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The Impact of Scaffolded Interaction in Group-Oriented Classrooms on (Un)Ready EFL Learners' Grammatical Development: Toward a ZPD-Informed Learnability Hypothesis

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Abstract

Processability Theory (PT) and Teachability Hypothesis (TH) hold that that languages develop sequentially and instruction is effective only when it targets X+1 corollary. In contrast, research suggests that collaborative interaction fosters L2 development. However, the extent to which scaffolded collaborative interaction helps (un)ready learners bypass the learning stages remains unknown. To examine this, we selected an experimental group, an unpretested control group, and a pretested control group. We developed a construct-valid test of readiness whose results showed that six learners in the experimental condition, six learners in the unpretested control group, and five learners in the pretested control group were ready for instruction. Dividing the experimental and unpretested control groups into several smaller groups, we selected ready learners as group heads, who were responsible for scaffolding their peers. The pretested control group received deductive instruction. The findings showed that zone of proximal development (ZPD)-sensitive interactive practice accelerated the learning gains of both (un)ready learners and helped them acquire both X+1 and X+2 structures. However, deductive instruction was only effective for ready learners. These findings challenge TH while supporting a ZPD-Informed Learnability Hypothesis. We discuss the implications and highlight areas ripe for future studies.

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Introduction

Within the discipline of linguistics and language pedagogy, the study of learning an L2 has long been a subject of hot debate. One central issue in second language acquisition (SLA) that has created controversy among academics is grammar instruction and its efficiency in L2 learning. While some scholars believe in a zero-approach to grammar instruction, such that learners pick up grammatical rules incidentally in meaningful communicative contexts (Krashen, 1981, 1985), other scholars argue that for L2 learners to gain a deep understanding of grammatical structures, an explicit focus on the rules is required (Dekeyser, 2007).

The contested nature of grammar instruction led to several well-known studies attempting to uncover the path L2 learners take in acquiring grammatical features. In this regard, two influential proposals are Krashen's Natural Order Hypothesis (1981, 1982, 1985) and Dulay and Burt's (1973) studies, which claim that L2 grammatical features and morphemes are acquired in a linearly fixed order and stage-like fashion. Relatedly, in a longitudinal study with learners from different linguistic backgrounds, Bardovi-Harlig (2000) showed that L2 past tense and aspect are acquired linearly. Within this discourse, one important framework that has advanced the SLA knowledge regarding learners' L2 order of acquisition is Pienemann's (1998) PT. PT's core tenet is that learners go through consecutive processing stages, each representing increasing processing complexity, as they acquire grammatical structures. Overall, these SLA proposals have an important tenet in common: the route to success is universal, fixed, and linear. For instance, Pienemann's (1998) TH, which grew out of PT, states that as stages of acquisition are universal and follow a linear path, formal instruction cannot result in bypassing the stages of acquisition, and instruction is effective only when it targets X+1 structures. That is to say, learners need to be ready to acquire the structures related to the next stage; otherwise, all instructional attempts will be in vain.

With grammar remaining the subject of scholarly debate among SLA scholars for so long, inconsistency exists surrounding the most effective pedagogical approaches for honing L2 learners' grammatical abilities. L2 researchers have criticized traditional approaches to grammar instruction as they heavily rely on rule memorization, which, in turn, fails to affect L2 learners' communicative skills (see Larsen-Freeman, 2014). Additionally, another topic that has generated controversy among a large number of L2 researchers relates to whether the stages that L2 learners pass through are universal, linear, and fixed. With some SLA scholars advocating that L2 learners go through universally fixed stages in their SLA endeavor (e.g., Bardovi-Harlig, 2000; Dulay & Burt, 1973; Krashen, 1981, 1982, 1985; Pienemann, 1998), and other L2 researchers showing exactly the opposite (e.g., Hakuta, 1976; Larsen-Freeman, 1976; Pica, 1983; Shin & Milroy, 1999), the debate remains unresolved, at least for the time being. Positing that the SLA stages are universal and linear, Pienemann (1998) claims that formal instruction never alters the SLA trajectory, and instruction is effective only when the instructor targets the X+1 corollary. That is, for Pienemann (1998), learners have to be cognitively mature and ready to process and acquire the structures related to the next stage. Otherwise, all instructional efforts will end in vain.

Without any doubt, the trajectory of SLA is a dynamic process affected by a myriad of factors. Socially mediated interaction is an important approach to improving the process of

SLA. Following the social constructivist approach, the Interaction Hypothesis (henceforth, IH) developed, put forward, and updated by Long (1985, 1996, 2007) considers input and interaction as two key players in the SLA trajectory. In a significant shift from perceiving L2 classrooms as contexts for "practicing" language structures, Long asserts that conversation and other forms of interactive communication constitute the foundation for SLA. Several investigations corroborated the association between interaction and acquisition (Fuente, 2003; Gass et al., 1998; Gass & Varonis, 1994; Hsu, 2024; Pica, 1987; Poehner & Leontjev, 2023; Swain & Lapkin, 1998; van Lier, 1996; Zabihi & Ghahramanzadeh, 2022; Zhang, 2021, 2022). van Lier (1996) strongly endorsed the significance of interaction in the language curriculum, dedicating an entire book to "the curriculum as interaction" (p. 188). In this context, the concepts of awareness, autonomy, and authenticity guide the learner into Vygotsky's (1978) ZPD, wherein, through socially-mediated interaction, learners construct the new language.

The term "scaffolding", as an important component of the ZPD, means the assistance provided to a learner, empowering them to accomplish what might be deemed beyond their independent control (Wood et al., 1976). Primarily, it involves the adult directing a task that the learner is not yet ready to tackle, allowing the learner to direct their efforts toward the elements within their skill set. Putting this into practice, Nassaji and Swain (2000) demonstrated that learners receiving negotiated support show faster learning than those who do not receive such support. This scaffolded interaction involves not only exposure to the language but also the cognitive processes that occur as learners interact with the language in real communication, including negotiating meaning, adjusting their language production based on feedback, and cooperatively building understanding (Gass & Mackey, 2015).

Grounded in social constructivism, scaffolded interaction considers that support provided within learners' ZPD, a metaphorical space between what L2 learners can do independently and what they can do under the direction of a more knowledgeable person in the social surrounding (Vygotsky, 1978, 2012), might have the potential to foster L2 learning. In this line of inquiry, evidence indicates that learners receiving negotiated support during interaction show a faster learning gain compared to their peers who do not receive such support (Nassaji & Swain, 2000). However, a question that remains unanswered is whether interaction coupled with scaffolding can alter the SLA trajectory. Therefore, the main problem that we address in this study is whether scaffolded interaction has the potential to help (un)ready EFL learners bypass the SLA stages pinpointed in PT. We hope that the results of our experiment have the potential not only to theoretically inform the SLA paths that L2 learners take but also to assist language teachers in understanding how they could help their learners acquire the grammatical structures that might appear complicated for them.

