

Emotional Competence Self-efficacy and Leadership Development Among University Student Leaders in Shandong China

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Abstract

Student leadership development is an important outcome of higher education, yet the relationships among emotional competencies, self-efficacy, and perceived leadership development remain insufficiently examined among university student leaders in Chinese higher education. This study examines the associations between six emotional competence dimensions and student leadership development and assesses the mediating role of self-efficacy among 394 undergraduate students holding formal leadership positions in private universities in Shandong Province China. Drawing on Emotional Intelligence Theory and Social Cognitive Theory, the study considers emotional awareness, empathy, emotional regulation, interpersonal communication skills, self-motivation, and conflict resolution skills as predictors of student leadership development, with self-efficacy specified as a mediator. Data were analysed using Partial Least Squares Structural Equation Modelling with SmartPLS 4. Five of the six emotional competence dimensions showed statistically significant direct associations with student leadership development, with interpersonal communication skills showing the strongest direct relationship $\beta = 0.227$ $p = 0.001$. All six dimensions were also significantly associated with self-efficacy, while self-efficacy was significantly associated with student leadership development. The model explained 61.3 percent of the variance in student leadership development and 60.3 percent of the variance in Self-efficacy. The reported results further indicate statistically significant indirect relationships through self-efficacy, although the indirect effect estimates should be verified against the component path coefficients before final submission. Overall, the findings suggest that emotional competencies and self-efficacy are meaningfully associated with perceived leadership development among university student leaders in the study context. The study contributes contextual evidence from private universities in Shandong Province and highlights the need for further longitudinal and multi-source research to clarify the temporal and causal relationships among these constructs..

Keywords: emotional intelligence; self-efficacy; student leadership development; higher education; PLS-SEM; China; collectivism.

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1. Introduction

The development of leadership competencies among university students has become an important objective of higher education. In addition to disciplinary knowledge, graduates are increasingly expected to demonstrate interpersonal, emotional, and collaborative capabilities that enable them to work effectively with others, respond to complex situations, and assume leadership responsibilities (Komives et al., 2017; Northouse, 2022). In China, higher education policies have similarly placed increasing emphasis on the broader development of students and the cultivation of graduates capable of contributing to social and economic development (Ministry of Education, 2017). Within this context, understanding the psychological and emotional factors associated with leadership development among university students is both theoretically and practically relevant. Emotional intelligence has received considerable attention as one factor associated with effective interpersonal and leadership functioning. Emotional intelligence generally refers to abilities related to perceiving, understanding, using, and regulating emotions in oneself and others (Salovey & Mayer, 1990; Mayer et al., 2016). These abilities are relevant to leadership because leadership frequently involves interpersonal communication, emotional regulation, relationship management, conflict resolution, and the coordination of individuals toward shared objectives. Previous research has linked emotional intelligence and related emotional competencies with a range of leadership and interpersonal outcomes. However, the extent to which particular emotional competencies are associated with leadership development among university student leaders requires further investigation, especially in higher education settings.

An important consideration in understanding this relationship is self-efficacy. Social Cognitive Theory defines self-efficacy as an individual's belief in their capability to organise and execute the actions required to attain particular outcomes (Bandura, 1997). Such beliefs may be especially relevant to student leadership because possessing emotional or interpersonal competencies does not necessarily mean that students will feel confident applying them when performing leadership responsibilities. Students who perceive themselves as capable of managing interpersonal challenges, communicating with others, regulating their emotions, and responding to conflict may also develop stronger beliefs in their ability to perform leadership related tasks. In turn, stronger efficacy beliefs may be associated with more positive perceptions of leadership development. Self-efficacy therefore provides a theoretically plausible explanatory pathway linking emotional competencies with student leadership outcomes. Despite this theoretical connection, the role of self-efficacy in the relationship between emotional competencies and student leadership development remains insufficiently examined. Existing studies have often focused on direct relationships between emotional intelligence and leadership related outcomes, while less attention has been given to the psychological processes that may help explain these associations among university student leaders. Examining self-efficacy as a mediator can therefore provide a more detailed understanding of whether emotional competencies are associated with leadership development partly through students' beliefs about their own capabilities. Importantly, because the present study uses cross sectional data, mediation is examined as a statistical and theoretically informed indirect relationship rather than as evidence of a confirmed causal mechanism.

Another limitation of the existing literature concerns the treatment of emotional intelligence as a broad or aggregate construct. Different emotional competencies may not be equally relevant to leadership related outcomes. Emotional awareness may help students recognise their own emotional responses, whereas empathy may support understanding of others' perspectives. Emotional regulation may assist students in managing emotional reactions, interpersonal communication skills may facilitate coordination and relationship building, self-motivation may support persistence in leadership responsibilities, and conflict resolution skills may assist in addressing interpersonal disagreements. Examining these dimensions separately therefore provides a more differentiated assessment of their relationships with student leadership development and self-efficacy. The Chinese higher education context also warrants greater empirical attention. Leadership development does not occur independently of the social and institutional environments in which students' study and interact. Cultural traditions associated with interpersonal relationships, social harmony, and collective responsibility may be relevant to how students perceive and perform leadership roles. However, cultural orientations such as collectivism or Confucian values are not directly measured in the present study. Accordingly, Shandong Province is treated as the geographical and educational context of the research rather than as evidence that particular cultural characteristics determine the observed relationships. This distinction allows the study to provide context specific evidence without attributing individual student behaviour to assumed cultural characteristics.

The present study therefore examines the relationships among six emotional competence dimensions, self-efficacy, and student leadership development among 394 undergraduate students holding formal leadership positions in private universities in Shandong Province China. The six dimensions examined are emotional awareness, empathy, emotional regulation, interpersonal communication skills, self-motivation, and conflict resolution skills. Drawing on Emotional Intelligence Theory (Salovey & Mayer, 1990) and Social Cognitive Theory (Bandura, 1997), the study assesses the direct relationships between these emotional competencies and student leadership development as well as their indirect relationships through self-efficacy. By adopting a multidimensional perspective, the study seeks to identify which emotional competencies show stronger associations with student leadership development and whether self-efficacy statistically accounts for part of these relationships. In doing so, the study contributes evidence from an underexamined higher education setting and provides a basis for further research on emotional competencies, efficacy beliefs, and student leadership. Rather than establishing causal effects, the findings are intended to clarify the pattern of associations among these constructs and to inform future longitudinal, experimental, and multi-source research on student leadership development.

2. Theoretical Background and Hypothesis Development

2.1 An Integrated Theoretical Framework

This study draws primarily on Emotional Intelligence Theory (Salovey & Mayer, 1990; Mayer et al., 2016) and Social Cognitive Theory (Bandura, 1986, 1997) to explain the relationships among emotional competencies, Self-efficacy, and student leadership development. Emotional Intelligence Theory provides the basis for understanding how individuals perceive, understand, and regulate emotions in interpersonal situations, whereas Social Cognitive Theory explains

how beliefs about personal capability are associated with motivation, persistence, and behaviour. Together, these perspectives provide a theoretical basis for examining both the direct relationships between emotional competencies and student leadership development and the indirect relationships that may operate through Self-efficacy.

Emotional Intelligence Theory proposes that the ability to perceive, understand, use, and regulate emotions contributes to effective functioning in social and interpersonal situations (Salovey & Mayer, 1990; Mayer et al., 2016). These emotional abilities are particularly relevant to leadership because leadership involves communication, relationship management, decision making, coordination, and responses to interpersonal challenges. In university settings, student leaders often coordinate peers, manage group activities, respond to disagreements, and undertake organisational responsibilities. Emotional competencies may therefore represent important personal resources associated with how students perceive and perform their leadership roles.

Related perspectives on emotional competence have expanded the concept beyond the original ability-based model. Goleman (1995) emphasised self-awareness, self-regulation, motivation, empathy, and social skills as competencies relevant to interpersonal and leadership functioning. Building on this broader competency perspective, the present study examines six dimensions: emotional awareness, empathy, emotional regulation, interpersonal communication skills, self-motivation, and conflict resolution skills. These dimensions are treated as distinct but related emotional and interpersonal competencies rather than as interchangeable indicators of a single emotional intelligence construct. Social Cognitive Theory provides the theoretical basis for introducing Self-efficacy into these relationships. Self-efficacy refers to an individual's belief in their capability to organise and execute the actions required to attain particular outcomes (Bandura, 1986, 1997). According to Bandura (1997), efficacy beliefs are informed by four principal sources: mastery experiences, vicarious experiences, verbal persuasion, and physiological and affective states. Self-efficacy can subsequently shape how individuals approach challenging situations, the effort they invest, and their persistence when difficulties arise.

