

Effectiveness of explicit and implicit corrective feedback in a video-based SCMC environment

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Abstract

The facilitative role of corrective feedback (CF) in second language (L2) acquisition has been attested in numerous empirical studies. However, despite the increasing popularity of video-supported tools in language education, few studies have examined the effectiveness of CF delivered through video chat. To address this gap, the current study investigated the effect of explicit and implicit corrective feedback (CF) on the acquisition of third person singular -s in a video-based synchronous computer-mediated communication (SCMC) environment. Fifty-six Chinese learners of English were recruited and randomly assigned to three experimental conditions: explicit CF, implicit CF, and control. They completed two interactive tasks over two treatment sessions during which CF was delivered through video chat to the two treatment groups. The effect of CF treatment was assessed by an untimed grammaticality judgement task and an oral elicited imitation task at the time of pretest, immediate posttest, and delayed posttest. The results indicated that the two treatment groups outperformed the control group on both assessment tasks and that there was no significant difference between the two treatment groups. These results point to the benefits of CF in video-based SCMC and challenge the superiority of explicit CF over implicit CF.

1. INTRODUCTION

The role of corrective feedback (CF) in the second language (L2) acquisition has attracted much attention over the past few decades. As a form-focused device, CF can direct learners' attention to gaps between the target language and their own language use, thereby promoting the development of the interlanguage system (Abbuhl, 2021; Gass, 1997). Numerous empirical studies have been conducted to examine the effectiveness of CF, and the results suggest that CF may be used as an effective pedagogical device to facilitate L2 acquisition (see Li, 2010; Lyster & Saito, 2010; Nassaji, 2016; Nassaji & Kartchava, 2021 for reviews and meta-analyses).

With the increasing use of technology in L2 learning, researchers have explored the benefits of CF in technology-supported contexts such as synchronous computer-mediated communication (SCMC). While this line of research has generally produced positive results (see Cerezo, 2021; Ziegler & Mackey, 2017), most existing studies have focused on text-based SCMC, and little attention has been paid to video-based SCMC. Considering the distinct nature of these two SCMC modes and the growing popularity of video chat tools in language learning (Petersen &

Sachs, 2016), more research is needed to focus on the impact of CF on L2 acquisition in video-based SCMC.

This paper reports on an experimental study that examined the effect of CF on the acquisition of third-person singular –s in a video-based SCMC environment. It focused on the effects of two kinds of CF: explicit CF and implicit CF. The relative effects of these two types of CF have caused much debate in the L2 literature (R. Ellis, 2021). The current study aimed to contribute to this debate by comparing the effectiveness of explicit and implicit CF in the context of video-based SCMC.

2. LITERATURE REVIEW

2.1. Effect Of CF in SCMC Environments

A growing amount of research on CF and L2 acquisition in SCMC environments have appeared over the past few years (see Cerezo, 2021; Ziegler & Mackey, 2017). SCMC can be defined as “real-time synchronous conversation that takes place online” (Baralt and Leow, 2016, p. 200). In SCMC, CF is most often provided through the text-based mode (i.e., text chat) or the video-based mode (i.e., video chat). Text-based SCMC represents a hybrid mode of interaction as it contains features of both oral and written communication. Video-based SCMC, on the other hand, allows interactants to see each other and draws upon both audial and visual cues during communication. Descriptive studies indicate that both SCMC modes are conducive for CF and interactive patterns associated with L2 acquisition, but the learning processes and outcomes they involve may be different (Dao et al., 2021; Ziegler & Phung, 2019).

Most CF studies conducted in SCMC contexts have focused on text-based SCMC. These studies indicate that CF provided through text-based SCMC can play a facilitative role in L2 acquisition. (Baralt, 2013; Henderson, 2021; Sachs & Suh, 2007; Shintani & Aubrey, 2016; Yilmaz, 2012; Yilmaz & Yuksel, 2011). Yilmaz (2012), for example, examined the effect of CF on the acquisition of two inflectional morphemes in Turkish in text-based SCMC and face-to-face conditions. The study found CF to be effective in both conditions and that the group that received CF during text chat made greater gains on a recognition task. Shintani and Aubrey (2016) investigated the effect of CF on the use of hypothetical conditionals and found that the group that received CF during text chat improved significantly over time. Henderson (2021) provided further support for CF in text-based SCMC in a recent study where CF delivered during text chat was found to help learners improve on L2 vocabulary development.

