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ARTICLE

Game-based instruction of pragmatics: Learning request-making through perlocutionary effects

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Abstract

Using the single-group pre-posttest design, this exploratory study examined whether L2 learners of English can learn a speech act by experiencing perlocutionary effects of the act as feedback (observing their interlocutor's reactions to their choice of speech act expressions). Sixty undergraduate English learners at a university in China played a digital game, developed at the researcher's institution, involving 10 hypothetical request-making interactions that took place on a university campus. For each interaction, participants read a brief scenario description and watched a video that depicts that scenario. After watching the video, they were presented with four options of request-making expressions and asked to select the most desirable expression directed to the speaker in each video. Each option was linked to specific reactions depicted by speakers in the videos (perlocutionary effects). After choosing a response, participants were shown a reaction video designed to give feedback on the appropriateness of their selected response. Recognition and production tests were used for pre, post, and delayed posttests to assess participants' knowledge of targeted request-making forms. Results revealed a significant gain from the pre to immediate posttest in both modalities, but the gain was not retained at delayed posttest. The effect from game-based instruction appeared larger in the production (Cohen's d = 0.83) than in the recognition test (d = 0.45). Participants' game performance significantly correlated with their test scores.

Keywords: *Digital Game, Pragmatics, Speech Acts, Implicit Feedback*

Language(s) Learned in This Study: *English*

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Introduction

The recent expansion of digital games has sparked strong interest among researchers and practitioners who wish to explore the potential of game-based language instruction (Reinhardt, 2019; Sykes & Reinhardt, 2012). Research on educational games has flourished in recent years, but pragmatics still lags behind this trend. Only a handful of studies have used educational games specifically designed to teach pre-selected pragmatic features and assessed learning outcomes (Ko & Eslami, 2021; Sykes & Dubriel, 2019). Yet, digital games are considered particularly suitable for pragmatics learning because they present a multimodal context where learners can engage in contextualized, goal-oriented communicative practice. Following this premise, this study empirically assesses the benefits of game-based pragmatics learning.

Pragmatics is concerned with how speakers express their intentions through linguistic means and how listeners understand their intentions. The centrality of intention in communication has been underscored in classic pragmatics theories. Speech act theory (Austin, 1962; Searle, 1969) contends that language is used to perform an action. For example, by saying "Who ate my candies?" the speaker is performing the action of probing, complaining, or blaming. Austin (1962) termed the act of saying something a *locution* and the act performed by saying something an *illocution*. What we actually achieve by saying something was termed as a *perlocution*, or the effect of a speech act on the listener. Speech acts can affect the listener's

feelings and actions. For example, the utterance "I'm hungry" can have a perlocutionary effect on the listener, which can be seen in the listener making something to eat after hearing the utterance.

The three components of speech acts—locution, illocution, and perlocution—present a useful framework for second language (L2) learners of pragmatics. L2 learners need to learn how to use linguistic forms (locution) to convey their intentions (illocution) appropriately and effectively. Specifically, they need to understand how their choice of linguistic forms is bound to contextual factors—settings, speakers' relationships and their roles, and topics of communication—to convey their intention. At the same time, they need to be mindful of the consequence of their linguistic choice—how it impacts their interlocutors' reactions (perlocution).

The present study capitalizes on the role of perlocutionary effects as a driving force for learning pragmatics. This exploratory study develops an instructional platform incorporating various gamification elements to examine whether L2 learners of English can learn the speech act of request (i.e., linguistic forms and strategies of request-making) by simply observing their interlocutor's reactions to their request (e.g., accepting the request happily, begrudgingly, or not at all). Using a single-group pre-posttest design, this study investigates whether real-life-like feedback (perlocutionary effects) embedded in a digital game's design can actually promote the learning of requests, and whether this learning is robust enough to allow cross-modality transfer (from receptive to productive skill).

Background

Teaching Pragmatics: Explicit and Implicit Instruction

Researchers have compared a variety of instructional approaches and methods for teaching pragmatics (Taguchi, 2015; Taguchi & Roever, 2017). So far, the comparison between explicit and implicit methods has been a primary interest in the field. Adopting Kasper's (2001) original definition, the explicit method involves a direct provision of metapragmatic explanation (e.g., explaining which forms to use when greeting someone). The implicit method holds back direct explanation and instead tries to develop learners' understanding of pragmatic features indirectly through exposure to input, consciousness-raising tasks, and implicit feedback. For example, teachers can expose learners to many instances of greetings, using various forms across contexts so that they can discover the connection between these contextual factors and the various forms of greetings.

Existing research has suggested that the explicit method often leads to greater gains in pragmatic knowledge than the implicit method. Plonsky and Zhuang's (2019) meta-analysis of 50 studies showed that studies using the explicit method had a larger effect size (d = 1.68) than those using the implicit method (d = 1.27). Yousefi and Nassaji's (2019) meta-analysis of 36 studies also revealed a larger effect size for the explicit (d = 1.21) versus implicit method (d = 0.88)[1]. However, Taguchi's (2015) narrative synthesis of 48 studies showed that the implicit method can be as effective as the explicit method when teachers strategically guide learners to notice focal pragmatic features and process them at a deeper level. Taguchi emphasizes that effective teaching can be closely related to depth of processing of target pragmatic features, going beyond the explicit-implicit dichotomy.