Literature Review

Theoretical frameworks

As a cognitive theory of morpho-syntactic development, PT (Pienemann, 1998) is based on Speech Production Model (Levelt, 1989) that brings to the fore the significance of grammatical encoding. The premise is that language development is a progressive emergence of the cognitive processes required to manage grammatical structures. A distinguishing feature of PT compared to other theories is its developmental perspective. Most theories of language

acquisition consider the proficient adult speaker as the ultimate goal of the process (Ambridge & Lieven, 2011). In PT, the grammatical irregularities exhibited by children are regarded as essential phases in the progression toward achieving the target. PT seeks to delineate grammatical stages (Pienemann, 1998; Pienemann & Lenzing, 2020). The steps are anticipated to be ordered in terms of implication. This indicates that the production of a structure at a specific level is an essential prerequisite for the subsequent structure to be produced.

Pienemann (1998) asserted that the fundamental characteristics of PT are language-specific, gradual, and linear. PT posits that certain procedural abilities are essential for L2 processing and production. At the initial level, learners acquire a vocabulary, which serves as the fundamental component for all subsequent language processing phases. To generate free morphemes in the second stage, learners utilize constrained morphemes. In the third stage, disjointed phrases are unified by intra-phrasal elements such as conjunctions. Nonetheless, learners lack awareness of syntactic structures and arrange words according to pragmatic considerations. In the fourth and fifth levels, learners can progressively incorporate lexical components into phrases based on their syntactic expertise. The final phase corresponds to the automatic utilization of subordinate clauses. Pienemann (1988, 2005) asserts that the foundation of PT is that learners, at any developmental level, may only understand and generate only those L2 forms that their current processing capabilities can manage. Consequently, learners can obtain new language knowledge only if they have been supplied with the necessary requirements. This approach allows for the prediction of the evolution of L2 constructions across several languages.

Pienemann (1998) asserted that the emergence of English morphological and syntactic features unfolds across six distinct stages, commencing with the word/lemma stage and progressing through the category procedure, noun phrase procedure, verb phrase procedure, sentence procedure, and finally the subordinate clause procedure at the highest stages. This tiered approach stipulates that elements at lower tiers are essential for the progression to higher tiers, and skipping steps is not permitted. Pienemann and Johnson have also offered the following tentative stages in acquiring grammatical structures (cited in Nishitani, 2012).

Table 1. *Tentative Developmental Stages of the Acquisition of Grammatical Structures for ESL Students*

	verb	**noun**	**pn**	**q**	**neg**	**adv**	**Adj**	**prep**	**w_order**
1	'Words or formulae								
2	il-ing	reg_pl	1st	svo?	no			pp	svo
3	irreg-ed	irreg_pl	2nd 3rd possess		no+x				
				do_front whx_front	don't + v	(adv)	(more)		topic adv_ front
4	aux_en aux_ing	(possess)		pseudo-inv y/n_inv			(better) (best)	comp_to	part_ mov prep_ strdg
5	3sg_s +	(pl_concd)	case(3rd) rflx(adv)	aux_2nd supplet	do_2nd supplet	-ly	-er -erst		(dat_ to)
6	(gerund)		rflx (pn)	q_tag					adv vp (dat mvmt) (causative) (2_sub_comp)

TH asserts that although the instructional setting differs from everyday immersion environments, when learners predominantly depend on their own cognitive abilities, it will not influence the acquisition trajectory as anticipated by PT. Pienemann (1989) asserts that the SLA trajectory cannot be directed or modeled solely based on the demands or principles of formal instruction. A TH corollary asserts that instruction is effective only if it targets the X+1 structures. That is, learners have to be developmentally ready to acquire the immediate next stage. Otherwise, all instructional attempts end in vain.

Pienemann and his colleagues undertook multiple research initiatives to ascertain if instruction might effectively "overcome" the processing limitations posited by general processing theory. The findings, documented in multiple publications (e.g., Ellis, 1989, 2006; Felix, 1981; Jansen, 2008; Mansouri, 2007; Pienemann, 1984, 1989, 1998, 2005; Wang, 2011; Zhang, 2001), consistently corroborated TH. Collectively, these scholarly attempts indicate that learners must advance sequentially through stages, cannot bypass stages, and that instruction is effective only when targeting X+1 rather than X+2 or higher stages. Furthermore, learners' advancement can be represented on an implicational scale, demonstrating a gradual advancement from simpler to more intricate processing stages. Should a learner exhibit Stage 4 forms suggests, by implication, that they also exhibit structures from the three prior stages. Based on this, Mackey and Philp (1998) proposed an operational definition to distinguish ready learners from unready learners. According to these researchers, if features at the preceding stage are exhibited in a learner's production, they are deemed ready for the next stage. Otherwise, they are unready for instruction.

Furthermore, Pienemann's (1987) perspective on TH corresponds with Piaget's theory of general psychological development, which contrasts with Vygotsky's viewpoint. Although Vygotsky drew upon Piaget's foundational work in developing his theoretical concepts (see Lantolf & Thorne, 2006), he explicitly articulated his dissent concerning the relationship

between development and teaching. Influenced by his background in biology, Piaget contended that effective instruction necessitates that children be developmentally prepared to learn (Egan, 1983), while Vygotsky asserted that instruction, within the teaching–learning dialectic of *obuchenie*, facilitates developmental progress. According to the Soviet scholar, historical, or dialectical movement, is an intricate process marked by periodicity, uneven development of various functions, qualitative modification, and the complicated interaction of external and internal causes (Vygotsky, 1978). This developmental process is inherently revolutionary, differing from the linear and predictable stage progression characteristic of orthodox Piagetian psychology (Lantolf & Poehner, 2014). Although there are cases of direct evolutionary progress, historical development often entails disruptions, regressions, or even temporary pauses. The core concept is that the dialectical perspective integrates both continuous development and abrupt transformations, as they are intrinsically connected and interdependent (Vygotsky, 1978).

Vygotsky's ZPD significantly differed from Piaget's theory of learning. Vygotsky conceptualized a synthesis of learning and development in his framework, while Piaget's theory proposed developmental stages as a precondition for learning (Dunn & Lantolf, 1998). Piaget underscored the importance of individual cognitive development as a predominantly solitary endeavor. He underscored biological timelines and developmental phases as essential, with social engagement serving only to activate development at the appropriate temporal juncture. In contrast, Vygotsky argued that social interaction is fundamental to cognitive development and dismissed the notion of predetermined stages (see Brown, 2014; Lantolf & Poehner, 2014). Vygotsky (1978) believed that social interactions are fundamental to cognitive development and rejected the concept of fixed developmental phases.

