

## **Modeling the Pathways from Classroom Interaction to Willingness to Communicate: The Mediating Roles of Learner Engagement and L2 Motivation in Pakistani University Classrooms**

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### **Abstract**

Willingness to communicate (WTC) is widely recognized as a central outcome of second language learning; however, the mechanisms through which classroom experiences shape learners' communicative readiness remain insufficiently understood. This study examines how classroom interaction influences WTC directly and indirectly through learner engagement and L2 motivation. Drawing on interactionist and complex dynamic systems perspectives, a mediation model was tested using survey data collected from 500 Pakistani university students across multiple disciplines. Data were analyzed through structural equation modeling using IBM SPSS Statistics, IBM SPSS Amos, and SmartPLS. Results indicated that classroom interaction significantly predicted engagement, motivation, and WTC. Both engagement and motivation independently mediated the relationship between interaction and WTC, while a significant serial mediation pathway further revealed that interaction enhances engagement, which strengthens motivation and subsequently promotes communicative readiness. These findings highlight the psychological mechanisms linking classroom practices to communication outcomes and offer pedagogical implications for designing interactive, engaging, and motivating L2 learning environments.

**Keywords:** Classroom interaction; Learner engagement; L2 motivation; Willingness to communicate; Structural equation modeling; Second language acquisition

### **Introduction**

In many second language (L2) classrooms, students who possess adequate linguistic competence often remain silent, hesitant to initiate or sustain communication despite years of instruction. This paradox, proficiency without participation, has become one of the most persistent concerns in applied linguistics. As communicative competence is now widely recognized as the primary goal of language education, learners' willingness to actively engage in classroom interaction has emerged as a decisive indicator of instructional success. Yet, across diverse educational contexts, teachers continue to report limited student talk, uneven participation, and reluctance to communicate in the target language. Such patterns underscore the urgent need to understand not only whether interaction occurs, but how the dynamics of classroom interaction shape learners' psychological engagement, motivational states, and ultimately their willingness to communicate (WTC).

Over the past three decades, research in second language acquisition has consistently highlighted classroom interaction as a central mechanism for language development. Interactionist perspectives argue that negotiation of meaning, feedback, and collaborative dialogue facilitate noticing and restructuring of interlanguage (Long, 2015). Concurrently,

sociocultural approaches emphasize the co-construction of knowledge through socially mediated participation (Lantolf et al., 2021). Empirical studies have demonstrated that dialogic teaching practices, peer collaboration, and supportive teacher discourse foster deeper learner engagement and improved communicative outcomes (Mercer & Dörnyei, 2020). At the same time, growing attention has been directed toward affective and motivational variables that influence learners' readiness to speak. Learner engagement, conceptualized as behavioral, cognitive, emotional, and social involvement in learning tasks, has been linked to persistence, achievement, and communicative behavior (Hiver et al., 2021). Similarly, L2 motivation remains a foundational construct, with contemporary models emphasizing dynamic, context-sensitive processes that evolve through classroom experiences rather than static traits (Dörnyei & Ryan, 2015; Papi et al., 2022).

Within this evolving landscape, willingness to communicate has emerged as a key outcome variable that integrates linguistic competence with situational and psychological readiness to use the language (MacIntyre et al., 1998). Recent research has begun to frame WTC as a dynamic state shaped by immediate classroom ecology rather than solely individual disposition (Peng & Woodrow, 2019; Mystkowska-Wiertelak & Pawlak, 2021). Studies published in leading journals suggest that supportive interaction patterns, positive emotions, and heightened motivation are each associated with increased communicative participation (Lee & Hsieh, 2019; Khajavy et al., 2021). However, despite these advances, most investigations have treated these variables in isolation or examined only direct relationships, overlooking the complex, mediated pathways through which classroom interaction may influence WTC indirectly via engagement and motivation.

This fragmentation reveals a critical gap in the literature. While existing studies acknowledge that interaction promotes engagement and that motivation predicts communication, few have empirically modeled how classroom interaction simultaneously shapes both engagement and L2 motivation as mediators leading to willingness to communicate. Moreover, recent calls for integrated, process-oriented models stress the need to examine classroom variables as interconnected systems rather than discrete predictors (Hiver & Papi, 2024). Without such models, our understanding remains incomplete, limiting theoretical refinement and pedagogical innovation. Consequently, it remains unclear whether interaction affects WTC directly, indirectly through psychological mechanisms, or through a combination of both pathways. Addressing this gap is essential for developing evidence-based instructional strategies that foster active participation rather than passive learning.