Perlocutionary Effects as Instructional Feedback

In pragmatics, feedback can take the form of perlocutionary effects. Learners select a certain form to convey their intention to their interlocutor, and success of their illocutionary intent is seen in the interlocutor's reaction. For example, when learners produce a request, their interlocutor may respond by performing the requested action or doing nothing. Facial expressions and gestures that accompany their action are also part of the perlocutionary effect, showing whether the interlocutor complies with the request happily or reluctantly. By observing the interlocutor's reaction, learners understand the outcome of their linguistic behavior—whether they have achieved the intended act while simultaneously meeting social and interpersonal expectations. Hence, perlocutionary effects can serve as useful feedback, providing learners

opportunities to attend to and reflect on their language use. Learners can develop metapragmatic awareness by making a connection among their linguistic choice (locution), intention conveyed through the choice (illocution), and consequence of the choice (perlocution).

This study examines the role of perlocutionary effects as feedback mechanisms. The study investigates whether L2 learners of English can learn focal pragmatic features (e.g., request-making forms) by observing their interlocutor's reaction. Although previous research has incorporated feedback into pragmatics teaching, most studies have implemented feedback as an instructional device that simply tells learners whether their pragmalinguistic forms are appropriate or not. For example, Koike and Pearson (2005) provided feedback on L2 English learners' incorrect formulation of suggestions using explicit (correction) and implicit (clarification request) feedback. Learners who received explicit feedback (metapragmatic explanation) improved their knowledge of how to formulate a suggestion. In Fukuya and Hill's (2006) study, when learners produced non-target-like request forms in role-plays, the instructor provided a recast. Recasts helped develop learners' awareness of target-like request forms, as shown in their post-instructional gains in accuracy and appropriateness of request forms as assessed with a discourse completion test **(**DCT**)**. Guo (2013) compared the effect of recasts and metapragmatic explanations on learning how to request. She found that the latter had a stronger effect on the learning of request-making forms (assessed with a DCT and role-play), although the effect diminished over time as shown by delayed posttest assessments.

The classroom-like format of feedback used in previous research (e.g., corrections) poses the question of whether more contextualized feedback grounded in pragmatics theories (perlocutionary effects) has any effect on learning. This is a reasonable question to ask because the feedback that learners receive is often tacit in real-life situations. Real-life interlocutors are not classroom teachers. That is, they do not usually correct learners' pragmatic missteps overtly nor provide explicit metapragmatic explanation (Taguchi, 2012). When something goes wrong, learners may realize their pragmatic failure by facing the consequence of their act, such as not getting what they wanted or watching their interlocutors walking away in dismay. Indeed, several studies documented such implicit learning occurring in study abroad settings (Diao, 2016; Shively, 2011). Shively (2011) documented how American students learned service encounter openings in Spain. The students learned that, unlike the U.S., service providers in this particular Spanish community do not engage in a how-are-you sequence with their customer. They learned this norm when their question "How are you?" was followed by an awkward long silence. The service provider's facial expression and the absence of a response were implicit signals indicating that the how-are-you sequence is not a local practice. Diao (2016) revealed how L2 Chinese learners learned the gendered meaning of Chinese sentence-final particles through their roommates' playful teasing of their use. While in some cases explicit pragmatic socialization does occur (e.g., a participant in Diao's study reported being told by his roommate when using sentence-final particles), language socialization largely occurs implicitly (Shively, 2011).

Individualized, timely feedback is the area where virtual gaming contexts excel compared with real-life contexts. Since pragmatic feedback is often difficult to provide because of its face-threatening nature, gaming environments can offer a solution to this challenge when the feedback is pre-programmed in a way that the system automatically responds to learners' pragmatic choices. In addition, virtual contexts provide learners a safe environment where they can experiment with their language use without a fear of offending someone in real-life.

This study aims to reproduce real-life-like feedback in a gaming environment to assess its effects on learning. In the study, a digital game was developed for learners to systematically experience the perlocutionary effects of their linguistic choices. Learners' choice of a particular request-making form is followed by their interlocutor's immediate reaction (i.e., accepting the request happily or reluctantly, or refusing the request completely). The study assesses the degree of learning coming from this implicit feedback via perlocutionary effect.

This study examines learning outcomes on both receptive and productive skills to assess the robustness of learned knowledge. The digital game in this study adopts input-based practice, excluding any kind of output practice. However, since output is considered to facilitate access to already developed target language

knowledge (VanPatten, 2004), if learners are able to produce target language forms after input-only instruction, it is an indication that they have consolidated their knowledge. Swain (1995) also contends that output is an indication of precise syntactic processing, which goes beyond the semantic processing required for comprehension. While output requires a more solid knowledge base, it could be developed through input-based practice alone. Through skill acquisition theory, DeKeyser (2007) explains that although the effects of practice are skill specific at the level of procedural knowledge (fluent performance), at the level of declarative knowledge (accurate understanding), the effects transfer across skill modalities. Indeed, Li and Taguchi (2014) showed that L2 Chinese learners gained accurate receptive and productive knowledge of request-making forms regardless of practice modality, although their gain in fluency of request-making was restricted to the skill practiced.

Games-Based Pragmatics Instruction

Corresponding to the growing trend in technology-mediated pragmatics learning (Gonzalez-Lloret, 2020), digital games have attracted much interest as a promising platform for pragmatics instruction. While research in this area goes back to early 2000s (Zacharski, 2002), Ko and Esmami's (2021) recent review uncovered 16 empirical studies published after 2000. Some studies were concerned with learning outcomes based on researcher-designed educational games (e.g., Sykes, 2009, 2013), while other studies focused on affordances of entertainment-purposed digital games (e.g., Peterson, 2012). This study belongs to the former group, implementing game-based learning and assessing its effects. According to Sykes and Reinhardt (2012), game-based learning involves designing a game for pedagogical purposes to elicit specific L2 learner behavior as learning objectives. Game-based learning can draw on insights from vernacular game design principles when developing learning activities.

