72**	–

Note. N = 286. ** $p < .01$ (two-tailed). FLP: 1–4 scale. Income: 1=<10k, 2=10–20k, 3=>20k RMB. Promotion: 1=Staff, 2=Middle, 3=Senior. FL Use: 1–5 composite score

As shown in Table 1, foreign language proficiency demonstrated a strong, statistically significant positive correlation with monthly income ($\rho = 0.70$, $p < .01$). This finding supports H1. Similarly, a very strong positive correlation was found between FLP and promotion level ($\rho = 0.77$, $p < .01$). This finding supports H2. As expected, income and promotion were also positively correlated ($\rho = 0.65$). Furthermore, the self-reported frequency of FLP use at work showed very strong correlations with FLP itself ($\rho = 0.81$) and strong correlations with both income ($\rho = 0.58$) and promotion ($\rho = 0.72$), lending contextual validity

to the proficiency measure and suggesting that actual use may mediate or reinforce the value of the skill – a possibility tested directly in the following section.

Mediation Analysis

While the correlation results confirm the existence of a language premium, they do not reveal how FLP translates into these economic returns. To test the instrumental pathway (H3 and H4), we conducted a path analysis with work-related FL use frequency as the mediator. Standardized path coefficients are presented in Table 2.

Table 2. *Standardized Path Coefficients and Sobel Test for Mediation Models*

Path	Outcome: Monthly Income (INC)	Outcome: Promotion Level (PROM)
Total Effect (c)	0.70**	0.77**
FLP → FL_Use (a)	0.81**	0.81**
FL_Use → Outcome (b)	0.038	0.280**
Direct Effect (c')	0.669**	0.543**
Indirect Effect (a × b)	0.031	0.227

Path	Outcome: Monthly Income (INC)	Outcome: Promotion Level (PROM)
Proportion Mediated	4.4%	29.5%
Sobel z	0.79	6.58**

*Note: N = 286. **p < .01 (two-tailed). Sobel test (Sobel, 1982) was used to examine the significance of the indirect effects*

Mediation Effect on Monthly Income (H3)

For the income model, the total effect of FLP on monthly income was 0.70. After controlling for the mediator (work-related FL use frequency), the direct effect (c') remained substantial at 0.669 and remained statistically significant. In contrast, the indirect effect transmitted through work-related FL use frequency was merely 0.031, accounting for only 4.4% of the total effect. The Sobel test yielded $z = 0.79$ ($p > 0.05$), indicating that this indirect effect did not reach statistical significance.

Thus, H3 is not supported. The income premium associated with FLP is driven almost entirely by its direct effect, rather than indirectly through the frequency of using foreign languages at work. Individuals with higher FLP earn more not primarily because they “use foreign languages more frequently on the job,” but rather because the proficiency itself commands a market premium independent of actual usage occasions.

Mediation Effect on Promotion Level (H4)

For the promotion model, the total effect of FLP on promotion was 0.77. The direct effect (c') was 0.543, while the indirect effect was 0.227, accounting for 29.5% of the total effect. The Sobel test showed $z = 6.58$ ($p < 0.01$), indicating that this indirect effect was statistically significant.

Thus, H4 is partially supported. Work-related FL use frequency serves as a significant partial mediator between FLP and career advancement. However, the direct effect remains the dominant channel, accounting for over 70% of the total influence.

Summary: Signaling Dominates

Taken together, the two mediation models yield a theoretically intriguing finding

that challenges the intuitive instrumental assumption: work-related foreign language use frequency is not the central channel through which FLP generates economic returns. For monthly income, the mediating role was negligible and non-significant; for promotion, although significant partial mediation was observed, the direct effect still accounted for over 70% of the total influence. This pattern strongly suggests that the signaling function of FLP – its role as a credible indicator of unobserved competencies – outweighs its instrumental utility in Shenzhen’s high-skilled labor market.

Discussion

Theoretical Implications: Signaling vs. Instrumental Pathways

The findings of this study offer several theoretical contributions to the economics of language.