These principles are relevant to student leadership. Emotional and interpersonal competencies may help students manage challenging interactions, communicate with peers, regulate emotional responses, and respond constructively to disagreements. Positive experiences in such situations may be associated with stronger beliefs about their ability to perform leadership related responsibilities. Self-efficacy may therefore provide a theoretically plausible pathway through which emotional competencies are associated with student leadership development. However, because the present study uses cross sectional data, this pathway is examined as a theoretically informed statistical mediation relationship rather than as evidence of a temporal or causal mechanism. Transformational Leadership Theory (Bass, 1985; Bass & Avolio, 1994) provides supplementary leadership context rather than the principal explanatory framework of the study. Transformational leadership emphasises idealised influence, inspirational motivation, intellectual stimulation, and individualised consideration. These behaviours illustrate the interpersonal and motivational demands commonly associated with effective leadership and help explain why emotional competence and confidence may be relevant to leadership roles.

However, transformational leadership is not treated as a separate construct in the empirical model. The theoretical model therefore relies principally on Emotional Intelligence Theory and Social Cognitive Theory to explain the proposed relationships among emotional competencies, Self-efficacy, and student leadership development.

2.2 Emotional Intelligence Dimensions and Student Leadership Development

Emotional competencies may contribute differently to leadership related functioning because each dimension represents a distinct aspect of how individuals understand themselves, interact with others, and respond to interpersonal demands. Emotional awareness refers to the capacity to recognise and understand emotional states. Greater awareness of one's own emotions may help student leaders recognise how emotional reactions are associated with their judgements, communication, and interpersonal behaviour. Awareness of emotional cues may also facilitate more considered responses to challenging situations (Mayer et al., 2016). Accordingly, emotional awareness may be positively associated with student leadership development.

Empathy concerns the capacity to understand and respond appropriately to the emotions and perspectives of others. For student leaders, empathy may facilitate relationship building, responsiveness to team members, and sensitivity to different perspectives. These capabilities are relevant to collaborative leadership because student leaders frequently depend on interpersonal influence rather than formal organisational authority. Empathy is therefore expected to be positively associated with student leadership development. Emotional regulation refers to the ability to manage emotional responses in ways that are appropriate to situational demands. Effective regulation may help student leaders remain composed during interpersonal difficulties, respond constructively to criticism, and manage emotionally demanding situations. The broader emotion regulation literature indicates that the regulation of emotional responses is relevant to adaptive functioning and social interaction (Gross, 1998). Emotional regulation may therefore be positively associated with student leadership development.

Interpersonal communication skills involve listening, expressing ideas clearly, responding appropriately to others, and adapting communication to interpersonal situations. Communication is central to leadership because leaders coordinate activities, communicate expectations, address disagreements, and encourage cooperation through interaction with others (Northouse, 2022). Student leaders with stronger interpersonal communication skills may therefore report more positive leadership development.

Self-motivation reflects the capacity to sustain effort and pursue goals despite challenges or limited external reinforcement. This capability may be particularly relevant in student leadership roles, where responsibilities are often undertaken alongside academic demands and may provide limited formal rewards. Students who remain motivated and persistent may be more willing to continue engaging with leadership responsibilities and developmental experiences. Conflict resolution skills refer to the capacity to manage disagreements constructively and facilitate workable solutions among individuals or groups. Conflict is a common feature of collaborative activity, and the ability to address disagreement without damaging interpersonal relationships may be particularly relevant to student leadership. Students with stronger conflict resolution skills may therefore be better positioned to manage

group relationships and leadership responsibilities. Taken together, these arguments suggest that each emotional competence dimension may be positively associated with student leadership development. A multidimensional approach also allows the study to assess whether some emotional competencies exhibit stronger relationships with leadership development than others. Accordingly, the following hypotheses are proposed:

H1a. Emotional awareness is positively associated with student leadership development.

H1b. Empathy is positively associated with student leadership development.

H1c. Emotional regulation is positively associated with student leadership development.

H1d. Interpersonal communication skills are positively associated with student leadership development.

H1e. Self-motivation is positively associated with student leadership development.

H1f. Conflict resolution skills are positively associated with student leadership development.

2.3 Emotional Intelligence Dimensions and Self-efficacy

Emotional competencies and Self-efficacy represent conceptually distinct constructs. Emotional competencies concern how individuals recognise, understand, and manage emotional and interpersonal situations, whereas Self-efficacy concerns beliefs about one's capability to perform actions required to attain particular outcomes (Bandura, 1997; Mayer et al., 2016). Social Cognitive Theory nevertheless provides a basis for expecting relationships between these constructs because efficacy beliefs develop partly through experiences, feedback, and interpretations of emotional and physiological states. Mastery experiences are considered an especially important source of Self-efficacy (Bandura, 1997). Successful experiences in managing interpersonal situations may contribute to stronger beliefs about one's capabilities. For student leaders, recognising emotional cues, understanding peers' perspectives, regulating emotional responses, communicating effectively, maintaining motivation, and resolving disagreements may be associated with more successful experiences in leadership related situations. Such experiences may, in turn, correspond with stronger perceptions of personal capability.

The six emotional competence dimensions may contribute to efficacy beliefs in somewhat different ways. Emotional awareness may help students interpret their responses to challenging situations more accurately. Empathy may facilitate positive interpersonal interactions and feedback. Emotional regulation may help students manage stress and negative affect when confronting leadership challenges. Interpersonal communication skills may support successful coordination and social interaction. Self-motivation may contribute to persistence when difficulties arise, while conflict resolution skills may help students address disagreements constructively. Collectively, these competencies provide theoretical reasons to expect positive relationships with Self-efficacy. However, the proposed relationships should not be interpreted as demonstrating that emotional competencies necessarily cause higher Self-efficacy. The present study assesses whether students reporting stronger emotional competencies also tend

to report stronger efficacy beliefs within the study sample. Accordingly, the following hypotheses are proposed:

H2a. Emotional awareness is positively associated with Self-efficacy.

H2b. Empathy is positively associated with Self-efficacy.

H2c. Emotional regulation is positively associated with Self-efficacy.

H2d. Interpersonal communication skills are positively associated with Self-efficacy.

H2e. Self-motivation is positively associated with Self-efficacy.

H2f. Conflict resolution skills are positively associated with Self-efficacy.

2.4 Self-efficacy and Student Leadership Development

Self-efficacy is a central construct in Social Cognitive Theory and concerns individuals' beliefs about their capability to perform actions necessary to achieve desired outcomes (Bandura, 1986, 1997). Such beliefs can influence how individuals approach challenging tasks, how much effort they invest, and how persistent they are when encountering difficulties. In leadership contexts, efficacy beliefs may be particularly relevant because leadership responsibilities frequently involve uncertainty, interpersonal demands, decision making, and persistence. Student leaders who have stronger confidence in their capabilities may be more willing to undertake responsibilities, participate actively in group activities, communicate their ideas, and persist when leadership challenges arise. In contrast, students with weaker efficacy beliefs may be less confident in applying their existing knowledge and interpersonal competencies to leadership situations.

Previous research has also linked efficacy beliefs with leadership related functioning among university students. For example, Chemers et al. (2000) identified leadership efficacy as an important psychological factor associated with leadership performance among college students. More broadly, research based on Social Cognitive Theory has demonstrated the relevance of Self-efficacy to motivation, persistence, and performance in educational settings (Schunk & DiBenedetto, 2020). These theoretical and empirical considerations provide a basis for expecting a positive relationship between Self-efficacy and student leadership development. Accordingly, the following hypothesis is proposed:

H3. Self-efficacy is positively associated with student leadership development.

2.5 The Mediating Role of Self-efficacy

The integration of Emotional Intelligence Theory and Social Cognitive Theory provides a theoretical basis for examining Self-efficacy as a mediator between emotional competencies and student leadership development. Emotional competencies may be directly associated with leadership development because they support interpersonal communication, emotional management, relationship building, motivation, and responses to conflict. At the same time, these competencies may also be associated with how capable students perceive themselves to

be when performing leadership related responsibilities. From a Social Cognitive Theory perspective, successful experiences, social feedback, and interpretations of emotional states contribute to efficacy beliefs (Bandura, 1997). Student leaders who perceive themselves as capable of recognising emotional situations, communicating effectively, regulating their responses, maintaining motivation, and addressing interpersonal conflict may also report stronger beliefs in their capacity to perform leadership related tasks. Stronger efficacy beliefs may, in turn, be associated with more positive perceptions of leadership development.