Sykes and Dubreil (2019) claim that game-based learning is beneficial for pragmatics learning because digital games allow learners to simulate different roles in diverse social contexts and experience consequences of their pragmatic behaviors through individualized feedback linked to specific learning goals. Several studies have explored the benefits of game-based learning for pragmatics. Sykes (2009, 2013) developed a three-dimensional immersive space where learners of Spanish produced speech acts (request and apology) directed to built-in characters in a virtual Spanish community. The characters responded to the learners' choice of speech act forms verbally and non-verbally (e.g., calm, upset). Learning outcomes assessed with a DCT revealed only minimal improvement in requests, but greater gains in apologies. Using augmented reality, Holden and Sykes (2013) developed a mobile game for teaching Spanish pragmatics. Situated in New Mexico, L2 Spanish learners solved a murder mystery by gathering clues from built-in characters. They received useful clues only when their way of speaking matched with the characters' preferred interaction style (e.g., direct or indirect). Although Holden and Sykes did not measure learning outcomes, interview data revealed that learners were engaged in pragmatic analysis and reflection throughout the game. However, the feedback coming from the built-in characters was not salient at all (often unnoticed), emphasizing the need to incorporate more salient, exaggerated reactions into the game's feedback mechanisms.

Cornillie (2017) also underscores the importance of explicit corrective feedback as one of the key gaming mechanics for boosting learning outcomes. He contends that, while implicit feedback such as recasts help maintain the flow of the game, such feedback "may pass unnoticed and that the opportunity to recruit language awareness in an otherwise meaning-focused context is lost" (p. 365). Cornillie et al. (2012) examined L2 learners' perceptions of explicit and implicit feedback occurring in a role-playing game. They found that L2 learners perceived explicit feedback (i.e., corrections, metapragmatic explanations) to be more useful for learning than implicit feedback (e.g., the game characters' facial expressions and gestures).

The ambiguous nature of in-game feedback was also documented in Tang and Taguchi (2020, 2021). They created a scenario-based digital game in which learners of Chinese interacted with programmed animated characters in a variety of settings. The interaction occurred through the construction or selection of formulaic expressions. The learners received both explicit text-based feedback indicating the correctness of their response, as well as implicit feedback through the animated facial expressions (e.g., happy, upset)

of the game's characters. Results of a production test (fill-in-the-blanks) and a recognition test (multiple-choice questions) indicated that the learners significantly improved their knowledge of formulaic expressions after one session of gameplay. However, interview data showed that they did not notice the implicit feedback coming from the characters' facial expressions. That is, they seemed to only pay attention to the text-based explicit feedback. Hence, it seems that the explicit feedback overshadowed the potential instructional value of affectively rich, implicit feedback (perlocutionary effects). These results point to the importance of testing the efficacy of implicit feedback alone to see whether implicit feedback itself can serve as a sufficient condition for improving L2 pragmatic knowledge.

Such an attempt was made by Jackson et al. (2020). They created a digital game incorporating implicit feedback only. In three-turn conversations featuring a range of social settings, English speakers were asked to select the most inappropriate response (and thus violating sociopragmatic norms). After selection, the game's programmed characters reacted in a manner that helped confirm the negative evidence of their response. Although the study focused on data from the experience of the user which was collected from native speakers and did not use the game to assess L2 learners' knowledge, the study demonstrates the potential of using character reactions (perlocutionary effects) as feedback mechanisms for pragmatics instruction.

Justification of the Study and Research Questions

Existing pragmatics research has mainly focused on comparing the explicit and implicit teaching method for learning outcomes. While the explicit method has been more effective than the implicit method, the implicit method deserves more attention in the literature because contextualized implicit feedback can facilitate noticing and processing of input in the implicit learning condition. Contextualized feedback can be achieved using multimodal cues by showing learners the consequence of their linguistic choices via audio-visual input. In real-life, language use is bound by consequentiality; it has a direct impact on their interlocutors' interpretation of the message, the impression that they form about the speaker, and their subsequent actions. Thus, a perlocutionary effect can serve as a realistic feedback mechanism, making the focal pragmatic features salient and memorable. Since almost no studies have tested this premise using a single-group pre-posttest design, the present study pursues this investigation. Using a digital game as a platform for the investigation, the study intends to contribute to the growing literature on technology-mediated pragmatics learning, but more specifically to the small pool of studies that incorporated feedback into game design to teach pragmatics. The novelty of the present study is two-fold: (a) investigating the impact of perlocutionary effects as a driving force for learning a speech act, and (b) investigating the robustness of learning by examining the transfer of learning across skill modalities. The following questions guide the aims of the current study:

1. To what extent do learners of English improve their knowledge of request-making by experiencing perlocutionary effects of their linguistic choices in game-based instruction?
2. To what extent is the knowledge assessed in receptive and productive modalities different?

Methods

Participants

Participants included 60 freshmen enrolled in English classes in a university in China (mean age = 18.6). They were all native speakers of Mandarin Chinese from China. There were 15 male and 40 female students as well as five students indicating non-binary gender identity. In the background survey, 47% of the students reported that they never play digital games, while 48% reported playing games a few times a week and 5% play games almost every day. None of the students had studied abroad. They had studied English for 10.6 years on average prior to data collection (range: 6 to 20 years). None of the students received English instruction focusing solely on pragmatics.