First, the mediation analysis moves beyond mere correlation to uncover the mechanism through which FLP translates into economic advantages. The non-significant indirect effect for income and the dominant direct effect for promotion (70%+ of total influence) indicate that, in Shenzhen’s knowledge-intensive, internationally oriented labor market, employers reward FLP not primarily because it is frequently deployed in daily tasks, but rather because high-level language competence serves as a credible signal of broader, hard-to-measure attributes – cognitive agility, cultural adaptability, perseverance, and future learning potential (Spence, 1973; Grin, 2003).

Second, this finding challenges the intuitive “instrumental” assumption embedded in much of the language economics literature – namely, that FLP generates returns through the productivity gains derived from its actual application. While this instrumental pathway undoubtedly operates (as evi-

denced by the significant partial mediation for promotion), the signaling pathway is considerably stronger. In other words, the economic value of FLP in this context is more “symbolic” than “instrumental”: possessing a high level of a foreign language signals a global-ready professional identity, which commands a premium independent of actual usage frequency.

Third, this study extends prior research on language premiums in China (Wang, Smyth, & Cheng, 2017; Liu & Zhang, 2016) by specifying a key boundary condition: the return to FLP does not require daily application; it operates through the mere perception of capability. This distinction carries important implications for human capital theory: language skills may function as “credential capital” rather than solely “productive capital” in certain labor market contexts.

Fourth, the differential patterns observed between income and promotion are also noteworthy. While the direct signaling effect dominates for both outcomes, the indirect instrumental pathway is stronger for promotion than for income. This may reflect different evaluation criteria: compensation decisions may rely more heavily on observable credentials (signaling), while promotion decisions may incorporate both credentials and demonstrated performance in work-related language tasks.

Comparison with Prior Research

Our findings resonate with and extend prior research on language premiums in China in several ways. First, the strong positive correlations between FLP and income ($\rho = 0.70$) and between FLP and promotion ($\rho = 0.77$) are consistent with the broader literature documenting language premiums (Wang et al., 2017; Liu & Zhang, 2015; Jia & Yue, 2019). However, our mediation analysis adds a critical layer of nuance that previous studies have not captured: the premium operates primarily through signaling rather than instrumental mechanisms.

Second, our findings align with Grin’s (2003) theoretical assertion that language skills have both productive and symbolic value, but we go further by quantifying the relative contribution of each pathway. The finding that the direct signaling effect accounts

for over 95% of the income premium and over 70% of the promotion premium provides empirical validation for the theoretical distinction that Grin and others have drawn but have rarely tested directly.

Third, our findings contrast with studies in immigrant-receiving contexts (Chiswick & Miller, 2007; Dustmann & Fabbri, 2003), where the instrumental pathway – enabling daily communication in the host country’s dominant language – typically plays a central role. In the Chinese metropolitan context, where foreign language is a “second” rather than “first” language of daily life, the signaling function appears to be more prominent. This contextual difference underscores the importance of geographical and cultural specificity in the economics of language.

Contextual Background: Shenzhen’s Language Environment

These findings should be interpreted against the backdrop of Shenzhen’s distinctive sociolinguistic context. As an emerging immigrant city established as China’s first Special Economic Zone, Shenzhen has evolved into a highly influential, modern, and international metropolis, with its rapid development famously termed “Shenzhen Speed.” In Shenzhen, various dialects from all over the country have their own soil for survival, though primarily within localized community circles. Nevertheless, many public service institutions, professionals, and businesspersons can provide services in English, and a significant number of young people speak relatively fluent English.

According to the Activity Plan of Speaking Foreign Languages in Shenzhen since 2010, Shenzhen has launched various activities, such as the “Millions of Citizens Speak Foreign Languages” campaign to increase the prevalence of foreign language use in public services and enhance citizens’ foreign language competence. The popularity of foreign languages, especially English, in Shenzhen is very high, creating a strong atmosphere of English learning. Since 2014, events like English Speaking Contests in the Window Industry and Corporate have been organized, eventually becoming hallmark features of the “Shenzhen Citizens Speak Foreign Languages” initiative, sparking

city-wide enthusiasm for English (Li & Hu, 2016). These activities have driven more citizens to speak foreign languages, attach importance to them, love foreign languages, and feel the charm of globalization, thereby enhancing the city's international ambiance.