Despite the positive evidence for CF in text-based SCMC, the effectiveness of CF in video-based SCMC is less clear. In a study targeting the past tense, Monteiro (2014) found that CF positively affected the acquisition of the target form. However, in a study focusing on vocabulary learning, Yanguas (2012) reported that the group that received CF during video chat failed to maintain their gains on a production task over time. In two recent studies, Rassaei (2017) and Canals et al. (2021) reported positive results for CF provided during video chat, but since neither study included a delayed posttest, it was unclear whether true learning had taken place. Thus, it seems that existing studies have not provided conclusive results regarding the effectiveness of CF in video-based SCMC. Given the prevalence of video-supported tools in language education, more research is needed to clarify the role of CF for L2 acquisition in video-based SCMC.

2.2. Explicit versus implicit CF

CF may be characterized as explicit or implicit depending on whether it overtly draws learners' attention to problems in their language production (R. Ellis, 2021). Explicit CF is often operationalized as explicit correction or metalinguistic feedback. While explicit correction involves the direct provision of target forms, metalinguistic feedback offers direct comments about the well-formedness of learners' utterances (Lyster & Ranta, 1997). Implicit CF, on the other hand, is most often operationalized as recasts or reformulations of non-target-like elements in learners' utterances (Revesz & Sachs, 2012). Although recasts may involve different levels of explicitness (R. Ellis & Sheen, 2006), they are typically classified as implicit CF as they require learners to infer from the discourse that an error has been committed in their use of the target language.

There has been much theoretical and empirical debate over the value of explicit and implicit CF. Long (2007, 2015) provides theoretical arguments for recasts, claiming that recasts offer optimal conditions for L2 acquisition as they contain both positive and negative evidence and are more likely to result in implicit language learning. On the other hand, Carroll (2001) argues that explicit CF is advantageous because CF needs to be direct and explicit enough for learners to benefit from. Most empirical studies on the relative effects of explicit and implicit CF have been conducted in traditional face-to-face conditions. With a few exceptions (Lyster & Izquierdo, 2009; Zhao & R. Ellis, 2022), most studies have found more explicit kinds of CF to have the edge over more implicit kinds of CF (Carroll & Swain, 1993; Gooch et al., 2016; Guchte et al., 2015; R. Ellis et al., 2006; Li, 2013; Sheen, 2010; Yilmaz, 2012).

Only a few studies have addressed the relative effects of explicit and implicit CF in SCMC contexts. In an early study, Loewen and Erlam (2006) reported that there was no difference between explicit CF (metalinguistic feedback) and implicit CF (recasts) in text-based SCMC. Yilmaz (2012), however, found that explicit CF had a clear advantage over implicit CF in text-based SCMC, a finding that echoes studies in face-to-face conditions. To the best of our knowledge, Monteiro (2014) was the only study that examined the relative effects of explicit and implicit CF in video-based SCMC contexts. The study found that there was no significant difference between the two kinds of CF in terms of their effect on the acquisition of regular past tense. Overall, it seems that no conclusion can be drawn about which kind of CF is more beneficial in SCMC contexts. More research is required to investigate in SCMC contexts whether the effect of CF is dependent on the degree of its explicitness.

2.3. The present study

In light of the research needs outlined above, the current study aimed to examine the effects of explicit and implicit CF on the acquisition of third-person singular *-s* in video-based SCMC environments. The study addressed two research questions:

1. To what extent does CF facilitate the acquisition of third-person singular *-s* by Chinese L2 learners of English in video-based SCMC environments?
2. Is there a difference in the effectiveness of explicit and implicit CF for acquiring third-person singular *-s* in video-based SCMC environments?