Instructional Target: Request-making in PDR-high Situations

Adopting Brown and Levinson's (1987) three contextual factors—power (P), social distance (D), and rank of imposition (R), this study aimed to teach English learners how to formulate a request that carries a large degree of imposition, directed towards someone in greater power and social distance (hereafter PDR-high request). Specifically, the study taught *bi-clausal request forms* and *request justification* (presenting an appropriate reason supporting the request). These two areas were targeted because they were common features of a PDR-high request found in previous studies (Taguchi, 2012, 2021). Using a closed role-play task, Taguchi (2021) found that over 80% of native English speakers (n = 31) used a bi-clausal request form and justification in their PDR-high requests. Two bi-clausal forms were most common in the data: "I was wondering if I could + verb" and "Is there any way/chance I could + verb". Since only 40% of nonnative English speakers (90% of whom were from China) in Taguchi (2021) were able to produce these bi-clausal forms, they were selected as instructional targets in this study. Other less common but viable forms in the data were conventional indirect forms with modal verbs (e.g., Can you ….?). Direct forms such as imperatives, "I want . . ." and "You should" never appeared in the native speaker data and thus were considered as undesirable forms in the PDR-high request.

Ten PDR-high request situations used in the instruction were adopted from previous studies (Taguchi, 2012, 2021). Five situations involved talking to a professor about a class-related issue, while the other five involved talking to a boss about a job-related issue. Sample situations are below. In addition to the 10 request situations, eight situations featuring different speech acts (e.g., apology, offer) were used as filler items.

- PDR-high Request to a Professor
  Your paper for English class is due tomorrow. You are sick and can't finish the paper. You want two extra days to work on it.

- PDR-high Request to a Boss
  You work for the English Department as a student worker. You want to take next Friday off because your parents are visiting you from far away.

A pilot study was conducted to check the plausibility of the situations. Eleven native English speakers were asked to judge whether each situation is likely to occur in their daily lives. All participants responded affirmative for all situations. In the main study, a survey was administered to the participants to assess their perceived relevance of the request situations used in the study. They indicated their degree of agreement with the two statements— "The situations were relevant to my life" and "The situations looked realistic"—on a five-point Likert scale ranging from 1 (*not true*) to 5 (*very true*). The mean rating was 3.68 (SD = 1.03), indicating that the situations were largely perceived relevant to their real-life experience.

Instructional Game

Instruction was delivered using a digital game developed at the researcher's institution using the programming language *Python* (Van Rossum & Drake, 2009). The game was designed to incorporate several defining elements of a digital game based on the literature (Prensky, 2007; Reinhardt, 2019). Specifically, the game was designed to incorporate five elements: goals, outcomes, feedback, interaction, and context. Unlike a traditional classroom, these elements were embedded in an educational game that incorporated rich multimodal input, interaction with consequences, and self-paced learning.

In-game activities were situated in the context of college life, with participants interacting with a variety of people on campus (e.g., professors, classmates). The goal of the game was to navigate various interactions successfully and make the interlocutor happy without violating social norms. The interlocutor's reactions (e.g., facial expressions) were presented as feedback to indicate the degree of success in each interaction. Gamification was made by incorporating several game elements (i.e., point system, time pressure) to increase participant engagement. At the end of the game, the participants saw the score based on how many people they made happy as game outcomes. The game incorporated videos of real people acting as the

interlocutors rather than animated computer-generated characters to reflect real-life-like settings more closely.

Response Options

The game involved 19 interactions: one practice, 10 PDR-high request interactions, and eight filler interactions involving different speech acts. In each interaction, participants read a brief scenario and watched a video clip illustrating the situation (15-20 seconds). The videos were recorded on the campus of the researcher's institution to improve the authenticity of the scenarios that participants saw during gameplay. After the video ended, participants saw four response options. They were asked to select the most desirable response given the situation and the person depicted in the video. They had only one chance to make a selection before moving to the next interactive scenario, meaning that they could not go back and try a different option once they confirmed their choice in each scenario.

The response options were created by incorporating the two areas targeted in the instruction—request forms and request justification (discussed in the previous section). The most desirable option involved a bi-clausal request form and a clear justification (reason) for the request. There were two less desirable options, one involving a bi-clausal request form with no reason and the other involving a conventional indirect form (e.g., Can you…?) with a vague or inappropriate reason. The undesirable option involved a direct form (e.g., imperatives) with a reason.

The degree of desirability of response options was confirmed with a pilot survey study. Eleven native English speakers were presented with the scenarios and four response options. They were asked to rank order the options according to the degree of appropriateness. The options fell in the expected order: the desirable option came in the first place and the undesirable option came in the last place, with less desirable options coming in between. A few minor changes were made based on participants' feedback from the pilot. For example, one participant mentioned that in the situation of asking a boss for a raise, people usually make an appointment with the boss beforehand. Hence, this was incorporated into the scenario.

Perlocutionary Effects on Selected Options

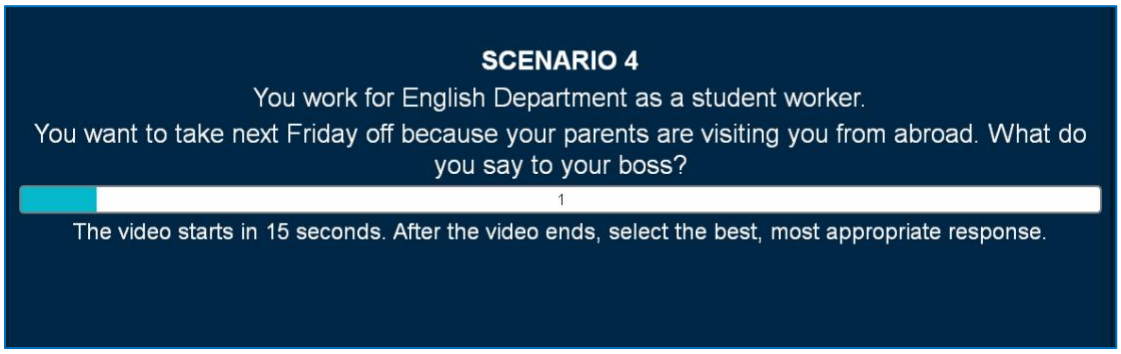
Each response option was linked to a specific reaction coming from the person in the video (perlocutionary effects). When participants selected the desirable option, they saw a video with the person reacting positively (request accepted with a smile). When they selected the undesirable option, they saw a video with the person reacting negatively (request rejected with annoyed face). For the two less desirable options, the person accepts the request but only reluctantly and with little enthusiasm.[2] All items followed the same format (see Figure 1 for a sample interaction).