This context likely amplifies the signaling effect documented in our study: in a city where foreign language competence is widely valued but not universally deployed in daily work, possessing high-level competence functions as an especially potent differentiator of professional excellence. The fact that Shenzhen's labor market is highly competitive and internationally oriented means that employers are particularly attentive to signals that distinguish high-potential candidates from the broader talent pool.

Practical Implications

The implications of this study are multi-level, spanning individual professionals, corporate talent management, and urban policy.

For individual professionals, the findings underscore that investing in advanced foreign language proficiency yields tangible economic returns – even if their current job does not require frequent language use. The signaling value of high-level competence can enhance both income and promotion prospects, independent of whether the skill is deployed daily. This suggests that individuals should pursue FLP not merely as a task-specific tool but as a long-term credential that certifies broader professional capabilities. For young professionals in particular, our results suggest that aiming for “fluent” or “professional” level competence (rather than stopping at “daily conversation” level) is where the largest marginal returns are concentrated.

For corporations operating in Shenzhen and similar metropolises, the findings highlight the importance of recognizing FLP as a general indicator of high-potential talent, rather than solely as a job-specific skill requirement. Talent management strategies should integrate FLP into recruitment, compensation, and leadership development frameworks, valuing advanced proficiency as a signal of global readiness and cognitive excellence. Recruitment processes should consider FLP as a screening criterion for roles that require international engagement,

but also for general managerial positions where cognitive agility and cultural adaptability are valuable. Compensation structures should reflect the market premium associated with advanced FLP, and leadership development programs should encourage and support the acquisition of high-level language competence among high-potential employees.

For city policymakers in Shenzhen and aspiring international hubs, the data reinforce the connection between a population's language capacity and the city's economic vitality. However, our findings suggest that policy emphasis should extend beyond promoting everyday usage (e.g., public signage, service industry English) to fostering advanced-level competence among the professional workforce. Strategic public investment in high-level language education, such as postgraduate programs in specialized foreign languages, business English for executives, and cross-cultural communication training, may yield higher economic returns than broad-based, basic-level language campaigns. This aligns with Shenzhen's existing initiatives while suggesting a shift in emphasis toward quality over quantity.

For educators and curriculum designers, the dominance of the signaling pathway implies that language education should not only focus on practical communication skills but also on certifying proficiency through recognized credentials (e.g., international testing standards). The “fluent” and “professional” levels – where the largest economic returns concentrate – should be the priority targets for advanced language programs, whereas basic levels (keyword and daily conversation) yield limited market premiums. Thus, training systems should prioritize ladderized pathways that push learners beyond the conversational threshold into professional and expert tiers. This argues for differentiated curricula that recognize the diverse goals and trajectories of language learners rather than a one-size-fits-all approach.

To operationalize this differentiated vision, Table 3 proposes a six-level classification of foreign language competence, ranging from basic keyword recognition to near-native expert proficiency. This framework is designed to align specific competence levels

with distinct target populations and occupational requirements, providing a practical

reference for curriculum design, workforce development, and language policy planning.

Table 3. *Proposed Classification of Foreign Language Competence Levels*

Level	Target Population	Competence Description
Keyword level	General public, freelancers, and citizens requiring basic foreign language popularization	Ability to recognize and pronounce common words (e.g., “stadium,” “car,” “police”) for basic survival and orientation purposes.
Daily conversation level	Ordinary public social personnel, grassroots workers, and community service providers	Ability to handle routine daily conversations, such as greetings, shopping, dining, and asking for directions.
Specific conversation level	Workers in specific jobs or industries (e.g., restaurants, hotels, stations, post offices, banks, and hospitals)	Mastery of industry-specific terminology and phrases to provide professional services in the target language.
Fluent level	Intermediate language professionals in the field of public affairs, mainly foreign-related institutions (e.g., customs officers, international airline cabin crew)	Ability to use the language proficiently and fluently in public service settings, providing effective communication and assistance to foreign nationals.
Professional level	Senior language professionals in the field of professional affairs, such as diplomats, international lawyers, and academic researchers	Ability to use both oral and written language for professional academic exchanges, to deliver prepared and impromptu speeches on international occasions, and to engage in timely professional feedback.
Expert level	Expert language professionals in this field or industry, including conference interpreters, senior translators, and language policy advisors	Ability to reach or approximate the level of educated native speakers of the target language, with full command of nuances, registers, and cultural references.