3. DESIGN

The present study adopted a pretest-posttest-delayed posttest experimental design with two treatment groups and a control group. The study consisted of two treatment sessions where all participants carried out two interactive tasks with the researcher (the first author). While the control group received no CF, the two treatment groups received explicit correction (explicit CF) and recasts (implicit CF), respectively, when they made errors in the target form. The effect of CF treatment was assessed by an untimed grammaticality judgement task and an elicited oral imitation task. The treatment and assessment sessions were all conducted online using MS Teams, a platform that the participants were familiar with.

3.1. Participants

The participants in the current study were 56 college-level intermediate learners of English who spoke Chinese as their first language (L1). They were randomly assigned to three conditions: explicit CF ($n = 18$), implicit CF ($n = 20$), and control ($n = 18$). There were 26 male and 30 female participants, and their ages ranged between 18 and 20 years. The participants were recruited through flyers and social media posts at a university in China. They majored in natural sciences and studied English for around 12 years in instructed settings emphasising grammatical accuracy. They reported limited exposure to the English language in their daily life and had not lived or studied abroad. Sixty participants originally agreed to participate in the study, but four did not show up for the delayed posttest. Their data were not included in data analysis.

3.2. Target linguistic form

The target linguistic form of the study was the third person singular verb ending *-s*. SLA research shows that verbal inflections tend to cause trouble to L2 learners and that third person singular *-s* tends to be a difficult structure even for advanced learners (Lardiere, 2007). The structure may be particularly challenging for Chinese-speaking learners as their L1 lacks a corresponding morpheme and does not mark person and number through verbal morphology. This may cause further difficulty as their attention to the target form may be blocked due to L1 influence (N. Ellis & Sagarrà, 2010; N. Ellis et al., 2014). The current study sought to investigate to what extent CF delivered through video-based SCMC would help learners develop mastery of the target form.

3.3. Operationalization of CF

Explicit CF was operationalized as explicit correction, consisting of a statement rejecting the erroneous part of an utterance and providing the correct form (Lyster and Ranta, 1997). It did not contain metalinguistic information since including such information would make it difficult to decide whether the effect of explicit CF should be attributed to its explicitness or metalinguistic information (Yilmaz, 2012). Episode 1 illustrates how the explicit correction was delivered:

Episode 1:

Participant: Keith study Portuguese from eight to nine every Friday evening.

Researcher: No, it's not 'study', but 'studies'.

Implicit CF was operationalised as recasts, which were defined as reformulations of utterances containing errors in the target form (Long, 2007). The participants received full recasts that reformulated the whole utterance that involved target errors, and the recasts were delivered in a normal tone with no additional stress or repetition (Nassaji, 2017). Episode 2 exemplifies how recasts were offered:

Episode 2:

Participant: Kevin play the guitar every evening.

Researcher: Kevin plays the guitar every evening.

3.4.Treatment tasks

The participants performed two interactive tasks over two treatment sessions with the researcher. Both tasks were designed to elicit the third person singular -s and provide contexts for the participants to receive CF on their erroneous use of the target form in communicative interactions. Both tasks were piloted with 15 college students with similar backgrounds to the participants and found to be able to elicit the target form successfully.

The first task was a spot-the-difference task. For this task, the participant and the researcher held 20 pictures showing the weekly routine of a college student named John. Each picture describes an activity that John engages in regularly during the week (e.g., John paints a picture every Friday afternoon). There were four differences between the two sets of pictures. For example, one picture showed John reading novels on Saturday evening while another picture showed him reading novels on Saturday afternoon. The participants were asked to work with the researcher to identify the four different areas in the two sets of pictures. They were told to describe each picture in terms of what the character routinely did, which created obligatory contexts for using the target form.