Participants received a score based on their choice: 5 points for the desirable response, 2 points for the less desirable responses, and 0 for the undesirable response. They saw their total score at the end of the game, along with pictures of the people with whom they had interacted in the game. Cartoon face icons (smiley, sad, and neutral face) were displayed next to the person, indicating how the participants' choices made the speakers feel. The face icons appeared at the end of the game after participants completed all of the game situations rather than giving a salient (or explicit) icon signal after every situation.

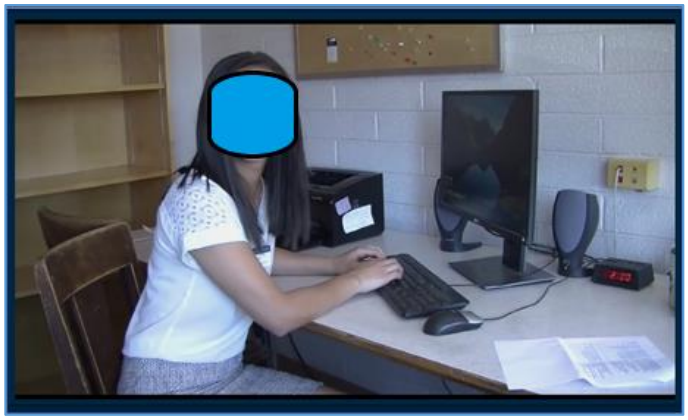
Figure 1

Sample Game Interaction

SCENARIO

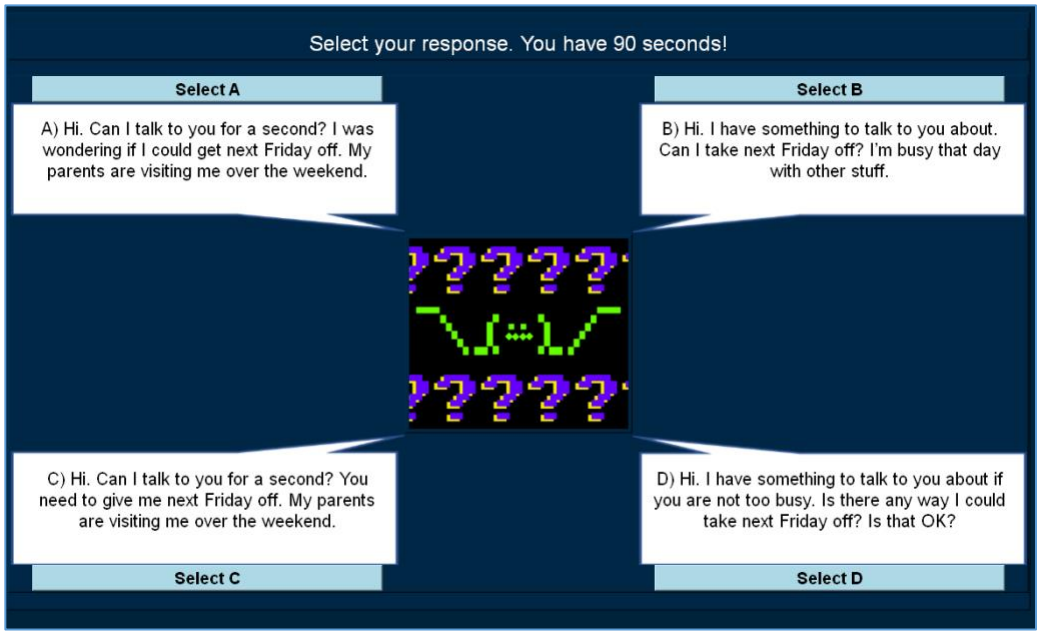


VIDEO



The boss in her office looking at the computer. The office door is half open. After a few knocks, she turns and says, “Yes, come in. What can I do for you?”

RESPONSE OPTIONS



Desirable	**Less desirable**	**Less desirable**	**Undesirable**
Hi. Can I talk to you for second? I was wondering if I could get next Friday off. My parents are visiting me over the weekend. (5 points)	Hi. I have something to talk to you about if you are not too busy. Is there any way I could take next Friday off. (2 points)	Hi. I have something to talk to you about. Can I take next Friday off? I'm busy that day with other stuff. (2 points)	Hi. Can I talk to you for a second? You need to give me next Friday off. My parents are visiting me over the weekend. (0 points)

INTERLOCUTOR REACTIONS (PERLOCUTIONARY EFFECTS) IN VIDEO

"Oh OK. That's fine. Have fun with your family?" (big smile)	"Oh, yeah . . . I guess so." (no smile, confused)	"Oh, yeah . . . I guess so." (no smile, confused)	"What? I don't think so." (annoyed)

Measures

Participants' learning outcomes were assessed using an online recognition and production test. To reduce practice effect, three parallel versions of the test were created for the pre, immediate post, and delayed posttest. All test versions had similar situational scenarios (e.g., making a request to a professor to reschedule something in class), but changes were made in minor areas, for example course names (e.g.,

English class, history class), assignment types (e.g., paper, book review), and content of the request (e.g., rescheduling a quiz, rescheduling a class presentation). To add variation to test versions, 40% of the test items were distractor items, items which were completely different across test versions.