Limitations and Future Research Directions

While this study offers valuable insights, several limitations must be candidly acknowledged, as they define the scope of our conclusions and chart a path for more definitive research.

First, regarding external validity and sampling, our convenience sample of 286 white-collar workers from specific industries, while informative, cannot be generalized to all of Shenzhen’s vast and stratified labor market. The observed strong correlations may be

most applicable to the professional, technology, and trade sectors. Future research must employ larger, stratified random sampling frameworks that encompass a wider range of occupations, educational backgrounds, and industries within Shenzhen and across multiple Chinese metropolises (e.g., Beijing, Shanghai, Guangzhou) to test the robustness and variability of the language premium.

Second, regarding internal validity and causal inference, the cross-sectional design prohibits causal claims. Although theory posits that FLP leads to better outcomes,

alternative explanations are plausible, including reverse causality (higher income affording more language learning opportunities) and confounding by unobserved “global competence” factors. Furthermore, common method bias (CMB) cannot be entirely ruled out, as all key variables were self-reported by the same respondents. However, the non-significant indirect effect in the income mediation model (4.4% of total effect, Sobel $z = 0.79$, $p > .05$) suggests that CMB is unlikely to be the primary driver of our core findings; if CMB had been severe, it would have uniformly inflated correlations across all pathways, yet the indirect pathway remains negligible while the direct signaling effect dominates. Nevertheless, future longitudinal studies or quasi-experimental designs are essential to establish causality, and objective measures should be incorporated to further mitigate CMB.

Third, regarding measurement and operationalization, self-reported proficiency and single-item measurement have inherent biases. Future studies should incorporate objective language assessments or multi-item scales to capture distinct skill modalities (listening, speaking, reading, writing). Similarly, measuring “promotion” solely by current title is crude; future work could use detailed career history data tracking the timing and frequency of promotions. Additionally, the mediation analysis was based on correlation matrix estimation rather than raw data modeling due to accessibility constraints; while the Sobel tests are mathematically consistent, future research should replicate these findings using bootstrapping techniques (e.g., PROCESS Model 4 with 5,000 resamples; Hayes, 2017) to provide more robust confidence intervals.

Fourth, regarding analytical depth and conceptual validation, our analysis was primarily bivariate and path-based. The premium attributed to FLP likely interacts with other variables, necessitating multivariate regression analyses that control for work experience, university prestige, and social networks. Moderation analyses could also explore whether the return to FLP differs by industry or firm ownership. Moreover, qualitative research – such as in-depth interviews with HR managers and professionals – is needed to illuminate how FLP translates into

economic advantage in specific workplace settings. Finally, the six-level classification of language competence proposed in this study requires further empirical validation to confirm whether these levels correspond to distinct labor market returns in terms of income and promotion outcomes.

Conclusion

In conclusion, this study establishes a strong empirical link between foreign language proficiency and economic success in Shenzhen’s core labor market, and further reveals that this link operates predominantly through a direct signaling mechanism rather than an indirect instrumental pathway via daily usage. The non-significant mediation for income and the dominant direct effect for promotion (accounting for over 70% of the total influence) challenge the intuitive assumption that “using” a language is what makes it valuable, and instead foreground the symbolic capital embedded in high-level linguistic competence. In Shenzhen – a city characterized by intense global connectivity and competitive talent markets – advanced FLP functions as a powerful credential that certifies cognitive agility, cultural adaptability, and future learning potential, commanding economic returns independent of how frequently the skill is deployed in routine work.

This study makes three contributions: (1) it moves beyond correlational evidence to test the mechanism of language returns, distinguishing between instrumental and signaling pathways; (2) it finds the signaling effect to be dominant in China’s most globalized metropolis, challenging the instrumental assumptions implicit in much of the language economics literature; and (3) it provides empirical grounding for human capital theory by demonstrating that the mere possession of high-level language competence commands a significant market premium, regardless of frequency of use.

By acknowledging its limitations and proposing concrete future directions, we hope this work stimulates further investigation into the vital role of language capital in shaping careers and economies within an increasingly interconnected world. The findings underscore that in an era of intensifying globalization, investment in language education is not merely an investment in

communication skills, but an investment in the human capital that underpins economic competitiveness at individual, organizational, and urban levels.

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