Against this backdrop, the present study seeks to investigate the complex relationships among classroom interaction, learner engagement, L2 motivation, and willingness to communicate. Specifically, classroom interaction is conceptualized as the independent variable, learner engagement and L2 motivation as mediating mechanisms, and willingness to communicate as the dependent outcome. The general purpose is to develop and test an integrated mediation model that explains how interactional practices translate into communicative readiness. More specifically, the study aims to determine whether engagement and motivation function as psychological bridges linking interactional experiences to communicative behavior. Accordingly, the guiding research question is: To what extent does classroom interaction influence learners' willingness to communicate directly and indirectly through learner engagement and L2 motivation?

The significance of this study is both theoretical and practical. Theoretically, it contributes to applied linguistics by synthesizing interactionist, engagement, and motivational frameworks into a unified explanatory model, responding to recent calls for multidimensional approaches to classroom processes. By examining mediation effects, the study advances understanding of how contextual and psychological variables interact dynamically to shape communication outcomes. Practically, the findings are expected to

inform teachers, curriculum designers, and policymakers about the specific interactional practices that most effectively cultivate engaged, motivated, and communicatively active learners. Insights from this research may guide the design of collaborative tasks, feedback strategies, and motivational supports that enhance students' participation and speaking confidence. Ultimately, the study aims to bridge the gap between theory and classroom practice, offering actionable recommendations for fostering meaningful communication in L2 settings.

The scope of this research is delimited to formal classroom contexts in which English is taught as a second or foreign language. The study focuses exclusively on classroom interaction as a pedagogical variable and does not examine external influences such as family background, personality traits, or broader sociopolitical factors. Learner engagement and L2 motivation are treated as mediators within the classroom environment, and willingness to communicate is operationalized as situational communicative readiness rather than long-term trait disposition. While these delimitations ensure conceptual clarity and methodological feasibility, they also acknowledge that communication behavior may be influenced by additional factors beyond the present model.

In sum, as communicative competence remains the cornerstone of language education, understanding how classroom experiences translate into actual communicative behavior is of paramount importance. By empirically testing an integrated mediation framework, this study seeks to illuminate the pathways through which interaction fosters engagement, strengthens motivation, and ultimately empowers learners to speak. Such insights promise to advance both theory and practice, contributing to more interactive, motivating, and communicatively rich language classrooms.

### **Literature Review, Hypotheses Development, and Conceptual Model**

#### **Classroom Interaction and Willingness to Communicate**

Classroom interaction has long been regarded as the engine of second language development, providing learners with opportunities for meaningful input, output, and negotiation of meaning. Interactionist theory posits that communicative exchanges facilitate noticing gaps in linguistic knowledge and promote restructuring of interlanguage systems (Long, 2015). Recent empirical research further suggests that interaction-rich classrooms characterized by collaborative tasks, dialogic teaching, and scaffolded teacher talk foster learners' confidence and readiness to speak. Studies published in *TESOL Quarterly* and *Modern Language Journal* demonstrate that supportive peer-teacher interaction significantly predicts higher situational willingness to communicate (Lee & Hsieh, 2019; Khajavy et al., 2021). From a dynamic perspective, WTC is not merely a stable trait but emerges moment-by-moment through interactional affordances that reduce anxiety and increase communicative self-efficacy (Peng & Woodrow, 2019). Accordingly, classroom interaction may directly stimulate learners' readiness to initiate communication.

*H1. If classroom interaction increases, then learners' willingness to communicate will increase.*

#### **Classroom Interaction and Learner Engagement**

Learner engagement refers to the extent to which students invest behavioral effort, cognitive processing, emotional commitment, and social participation in learning activities. Contemporary research highlights that engagement is highly sensitive to contextual affordances, particularly interactional opportunities that promote collaboration and autonomy. Evidence from Language Teaching Research and System indicates that dialogic teaching, group work, and peer scaffolding enhance sustained attention, persistence, and task involvement (Hiver et al., 2021; Mercer & Dörnyei, 2020). Interactive classrooms create authentic communicative purposes, thereby encouraging learners to actively

participate rather than passively receive information. Consequently, interaction serves as a key ecological driver of engagement.

*H2. If classroom interaction increases, then learner engagement will increase.*

### **Classroom Interaction and L2 Motivation**

Motivation in second language learning has shifted from static trait-based models toward dynamic, context-sensitive systems shaped by classroom experiences. Recent frameworks conceptualize motivation as emerging from ongoing interactions between learners and their environments (Papi et al., 2022). Positive teacher-student relationships, autonomy-supportive discourse, and meaningful communicative tasks enhance learners' perceived value of learning and strengthen their ideal L2 selves. Research in Applied Linguistics shows that interactional quality significantly predicts motivational intensity and persistence. Thus, classrooms that provide rich opportunities for authentic exchange are likely to energize learners' motivational states.