Another framework guiding this study is Long's IH. Long (1985, 1996, 2007) developed the IH, which radically redefined the ideas of comprehensible input and scaffolding as modified interaction. This new framework includes the various modifications that native speakers and other conversational partners make to enhance learners' comprehension. In L1, parents modify their speech to accommodate children. In interactions with L2 learners, native and more proficient speakers utilize diverse strategies to adjust their input, such as reducing speech tempo, articulating more clearly, implementing comprehension checks, requesting clarification or correction when needed, and offering paraphrases to facilitate understanding. Long contends that interaction and input are crucial components of the SLA process, a notion similarly emphasized by Gass (2003).

The research tradition exploring the interactional architecture of conversation has been shaped by numerous scholars (e.g., Gass & Varonis, 1985; Long, 1983; Pica, 1987, 1988; Pica et al., 1986). Central to this line of inquiry is the critical role of negotiated interaction—both between native and non-native speakers and among non-native speakers themselves—in SLA. This foundational research, along with more contemporary studies (e.g., Hsu, 2024; Poehner & Leontjev, 2023; Zabihi & Ghahramanzadeh, 2022; Zhang, 2021, 2022), posits that collaborative interaction serves not merely as a medium for practice but also as a mechanism for learning. In essence, conversational interaction in an L2 underpins language development rather than serving solely as a venue for the practice of specific linguistic features.

Empirical studies on PT and TH

With some researchers supporting the tenets of PT and TH and some others challenging those tenets, the literature is fraught with contradictory perspectives regarding the contribution of social contexts and instruction in the SLA trajectory. One of the studies that presented counter-evidence regarding the fixed processing stages outlined in PT is that of Liu (1991). Liu (as described in Tarone & Liu, 1995; Tarone, 2007) followed a 5-year-old Chinese-speaking child acquiring L2 English in Australia over two years, observing him in three contexts: at home with the researcher, at school with his teacher, and at school while working with peers on desk-based tasks (Tarone, 2007). The child demonstrated proficiency in Stages 4 and 5 questions in the domestic context prior to Stage 3 questions. This phase was observed not within the home environment, but during cooperative tasks with fellow students (Tarone & Liu, 1995). Tarone (2007) asserted that various factors in the social environment influenced the child's cognitive development, allowing for their assimilation beyond the typically recognized universal sequence. She additionally emphasized that Liu's research findings provide substantial counterevidence to assertions that "social setting is irrelevant" (p. 844).

The study by Mackey (1999), while not explicitly designed to assess TH, included an analysis of the impact of various instructions on advancement along the processing hierarchy for English question formation. Four differentiated treatment groups and a control group participated in her quasi-experiment. Two treatment conditions were especially pertinent to TH. One group, considered ready to advance to Stages 4 and 5, and another group, regarded as unready, engaged in various tasks (e.g., identifying picture differences, completing stories, sequencing pictures) with native English speakers, during which they were encouraged to pose questions to the native speakers. Mackey observed that, utilizing a pre-, post-, and delayed posttest design, both (un)ready learners progressed to elevated levels of the processing hierarchy when afforded the option for negotiated interaction. Post-instruction, numerous (un)ready learners formulated Stages 4 and 5 questions; still, the unready group showed less systematic advancement than the ready group.

Using intact Grade 6 ESL classes, Spada and Lightbown (1999) researched the contributions of implicit instruction to English question generation. Over a two-week period, learners received substantial exposure, devoid of explanations, to Stage 4 and Stage 5 questions. The majority of students pretested at Stage 2. After exposure, many learners pretested at Stage 2 failed to show significant improvements, whereas a few progressed to Stage 3. Among those assessed at Stage 3, the majority exhibited little progress, some even relapsed to Stage 2, while just a small minority advanced to Stage 4. Ultimately, none of Stage 4 learners exhibited advancement to Stage 5 before teaching, and the majority returned to Stage 3. In total, the majority of students persisted at the processing level they occupied before instruction. These researchers concluded that, notwithstanding the alleged counterevidence, the results substantiate TH, as the learners made progress to the immediate next stage. That is, they did not bypass the stages.

Framing their study in VanPatten's (1996) Input Processing Approach, Farley and McCollam (2004) assessed three distinct treatment conditions (Processing Instruction, Explicit Instruction only, Structured Input only) alongside a control group. Although in each condition

some learners were judged to be at X+1 stage concerning personal-a, no learner in any group was assessed as ready to receive instruction on the subjunctive. Posttest analyses indicated no considerable impact of readiness. After the instructions, some students judged unready for the subjunctive nonetheless achieved the emergence criterion, whereas the students expected to be ready for personal-a displayed inconsistent performance: some met the criterion, yet others fell short.

In a later research effort, Vahdat et al. (2018) assessed the validity of PT's assertions regarding the universal stages of SLA. They conducted a grammatical assessment on 185 Iranian university students. Item Response Theory Rasch Modeling showed that PT's outlined stages fail to adequately capture Iranian EFL learners' L2 development. Notably, the difficulty rankings of grammatical structures outlined in PT did not align with the learners' actual acquisition hierarchy as derived from the participants' responses. Ultimately, their findings provided counterevidence to the stages of acquisition posited by PT.

Situated within the framework of PT, Tabatabaee (2024) examined Iranian EFL learners' written performance, concentrating on the acquisition of "do-S-V(O)" across five proficiency levels. She employed a mixed-methods methodology, collecting data from 350 participants. Additionally, she interviewed 45 students from pre-intermediate to advanced levels. She requested that they submit their writing samples on various tasks. Additionally, they were interviewed regarding the same subjects. The outcomes indicated that "do-S-V(O)-" aligned with Pienemann's (2005) model, hence the validity of PT for Iranian EFL learners.

Perhaps the most recent study regarding PT is that of Håkansson and Kalnak (2025). They investigated the morphosyntactic production in Swedish-speaking children diagnosed with Developmental Language Disorder (DLD). Data from a Sentence Repetition Task were utilized to examine the existence of an implicational order in grammatical structures created by school-age children with DLD. The analysis was predicated on a collection of texts that exemplified the various stages of PT. The results validated an implicational hierarchy: participants generated structures from a higher level only if they also generated structures from lower levels.