This reasoning suggests an indirect pathway in which emotional competencies are associated with Self-efficacy, which is subsequently associated with student leadership development. Importantly, mediation in the present study represents a statistical indirect association based on the proposed theoretical model. Because the variables are measured at a single point in time, the analysis cannot establish that emotional competencies temporally precede Self-efficacy or that Self-efficacy subsequently causes leadership development. Longitudinal or experimental research would be required to test such a causal sequence more directly. The multidimensional conceptualisation adopted in this study further suggests that the indirect relationship can be examined separately for each emotional competence. Emotional awareness, empathy, emotional regulation, interpersonal communication skills, self-motivation, and conflict resolution skills may each be associated with student leadership development partly through their relationships with Self-efficacy. Examining these pathways separately provides a more detailed assessment of the proposed mediation model than treating emotional intelligence solely as an aggregate construct. Accordingly, the following hypotheses are proposed:

H4a. Self-efficacy mediates the relationship between emotional awareness and student leadership development.

H4b. Self-efficacy mediates the relationship between empathy and student leadership development.

H4c. Self-efficacy mediates the relationship between emotional regulation and student leadership development.

H4d. Self-efficacy mediates the relationship between interpersonal communication skills and student leadership development.

H4e. Self-efficacy mediates the relationship between self-motivation and student leadership development.

H4f. Self-efficacy mediates the relationship between conflict resolution skills and student leadership development.

Figure 2 presents the estimated structural model and summarises the standardised path coefficients among the six emotional competence dimensions, self-efficacy, and student leadership development. The figure also reports the coefficients of determination for self-efficacy ($R^2 = 0.603$) and student leadership development ($R^2 = 0.613$). The solid paths represent the structural relationships estimated in the model, while the dashed path from conflict resolution to student leadership development represents the statistically nonsignificant

direct relationship. Bootstrap t statistics, p values, confidence intervals, and specific indirect effects are reported separately in the corresponding tables to maintain the clarity of the figure.

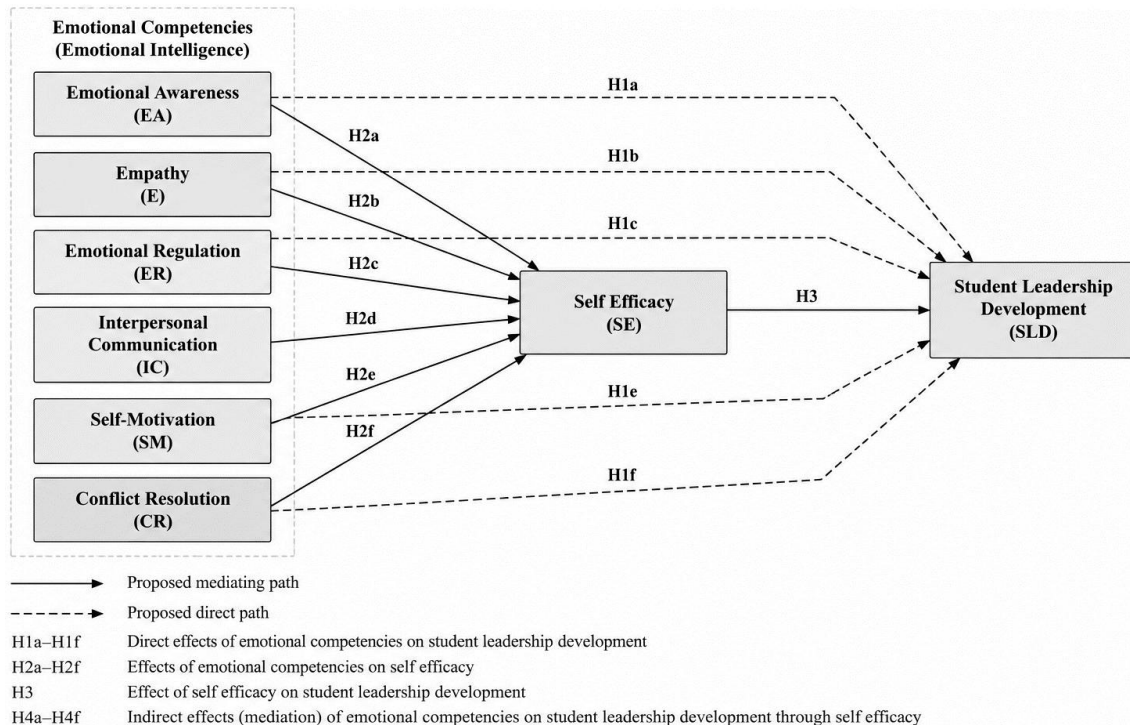


Figure 1: Framework of Emotional Competencies, Self-Efficacy, and Student Leadership Development

3. Method

3.1 Research Design and Context

This study employed a quantitative cross sectional survey design to examine the relationships among emotional competencies, Self-efficacy, and student leadership development among undergraduate student leaders. A cross sectional design was appropriate because the variables were measured at a single point in time and the study focused on associations among the constructs rather than changes occurring over time (Creswell & Creswell, 2023). Consequently, the design supports the examination of statistical relationships and indirect associations but does not establish temporal ordering or causal effects. Partial Least Squares Structural Equation Modelling was used to evaluate the proposed measurement and structural models. PLS SEM was considered appropriate because the conceptual model contains multiple latent constructs and simultaneous direct and indirect relationships and because the analysis sought to estimate the explanatory relationships among the constructs (Hair et al., 2022).

The study was conducted in private universities in Shandong Province China. Shandong provides a relevant higher education setting for examining student leadership because the study focuses on undergraduate students who hold formally recognised leadership responsibilities within university organisations. The province is treated as the geographical and institutional

context of the study. Cultural characteristics such as collectivism and Confucian values were not directly measured and therefore are not used as explanatory variables in the empirical analysis.

3.2 Population Sample and Sampling Procedure

The target population comprised undergraduate students holding formal leadership positions in private universities in Shandong Province China. Eligible participants included student union executives, faculty or departmental student association committee members, club presidents and officers, and other officially recognised student leaders with responsibilities for organising activities, coordinating students, or representing student organisations. Purposive sampling was employed because participation required respondents to meet the specific criterion of currently holding a formal student leadership position. The use of purposive sampling enabled the study to target students with direct experience of leadership responsibilities rather than members of the general undergraduate population. However, as a non-probability sampling approach, purposive sampling limits the extent to which the findings can be generalised to the broader population of university students or student leaders.

An a priori sample size calculation was conducted using G Power 3.1 (Faul et al., 2009). The calculation specified multiple linear regression with a medium effect size of $f^2 = 0.15$, a significance level of $\alpha = 0.05$, statistical power of 0.95, and seven predictors. This analysis indicated a minimum required sample of 153 participants. A larger sample was targeted to improve the stability of parameter estimates and to account for potentially incomplete or unusable responses. Data were collected from students at five higher education institutions in Shandong Province. The institutional names and their official status should be verified against authoritative institutional or Ministry of Education records before final publication. Following data screening, six cases identified as multivariate outliers using Mahalanobis distance at $p \leq 0.001$ were excluded from the analysis. The final analytic sample consisted of 394 respondents.

3.3 Instruments and Measures

Data were collected using a structured questionnaire consisting of three sections. Section A collected demographic and background information, including gender, age, academic year, university, type of leadership role, previous leadership experience, and hometown background. Section B contained items measuring the six emotional competence dimensions. Section C contained measures of Self-efficacy and student leadership development. Unless otherwise specified, all construct items were rated using a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree.

Emotional Competencies

Six emotional competence dimensions were examined: emotional awareness, empathy, emotional regulation, interpersonal communication skills, self-motivation, and conflict resolution skills. Each dimension was represented by four items, resulting in 24 emotional competence items in total. The constructs were coded as emotional awareness EA1 to EA4, empathy EM1 to EM4, emotional regulation ER1 to ER4, interpersonal communication skills IC1 to IC4, self-motivation SM1 to SM4, and conflict resolution skills CR1 to CR4.