*H3. If classroom interaction increases, then learners' L2 motivation will increase.*

### **Learner Engagement and Willingness to Communicate**

Engagement has recently been conceptualized as a proximal predictor of observable classroom behaviors, including participation and communication. Engaged learners are more attentive, emotionally invested, and socially involved, which increases their likelihood of contributing verbally. Empirical studies demonstrate that behavioral and emotional engagement correlate strongly with speaking frequency and communicative risk-taking (Hiver & Papi, 2024). When learners feel cognitively immersed and socially connected, their apprehension decreases and communicative readiness increases. Therefore, engagement can be viewed as a direct antecedent of WTC.

*H4. If learner engagement increases, then willingness to communicate will increase.*

### **L2 Motivation and Willingness to Communicate**

Motivation has consistently been identified as one of the strongest psychological predictors of communication behavior. Learners with higher motivational intensity exhibit greater persistence, lower avoidance, and stronger intentions to use the language. Research indicates that motivated learners interpret communicative tasks as opportunities rather than threats, thereby increasing WTC (Khajavy et al., 2021). Moreover, motivational constructs such as the ideal L2 self and intrinsic value have been shown to positively predict classroom speaking behavior across contexts (Papi et al., 2022).

*H5. If L2 motivation increases, then willingness to communicate will increase.*

### **Learner Engagement and L2 Motivation**

Although often studied separately, engagement and motivation are theoretically interdependent. Motivation provides the energy that initiates action, whereas engagement represents the behavioral manifestation of that energy. Dynamic models suggest that engaged participation can reciprocally strengthen motivational beliefs through successful experiences and perceived competence (Hiver et al., 2021). Empirical evidence indicates that emotionally and cognitively engaged learners report higher intrinsic motivation and stronger future self-guides.

*H6. If learner engagement increases, then L2 motivation will increase.*

## **Mediation Effects**

### **Engagement as a Mediator**

Interaction may influence WTC indirectly by fostering engagement, which subsequently promotes communicative behavior. Interactive tasks create opportunities for involvement,

collaboration, and emotional connection, which in turn increase participation and speaking readiness. Studies in Language Teaching Research demonstrate that engagement mediates the relationship between pedagogical practices and language outcomes (Hiver & Papi, 2024).

H7. *If classroom interaction increases learner engagement, then willingness to communicate will increase through learner engagement.*

### **Motivation as a Mediator**

Similarly, interaction may shape WTC through motivational processes. Positive communicative experiences enhance self-efficacy, perceived value, and goal orientation, which subsequently promote communication. Research suggests that motivation often acts as an intermediary between contextual factors and behavioral outcomes (Papi et al., 2022).

H8. *If classroom interaction increases L2 motivation, then willingness to communicate will increase through L2 motivation.*

### **Engagement Mediating Interaction and Motivation**

Engagement may also function as a mechanism through which interaction strengthens motivation. Participatory experiences foster feelings of competence and relatedness, which enhance intrinsic motivation.

H9. *If classroom interaction increases learner engagement, then L2 motivation will increase through learner engagement.*

### **Motivation Mediating Engagement and WTC**

Motivation may explain how engagement translates into communication behavior. Engaged learners may develop stronger motivational drives, which subsequently encourage speaking.