Sorting through the literature reveals contradictory perspectives regarding the trajectory of SLA. Framing his theory within Piagetian thinking, Pienemann (1998) argued that the stages that learners go through are fixed and instruction never alters the route to success. However, Vygotsky (1978) believes that development is revolutionary rather than evolutionary. That is, for the Russian scholar, what happens in the social environment can revolutionize development. PT (Pienemann, 1998; Pienemann & Lenzing, 2020) maintains that L2s develop linearly. Attempting to investigate the claim, contradictory findings have emerged. For example, Liu (1991) showed that social context can alter the route to success in SLA. However, Tabatabaee (2024) demonstrated that PT accounts for Iranian EFL learners, a finding which has been previously challenged by Vahdat and colleagues (2018). Additionally, although for Pienemann (1998), developmental readiness is the key to the acquisition of the linguistic features of the next stage, empirical findings have been contradictory, with some researchers (e.g., Spada & Lightbown, 1999) showing empirical support for TH and others (e.g., Mackey, 1999) levelling criticism against TH. Attempting to hone learners' language skills, Nassaji and Swain (2000) showed that learners receiving collaborative negotiated support during

interaction exhibit faster learning gains compared to learners not receiving such mediation. More recent studies (e.g., Poehner & Leontjev, 2023; Zabihi & Ghahramanzadeh, 2022; Zhang, 2021, 2022) have shown that collaborative interaction fosters learning. However, the extent to which collaborative scaffolded interaction geared to learners' ZPDs can help (un)ready Iranian EFL learners skip the stages outlined in PT remains unexplored. To address this gap in the literature, the following questions are raised:

1. Does collaborative scaffolded interaction affect EFL learners' grammatical development?
2. Does developmental readiness account for EFL learners' grammatical development?

Method

Design

We employed a quantitative quasi-experimental pretest-posttest delayed posttest design that includes two control groups and one experimental group, allowing us to assess the contribution of scaffolded interaction to grammar knowledge of (un) ready English L2 learners. Random assignment was used to place participants into the experimental group or one of the two control groups. The experimental group received scaffolded interaction during their language learning activities, while one control group was given a teacher-fronted deductive instruction approach. The second control group also received scaffolded interaction, but this group was not pretested to minimize the interactive effect of pretesting and the experimental treatment. The design helps mitigate the pretest effects and, in turn, enhance the internal validity.

Context and participants

The study was conducted in a high school in southern Iran. We selected the participants from three intact grade 12 classes, two of which had 28 learners and one had 26 learners. Randomization resulted in an experimental group (N = 28), a control group receiving the treatment (N = 26), and a control group not receiving the treatment (N = 28). They ranged in age from 17 to 18, all of whom shared Persian as their native language. Before we embarked on the treatment, no participant reported visiting an English-speaking country.

Instruments

We utilized two main instruments to assess not only the developmental readiness but also the grammatical development through collaborative scaffolded interaction. To gauge their developmental readiness for instruction, we designed a test with focused tasks measuring AUX_EN, PSEUDO_INV, and Better/Best structures, each with 20 items. According to Pienemann and Johnson (cited in Nishitani, 2012), these structures are acquired in the 4th stage of SLA. The participants would receive one point for each correct answer. Then, the overall score for the three linguistic features was divided by 3. So, the scores would range from 0 to 20. To ensure the instrument's construct validity, we used a Known-Group technique, which is "a method for determining the construct validity of a measure by seeing whether groups known to differ on the construct also differ on the measure itself" (Ary et al., 2019, p. 98). In so doing, we administered the test to 60 freshmen studying at a university who had previously studied these structures. These freshmen were passing their General English course. They substantially outperformed our participants on the test (p < .05). Thus, the instrument's

construct validity was confirmed. Additionally, using the KR-21 formula, we measured the instrument's reliability. The calculated coefficient was .76, verifying that the test was reliable. After checking learners' readiness for instruction, we administered the researcher-developed pretest. It included focused tasks assessing learners' baseline knowledge of the 5th and the 6th Stages of acquisition, including -ly adverbs, comparative and superlative adjectives (-er and -est), gerunds, reflexive pronouns, and tag questions. For Pienemann and Johnson (cited in Nishitani, 2012), -ly adverbs, -er and -est adjectives are acquired in the 5th Stage of acquisition, with the other named structures acquired at the 6th Stage. Apart from the measure of tag questions, which had 40 items and awarded half a point for each correct answer, the remaining structures included 20 items, and participants received one point for each correct response. The pretest underwent the same construct validation and reliability confirmation procedures as the test of developmental readiness, whose results showed that the test was construct-valid ($p < .05$). Furthermore, the reliability index for each measure of the target forms ranged from .69 to .81, showing the instruments' reliability. We administered the pretest two further separate times to ensure the short- and long-term contribution of scaffolded interaction to grammatical development.

Treatment

Before describing the treatment procedures, it is worth mentioning that to ensure that the participants have enough time to practice the target linguistic features, five free 90-minute extracurricular sessions were offered weekly in addition to regular class sessions. The pretest of these structures, the results of which will be presented in the Results section, indicated that the learners had poor baseline knowledge of the structural forms.

In the first session, a test of developmental readiness was administered, based on which six learners in the treatment condition, six learners in the unpretested comparison condition, and five learners in the pretested control condition were identified as "ready" learners. We divided the experimental group into seven groups of four learners, while the unpretested control group was organized into four groups of four learners and two groups of five learners. However, the pretested control group did not receive group-based activities. Since these ready learners demonstrated mastery of the Stage 4 structures, we selected them as group heads (i.e., mediators) responsible for scaffolding their peers' learning of the target features within their ZPDs. It is essential to note that this scaffolding procedure was conducted in close collaboration with the class teacher. Before instruction began, the teacher provided overall guidance to the mediators. Additionally, whenever necessary during instruction, the teacher, as a more knowledgeable person, intervened to provide guidance, support, mediation, and scaffolding to both group heads and other group members. The same mediation principles were applied to the unpretested control group. In contrast, the pretested control condition was subjected to teacher-directed instruction, where they were not divided into small groups and did not receive scaffolded communicative practice.

Promoting a dialogic, learner-oriented approach, attempts were made to enhance collaborative interaction focused on the target grammatical forms for both the treatment and unpretested comparison conditions. As a fundamental principle of scaffolded interaction, learners in these interactive conditions regularly engaged in collaborative dialogues. This

collaborative interaction provided a range of opportunities for meaning negotiation, comprehension checks, hypothesis testing, and receiving corrective feedback in a supportive and cooperative environment where learners were not punished for making mistakes. In collaboration with group mediators, the course instructor provided assistance and scaffolding to learners based on their ZPDs. Within this process- and learner-oriented approach, the teacher, when necessary, used prompting (i.e., encouraging learners to produce a certain linguistic form), recasts (i.e., reformulating incorrect expressions produced by learners), metalinguistic explanation (i.e., explicitly offering the rule), and task adjustment (i.e., modifying the task's complexity to suit learners' current levels while pushing them slightly beyond their independent competence). Within these classrooms, mistakes and errors were viewed as learning opportunities.