The questionnaire was informed by the Wong and Law Emotional Intelligence Scale (Wong & Law, 2002) and other measures reported in the manuscript as having been used in Chinese educational settings. Because the six dimensions employed in the present study do not correspond directly to the original four-dimensional structure of the Wong and Law Emotional Intelligence Scale, the items should be regarded as adapted emotional competence measures rather than as a direct application of the original scale. The precise source and adaptation of each item should therefore be documented in an item provenance table before publication.

Self-efficacy

Self-efficacy was assessed using items intended to capture respondents' confidence in performing leadership related activities, including leading others, influencing team members, managing interpersonal challenges, and responding to conflict. The items were reported as being adapted from the General Self-efficacy Scale developed by Schwarzer and Jerusalem (1995). However, the leadership specific wording represents a substantive adaptation of generalized Self-efficacy. The measure may therefore reflect leadership related Self-efficacy rather than generalized Self-efficacy. The construct label and its theoretical interpretation should be confirmed after comparing the final questionnaire items with the original scale.

The number of Self-efficacy items also requires verification before publication. The Method section currently reports five items SE1 to SE5, whereas the reported measurement model and appendix contain four items SE1 to SE4. The final manuscript should report the number of items actually administered and retained in the analysed measurement model and should explain any item deletion where applicable.

Student Leadership Development

Student leadership development was assessed using four items coded SLD1 to SLD4. The items were designed to capture respondents' perceptions of their leadership related competencies and capabilities associated with their student leadership experiences. The manuscript currently identifies the source as the Leadership Development Questionnaire attributed to Liu and Zhang (2022). This source and its reported validation among Chinese university students should be independently verified before the measure is described as previously validated. In addition, because the data were collected at a single point in time, the measure represents respondents' perceived leadership development rather than objectively observed developmental change over time.

3.4 Pilot Testing and Questionnaire Preparation

A pilot test was conducted with 30 students to assess the clarity, comprehensibility, and contextual appropriateness of the questionnaire. Feedback from the pilot study was used to identify wording that required clarification before the main data collection. The questionnaire was also reviewed by individuals with relevant academic or contextual expertise. In the final manuscript, the number of experts, their areas of expertise, the criteria used during the review, and the specific modifications resulting from the review should be reported to provide clearer evidence of the instrument development and content validation process.

If the questionnaire was translated between English and Chinese, the final manuscript should also describe the translation procedure, including whether independent translation, back translation, reconciliation, or bilingual expert review was employed. These procedures are

important because several constructs were adapted from measures originally developed in English.

3.5 Data Analysis

Data analysis was conducted using IBM SPSS Statistics Version 29 and SmartPLS Version 4. SPSS was used for preliminary data screening and descriptive analyses, including the examination of missing data, descriptive statistics, multivariate outliers, and relevant distributional characteristics. SmartPLS 4 was used to estimate and evaluate the PLS SEM measurement and structural models. For the reflective measurement model, indicator reliability was evaluated using outer loadings, with values of approximately 0.70 or higher considered desirable. Indicators with lower loadings were not to be removed automatically; their retention or deletion was considered in relation to construct reliability, convergent validity, theoretical relevance, and item content. Internal consistency reliability was assessed using Cronbach's alpha and composite reliability, with values of 0.70 or higher generally indicating acceptable reliability. Convergent validity was assessed using average variance extracted, with AVE values of at least 0.50 considered acceptable.

Discriminant validity was assessed primarily using the heterotrait monotrait ratio of correlations. An HTMT value below 0.85 was used as a conservative criterion for conceptually distinct constructs. The Fornell Larcker criterion and examination of indicator loadings were used as supplementary diagnostic information. Following satisfactory assessment of the measurement model, the structural model was evaluated using path coefficients, collinearity diagnostics, coefficients of determination R^2 , and effect sizes f^2 . Statistical inference for direct and indirect relationships was assessed through bootstrapping. For the final analysis, a sufficiently large number of bootstraps resamples should be used, preferably 10,000, and the manuscript should report the resulting confidence intervals in addition to t values and p values.

Mediation was assessed by estimating the specific indirect relationship between each emotional competence dimension and student leadership development through Self-efficacy. Evidence of an indirect relationship was evaluated using bootstrapped confidence intervals. Mediation was interpreted as a statistical indirect association within the proposed cross-sectional model rather than as evidence of a causal mechanism. Predictive assessment should be clearly distinguished from explanatory assessment. If Q^2 obtained through blindfolding is retained, it should be reported as an assessment of in sample predictive relevance. If the study intends to make stronger claims regarding out of sample predictive performance, an appropriate procedure such as PLSpredict should additionally be reported.

4. Results

4.1 Respondent Characteristics

The final analytic sample consisted of 394 undergraduate students holding formal leadership positions. Of the respondents, 210 were male (53.3%) and 184 were female (46.7%). Most participants were aged 21 to 23 years (45.7%), followed by those aged 18 to 20 years (40.6%), while 13.7% were aged 24 years or above. The distribution across academic years was relatively balanced, with 23.4% of respondents in Year 1, 27.4% in Year 2, 29.4% in Year 3,

and 19.8% in Year 4 or above. Most respondents (71.1%) reported previous leadership experience, whereas 28.9% reported no previous leadership experience.

Regarding current leadership roles, 23.4% of respondents were team leaders, 22.3% were student council members, 19.3% were club leaders, 16.2% were event organisers, and 18.8% held other formally recognised leadership positions. Respondents also represented a range of hometown backgrounds, including urban areas (44.7%), semi urban areas (32.5%), and rural areas (22.8%). Table 1 summarises the demographic characteristics of the sample.

Table 1: Demographic Characteristics of Respondents

Variable	Category	n	%
Gender	Male	210	53.3
	Female	184	46.7
Age	18 to 20 years	160	40.6
	21 to 23 years	180	45.7
	24 years and above	54	13.7
Academic year	Year 1	92	23.4
	Year 2	108	27.4
	Year 3	116	29.4
	Year 4 or above	78	19.8
Previous leadership experience	Yes	280	71.1
	No	114	28.9
Leadership role	Student council	88	22.3
	Club leader	76	19.3
	Team leader	92	23.4
	Event organiser	64	16.2
	Other	74	18.8
Hometown background	Urban	176	44.7
	Semi urban	128	32.5
	Rural	90	22.8

Note. N = 394.

4.2 Measurement Model Assessment

The reflective measurement model consisted of eight constructs: emotional awareness, empathy, emotional regulation, interpersonal communication, self-motivation, conflict resolution, Self-efficacy, and student leadership development. The measurement model was assessed in terms of indicator reliability, internal consistency reliability, convergent validity, and discriminant validity. Internal consistency reliability was evaluated using Cronbach's alpha and composite reliability. Cronbach's alpha values ranged from 0.850 for empathy to 0.954 for emotional awareness, while the reported composite reliability values ranged from 0.899 to 0.960. All values exceeded the commonly recommended minimum criterion of 0.70.

Convergent validity was assessed using indicator loadings and average variance extracted. The reported AVE values ranged from 0.683 for empathy to 0.877 for emotional awareness, with all constructs exceeding the recommended minimum value of 0.50. The reported indicator

loadings were also generally satisfactory, with most exceeding 0.70. The reliability and convergent validity statistics are presented in Table 2.

Table 2: Reliability and Convergent Validity

Construct	Code	Cronbach's α	Composite reliability	AVE
Emotional awareness	EA	0.954	0.960	0.877
Empathy	E	0.850	0.924	0.683
Emotional regulation	ER	0.895	0.899	0.762
Interpersonal communication	IC	0.929	0.932	0.826
Self-motivation	SM	0.947	0.955	0.864
Conflict resolution	CR	0.919	0.923	0.805
Self-efficacy	SE	0.946	0.948	0.861
Student leadership development	SLD	0.902	0.905	0.773

Discriminant validity was assessed primarily using the heterotrait monotrait ratio of correlations. The reported HTMT values ranged from 0.312 to 0.759 and were therefore below the conservative criterion of 0.85. The highest HTMT value was 0.759 between interpersonal communication and student leadership development. The Fornell Larcker criterion and the pattern of indicator loadings provided supplementary evidence of discriminant validity. Taken together, the reported results did not indicate substantial discriminant validity concerns among the eight constructs. A complete HTMT matrix should be reported because the full set of construct comparisons provides more transparent evidence than reporting only the highest and lowest values. The item loading matrix should be retained in an appendix.