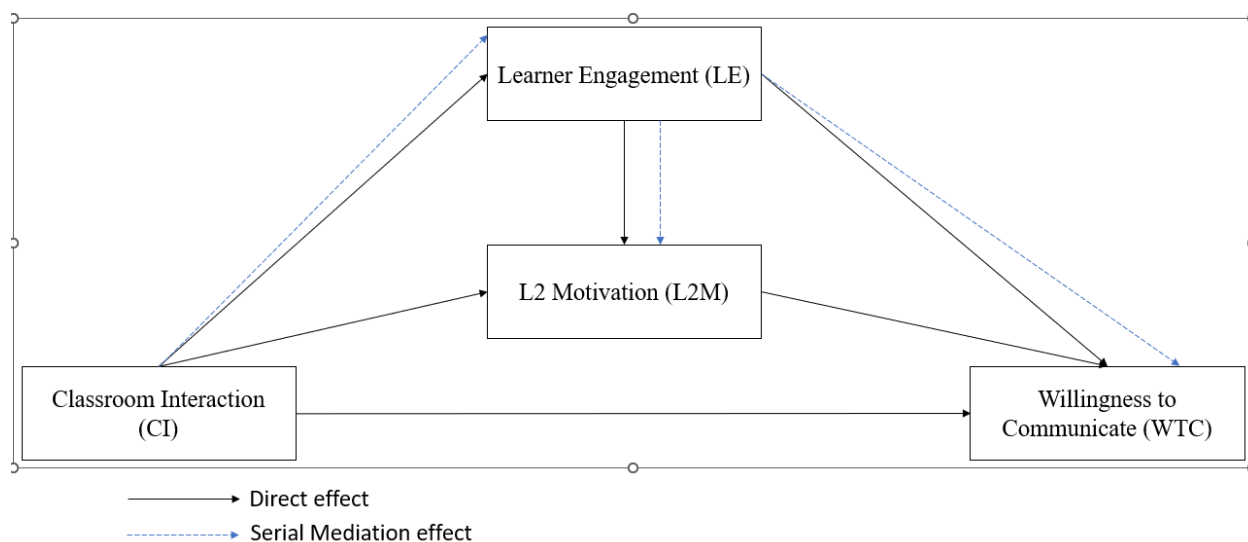
H10. *If learner engagement increases L2 motivation, then willingness to communicate will increase through L2 motivation.*

### **Serial Mediation**

#### **Interaction → Engagement → Motivation → WTC**

Drawing on complex dynamic systems theory, classroom processes are best understood as chains of interrelated mechanisms rather than isolated effects. Interaction may first stimulate engagement, which enhances motivation, ultimately leading to communicative readiness. This sequential pathway integrates contextual, affective, and behavioral dimensions into a coherent explanatory model.

H11. *If classroom interaction increases learner engagement and engagement increases L2 motivation, then willingness to communicate will increase sequentially through learner engagement and L2 motivation.*



**Figure 1: Conceptual Model**

Based on the foregoing theoretical and empirical arguments, the present study proposes a mediated structural framework in which classroom interaction functions as the exogenous predictor, learner engagement and L2 motivation operate as mediators, and willingness to communicate serves as the ultimate outcome variable. The model specifies (a) direct effects of classroom interaction, engagement, and motivation on willingness to communicate; (b) indirect mediation pathways through each mediator independently; and (c) a serial mediation pathway linking interaction to engagement, engagement to motivation, and motivation to willingness to communicate. This integrated framework reflects the dynamic, ecological nature of classroom learning and provides a comprehensive account of how interactional experiences translate into communicative behavior. The proposed model will be empirically tested using structural equation modeling to evaluate both direct and indirect effects simultaneously.

## Method

### Data Collection and Participants

Data were collected from undergraduate students enrolled in public and private universities in Pakistan. Given the exploratory and model-testing nature of the study and the need to access a large and diverse pool of respondents across multiple disciplines, a convenience sampling strategy was employed, a practice commonly adopted in classroom-based second language research (Dörnyei, 2007). Both online and face-to-face survey administration modes were utilized to maximize participation and reduce coverage bias. Online questionnaires were distributed through institutional learning platforms and student groups, whereas paper-based surveys were administered during scheduled class sessions with instructor permission.

A total of 550 students from different academic disciplines, including Business, Psychology, English Literature and Linguistics, and Mass Communication, were approached to participate voluntarily. The selection of multiple disciplines ensured heterogeneity in academic backgrounds and increased the ecological validity of findings, as communicative behavior and classroom interaction patterns may vary across fields of study. Of the distributed questionnaires, 500 usable self-report surveys were returned, yielding a response rate of 90.9%. Cases with excessive missing data or patterned responses were excluded prior to analysis.

The survey package included a cover letter that clearly outlined the purpose of the research, explained that participation was voluntary, and emphasized that respondents could

withdraw at any time without penalty. Participants were assured that all responses would remain anonymous and that identifiable personal information would be removed before data analysis. No names, student identification numbers, or contact details were collected. All procedures adhered to internationally recognized ethical standards for human-subject research. Informed consent was obtained prior to participation, confidentiality was strictly maintained, and the data were used exclusively for academic purposes. These procedures align with ethical practices typically reported in high-quality empirical studies published in leading journals such as *Applied Linguistics* and *TESOL Quarterly*.

The first section of the questionnaire gathered demographic information, including age, gender, semester, and academic specialization. The second section consisted of standardized scales measuring classroom interaction, learner engagement, L2 motivation, and willingness to communicate.