The production tests were administered before the recognition tests to avoid prompting participants with the target expressions. Two instructors at the target institution checked the tests and confirmed that the language used in the tests were appropriate for the participants' level.

Recognition Test

The recognition test had 13 multiple-choice items. Eight items were target items (request), while five were filler items featuring other speech acts (e.g., apology, refusal). Each item included a written scenario and four answer options from which participants selected the most desirable response. The options were constructed in the same manner as those in the game. The most desirable response received 3 points, while the less and the least desirable expressions received 2 and 1 point, respectively (total score range: 8 to 24). A sample item is shown below.

Sample Recognition Test Item

> You are taking Professor Li's English class. You were five minutes late because you had a meeting with your advisor before class. You missed a quiz. You want to take the quiz another time. What do you say to the professor?

A. Hello. I had an important meeting with my advisor today. My advisor said it should be okay to be a few minutes late to your class. Is there any way I could take the quiz another day? (most desirable)
B. Hello. Can I talk to you a second? I was wondering if I could take the quiz that I missed another day. Would that be all right with you? (less desirable)
C. Hello. I have something to ask you. Can I make up the quiz? I was late because I had something to do. Would that be all right with you? (less desirable)
D. Hello. My day has been crazy busy. The meeting with my advisor ran late. You should let me take the quiz tomorrow. (least desirable)

Production Test

The production test had seven open response items, of which four were target items eliciting request and three were filler items eliciting other speech acts (e.g., apology, refusal). Each item contained a written scenario followed by a box in which participants typed in their speech acts.

Sample Production Test Item

> You're working on a book review for Professor Smith's literature class. You have never written a book review, and you don't know if you formatted the review correctly. You have finished a draft of the book review. You want the professor to check the draft and give you feedback. What do you say?

Two scoring rubrics were developed to evaluate production test responses, one for request forms and the other for request justification. The entire rubrics are presented in the Appendix. Scores for the request form (3 points max) and justification (2 points max) were combined to yield a composite score (5 points max) (score range: 0 to 20 for four items). Two raters (a native and a nonnative English speaker) scored all 720 responses (60 participants; three tests; four items per test).[3] Kappa agreement was .94, which is considered almost perfect agreement (McHugh, 2012).

Data Collection Procedures

Data were collected individually in a computer lab on campus over two days. On Day 1, participants filled out a background survey, completed the pretest, played the game, and completed the immediate posttest. The entire process took about 100 minutes. Two weeks later (Day 2), participants completed the delayed

posttest, which took about 25 minutes to complete.

Data Analysis Procedures

This study asked whether participants increased their knowledge of requests after playing the game and if the degree of increase was different between receptive and productive skills. To address these questions, a repeated-measures ANOVA was conducted separately for the recognition and production test score, with test session (pre, immediate post, and delayed posttest) as a within-subject factor. Prior to the statistical analyses, underlying assumptions were checked. The assumption of sphericity was met. The assumption of normal distribution was not met because the kurtosis value was outside of the acceptable range of +/- 2.0 (Field, 2009). Two outliers were detected in the data. Given that ANOVA is considered a robust test against the normal distribution (Field, 2009) and because there was no clear justification for removing the outliers from the data, the analyses included all data points, including the two outliers.

Results

Table 1 and Table 2 display descriptive statistics of pre, post, and delayed posttest results.

Table 1

Descriptive Statistics of Recognition Test Scores

Test	***n***	***M***	***SD***	***Mean 95% CIs***
Pretest	60	20.70	2.08	[20.16, 21.24]
Immediate posttest	60	21.67	2.60	[21.00, 22.34]
Delayed posttest	60	20.17	2.29	[19.58, 20.76]

Note. Score range: 8 to 24. CI refers to confidence interval.

Table 2

Descriptive Statistics of Production Test Scores

Test	***n***	***M***	***SD***	***Mean 95% CIs***
Pretest	60	13.00	3.45	[12.13, 13.87]
Immediate posttest	60	15.92	3.56	[15.02, 16.82]
Delayed posttest	60	14.52	3.54	[13.62, 15.41]

Note. Score range: 0 to 20. CI refers to confidence interval.

The repeated-measures ANOVA revealed a significant effect of time (pre, immediate post, and delayed posttest) on recognition test scores, $F = 9.97$ ($p = .0001$). Post-hoc pairwise comparisons were conducted using the paired-sample *t*-test with the adjusted *p*-value of .017 (.05 divided by 3 comparisons). Results revealed a significant gain from pre to immediate posttest ($t = -2.94$, $p = .005$), but a significant decline from immediate to delayed posttest ($t = 4.42$, $p = .0001$). There was no significant difference between pre and delayed posttest scores ($t = 1.59$, $p = .117$).

Turning to the production test results, the repeated-measures ANOVA revealed a significant effect of time on production test scores, $F = 16.41$ ($p = .0001$). Post-hoc pairwise comparisons revealed a significant gain from pre to immediate posttest ($t = -5.78$, $p = .0001$), but a significant decline from the immediate to delayed posttest ($t = 3.13$, $p = .003$). Despite the decline, the delayed posttest score was still significantly higher than that of the pretest ($t = -3.39$, $p = .001$).