4.3 Structural Model Assessment and Direct Relationships

Following assessment of the measurement model, the structural model was evaluated using collinearity diagnostics, path coefficients, coefficients of determination, effect sizes, and predictive relevance. The reported variance inflation factor values ranged from 1.423 to 2.857 and were below 3.0, indicating that problematic collinearity was not evident among the predictor constructs. The direct structural relationships are presented in Table 3.

Table 3: Direct Structural Relationships

Hypothesis	Relationship	β	t	p	Decision
H1a	EA $\rightarrow$ SLD	0.141	2.783	0.005	Supported
H1b	E $\rightarrow$ SLD	0.129	3.111	0.002	Supported
H1c	ER $\rightarrow$ SLD	0.099	1.982	0.048	Supported
H1d	IC $\rightarrow$ SLD	0.227	3.350	0.001	Supported
H1e	SM $\rightarrow$ SLD	0.103	3.043	0.002	Supported
H1f	CR $\rightarrow$ SLD	-0.053	1.051	0.294	Not supported
H2a	EA $\rightarrow$ SE	0.113	2.705	0.007	Supported
H2b	E $\rightarrow$ SE	0.102	2.275	0.023	Supported
H2c	ER $\rightarrow$ SE	0.235	5.494	< 0.001	Supported
H2d	IC $\rightarrow$ SE	0.542	10.887	< 0.001	Supported
H2e	SM $\rightarrow$ SE	0.081	2.114	0.035	Supported

H2f	CR → SE	0.127	2.720	0.007	Supported
H3	SE → SLD	0.260	4.283	< 0.001	Supported

Five of the six emotional competence dimensions were positively and significantly associated with student leadership development. Interpersonal communication showed the largest positive coefficient ($\beta = 0.227$, $p = 0.001$), followed by emotional awareness ($\beta = 0.141$, $p = 0.005$), empathy ($\beta = 0.129$, $p = 0.002$), self-motivation ($\beta = 0.103$, $p = 0.002$), and emotional regulation ($\beta = 0.099$, $p = 0.048$). Conflict resolution was not significantly associated with student leadership development ($\beta = -0.053$, $p = 0.294$). Accordingly, H1a to H1e were supported, whereas H1f was not supported.

All six emotional competence dimensions were positively and significantly associated with Self-efficacy. Interpersonal communication showed the largest coefficient ($\beta = 0.542$, $p < 0.001$), followed by emotional regulation ($\beta = 0.235$, $p < 0.001$), conflict resolution ($\beta = 0.127$, $p = 0.007$), emotional awareness ($\beta = 0.113$, $p = 0.007$), empathy ($\beta = 0.102$, $p = 0.023$), and self-motivation ($\beta = 0.081$, $p = 0.035$). These findings supported H2a to H2f. Self-efficacy was positively and significantly associated with student leadership development ($\beta = 0.260$, $p < 0.001$), supporting H3.

4.4 Explanatory Power Effect Sizes and Predictive Relevance

The coefficient of determination for Self-efficacy was $R^2 = 0.603$, indicating that the six emotional competence dimensions jointly accounted for 60.3% of the variance in Self-efficacy. The coefficient of determination for student leadership development was $R^2 = 0.613$, indicating that the emotional competence dimensions together with Self-efficacy accounted for 61.3% of the variance in student leadership development.

The Q^2 values obtained through blindfolding were 0.543 for Self-efficacy and 0.424 for student leadership development. Because both values were above zero, the model demonstrated predictive relevance for the endogenous constructs within the estimated sample.

Table 4: Explanatory Power and Predictive Relevance

Endogenous construct	R^2	Q^2
Self-efficacy	0.603	0.543
Student leadership development	0.613	0.424

Effect size analysis provided additional information concerning the contribution of individual predictors. The reported f^2 values are presented in Table 5.

Table 5: Effect Sizes for Structural Relationships

Relationship	f^2	Interpretation
EA → SE	0.120	Small
E → SE	0.118	Small
ER → SE	0.198	Moderate
IC → SE	0.351	Large

SM → SE	0.111	Small
CR → SE	0.120	Small
EA → SLD	0.139	Small
E → SLD	0.129	Small
ER → SLD	0.123	Small
IC → SLD	Not reported	To be verified
SM → SLD	0.126	Small
CR → SLD	0.137	Small
SE → SLD	0.244	Moderate

The largest reported effect size was observed for interpersonal communication on Self-efficacy ($f^2 = 0.351$). Emotional regulation showed a moderate effect on Self-efficacy ($f^2 = 0.198$), while Self-efficacy showed a moderate effect on student leadership development ($f^2 = 0.244$). Most remaining reported effect sizes were small. The f^2 value for interpersonal communication on student leadership development was not available in the reported output and should be verified before final submission.

4.5 Indirect Effects and Mediation Analysis

The proposed indirect relationships were examined through Self-efficacy. In a simple mediation pathway, the estimated indirect coefficient corresponds to the product of the path from the predictor to the mediator and the path from the mediator to the outcome. Based on the structural coefficients reported in Table 3, the implied indirect coefficients are presented in Table 6.

Table 6: Indirect Coefficients Implied by the Reported Structural Paths

Hypothesis	Indirect relationship	Predictor → SE	SE → SLD	Implied indirect β
H4a	EA → SE → SLD	0.113	0.260	0.029
H4b	E → SE → SLD	0.102	0.260	0.027
H4c	ER → SE → SLD	0.235	0.260	0.061
H4d	IC → SE → SLD	0.542	0.260	0.141
H4e	SM → SE → SLD	0.081	0.260	0.021
H4f	CR → SE → SLD	0.127	0.260	0.033

Note. The indirect coefficients in this table are arithmetic products of the structural coefficients currently reported in Table 3. They should not replace the specific indirect effects exported from the final SmartPLS model.

The mediation table in the earlier analysis reported indirect coefficients of 0.039, 0.035, 0.081, 0.186, 0.028, and 0.044 for H4a to H4f, respectively. These values are not consistent with the component path coefficients reported in the structural model. For example, the reported interpersonal communication to Self-efficacy coefficient of 0.542 combined with the reported Self-efficacy to student leadership development coefficient of 0.260 yields an implied indirect coefficient of approximately 0.141 rather than 0.186. Because the discrepancy occurs systematically across all six indirect relationships, the bootstrapping output for the mediation model should be rechecked against the final structural model before statistical significance or mediation type is interpreted. Accordingly, H4a to H4f should not receive final hypothesis decisions on the basis of the currently inconsistent coefficients.

The final mediation analysis should report the specific indirect coefficient, bootstrap standard error, t statistic, p value, and the lower and upper bounds of the 95% bootstrap confidence

interval for each pathway. An indirect relationship should be regarded as statistically supported when its bootstrapped confidence interval does not include zero. The distinction between direct and indirect associations should also be retained in the interpretation. In particular, the non-significant direct relationship between conflict resolution and student leadership development does not by itself establish full mediation. Such a conclusion should be made only after the corresponding indirect effect has been verified using the final bootstrap results. Figure 1 presents the estimated structural model and summarises the standardised path coefficients among the six emotional competencies dimensions, self-efficacy, and student leadership development. The figure also reports the coefficients of determination for the two endogenous constructs. Statistical significance tests are reported separately in Tables 3 and 6 to maintain the clarity of the structural model