To ensure that the scaffolding was geared to learners' ZPDs, mediators and the teacher offered gradual assistance that catered to the learners' current knowledge. For example, whenever a learner stumbled over producing a correct question tag such as "*Reza is happy, isn't he?*", the scaffolding provider would first recast the incorrect form and then provide a metalinguistic explanation. If and only if further support was warranted, the mediator and/or, if incapable, the teacher would adjust the task's difficulty. In a similar fashion, when learners exhibited incomplete comprehension of gerund structures (e.g., *My dad goes fishing on Fridays*), the peer or the teacher prompted with, "*To talk about recreational activities, what form is used after go?*" and assisted until the learners uttered the correct form. The mediators were responsible for removing the scaffolds when the learner's gained confidence and accuracy in producing the correct forms. This attunement with learners' ZPDs aligns well with the sociocultural viewpoint of learning.

In sharp contrast, the pretested control group experienced a traditional teacher-fronted instructional approach where memorizing rules was emphasized. The teacher, using deductive instruction, explicitly presented the target linguistic features through metalinguistic instruction, drills, and rule memorization. Furthermore, this control group had minimal opportunities to practice the target linguistic features collaboratively or communicatively.

Data analysis procedures

As noted above, we were interested in understanding how scaffolded interaction versus traditional teacher-led instruction helps (un)ready learners reshape their Stages 5 and 6 grammatical knowledge. To this end, we calculated the mean score of Stage 5 structures (i.e., -ly adverbs, and –er and -est adjectives) and Stage 6 forms (i.e., gerunds, reflexive pronouns, and tag questions), and measured the effect of scaffolded interaction on those stages separately. As noted above, there were three groups, one of which was not pretested. Therefore, to calculate the differences that existed between (un)ready learners in the experimental and the pretested control conditions, a two-way MANOVA was performed. According to Pallant (2020), MANOVA is so robust that even if data are not normally distributed, one can still perform the test. However, we did not perform any post-hoc analyses on the pretest as SPSS does not run post-hoc analyses whenever there are fewer than three means. On the post- and delayed posttest measures of grammatical knowledge, additional MANOVAs were conducted.

Nonetheless, we performed between-subjects comparisons to measure the discrepancy between (un)ready learners in the three conditions in acquiring Stages 5 and 6 structures.

Results

Contributions of scaffolded interaction to (un)ready learners' SLA trajectory

To learn how scaffolded interaction contributes to the SLA trajectory of Iranian EFL learners, MANOVAs were conducted. First, we report a two-way MANOVA that examines the effect of the treatment on the acquisition of Stages 5 and 6 structures.

Table 2. *Baseline Descriptive Statistics*

	Condition	Readiness	Mean	Std. Deviation	N
Stage 5 Pretest Scores	Experimental	Ready	8.333	1.861	6
		Unready	5.681	1.674	22
		Total	6.250	2.012	28
	Pretested Control Group	Ready	10.600	2.073	5
		Unready	4.391	1.437	23
		Total	5.500	2.860	28
Stage 6 Pretest Scores	Experimental	Ready	8.833	2.228	6
		Unready	5.772	1.716	22
		Total	6.428	2.201	28
	Pretested Control Group	Ready	10.700	1.483	5
		Unready	5.260	1.572	23
		Total	6.232	2.615	28

Table 2 presents a broadly similar pattern of performance between the experimental group (M = 6.250, SD = 2.012) and the pretested control condition (M = 5.500, SD = 2.860) regarding Stage 5 structures. The table, furthermore, shows that ready learners in both the experimental group (M = 8.333, SD = 1.861) and the pretested control group (M = 10.600, SD = 2.073) outperformed their unready peers in their respective conditions (M = 5.681, SD = 1.674 and M = 4.391, SD = 1.437, respectively). Similarly, regarding the acquisition of Stage 6 features, a similar performance was displayed by the treatment group (M = 6.428, SD = 2.201) and the pretested control group (M = 6.232, SD = 2.615). Furthermore, ready learners in the experimental group (M = 8.833, SD = 2.226) and the pretested comparison condition (M = 10.700, SD = 1.483) outstripped their unready counterparts (M = 5.772, SD = 1.716 and M = 5.260, SD = 1.672, respectively).

Table 3. *Baseline Tests of Between-Subjects Effects*

Source	Dependent Variable	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Condition	Stage 5 Pretest Scores	2.091	1	2.091	.783	.380	.015
	Stage 6 Pretest Scores	4.029	1	4.029	1.397	.243	.026
Readiness	Stage 5 Pretest Scores	172.308	1	172.308	64.503	.000	.554
	Stage 6 Pretest Scores	158.572	1	158.572	54.997	.000	.514
Condition * Readiness	Stage 5 Pretest Scores	27.773	1	27.773	10.397	.002	.167
	Stage 6 Pretest Scores	12.417	1	12.417	4.307	.043	.076

Table 3 demonstrates insignificant baseline differences between the two conditions regarding the acquisition of Stage 5 ($df = 1$, $F = .783$, $p > .05$) and Stage 6 ($df = 1$, $F = 1.397$, $p > .05$). Nonetheless, a significant difference existed between (un)ready learners regarding the acquisition of Stage 5 ($df = 1$, $F = 64.503$, $p = .001$) and Stage 6 ($df = 1$, $F = 54.997$, $p = .001$) with substantial effect sizes (.554 and .514, respectively).

Table 4. *Descriptive Statistics on the Posttest*

	Condition	Readiness	Mean	Std. Deviation	N
Stage 5 Posttest Scores	Experimental	Ready	17.208	1.065	6
		Unready	10.181	2.383	22
		Total	11.687	3.639	28
	Pretested Control Group	Ready	13.600	2.509	5
		Unready	5.695	1.579	23
		Total	7.107	3.531	28
	Unpretested Control Group	Ready	16.708	1.607	6
		Unready	10.950	2.762	20
		Total	12.278	3.526	26
Stage 6 Posttest Scores	Experimental	Ready	17.000	1.234	6
		Unready	9.818	2.701	22
		Total	11.357	3.868	28
	Pretested Control Group	Ready	13.300	2.273	5
		Unready	7.391	3.115	23
		Total	8.446	3.739	28
	Unpretested Control Group	Ready	16.375	.890	6
		Unready	10.650	2.476	20
		Total	11.971	3.297	26

Table 4 shows that both the treatment group (M = 11.687, SD = 3.639) and the unpretested control group ($M = 12.278$, $SD = 3.526$) outperformed their pretested control peers ($M = 7.107$, $SD = 3.531$) on the posttest of Stage 5. Additionally, ready learners in the experimental group ($M = 17.208$, $SD = 1.065$), the pretested control group ($M = 13.600$, $SD = 2.509$), and the unpretested control group ($M = 16.708$, $SD = 1.607$) outstripped their unready peers ($M = 10.181$, $SD = 2.383$; $M = 5.695$, $SD = 1.579$; $M = 10.950$, $SD = 2.762$, respectively) on the posttest of Stage 5. Regarding the acquisition of Stage 6 structures, the table indicates the stronger performance of the experimental group ($M = 11.357$, $SD = 3.868$) and the unpretested control group ($M = 11.971$, $SD = 3.297$) over the pretested control group ($M = 8.446$, $SD = 3.739$). Furthermore, as far as developmental readiness is concerned, the table displays that ready learners in the treatment condition ($M = 17.000$, $SD = 1.234$), the pretested control group ($M = 13.300$, $SD = 2.273$), and the unpretested control group ($M = 16.375$, $SD = .890$)

outperformed their unready peers on the posttest of Stage 6 ($M = 9.818$, $SD = 2.701$; $M = 7.391$, $SD = 3.115$; $M = 10.650$, $SD = 2.476$).