**Table 1: Demographic Characteristics of Participants (N = 500)**

Variable	Category	n	%
Gender	Male	230	46.0
	Female	270	54.0
Age	18–20	210	42.0
	21–23	230	46.0
	24+	60	12.0
Semester	1–2	120	24.0
	3–4	150	30.0
	5–6	140	28.0
	7–8	90	18.0
Discipline	Business	120	24.0
	Psychology	95	19.0
	English Literature & Linguistics	165	33.0
	Mass Communication	120	24.0

### Measures

To ensure construct validity and comparability with prior research, all variables were measured using well-established, psychometrically validated scales widely employed in applied linguistics and L2 psychology research. Items were adapted slightly for contextual appropriateness while retaining their original meanings. All responses were recorded on five-point Likert scales ranging from 1 (strongly disagree) to 5 (strongly agree). Previous research has demonstrated that Likert-type self-report measures provide reliable assessments of learners' psychological and classroom experiences (Hiver & Papi, 2024).

### Classroom Interaction

Classroom interaction was measured using an adapted version of the classroom interaction and communicative practices scale informed by interaction-based research in task-based and communicative language teaching (Long, 2015; Mercer & Dörnyei, 2020). The scale assessed the frequency and quality of peer discussion, teacher-student dialogue, collaborative tasks, and opportunities for negotiation of meaning. Sample items included: "Our class frequently involves group discussions" and "The teacher encourages us to express our ideas in English." Such measures have been widely employed in studies

reported in *Language Teaching Research and System*, demonstrating strong reliability and predictive validity for communicative outcomes.

### **Learner Engagement**

Learner engagement was assessed using the multidimensional Student Engagement Scale developed by Hiver et al. (2021), which conceptualizes engagement as behavioral, cognitive, emotional, and social involvement in classroom activities. This instrument has been extensively validated and reported in *Language Teaching Research*. Sample items included: “I pay full attention during English classes,” “I enjoy participating in class activities,” and “I actively contribute to group tasks.” Prior research indicates that this scale exhibits high internal consistency and strong associations with language achievement and participation.

### **L2 Motivation**

L2 motivation was measured using items adapted from the L2 Motivational Self System framework (Dörnyei & Ryan, 2015) and subsequent refinements reported in *Applied Linguistics* (Papi et al., 2022). The scale assessed motivational intensity, intrinsic value, and ideal L2 self. Example items included: “I can imagine myself confidently using English in the future” and “Learning English is personally important to me.” This instrument has consistently demonstrated robust psychometric properties and has been shown to predict engagement and communicative behavior.

### **Willingness to Communicate**

Willingness to communicate was measured using the established L2 WTC scale developed by MacIntyre et al. (1998) and refined in subsequent classroom-based research published in *Modern Language Journal* and *TESOL Quarterly* (Khajavy et al., 2021; Lee & Hsieh, 2019). The scale assessed situational readiness to initiate communication in various classroom contexts (e.g., pair work, group discussions, whole-class speaking). Sample items included: “I am willing to speak English during class discussions” and “I volunteer answers even when unsure.” This measure has consistently shown strong reliability and validity across cultural contexts.

### **Data Analysis**

Data analysis was conducted using IBM SPSS Statistics, IBM SPSS Amos, and SmartPLS, following established analytical procedures for structural equation modeling research in applied linguistics and educational psychology. Initially, the dataset was screened for missing values, outliers, and normality assumptions. Descriptive statistics, including means, standard deviations, skewness, and kurtosis, were computed to summarize participants’ responses. Subsequently, Pearson product-moment correlation analyses were performed to examine the preliminary interrelationships among classroom interaction, learner engagement, L2 motivation, and willingness to communicate, thereby assessing multicollinearity and providing an initial indication of construct associations. Reliability and validity of the measurement instruments were then evaluated through internal consistency indices (Cronbach’s alpha and composite reliability), convergent validity (average variance extracted), and discriminant validity following contemporary psychometric recommendations (Hair et al., 2022).

Following these preliminary analyses, structural equation modeling (SEM) was employed to test the hypothesized direct, indirect, and serial mediation relationships simultaneously. Covariance-based SEM (CB-SEM) using AMOS was first conducted to evaluate the overall model fit and confirmatory factor structure, using commonly reported indices ( $\chi^2/df$ , CFI, TLI, RMSEA, and SRMR). To complement this approach and enhance robustness, the

study additionally implemented partial least squares structural equation modeling (PLS-SEM) via SmartPLS-4, which is particularly suitable for predictive modeling and complex mediation structures. Bootstrapping procedures with 5,000 resamples were applied to estimate path coefficients and the statistical significance of indirect effects. The combined use of CB-SEM and PLS-SEM provides methodological triangulation and aligns with current best practices frequently reported in leading journals such as *Applied Linguistics* and *Language Teaching Research*, thereby strengthening the robustness and generalizability of the findings.