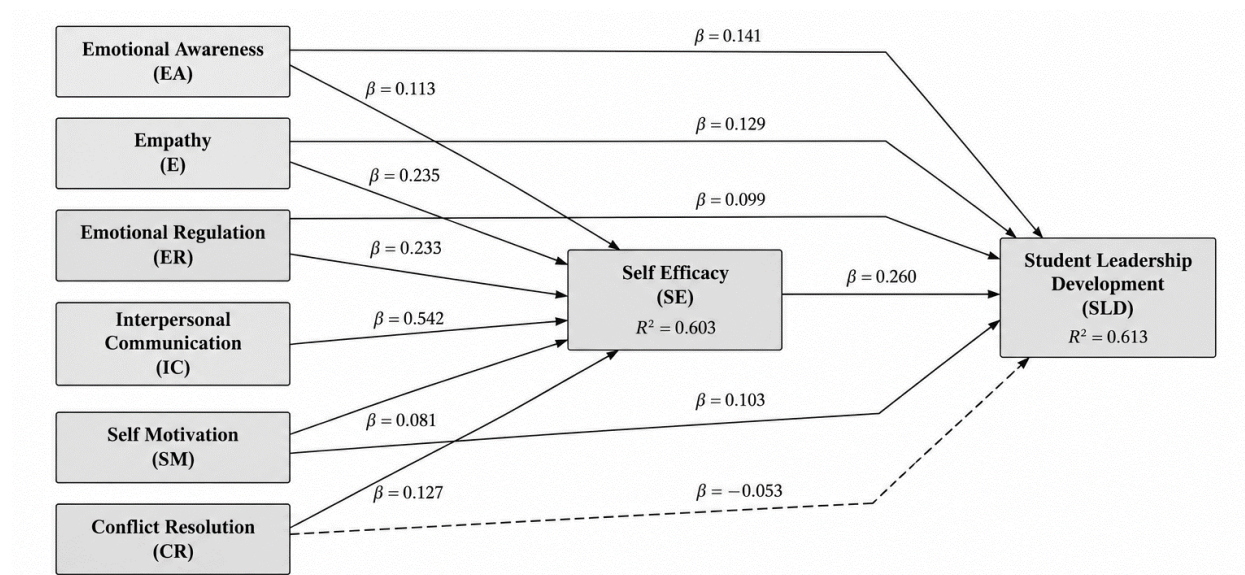


Figure 2: Structural Model of Emotional Competencies, Self-Efficacy, and Student Leadership Development

Values shown on the structural paths are standardised path coefficients. R2 values are reported within the endogenous constructs. The dashed path represents a statistically non-significant direct relationship. Bootstrap statistics, p values, and confidence intervals are reported in the corresponding tables and are not displayed in the figure.

Based on the verified direct structural results, H1a, H1b, H1c, H1d, and H1e were supported, whereas H1f was not supported. H2a through H2f were supported, and H3 was supported. Decisions concerning H4a through H4f remain subject to verification of the final specific indirect effects and their bootstrap confidence intervals.

Table 7: Summary of Hypothesis Decisions

Hypothesis	Proposed relationship	Decision
H1a	Emotional awareness → Student leadership development	Supported
H1b	Empathy → Student leadership development	Supported
H1c	Emotional regulation → Student leadership development	Supported

H1d	Interpersonal communication → Student leadership development	Supported
H1e	Self-motivation → Student leadership development	Supported
H1f	Conflict resolution → Student leadership development	Not supported
H2a	Emotional awareness → Self-efficacy	Supported
H2b	Empathy → Self-efficacy	Supported
H2c	Emotional regulation → Self-efficacy	Supported
H2d	Interpersonal communication → Self-efficacy	Supported
H2e	Self-motivation → Self-efficacy	Supported
H2f	Conflict resolution → Self-efficacy	Supported
H3	Self-efficacy → Student leadership development	Supported
H4a	EA → SE → SLD	Pending verification
H4b	E → SE → SLD	Pending verification
H4c	ER → SE → SLD	Pending verification
H4d	IC → SE → SLD	Pending verification
H4e	SM → SE → SLD	Pending verification
H4f	CR → SE → SLD	Pending verification

5. Discussion

5.1 Emotional Competencies and Student Leadership Development

The findings indicate that five of the six emotional competence dimensions were positively and significantly associated with student leadership development. Interpersonal communication showed the largest direct coefficient, followed by emotional awareness, empathy, self-motivation, and emotional regulation. Conflict resolution was not significantly associated with student leadership development in the direct model. These findings are broadly consistent with the theoretical expectation that emotional and interpersonal competencies are relevant to leadership related functioning. Emotional Intelligence Theory suggests that the capacity to recognise, understand, and regulate emotions can support adaptive interpersonal behaviour in socially demanding situations (Salovey & Mayer, 1990; Mayer et al., 2016). In student leadership settings, such competencies may be particularly relevant because student leaders often coordinate peers, communicate expectations, manage group relationships, and respond to interpersonal challenges without relying on extensive formal authority.

Among the six dimensions, interpersonal communication showed the strongest direct association with student leadership development ($\beta = 0.227$, $p = 0.001$). This result suggests that communication may be especially relevant to how student leaders perceive their leadership related development. Clear expression, active listening, responsiveness to others, and the ability to coordinate group interaction are central to many leadership activities. In student organisations, where leadership frequently depends on cooperation and interpersonal influence, communication skills may therefore play an important role in supporting effective participation in leadership responsibilities. The positive associations observed for emotional awareness,

empathy, self-motivation, and emotional regulation also suggest that leadership development is related to more than communication alone. Emotional awareness may help students recognise how their own emotional responses affect decision making and interaction. Empathy may support relationship building and responsiveness to peers. Emotional regulation may help student leaders manage emotionally demanding situations, while self-motivation may contribute to persistence in fulfilling leadership responsibilities. Although the magnitudes of these direct coefficients were relatively modest, their statistical significance suggests that several distinct emotional competencies may be relevant to student leadership development.

Conflict resolution differed from the other dimensions because its direct relationship with student leadership development was not statistically significant ($\beta = -0.053$, $p = 0.294$). This finding suggests that, within the present sample, students who reported stronger conflict resolution skills did not necessarily report higher levels of student leadership development after the other predictors were included in the model. This result should be interpreted cautiously because the relationship may depend on other psychological, situational, or organisational factors. It is also possible that conflict resolution becomes particularly relevant only when students encounter frequent or complex interpersonal disagreements.

The absence of a significant direct relationship should not be interpreted as evidence that conflict resolution is unimportant for leadership. Rather, it indicates that the unique statistical association was not supported in the present model. Further research should examine whether conflict resolution is more strongly related to specific leadership outcomes, particular leadership situations, or behavioural measures rather than broad self-reported perceptions of leadership development.

5.2 Emotional Competencies and Self-efficacy

All six emotional competence dimensions were positively and significantly associated with Self-efficacy. Interpersonal communication showed the largest coefficient ($\beta = 0.542$, $p < 0.001$), followed by emotional regulation ($\beta = 0.235$, $p < 0.001$). The remaining emotional competence dimensions also showed positive but smaller associations with Self-efficacy. These findings are consistent with Social Cognitive Theory, which proposes that efficacy beliefs are shaped by mastery experiences, social feedback, vicarious experiences, and interpretations of emotional and physiological states (Bandura, 1997). Emotional and interpersonal competencies may be relevant to these sources because they can influence how individuals interpret and respond to demanding social situations. Students who perceive themselves as capable of communicating effectively, managing emotional responses, understanding peers, maintaining motivation, and resolving interpersonal difficulties may also be more likely to report confidence in their ability to perform leadership related tasks.

The comparatively large association between interpersonal communication and Self-efficacy is noteworthy. Communication provides frequent opportunities for student leaders to evaluate their effectiveness through interaction with peers, team members, and other stakeholders. Successful communication experiences may correspond with greater confidence in one's ability to perform leadership responsibilities. However, the cross-sectional design does not establish whether stronger communication skills increase Self-efficacy, whether more self-efficacious students communicate more effectively, or whether both are influenced by other factors.

Emotional regulation also showed a comparatively strong relationship with Self-efficacy. Students who perceive themselves as able to regulate their emotional responses may feel more capable of managing uncertainty, criticism, disagreement, and interpersonal stress in leadership situations. This interpretation is theoretically consistent with Bandura's emphasis on affective and physiological states as sources of efficacy beliefs. Overall, the findings suggest that emotional competencies and Self-efficacy are closely related among the student leaders in this sample. They do not, however, establish a developmental sequence in which emotional competencies necessarily precede or cause stronger efficacy beliefs.

5.3 Self-efficacy and Student Leadership Development

Self-efficacy was positively and significantly associated with student leadership development ($\beta = 0.260$, $p < 0.001$). This finding is consistent with Social Cognitive Theory, which emphasises the role of efficacy beliefs in shaping motivation, persistence, and engagement in challenging activities (Bandura, 1997).

For student leaders, confidence in one's capability may be relevant to undertaking responsibilities, communicating ideas, responding to problems, and persisting when leadership tasks become difficult. Students who perceive themselves as more capable may also be more willing to participate actively in leadership activities and to evaluate their leadership experiences positively.