To further analyze the extent of learning over time between the two modalities, effect sizes (Cohen's *d*) were calculated for all test contrasts and are reported in Table 3. Test score gains from the pretest to the immediate posttest indicate that the game had a positive significant effect on participants' abilities to both recognize and produce appropriate requests. The game's effect was greater for the production tests (d = 0.83) than it was for the recognition test (d = 0.42). Comparing immediate posttest scores to delayed posttest scores, it appears that the positive effect from the game reduced over time. The delayed posttests, taken two weeks after playing the game, indicate a small negative significant effect both on participants' recognition abilities (d = -0.62) and, to a lesser extent, their production abilities (d = -0.39). Similarly, the effect size for the pre-delayed posttest difference was greater for productive knowledge (d = 0.43) than receptive knowledge (d = -0.24). These findings indicate that participants' degree of productive knowledge retention at the time of the delayed posttest (compared with their baseline knowledge at pre-test) was larger than that of their receptive knowledge.

Table 3

Effect Size Comparisons between Recognition and Production Test

	n	***Cohen's d***	***d* 95% CIs**	***d* interpretation***
Recognition test scores				
Pre vs. immediate posttest	60	0.42	[0.05, 0.78]	Small
Immediate vs. delayed posttest	60	-0.62	[-0.98, -0.25]	Small
Pre vs. delayed posttest	60	-0.24	[-0.60, 0.12]	Very small
Production test scores				
Pre vs. immediate posttest	60	0.83	[0.46, 1.21]	Small-medium
Immediate vs. delayed posttest	60	-0.39	[-0.76, -0.03]	Small
Pre vs. delayed posttest	60	0.43	[0.06, 0.8]	Small

Note. *For studies with a within-group design, *d* values around 0.60 are considered as a small effect size, values around 1.00 as a medium effect size, and values around 1.40 as a large effect size (Plonsky & Oswald, 2014).

Additional analyses were conducted to examine relationships between the participants' game performance and learning outcomes. Table 4 reports Pearson correlations between the participants' total game scores and their recognition and production test scores. Participants received a game score based on their response choice (see Methods). The higher participants' game scores were, the more often they selected the most desirable response in-game. As shown in Table 4, game scores significantly correlated with all test scores, indicating that participants' in-game performance was related to their test performance.

Table 4

Correlations between Game Scores and Test Scores

		Recognition Test Score		**Production Test Score**	
		Immediate	Delayed	Immediate	Delayed
Game Score	Pearson's *r*	.43	.38	.53	.52
		p = .001	p = .003	p = .0001	p = .0001

Note. Game Score: M = 80.12 (out of 90 possible), SD = 11.63, CI [77.17; 83.17].

Discussion

This study examined whether L2 learners of English can improve their knowledge of the request speech act by observing perlocutionary effects of requests. Perlocutionary effects were implemented as a feedback mechanism in a digital game, allowing learners to ascertain the degree of success of their speech acts by showing their interlocutor's reactions. Indeed, after one session of gameplay, the learners' receptive and productive knowledge of request improved from the pre-test level, though their knowledge was not retained at the delayed posttest.

Although the perlocutionary effect is implicit in nature compared with explicit feedback (e.g., metapragmatic explanations) (Fukuya & Hill, 2006; Guo, 2013; Koike & Pearson, 2005), it seemed to be salient enough for learners to make critical connections between linguistic forms (locution), intention of using the forms (illocution), and outcomes of their use (perlocution). It is possible that the learners paid attention to their interlocutor's nuanced non-verbal cues (e.g., facial expressions) and their reactions (accepting or refusing the request), and likely used these cues to re-evaluate the appropriateness of the forms they selected. It is also possible that this sequence facilitated learners' noticing and processing of target features, leading to their increased knowledge.

The present findings contribute to the existing literature on the role of feedback in pragmatics learning because the implicit feedback design used in this study was different from other instructional studies in L2 pragmatics (Taguchi, 2015). In most previous studies, learners were strategically guided to notice target forms without explicit explanation. In some cases, they were simply exposed to target forms so they could notice these forms on their own (input exposure). In other cases, target forms were highlighted to enhance saliency. Unlike these studies, the current study presented target-like forms together with non-target-like forms in a multiple-choice format. Participants were asked to select a form, and feedback to their selection was given via the interlocutor's reaction (perlocutionary effect), allowing participants to construct mental mapping between the form and outcome of using the form. The present findings also add to the literature on the role of feedback in game-based pragmatics learning. Previous research has suggested that learners do not notice implicit feedback when explicit feedback is given (Holden & Sykes, 2013; Tang & Taguchi, 2021). The present findings demonstrate how perlocutionary effects can work as an effective form of implicit feedback, leading to the learning of request-making.

It is notable that the learners increased their productive knowledge of request-making through receptive practice alone (multiple-choice questions). In fact, the immediate effect of instruction was almost twice as large for productive skills (d = 0.83) than for receptive skills (d = 0.42). While completing in-game tasks, the learners received input, but they never produced output. Nevertheless, they improved their abilities to produce the target forms immediately after the game. These findings show the transfer of learned knowledge across modalities. Since output is an indication of already developed target language systems (VanPatten, 2004), it seems that input-based in-game practice helped consolidate learners' knowledge of request-making to the level that they could use it in production. The finding lends support to the claim of skill acquisition theory (DeKeyser, 2007): unlike procedural knowledge, declarative knowledge (accurate understanding of target areas) is shared across skills and thus can be developed through practice in a different skill domain (Li & Taguchi, 2014).

The present findings showed that even without direct metapragmatic information, learners still developed knowledge strong enough to be applied to novel skill areas. Although the effect sizes found in this study were smaller than those reported in the previous meta-analysis (Plonsky and Zhuang, 2019; d = 1.58 for explicit and d = 1.22 for implicit method in the within-subject design), the important point to consider is that this study used real-life-like feedback that tends to be less salient than teacher-initiated instructional feedback (e.g., corrections). The interlocutors' reactions (e.g., facial expressions) provide only subtle cues, which often remain unnoticed particularly when more salient, explicit feedback overshadows the effect (Tang & Taguchi, 2020). Yet, those reactions are precisely the type of feedback that learners receive in real-life settings (e.g., Shively, 2011). This study was able to simulate the consequential nature of a speech

act in the game-based instruction.