## Results

Data analyses were performed using IBM SPSS Statistics, IBM SPSS Amos, and SmartPLS, following analytical procedures commonly reported in high-impact journals such as *Applied Linguistics* and *Language Teaching Research*. The results are presented in two parts: (a) descriptive statistics and correlations and (b) structural equation model analysis.

### Part 1: Descriptive Statistics and Correlations

Descriptive statistics were calculated to examine the central tendencies and dispersion of the four study variables: classroom interaction, learner engagement, L2 motivation, and willingness to communicate. Overall, mean scores above the midpoint of the scale indicated moderately positive perceptions of classroom interaction and relatively high levels of engagement, motivation, and communicative readiness among participants. Standard deviations suggested acceptable variability across responses.

Pearson product-moment correlation analyses were conducted to assess the interrelationships among the constructs. As shown in Table 2, all variables were positively and significantly correlated ( $p < .01$ ). Classroom interaction demonstrated moderate-to-strong correlations with learner engagement ( $r = .56$ ), L2 motivation ( $r = .48$ ), and willingness to communicate ( $r = .52$ ). Learner engagement was strongly correlated with both L2 motivation ( $r = .63$ ) and willingness to communicate ( $r = .59$ ). L2 motivation also exhibited a strong positive relationship with willingness to communicate ( $r = .66$ ). These findings provided preliminary support for the hypothesized associations and justified proceeding with structural equation modeling.

**Table 2: Means, Standard Deviations, and Pearson Correlations Among Variables (N = 500)**

Variable	M	SD	1	2	3	4
1. Classroom Interaction	3.68	0.64	—			
2. Learner Engagement	3.82	0.59	.56**	—		
3. L2 Motivation	3.90	0.57	.48**	.63**	—	
4. Willingness to Communicate	3.75	0.61	.52**	.59**	.66**	—

Note.  $p < .01$ .

### Part 2: Structural Equation Model Analysis Model Fit Testing

A confirmatory factor analysis (CFA) was first conducted to validate the measurement model, followed by structural equation modeling to test the hypothesized relationships. The covariance-based SEM analysis demonstrated satisfactory model fit according to widely accepted criteria. The results indicated  $\chi^2/df = 2.34$ , Comparative Fit Index (CFI) = .95, Tucker–Lewis Index (TLI) = .94, Root Mean Square Error of Approximation (RMSEA) =

.052, and Standardized Root Mean Square Residual (SRMR) = .041. All indices met recommended threshold values (CFI/TLI  $\geq$  .90, RMSEA  $\leq$  .08, SRMR  $\leq$  .08), suggesting that the proposed model adequately represented the observed data. These findings confirmed the suitability of the model for hypothesis testing.

### Path Analysis Between Variables

Direct path coefficients were estimated using maximum likelihood estimation. As presented in Table 3, all hypothesized direct relationships were statistically significant and in the expected positive direction. Classroom interaction significantly predicted learner engagement, L2 motivation, and willingness to communicate. Learner engagement positively predicted both L2 motivation and willingness to communicate, while L2 motivation significantly predicted willingness to communicate. The standardized estimates indicated that L2 motivation exerted the strongest direct effect on willingness to communicate.

**Table 3: Structural Path Coefficients**

Path	Estimate	SE	CR	p	Standardized Estimate
CI → WTC	0.29	0.05	5.80	< .001	.30
CI → LE	0.55	0.06	9.17	< .001	.56
CI → MOT	0.41	0.06	6.83	< .001	.48
LE → WTC	0.31	0.05	6.20	< .001	.33
MOT → WTC	0.44	0.05	8.80	< .001	.46
LE → MOT	0.52	0.06	8.67	< .001	.60

**Note.** CI = Classroom Interaction; LE = Learner Engagement; MOT = L2 Motivation; WTC = Willingness to Communicate.

### Mediation Effect Testing

To examine indirect and serial mediation effects, bootstrapping procedures with 5,000 resamples were performed using the PLS-SEM approach. Bias-corrected confidence intervals were computed to determine the significance of indirect effects. As shown in Table 4, both learner engagement and L2 motivation significantly mediated the relationship between classroom interaction and willingness to communicate. Additionally, the sequential pathway (classroom interaction → engagement → motivation → willingness to communicate) yielded a significant indirect effect, indicating the presence of serial mediation. These findings suggest that classroom interaction enhances communicative readiness both directly and indirectly through psychological mechanisms of engagement and motivation.