The magnitude of the coefficient indicates a meaningful positive relationship, although it should not be described as evidence that Self-efficacy determines leadership development. Both constructs were measured through self-report at the same point in time, and reciprocal relationships are plausible. Students who perceive themselves as developing successfully as leaders may also develop stronger efficacy beliefs as a result of those experiences. The findings therefore support the theoretical relevance of Self-efficacy to student leadership while also highlighting the need for longitudinal research capable of examining temporal ordering. Future studies could assess whether changes in leadership related Self-efficacy precede later changes in leadership behaviour or whether successful leadership experiences contribute to subsequent increases in Self-efficacy.

5.4 Indirect Relationships Through Self-efficacy

The conceptual model proposed that Self-efficacy would mediate the relationships between each emotional competence dimension and student leadership development. However, the indirect effect coefficients currently available in the manuscript are not fully consistent with the component path coefficients reported in the structural model. The mediation findings should therefore be interpreted only after the final SmartPLS specific indirect effects have been verified.

The theoretical rationale for examining indirect relationships nevertheless remains relevant. Emotional competencies may be associated with how confidently students perceive their ability to perform leadership related tasks, and Self-efficacy is in turn positively associated with student leadership development. This pattern provides a basis for investigating whether part of the association between emotional competencies and leadership development is statistically accounted for by Self-efficacy. Particular attention should be given to interpersonal

communication because it showed the strongest relationship with Self-efficacy and the strongest direct relationship with student leadership development among the six emotional competence dimensions. If the final bootstrapped indirect effect is confirmed, this would suggest that interpersonal communication is associated with student leadership development both directly and indirectly through Self-efficacy. Conflict resolution also warrants careful interpretation. Its direct relationship with student leadership development was not statistically significant, whereas its relationship with Self-efficacy was positive and significant. If a statistically significant indirect effect is confirmed in the final bootstrap analysis, the appropriate interpretation would be that the data are consistent with an indirect only relationship through Self-efficacy. However, such a finding should not be described as proof that Self-efficacy is the causal mechanism through which conflict resolution influences leadership development. More generally, the mediation model should be interpreted as a theoretically informed statistical representation of associations among simultaneously measured constructs. Longitudinal or experimental data would be required to establish whether emotional competencies precede changes in Self-efficacy and whether those changes subsequently contribute to leadership development.

6. Theoretical Contributions

This study offers several theoretical contributions to research on emotional competencies, Self-efficacy, and student leadership development. First, the study brings Emotional Intelligence Theory and Social Cognitive Theory together in a model that examines both direct and indirect associations with student leadership development. Emotional Intelligence Theory provides a basis for understanding the interpersonal and emotional competencies relevant to leadership, while Social Cognitive Theory provides a basis for examining the role of efficacy beliefs. The integration of these perspectives offers a more differentiated account of the relationships among emotional competencies, confidence in personal capability, and perceived leadership development. Second, the study adopts a multidimensional rather than purely aggregate treatment of emotional competence. By examining emotional awareness, empathy, emotional regulation, interpersonal communication, self-motivation, and conflict resolution separately, the analysis reveals that the dimensions are not equally associated with the two endogenous constructs. Interpersonal communication showed the strongest relationship with both Self-efficacy and student leadership development, while conflict resolution did not show a statistically significant direct relationship with student leadership development. This pattern illustrates the value of examining emotional competencies separately rather than assuming that all dimensions contribute in the same way. Third, the study contributes to the application of Social Cognitive Theory within the context of student leadership. The positive relationship between Self-efficacy and student leadership development supports the theoretical relevance of efficacy beliefs to leadership related functioning among undergraduate student leaders. The results also indicate that emotional competence dimensions are associated with Self-efficacy to differing degrees, providing a basis for further investigation of how students' interpersonal and emotional experiences relate to their perceptions of leadership capability. Fourth, the study contributes context specific evidence from private higher education institutions in Shandong Province China. Much of the broader literature on emotional intelligence and leadership has focused on organisational employees or managers rather than undergraduate students holding

formal leadership roles. The present study therefore extends empirical attention to a student leadership population in a Chinese higher education setting.

The contextual contribution should, however, be interpreted carefully. The study does not directly measure collectivism, Confucian values, respect for authority, or related cultural orientations. It therefore cannot determine whether the observed relationships are caused or moderated by these cultural characteristics. Future comparative research that directly measures cultural values would be better positioned to test whether the strength or form of the relationships differs across cultural settings.

7. Practical and Policy Implications

The findings have potential implications for university leadership development programmes, student affairs units, and educators. Because the study is cross sectional, these implications should be regarded as informed directions for programme design rather than evidence that particular interventions will necessarily produce the observed outcomes.

For university leadership development programmes, the findings suggest that emotional and interpersonal competencies may be worthwhile areas of attention. In particular, interpersonal communication showed comparatively strong relationships with both Self-efficacy and student leadership development. Leadership programmes may therefore consider including structured opportunities for students to practise active listening, clear expression, feedback, teamwork, emotional regulation, and constructive responses to interpersonal challenges.

Social Cognitive Theory also suggests the potential value of learning experiences that allow students to build confidence through practice and feedback. Universities could provide supervised leadership activities, mentoring, simulations, collaborative projects, and reflective exercises that allow students to apply interpersonal and emotional skills in realistic situations. Such approaches are theoretically consistent with the role of mastery experiences, social feedback, and observational learning in the development of efficacy beliefs.

Student affairs units may also consider providing developmental support to newly appointed student leaders. Mentoring from experienced student leaders, academic staff, or trained advisers could provide opportunities for modelling, feedback, and reflection. However, emotional intelligence assessments should be used cautiously and primarily for developmental rather than exclusionary purposes, particularly when adapted instruments have not been independently validated for high stakes selection.

For educators, classroom activities involving teamwork, peer collaboration, group problem solving, and reflective discussion may create opportunities for students to practise interpersonal and leadership related competencies. Constructive feedback may also help students evaluate their strengths and areas for development.

At the policy level, the present findings do not by themselves justify mandating emotional intelligence or Self-efficacy interventions across institutions. Instead, they provide preliminary empirical support for further programme development and evaluation. Institutions interested in incorporating emotional competence and leadership confidence into student development initiatives should assess such programmes using longitudinal, experimental, or quasi

experimental designs to determine whether they produce measurable improvements in leadership outcomes.

8. Limitations and Future Research

Several limitations should be considered when interpreting the findings. First, the study used a cross sectional design in which all constructs were measured at a single point in time. The results therefore support statistical associations but do not establish temporal ordering or causal relationships. This limitation is particularly important for the proposed mediation model because statistical mediation in cross sectional data does not demonstrate that emotional competencies first influence Self-efficacy and that Self-efficacy subsequently influences leadership development. Longitudinal and experimental research is needed to examine these temporal relationships more directly. Second, the study relied on self-reported measures of emotional competencies, Self-efficacy, and student leadership development. The use of a single response source may increase the risk of common method variance, social desirability effects, and shared self-perception biases. Unless a specific common method bias analysis is reported transparently in the Results, the manuscript should not claim that common method bias was demonstrated to be negligible. Future research should incorporate additional data sources such as peer ratings, supervisor evaluations, behavioural assessments, or objective indicators of leadership activity. Third, the study used purposive sampling and focused on undergraduate students holding formal leadership positions in selected higher education institutions in Shandong Province. The findings therefore should not be generalised automatically to all university students, all student leaders in China, public universities, or higher education systems in other countries. Replication across different institutional types, provinces, and national contexts would strengthen the external validity of the findings. Fourth, the measurement strategy requires further consideration. The six emotional competence dimensions represent adaptations from more than one measurement tradition and do not correspond directly to the original four-dimensional Wong and Law Emotional Intelligence Scale. The Self-efficacy items also appear to focus on confidence in leadership related activities rather than generalized Self-efficacy. Future research should provide detailed item provenance, undertake rigorous construct validation, and consider whether leadership Self-efficacy is a more precise construct label. Fifth, student leadership development was assessed using respondents' perceptions rather than objectively observed developmental change. Cross sectional self-reports cannot establish whether students' leadership abilities improved over time. Future studies could use repeated measures, behavioural assessments, leadership performance ratings, or longitudinal indicators to examine actual developmental change. Sixth, the current model does not include several potentially relevant factors. Variables such as personality, leadership identity, resilience, mentoring quality, organisational climate, prior leadership experience, and institutional support may influence both efficacy beliefs and leadership development. Future studies may benefit from examining these variables as controls, moderators, antecedents, or additional mediators. Finally, future research should directly examine cultural context rather than infer cultural effects from geographical location. Measures of collectivism, power distance, relational orientation, Confucian values, or related constructs could be incorporated into comparative designs to test whether cultural orientations influence

the strength of the relationships among emotional competencies, Self-efficacy, and leadership development.