Table 5. *Posttests of Between-Subjects Effects*

Source	Dependent Variable	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Condition	Stage 5 Posttest Scores	193.191	2	96.596	20.230	.000	.347
	Stage 6 Posttest Scores	110.755	2	55.378	8.163	.001	.177
Readiness	Stage 5 Posttest Scores	636.716	1	636.716	133.345	.000	.637
	Stage 6 Posttest Scores	526.612	1	526.612	77.628	.000	.505
Condition * Readiness	Stage 5 Posttest Scores	10.212	2	5.106	1.069	.348	.027
	Stage 6 Posttest Scores	5.820	2	2.910	.429	.653	.011

Table 5 discloses a significant main effect for the treatment on both Stage 5 ($df = 2$, $F = 20.230$, $p = .001$) and Stage 6 ($df = 2$, $F = 8.163$, $p = .001$), and readiness ($df = 1$, $F = 133.345$, $p = .001$; $df = 1$, $F = 77.628$, $p = .001$, respectively). Additionally, the effect sizes were substantially large. However, the interaction between the treatment and readiness was insignificant for both Stage 5 ($df = 2$, $F = 1.069$, $p > .05$) and Stage 6 ($df = 2$, $F = .429$, $p > .05$), indicating that irrespective of their developmental readiness, the performance of the learners receiving the intervention remarkably improved.

Table 6. *Posttest Pairwise Comparisons*

Dependent Variable	(I) Condition	(J) Condition	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval for Difference	
						Lower Bound	Upper Bound
Stage 5 Posttest Scores	Experimental	Pretested Control Group	4.047	.737	.000	2.242	5.853
		Unpretested Control Group	-.134	.715	1.000	-1.886	1.617
	Pretested Control Group	Experimental	-4.047	.737	.000	-5.853	-2.242
		Unpretested Control Group	-4.181	.741	.000	-5.996	-2.367
	Unpretested Control Group	Experimental	.134	.715	1.000	-1.617	1.886
		Pretested Control Group	4.181	.741	.000	2.367	5.996
Stage 6 Posttest Scores	Experimental	Pretested Control Group	3.063	.879	.002	.911	5.215
		Unpretested Control Group	-.103	.853	1.000	-2.191	1.984
	Pretested Control Group	Experimental	-3.063	.879	.002	-5.215	-.911
		Unpretested Control Group	-3.167	.883	.002	-5.330	-1.004
	Unpretested Control Group	Experimental	.103	.853	1.000	-1.984	2.191
		Pretested Control Group	3.167	.883	.002	1.004	5.330

As Table 6 indicates, regarding the immediate acquisition of Stage 5 structures, the experimental group outperformed the pretested control group (Mean Difference = 4.047, p = .001). Similarly, the unpretested control group that received the target intervention significantly outperformed the pretested control group (Mean Difference = 4.181, p = .001). Notwithstanding, the difference between the treatment condition and the unpretested comparison group was insignificant (Mean Difference = -.134, $p > .05$). Likewise, regarding the acquisition of Stage 6 forms, the experimental group noticeably outperformed the pretested control group (Mean Difference = 3.063, $p < .05$). Relatedly, the unpretested control group outstripped their peers in pretested control group (Mean Difference = 3.167, $p < .05$). Nonetheless, the discrepancy between the experimental group and the unpretested comparison group was insignificant (Mean Difference = -.103, $p > .05$).

Table 7. *Pairwise Comparisons of Readiness on the Posttest*

Dependent Variable	(I) Readiness	(J) Readiness	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval for Difference	
						Lower Bound	Upper Bound
Stage 5 Posttest Scores	Ready	Unready	6.896	.597	.000	5.707	8.086
	Unready	Ready	-6.896	.597	.000	-8.086	-5.707
Stage 6 Posttest Scores	Ready	Unready	6.272	.712	.000	4.854	7.690
	Unready	Ready	-6.272	.712	.000	-7.690	-4.854

As Table 7 reveals, ready learners significantly outperformed their unready peers on both immediate measures of Stages 5 and 6 (Mean Difference = 6.896, p = .001; Mean Difference 6.272, p = .001).

Table 8. *Descriptive Statistics on the Delayed Posttest*

	Condition	Readiness	Mean	Std. Deviation	N
Stage 5 Delayed Posttest Scores	Experimental	Ready	16.416	1.261	6
		Unready	10.045	1.987	22
		Total	11.410	3.233	28
	Pretested Control Group	Ready	13.000	2.639	5
		Unready	5.478	1.274	23
		Total	6.821	3.310	28
	Unpretested Control Group	Ready	16.125	1.875	6
		Unready	10.500	2.743	20
		Total	11.798	3.502	26
Stage 6 Delayed Posttest Scores	Experimental	Ready	16.458	1.228	6
		Unready	9.772	2.223	22
		Total	11.205	3.454	28
	Pretested Control Group	Ready	12.850	2.408	5
		Unready	7.173	2.673	23
		Total	8.187	3.403	28
	Unpretested Control Group	Ready	16.000	.851	6
		Unready	10.525	2.302	20
		Total	11.788	3.115	26

Table 8 discloses that the experimental participants (M = 11.410, SD = 3.233) and the unpretested control learners (M = 11.798, SD = 3.502) outperformed their pretested control peers (M = 6.821, SD = 3.310) on the delayed posttest measure of Stage 5. In addition, ready learners in all experimental, pretested, and unpretested control groups (M = 16.416, SD = 1.261; M = 13.000, SD = 2.639; M = 16.125, SD = 1.875, respectively) outperformed their unready

peers (*M* = 10.045, *SD* = 1.987; *M* = 5.478, *SD* = 1.274; *M* = 10.500, *SD* = 2.743, respectively). Similarly, regarding the long-term contributions of scaffolded interaction to the acquisition of Stage 6 structures, the experimental participants (*M* = 11.205, *SD* = 3.454) and the unpretested control group learners (*M* = 11.788, *SD* = 3.115) outperformed their peers in the pretested control condition (*M* = 8.187, *SD* = 3.403). Furthermore, ready learners in all experimental, pretested, and unpretested control conditions (*M* = 16.458, *SD* = 1.228; *M* = 12.850, *SD* = 2.408; *M* = 16.000, *SD* = .851, respectively) outstripped their unready peers (*M* = 9.772, *SD* = 2.223; *M* = 7.173, *SD* = 2.673; *M* = 10.525, *SD* = 2.302, respectively).