The second task was a decision-making task adapted from Kourtali and Revesz (2020). For this task, the researcher acted as a custodian of a student residence hall, while the participant played the role of his assistant. The task instructions stated that there were 20 lost items that belonged to 20 different students living in the hall. In addition to a list of lost items, the participant, or assistant, was also given 20 pictures with each one describing a habit of the students who have lost their items (e.g., Kevin plays the guitar every evening). The participant was asked to describe each student's habit as shown in the pictures and work with the researcher to decide to whom each lost item should be returned. The task was designed to create obligatory contexts for the third person singular -s when the participants set out to describe habitual actions.

3.5.Assessment tasks

To assess learning outcomes, an untimed grammaticality judgement task (UGJT) and an oral elicited imitation task (OEIT) were utilised for the pretest, immediate posttest, and delayed posttest. The UGJT was intended to assess explicit knowledge about the target form, whilst the OEIT was designed to tap into implicit knowledge of the target form (R. Ellis et al., 2009; Nassaji, 2020). Three different versions were created for each task and counterbalanced within each group across the pretest and posttests. Both tests were computer-delivered using MS Teams.

The UGJT comprised 24 items, including 12 target items and 12 distractors. There were six grammatical and ungrammatical sentences for both target items and distractors. The sentences were presented on PowerPoint slides one at a time and the participants were asked to judge whether each sentence was grammatical or not. If they judged a sentence to be ungrammatical, they were required to identify the error and correct it. An option of 'I don't know' was also available. The participants were asked to type their response to each sentence in the chat box and send it over before moving on to the next sentence. They were provided six practice items before the test. There was no time pressure for this task to allow for the use of explicit knowledge about the target form.

The OEIT test consisted of 24 belief statements, with 12 involving the target form and 12 serving as distractors. For both types of statements, half involved grammatical sentences and half involved ungrammatical sentences. The statements were recorded by a native speaker of English who read them at normal speed. The participants listened to each statement once and were asked to indicate whether they agreed with, disagreed with, or unsure about it. They were then asked to repeat the statement they heard in correct English after hearing a beep. To minimize the possibility of rote memorization, there was an interval of five seconds between the presentation of the stimulus sentence and the beep (Erlam, 2006). Before each test, the participants practiced with six statements which did not involve the target form. Their repetition during the tests was recorded for analysis.

3.6. Procedure

The study was conducted over a period of four months, during which each participant attended three individual sessions with the researcher. On the day of each session, the researcher called the participant and shared the documents to be used for that session on MS Teams. Participants completed the OEIT pretest, the UGJT pretest, and the spot-the-difference task in the first session. In the second session (two days later), they did the decision-making task followed by the immediate OEIT and UGJT posttests. In the third session (two weeks later), participants completed the delayed OEIT and UGJT posttests. Table 1 shows the procedure of the study and the approximate duration of the assessment and treatment tasks that the participants performed. The participants did not receive instruction on the target form nor did they report much exposure to the English language during the study.

Table 1. Procedure of the study

<i>Session 1</i>		<i>Session 2</i>		<i>Session 3</i>	
Task	Duration	Task	Duration	Task	Duration
OEIT pretest	10 min	Treatment task 2	15 min	OEIT posttest 2	10 min
UGJT pretest	10 min	OEIT posttest 1	10 min	UGJT posttest 2	10min
Treatment task 1	15 min	UGJT posttest 2	10 min		

4. SCORING AND ANALYSIS

For the UGJT, each item was worth one point for a total score of 12. One point was awarded if a grammatical sentence was judged to be grammatical or an ungrammatical sentence was judged to be ungrammatical and successfully corrected. Credit was also given when the participants judged a grammatical sentence to be ungrammatical but their correction was not related to the target form. No credit was awarded if the participants did not answer a question or they did not know the answer. Cronbach's alpha assessed the reliability of the UGJT tests. The values were .73 for the pretest, .82 for the immediate posttest, and .77 for the delayed posttest. These were considered to reflect an acceptable level of internal consistency (Field, 2009).