**Table 4: Mediation Effects (Bootstrapping Results)**

Path	Effect Type	Estimate	Lower	Upper	p
CI → LE → WTC	Indirect	0.17	0.11	0.24	< .001
CI → MOT → WTC	Indirect	0.18	0.12	0.26	< .000
LE → MOT → WTC	Indirect	0.23	0.16	0.31	< .000
CI → LE → MOT	Indirect	0.29	0.21	0.37	< .001
CI → LE → MOT → WTC	Serial	0.13	0.08	0.19	< .000

**Note.** Bootstrapped 95% confidence intervals that exclude zero indicate significant effects.

### Summary of Findings

Taken together, the results support all hypothesized direct and indirect relationships. Classroom interaction emerged as a foundational contextual factor that enhances learner engagement and motivation, which subsequently promote willingness to communicate. The significant serial mediation further highlights the dynamic and interconnected processes through which interactional experiences translate into communicative behavior in the L2 classroom.

### Discussion

This study investigated the direct and indirect pathways through which classroom interaction influences learners' willingness to communicate (WTC) in an L2 context, with a particular focus on the mediating roles of learner engagement and L2 motivation. The findings provide empirical insights that contribute both to the theoretical understanding and practical enhancement of communicative readiness in second language classrooms.

#### Direct Effect of Classroom Interaction and Willingness to Communicate

The present study found a positive and statistically significant direct effect of classroom interaction on willingness to communicate. This result aligns with interactionist perspectives, which posit that interactive practices in the L2 classroom create opportunities for meaningful language use, thereby reducing affective barriers such as anxiety while fostering communicative confidence (Long, 2015). Similarly, recent research in *Language Teaching Research* and *TESOL Quarterly* emphasizes that classroom environments rich in peer–teacher dialogic engagement provide learners with authentic communicative affordances that strengthen their readiness to speak (Peng & Woodrow, 2019; Lee & Hsieh, 2019).

This finding contributes to ongoing debates about the role of interaction in communicative language teaching. Whereas traditional approaches have often focused on interaction as a means to an end (i.e., linguistic proficiency), our results support the view that interaction also directly influences learners' psychological willingness to initiate communication. The positive direct relationship confirms that interactive experiences do not merely facilitate language acquisition but also act as motivational contexts that empower learners to take communicative risks. In practical terms, these findings suggest that educators should prioritize interactive pedagogies, structured peer discussions, teacher-led dialogues, and task-based learner interactions, to enhance WTC in the L2 classroom.

#### Mediating Role of Learner Engagement and L2 Motivation

A central contribution of this study is the identification of learner engagement and L2 motivation as significant mediators linking classroom interaction to willingness to communicate. Both mediators independently and significantly explained indirect pathways, suggesting that the effects of interactive classroom practices are transmitted through psychological mechanisms that reflect learners' involvement and motivational states.

The mediating role of engagement is consistent with recent theoretical frameworks that conceptualize engagement as a multi-dimensional construct encompassing behavioral, cognitive, emotional, and social involvement (Hiver et al., 2021). These frameworks argue that engagement reflects learners' active investment in classroom tasks and serves as a proximal predictor of communicative behavior. By demonstrating that engagement mediates the interaction WTC relationship, the present findings support the view that merely providing interactional opportunities is insufficient; learners must be actively engaged to experience enhanced communicative readiness. This aligns with studies in *Applied Linguistics* showing that engagement translates contextual potential into actual communicative action (Hiver & Papi, 2024).

Similarly, the mediating role of L2 motivation corroborates dynamic motivational theories that emphasize contextually nurtured motivational states rather than fixed trait-like dispositions (Papi et al., 2022). Motivation increases when learners perceive value, relevance, and future self-guides through positive interactive experiences. Once their motivational energy is strengthened, learners are more willing to communicate, as they approach L2 use with purposeful intention and persistence. This finding expands prior research published in *Modern Language Journal* by demonstrating that motivation does not only predict communicative behavior directly but also functions as a mechanism through which interaction fosters WTC.

From an instructional perspective, these mediation effects highlight the importance of fostering both engagement and motivation in tandem with interactional opportunities. Tasks that merely increase interaction frequency without cultivating learner engagement or motivational salience may have limited impact on communicative readiness. Therefore, educators are encouraged to design activities that are cognitively stimulating, emotionally supportive, and relevant to learners' goals, thereby enhancing both engagement and motivation as pathways to increased WTC.