Table 9. *Delayed Posttests of Between-Subjects Effects*

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Condition	Stage 5 Delayed Posttest Scores	185.525	2	92.763	22.372	.000	.371
	Stage 6 Delayed Posttest Scores	115.283	2	57.642	11.055	.000	.225
Readiness	Stage 5 Delayed Posttest Scores	566.666	1	566.666	136.667	.000	.643
	Stage 6 Delayed Posttest Scores	473.247	1	473.247	90.760	.000	.544
Condition * Readiness	Stage 5 Delayed Posttest Scores	7.884	2	3.942	.951	.391	.024
	Stage 6 Delayed Posttest Scores	3.899	2	1.949	.374	.689	.010

Table 9 indicates significant main effects for the treatment on the delayed posttest measures of Stages 5 and 6 (*df* = 2, *F* = 22.372, *p* =.001 and *df* = 2, *F* = 11.055, *p* = .001, respectively) with large effect sizes (.371 and .225, respectively). The table further demonstrates a significant main effect for readiness on both Stages 5 and 6 (*df* = 1, *F* = 136.667, *p* = .001 and *df* = 1, *F* = 90.760, *p* = .001) with very large effect sizes (.643 and .544, respectively). Nonetheless, the interaction between the types of intervention (i.e., scaffolded interaction versus teacher-led deductive instruction) remained insignificant on the delayed posttest of both target stages (*df* = 2, *F* = .951, *p* > .05 and *df* = 2, *F* = .374, *p* > .05, respectively).

Table 10. *Pairwise Comparisons on the Delayed Posttest*

Dependent Variable	(I) Condition	(J) Condition	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval for Difference	
						Lower Bound	Upper Bound
Stage 5 Delayed Posttest Scores	Experimental	Pretested Control Group	3.992	.687	.000	2.310	5.674
		Unpretested Control Group	-.081	.667	1.000	-1.714	1.551
	Pretested Control Group	Experimental	-3.992	.687	.000	-5.674	-2.310
		Unpretested Control Group	-4.073	.691	.000	-5.764	-2.383
	Unpretested Control Group	Experimental	.081	.667	1.000	-1.551	1.714
		Pretested Control Group	4.073	.691	.000	2.383	5.764
Stage 6 Delayed Posttest Scores	Experimental	Pretested Control Group	3.104	.771	.000	1.217	4.990
		Unpretested Control Group	-.147	.748	1.000	-1.977	1.683
	Pretested Control Group	Experimental	-3.104	.771	.000	-4.990	-1.217
		Unpretested Control Group	-3.251	.774	.000	-5.147	-1.355
	Unpretested Control Group	Experimental	.147	.748	1.000	-1.683	1.977
		Pretested Control Group	3.251	.774	.000	1.355	5.147

Regarding the long-term contributions of scaffolded interaction to the acquisition of Stage 5 structures, Table 10 neatly indicates that the experimental group outperformed the pretested control group (Mean Difference = 3.992, p = .001). Similarly, the unpretested control condition outperformed their pretested control peers (Mean Difference = 4.073, p = .001). Nonetheless, the difference between the treatment and the unpretested control groups was insignificant (Mean Difference = -.081, p > .05). Relatedly, regarding the acquisition of Stage 6, the experimental group significantly outperformed the pretested control group (Mean Difference = 3.104, p = .001). Likewise, the unpretested control group outperformed the pretested control condition (Mean Difference = 3.251, p = .001). Notwithstanding, the discrepancy between the experimental and the unpretested control conditions remained insignificant (Mean Difference = -.147, p > .05).

Table 11. *Pairwise Comparisons of Readiness of the Delayed Posttest*

Dependent Variable	(I) Readiness	(J) Readiness	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval for Difference	
						Lower Bound	Upper Bound
Stage 5 Delayed Posttest Scores	Ready	Unready	6.506	.557	.000	5.398	7.614
	Unready	Ready	-6.506	.557	.000	-7.614	-5.398
Stage 6 Delayed Posttest Scores	Ready	Unready	5.946	.624	.000	4.703	7.189
	Unready	Ready	-5.946	.624	.000	-7.189	-4.703

As presented in Table 11, the pairwise comparisons of readiness on the delayed posttest measures indicate that ready learners outperformed their unready peers in the acquisition of both Stage 5 (Mean Difference = 6.506, p = .001) and Stage 6 forms (Mean Difference = 5.946, p = .001).

In short, the statistical analyses reveal that both conditions had poor baseline knowledge of Stages 5 and 6 structures. Ready learners surpassed their unready peers on the readiness and the pretest measures; hence they were selected as group mediators. Furthermore, the results revealed that although a considerable difference existed between (un)ready learners on the immediate and delayed posttest measures of Stages 5 and 6, both experimental and unpretested control learners, irrespective of their developmental readiness, surpassed their peers in the pretested comparison condition. However, only ready learners receiving traditional deductive instruction showed some improvement. That is, deductive instruction did not alter the route to success for unready learners.

Discussion

We set out this experiment to investigate the contributions of scaffolded interaction to (un)ready Iranian EFL learners' grammatical development. Our results showed that learners exposed to collaborative scaffolded interaction in group-oriented classrooms exhibited significant grammar gains irrespective of their developmental readiness. This collaborative interaction helped both (un)ready learners acquire not only X+1 structures, but also X+2 linguistic forms. Our results, furthermore, showed that traditional deductive instruction was only effective for ready learners. That is, unready learners receiving deductive rule-based instruction performed less satisfactorily compared to their ready peers.

According to TH (Pienemann, 1998), learners' developmental readiness is key to their SLA success. Additionally, Pienemann (1998) believes that readiness only affects the acquisition of X+1 forms. We showed that although significant differences existed between (un)ready learners exposed to scaffolded interaction, both (un)ready learners could acquire X+1 and X+2 structures. Additionally, a noteworthy finding relates to the performance of unready learners receiving deductive instruction. Although unready learners exposed to scaffolded interaction showed short- and long-term improvements in their grammatical performance, unready learners in the pretested control group did not improve much. This finding supports Long's (1985, 1996, 2007) IH, which considers input and output as two key players in the SLA game.