9. Conclusion

This study examined the relationships among six emotional competence dimensions, Self-efficacy, and student leadership development among 394 undergraduate students holding formal leadership positions in higher education institutions in Shandong Province China. The findings indicate that emotional awareness, empathy, emotional regulation, interpersonal communication, and self-motivation were positively associated with student leadership development, whereas conflict resolution did not show a statistically significant direct relationship. Interpersonal communication showed the strongest direct association with student leadership development and the strongest association with Self-efficacy. All six emotional competence dimensions were positively associated with Self-efficacy, and Self-efficacy was positively associated with student leadership development.

The model accounted for 60.3% of the variance in Self-efficacy and 61.3% of the variance in student leadership development. These findings suggest that emotional competencies and efficacy beliefs are meaningfully related to how student leaders perceive their leadership development. They also support the value of examining emotional competencies as distinct dimensions rather than treating emotional intelligence solely as an aggregate construct. The proposed indirect relationships through Self-efficacy provide an important direction for interpreting the integrated theoretical model. However, final conclusions concerning mediation should be made only after the specific indirect effects have been verified against the final SmartPLS output. Given the cross-sectional design, any confirmed mediation should be interpreted as a statistical indirect association rather than evidence of a causal psychological mechanism. Overall, the study contributes context specific evidence concerning emotional competencies, Self-efficacy, and student leadership among undergraduate students in Shandong Province. The findings provide a basis for further longitudinal, multi-source, and intervention based research and suggest that interpersonal communication, emotional regulation, and leadership related efficacy beliefs may be useful areas for future student leadership development initiatives.

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Appendices

Appendix A. Standardized Indicator Loadings

Table A1 reports the standardised outer loadings for the indicators retained in the final measurement model. The results indicate that most indicators loaded strongly on their respective constructs. The lowest loading was observed for E4 (0.665), whereas the remaining indicators generally exhibited loadings above 0.80. Although E4 was comparatively lower than the other indicators, the empathy construct retained satisfactory internal consistency and convergent validity at the construct level. The indicator should therefore not be removed solely on the basis of its loading without considering its theoretical relevance and the effect of removal on construct validity.

Table A1: Standardized Indicator Loadings

Construct	Indicator	Loading
Emotional Awareness	EA1	0.915
	EA2	0.953
	EA3	0.940
	EA4	0.939
Empathy	E1	0.905
	E2	0.916
	E3	0.801
	E4	0.665
Emotional Regulation	ER1	0.812
	ER2	0.871
	ER3	0.938
	ER4	0.866
Interpersonal Communication	IC1	0.870
	IC2	0.920
	IC3	0.928
	IC4	0.914
Self-Motivation	SM1	0.935
	SM2	0.949
	SM3	0.953
	SM4	0.879
Conflict Resolution	CR1	0.862
	CR2	0.875
	CR3	0.946
	CR4	0.905
Self-Efficacy	SE1	0.930
	SE2	0.915
	SE3	0.915
	SE4	0.951
Student Leadership Development	SLD1	0.886
	SLD2	0.882
	SLD3	0.874
	SLD4	0.875

Note. EA = emotional awareness; E = empathy; ER = emotional regulation; IC = interpersonal communication; SM = self-motivation; CR = conflict resolution; SE = self-efficacy; SLD = student leadership development. Values should be checked against the final SmartPLS measurement-model output before submission.

Appendix B. Fornell–Larcker Criterion

Discriminant validity was additionally examined using the Fornell–Larcker criterion. As shown in Table B1, the square root of the average variance extracted for each construct, presented on the diagonal, was greater than its correlations with the other constructs. The reported results therefore provide supplementary evidence that the eight constructs were empirically distinguishable in the estimated measurement model.

Table B1: Fornell–Larcker Criterion

Construct	EA	E	ER	IC	SM	CR	SE	SLD
EA	0.937							
E	0.525	0.826						
ER	0.283	0.333	0.873					
IC	0.543	0.473	0.551	0.909				
SM	0.472	0.420	0.292	0.515	0.929			
CR	0.411	0.357	0.452	0.724	0.385	0.897		
SE	0.514	0.487	0.566	0.731	0.476	0.485	0.928	
SLD	0.563	0.532	0.507	0.699	0.513	0.530	0.691	0.879

Note. Diagonal values in bold represent the square roots of AVE. Off-diagonal values represent interconstruct correlations. EA = emotional awareness; E = empathy; ER = emotional regulation; IC = interpersonal communication; SM = self-motivation; CR = conflict resolution; SE = self-efficacy; SLD = student leadership development.

Appendix C. Effect Sizes

Table C1 presents the reported effect sizes (f^2) for the structural relationships. The values provide information about the contribution of individual exogenous constructs to the explained variance of the relevant endogenous construct. The largest reported effect size was observed for interpersonal communication in relation to self-efficacy ($f^2 = 0.351$), while the reported effect of self-efficacy on student leadership development was $f^2 = 0.244$.

Table C1: Effect Sizes for Structural Relationships

Relationship	f^2	Interpretation
EA → SE	0.120	Small
E → SE	0.118	Small
ER → SE	0.198	Moderate
IC → SE	0.351	Large
SM → SE	0.111	Small
CR → SE	0.120	Small
EA → SLD	0.139	Small
E → SLD	0.129	Small
ER → SLD	0.123	Small
IC → SLD	To be verified	—
SM → SLD	0.126	Small

CR → SLD	0.137 — verify	Small
SE → SLD	0.244	Moderate

Note. f^2 values of approximately 0.02, 0.15, and 0.35 are conventionally interpreted as small, moderate, and large effects, respectively. The IC → SLD effect size is absent from the current reported output and must be obtained from the final SmartPLS results. The reported CR → SLD value should also be checked against the original SmartPLS output because the corresponding direct structural coefficient was small and statistically nonsignificant.

Appendix D. Measurement Specification and Instrument Provenance

The study operationalised emotional competence through six dimensions: emotional awareness, empathy, emotional regulation, interpersonal communication, self-motivation, and conflict resolution. Four indicators were specified for each emotional competence dimension, producing 24 emotional competence indicators. The questionnaire documentation states that these indicators were adapted from the Wong and Law Emotional Intelligence Scale and other measures used in the study context. However, the six-dimensional structure used in the present study should be regarded as an adapted measurement specification rather than as a direct reproduction of the original Wong and Law scale.

Self-efficacy was operationalised using leadership-related efficacy statements assessing respondents' confidence in performing activities such as leading, influencing others, resolving conflicts, and inspiring team members. Consequently, the operationalisation is more leadership-specific than a conventional general self-efficacy measure. Student leadership development was measured through respondents' perceptions of improvements in their leadership competencies, organisational effectiveness, and behavioural capabilities associated with their leadership experiences.

Table D1: Measurement Specification of the Study Constructs

Construct	Code	Retained Indicators	Number Retained	Measurement Focus
Emotional Awareness	EA	EA1–EA4	4	Awareness and understanding of emotions
Empathy	E	E1–E4	4	Understanding and responding to others' emotions
Emotional Regulation	ER	ER1–ER4	4	Management and regulation of emotional responses
Interpersonal Communication	IC	IC1–IC4	4	Communication and interpersonal interaction
Self-Motivation	SM	SM1–SM4	4	Motivation and persistence in leadership-related activities
Conflict Resolution	CR	CR1–CR4	4	Management and resolution of interpersonal conflict

Self-Efficacy	SE	SE1–SE4	4 retained in reported model	Confidence in leadership- related capabilities
Student Leadership Development	SLD	SLD1–SLD4	4	Perceived development of leadership capabilities

Note. All constructs were assessed using a five-point Likert response format ranging from 1 = strongly disagree to 5 = strongly agree. The original Method section states that self-efficacy contained five indicators (SE1–SE5), whereas the reported SmartPLS measurement model contains only SE1–SE4. The final manuscript must clarify whether SE5 was removed before or during measurement-model assessment and provide the reason for its exclusion. If SE5 was never administered or was reported in error, the Method section should instead be corrected to four items. The exact wording and item-level provenance of the adapted indicators should be reported only after they have been checked against the questionnaire actually administered to participants. Because the current manuscript does not reproduce the individual questionnaire statements, the item wording should not be reconstructed retrospectively from the cited scales.