### **Chain Mediating Role of Learner Engagement and L2 Motivation**

Beyond individual mediation effects, this study also revealed a significant serial mediation pathway: classroom interaction → learner engagement → L2 motivation → willingness to communicate. This chain mediation underscores the dynamic and interrelated nature of psychological processes in language learning, consistent with complex dynamic systems perspectives (Hiver & Papi, 2024).

Specifically, interactive classroom practices appear first to engage learners at behavioral and cognitive levels, fostering deeper involvement in tasks. This heightened engagement, in turn, strengthens motivational processes by enhancing learners' perceptions of value, competence, and future self-guides. Finally, elevated motivation drives learners' communicative intentions and willingness to participate actively in L2 talk. This sequential mechanism resonates with the theoretical contention that motivation and engagement are not isolated predictors but intersecting elements within a broader ecosystem that sustains communicative behavior (Mercer & Dörnyei, 2020; Papi et al., 2022).

The empirical support for this chain mediating role contributes to theoretical integration by bridging interactionist, engagement-based, and motivation-centered frameworks. It also provides a more nuanced understanding of how classroom structures and psychological processes interact to shape communicative outcomes. For practitioners, this means that interventions aimed at enhancing WTC should not only facilitate interaction or motivation separately but should strategically support the engagement-motivation continuum. For example, task designs that evoke emotional investment and personal relevance are more likely to generate sustained motivational drive, ultimately increasing students' readiness to communicate.

### **Conclusion**

This study examined how classroom interaction influences learners' willingness to communicate (WTC) within an L2 context, and it revealed both direct and indirect mechanisms underlying this relationship. Consistent with interactionist perspectives, the results demonstrated that interactive practices in the classroom directly enhance learners' readiness to communicate. Importantly, the study also identified that learner engagement and L2 motivation function as significant mediators, independently and sequentially, connecting classroom interaction to communicative outcomes. The serial mediation pathway highlighted how interactive opportunities first stimulate engagement, which then strengthens motivational processes, culminating in increased willingness to communicate.

These findings advance theoretical understanding by integrating interactionist, engagement-based, and dynamic motivation theories into a cohesive explanatory framework. Practically, the results suggest that L2 educators should design pedagogical environments that not only enable interactional opportunities but also nurture learner engagement and motivation to maximize learners' communicative participation. By demonstrating the multifaceted pathways through which classroom dynamics shape communicative readiness, this study contributes to the evolving literature on communicative competence and L2 pedagogy.

### **Limitations and Future Research Directions**

Despite its contributions, the present study has several limitations that suggest avenues for future research. First, the use of cross-sectional self-report data limits causal inference and may be subject to common method variance. Although procedural remedies were employed, longitudinal or experimental designs could more rigorously assess causal pathways, especially the temporal order of engagement and motivation (Wang et al., 2023). Future studies should incorporate longitudinal data collection or experience sampling methods (ESM) to capture dynamic changes over time and provide stronger evidence for the proposed mediational mechanisms (Mercer & Kostoulas, 2024).

Second, while the current research focused on general classroom interaction, learner engagement is a multi-layered construct that could be further unpacked. Recent studies highlight the importance of distinguishing between behavioral, emotional, cognitive, and social engagement when modeling communication outcomes (Dewaele et al., 2024). Future research might adopt multidimensional modeling to determine which specific facets of engagement most strongly predict motivation and WTC in diverse learning contexts.

Third, the cultural and educational context of Pakistani universities may limit the generalizability of the findings. Cultural norms, teacher expectations, and institutional practices shape classroom interaction differently across societies (Li & Zhang, 2023). Subsequent research could employ cross-cultural comparisons or multi-site designs to investigate whether the proposed model holds across diverse educational systems and linguistic environments.

Fourth, the current investigation relied on quantitative measures of classroom interaction and psychological constructs. Although such measures are valuable for structural modeling, they may not fully capture the qualitative nuances of interaction patterns, motivation narratives, and engagement processes (Taguchi et al., 2019). Future research can benefit from mixed-methods designs integrating classroom observations and learner interviews to gain richer insights into how moment-by-moment interactional events contribute to communicative readiness.

Finally, recent scholarship suggests that individual differences such as foreign language anxiety, personality traits, and self-efficacy may moderate the relationships among engagement, motivation, and WTC (Eves et al., 2025). Exploring these moderators could clarify for whom and under what conditions interactional practices most effectively enhance willingness to communicate.

By addressing these limitations, future studies can extend current understanding of the complex, dynamic processes that underpin L2 communication behavior. Such advancements will further bridge theory and practice in applied linguistics and language education research.

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