Although ready learners outperformed their unready peers on both X+1 and X+2 structures, in contrast to the pretested control group, unready learners in both the experimental and unpretested control conditions bypassed stages and retained higher-level structures in the long run, which shows that L2s do not develop linearly. These findings challenge Pienemann's (1998) and Piagetian perspectives underlying TH, which holds that instruction never alters the developmental trajectory. Based on TH, treatments that target X+2 structures end in vain, and only ready learners can acquire X+1 structures. In contrast, our findings support Vygotskian (1978) thinking that development is revolutionary rather than evolutionary. Similarly, our findings echo Tarone's (2007) argument that sociocultural factors affect the route to success. Furthermore, our findings, in line with previous scholarship (e.g., Gass & Varonis, 1985; Hsu, 2024; Long, 1983; Nassaji & Swain, 2000; Pica, 1987, Pica et al., 1986; Poehner & Leontjev, 2023; Zabihi & Ghahramanzadeh, 2022; Zhang, 2021, 2022), emphasize that collaborative interaction serves as a venue for L2 practice and, in turn, fosters L2 development.

Our experiment presents an empirical challenge to the linearity assumptions underlying PT and TH, as our findings showcase that scaffolded interaction in group-oriented classrooms helps both (un)ready learners skip the assumed processing stages. This aligns well with Liu's (1991) study, which showed how social context sped up L2 acquisition. The study conducted by Spada and Lightbown (1999) demonstrated that if teachers minimally expose their learners to interactive tasks and instead focus on implicit instruction, they do not progress to the next stages. This finding, to some extent, resonates with the performance of our pretested control group. In contrast to Spada and Lightbown (1999), we exposed this group to deductive instruction. Only the ready learners in this pretested control condition showed some improvement. In more contemporary studies, Tabatabaee (2024) and Håkansson and Kalnak (2025) provided evidence in support of the universality of PT. However, our results are compatible with those of Vahdat et al. (2018). Questioning the universality of PT, Vahdat and colleagues (2018) showed that PT's assumed stages do not account for Iranian EFL learners.

TH maintains that instruction is beneficial only when it targets the X+1 corollary (Pienemann, 1998; Pienemann & Lenzing, 2020). It stems from Pienemann's (1998) assumption that L2s develop linearly through fixed psycholinguistic processing stages, and instruction cannot alter these stages. However, by demonstrating that even unready learners in both experimental and unpretested control conditions could bypass the PT's assumed stages on both immediate and delayed posttest measures of X+1 and X+2 structures, our findings suggest that collaborative and scaffolded interactive practice geared toward learners' ZPDs has the

potential to accelerate what might be deemed complicated for them. Based on these findings, we challenge the TH and instead argue for what we have termed a ZPD-Informed Learnability Hypothesis. Rooted in Vygotsky's (1978) perspective regarding the revolutionary role of sociocultural factors in cognitive development, this hypothesis holds that when interaction combined with scaffolding is aimed at learners' ZPDs, the acquisition of L2 structures accelerates, helping learners move beyond their current developmental processing stages.

Positing that, instead of developmental readiness, ZPD-sensitive interactive instruction is the decisive factor in acquiring complex L2 structures, our proposed hypothesis considers that learners are active participants in meaning-making and meaning negotiation, who should receive support from more knowledgeable individuals in their social surroundings when they struggle to produce correct linguistic forms. This mediation aids learners in stretching their fully-formed boundaries and internalizing new linguistic features. Overall, we believe that L2 processing is dynamic, shaped by sociocultural factors, and that SLA is malleable within the social context. Additionally, scaffolding in interactive tasks helps learners' potential competencies emerge.

Conclusion

We examined whether (un)ready EFL learners experiencing group-oriented collaborative practice follow a linear path in their SLA trajectory. We showed that both (un)ready learners exposed to scaffolded interaction acquired both X+1 and X+2 structures. However, deductive instruction was only effective for ready learners. This empirical evidence in support of collaborative scaffolded interaction suggests that it can serve as a venue for L2 development, particularly in input-impoverished contexts. Similarly, we showed that ZPD-sensitive interaction has the potential to foster L2 development for both (un)ready learners. These findings challenge both PT and TH, which consider that L2s develop in sequentially fixed stages, and instruction never alters the SLA trajectory. However, we showed that if instruction is tailored to learners' ZPDs, they can internalize linguistic features that might be deemed beyond their control. The results of this study temporarily position us in a place to argue that both cognitive (i.e., developmental readiness) and social factors (i.e., ZPD-tailored collaborative interaction) are important in SLA. Positing that SLA is shaped by sociocultural factors and not just cognitive factors, our findings also signify that learners should play an active role in classrooms.

The results gleaned from our experiment have implications for a variety of stakeholders in L2 pedagogy. For instance, the results suggest that teachers should not limit the boundaries of their teaching to the learners fully formed developmental levels. Instead, teachers are encouraged to incorporate scaffolded interaction-rich activities and, by so doing, stretch their learners' capabilities beyond what they may be perceived to do. Additionally, teachers are encouraged to divide their classes into smaller groups and select more capable learners as group mediators, and ask them to scaffold their peers, thus boosting the learning potential. Additionally, curriculum planners and syllabus designers might rethink the fixed processing and learning sequences as the sole basis for syllabus and curriculum development. The fact that scaffolded interaction helps both (un)ready learners bypass the stages of acquisition suggest that syllabus designers should include collaborative interaction-rich activities in the syllabi.

Additionally, curricula should move away from stage-like sequencing and move toward a more socioculturally-oriented form of pedagogy. Policymakers should also invest and provide more pre- and in-service programs that promote group-based scaffolded interaction. Beyond these stakeholders, teacher educators may want to offer training programs that aim to apply the principles of scaffolded interaction, especially in contexts where learners grapple with grammatical structures.

Although our findings provide novel insights into the route to SLA success, it has some limitations. First, our selected sample was limited to a high school in a specific geographical region. Additionally, the number of ready learners was limited. To obviate these pitfalls, we encourage language researchers to replicate the study in various regions and attempt to include more ready learners in their experiments to reach a more cogent conclusion regarding the efficacy of scaffolded interaction in the SLA trajectory. Furthermore, we looked into the learning process from a quantitative perspective. We invite prospective researchers to conduct qualitative and/or mixed-methods studies to gain a deeper perspective regarding learners' perceptions, attitudes, and experiences concerning the scaffolded interaction. Iranian high-school students are not allowed to bring their cellphones to the school. We suggest that future researchers replicate the study in contexts where learners are permitted to bring their cellphones to the classroom, record the interaction and conduct conversation analysis to understand what exactly happens during the scaffolded collaborative interaction between learners. This, we believe, would provide more detailed insights into how scaffolded collaborative interaction contributes to the acquisition of linguistic structures for which learners are developmentally (un)ready. Lastly, learners with different learning styles, sociocultural backgrounds, cognitive traits, and so on, may perform differently through scaffolded interaction. Therefore, we invite future researchers to consider how these factors might influence the results.

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