Limitations and Future Directions

This study expands the scope of technology-mediated pragmatics teaching by developing an instructional game for teaching a speech act through perlocutionary effects. Technology has made it possible to replicate real-life-like situations; learners were able to systematically observe a direct consequence of their linguistic choices in a non-threatening, virtual environment. They were also able to see other alternative expressions and compare them in the given situation, which is not possible in a real-life setting. As this study demonstrated, the consequentiality of one's linguistic behavior embedded in feedback mechanisms has potential for assisting learners' noticing and processing of target pragmalinguistic forms; at the same time, it can help enhance learners' awareness and sensitivity to nonverbal cues (interlocutors' facial expressions and demeanors) as well as the meaning conveyed through those cues.

Since this study is one of the first attempts to explore the instructional effect of perlocutionary effects as implicit feedback (see Cornillie, 2017 for a review of game feedback studies), future research is needed to assess the generalizability of the present findings in different participant populations (different L1 backgrounds, educational settings, age groups). Critically, this study did not have a control group who received no game-based instruction or a comparison group who received alternative forms of feedback (e.g., explicit feedback). Hence, the findings about the effectiveness of perlocutionary effects as feedback are only tentative and need to be further assessed using experimental designs.

Future research could collect qualitative data via interviews and observations of participants' gameplay to see if there is a clear link between their game performance and learning outcomes. Tools such as a screen recorder can be used to analyze how participants actually play the game, which would help assess their level of engagement. Similarly, retrospective interviews of stimulated recall could be conducted to see if participants can actually notice the interlocutors' reactions and use these cues as evidence to evaluate the appropriateness of their linguistic forms.

The short-lived, small-size effect of instruction found in this study deserves further consideration in future research. Participants in this study were not able to maintain their learned knowledge two weeks later as indicated by the delayed posttest scores. This was probably because their knowledge was not robust enough at immediate posttest as indicated by the small effect size. Future research should explore ways to create a game that can produce a long-term effect. There are several potential directions for future research. The game in this study provided only one chance for participants to select a response. As a result, when they selected the correct option (desirable request forms) at the first attempt, they only saw positive evidence (the interlocutor happily accepting the request) and did not see negative evidence (the request being rejected). It is possible that exposing learners to both positive and negative evidence could strengthen their learning because they can see the contrast between desirable and undesirable forms and the consequences of selecting one form over the other. This contrast could make the target forms more salient and memorable, leading to better retention. Future research could test this hypothesis using different game designs that incorporate different game mechanics as unique game mechanics have been shown to require unique linguistic forms and functions (see Dixon, 2021). For example, participants could try out different responses and see the consequences associated with different responses (see Taguchi & Dixon, 2023, for a follow-up of the present study).

Another possible direction to consider for a long-term effect is to improve game design by enhancing the level of learner engagement. This study incorporated several gamification elements (e.g., point system, time pressure), along with simulations of real-life-like interactions and multimodal feedback, in order to motivate and engage learners in the game. However, the game tasks created in this study were rather linear in structure. They followed fixed sequences which did not give learners any agency in choosing their own paths during gameplay. In addition, the game did not involve different "levels" included in many other games (e.g., reaching goals to unlock the next level). Future research could add more gaming features to

further explore the potential of game-based learning.

Finally, future research should incorporate more nuanced representations of interlocutor reactions. In this study, interlocutor reactions were scripted and fixed. They were pre-recorded and programmatically linked to specific request-making forms that participants selected. The locution-perlocution mappings were created by the researcher in order to raise participants' awareness of different pragmalinguistic forms leading to different consequences.

However, in real-life situations, interlocutors may react differently depending on their personal preferences. For example, they may not give any indication that they thought the request was inappropriate, or they may not react to inappropriate request forms assuming that L2 learners do not know the pragmatic norms. This study did not document how interlocutors actually react to inappropriate requests nor considered variations existing in their reactions. To overcome this limitation, future research should collect data from a large group of English speakers and select the most common reactions to use as feedback. When doing so it is critical to consider the learnability of those real-life reactions to make sure that they are appropriate for participants' levels.

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Notes

1. Yousefi and Nassaji (2019) also found a larger effect size for computer-mediated instruction (d = 1.17) than face-to-face instruction (d = 0.97), although this difference was not statistically significant.
2. The reaction videos were recorded multiple times in multiple ways, and the reaction that was perceived to be most realistic by the producer of the videos (who has extensive experience working in the TV industry) was selected.
3. Both native and nonnative speakers of English served as raters reflecting the current demographic reality that we have far more nonnative speakers of English. The nonnative speaker rater was a highly proficient user of English with almost 20 years of residence in the U.S.A.

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Appendix

Rubric for Request Form

Score	Description
3	Request is made clearly using a bi-clausal form (e.g., I was wondering if I could . . . , Is there any way I could . . . ?)
2	Request is made clearly using a mono-clausal conventional indirect form (e.g., Can you…?)
1	Request is made clearly using a mono-clausal direct form (e.g., Please do . . .).
0	Request is unclear or incomprehensible due to excessive errors.

Rubric for Request Justification

Score	Description
2	There is a clear and appropriate reason supporting the request (e.g., saying “My parents are visiting me from far and I’d like to spend time with them” when asking for a day off).
1	There is a reason supporting the request, but it is either too vague or inappropriate (e.g., saying “I have something to do” when asking for a day off).
0	No reason is provided/Reasons are incomprehensible due to excessive errors.

About the Author

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