The scoring method for the OEIT was based on Erlam (2006). The maximum score of the task was 12, with each stimulus item worth one point. The participants received one point if they successfully supplied the target form in their repetition. Errors in other linguistic forms were ignored. No credit was awarded for repetitions involving self-repair or correction, as this might have involved the use of explicit knowledge (Li, 2013). Cronbach's alpha was calculated to establish the internal consistency of the tests. The values were .82 for the pretest, .75 for the immediate posttest, and .83 for the delayed posttest, which was considered acceptable (Field, 2009). A second rater marked 20 percent of the OEIT data. The inter-rater agreement was 96.97% ($r = .99$).

Data analysis was carried out using SPSS (version 23). First, descriptive statistics for the participants' performance on the assessment tasks were calculated to identify general trends and patterns. Then two-way mixed-model ANOVAs were performed with Group as the between-subject variable and Time as the within-subject variable. Post hoc pairwise comparisons were conducted when there were significant interaction effects. To measure effect sizes, partial eta-squared was calculated for mixed-model ANOVAs, with values of .01, .06, and .14 considered as small, medium, and large effect sizes (Cohen, 1988). The correlation coefficient r was computed for post hoc pairwise comparisons, with values of .25, .40, and .60 interpreted as small, medium, and large effect sizes (Plonsky & Oswald, 2014).

5. RESULTS

5.1.Untimed grammaticality judgement task

Table 2 displays the descriptive statistics for the UGJT scores of the three groups in the pretest and two posttests. The table shows that the two treatment groups improved on their judgement accuracy from the pretest to the immediate posttest and retained their progress in the delayed posttest. The control group did not show much progress.

Table 2. Descriptive statistics for UGJT scores

Group	Pretest			Posttest 1		Posttest 2	
	N	M	SD	M	SD	M	SD
Explicit correction	18	6.06	1.11	8.39	1.15	8.17	1.10
Recast	20	6.25	1.21	8.55	1.32	8.60	1.19
Control	18	5.89	1.18	6.28	1.07	6.17	1.10

Note. The total score was 12 for each UGJT test.

To statistically determine whether the three groups showed different patterns of change over time, a mixed-model ANOVA was conducted, with Group as the between-subject variable and Time as the within-subject variable. The analysis showed that there was a statistically significant main effect for Group ($F(2, 53) = 16.08, p < .001, \eta_p^2 = .38$) and for Time ($F(2, 106) = 49.41, p < .001, \eta_p^2 = .61$). The interaction between Group and Time was also significant ($F(4, 106) = 12.89, p < .001, \eta_p^2 = .33$), indicating that the three groups differed significantly with regard to how they progressed over time.

To break down the interaction effect, post hoc pairwise comparisons were conducted using the Bonferroni adjustment. The results indicated that there was no significant difference among the three groups in the pretest. The two treatment groups significantly outperformed the control group with a large effect size in the immediate posttest: explicit correction ($p < .001, r = .69$) and recast ($p < .001, r = .69$). They continued to outperform the control group with a large effect size in the delayed posttest: explicit correction ($p < .001, r = .67$) and recast ($p < .001, r = .73$). No significant differences were found between the two treatment groups in the posttests.

5.2.Oral elicited imitation task

Table 3 presents the descriptive statistics for the OEIT scores of each group over the three testing periods. The table shows that while the two treatment groups made gains from the pretest to the two posttests, the control group did not show much change in their mean scores.

Table 3. Descriptive statistics for OEIT scores

Group	Pretest			Posttest 1		Posttest 2	
	N	M	SD	M	SD	M	SD
Explicit correction	18	4.11	1.08	5.06	1.26	5.06	0.94
Recast	20	3.85	0.99	4.80	1.01	4.75	1.02
Control	18	3.83	0.99	3.89	0.96	3.83	1.10

Note. The total score was 12 for each UGJT test.

To statistically measure group differences over time, a mixed-model ANOVA was run, with Group as the within-subject variable and Time as the within-subject variable. As Mauchly's test indicated that the sphericity assumption was violated ($\chi^2(2) = 10.07; p = .01$), F values were corrected using the Greenhouse-Geisser adjustment ($\varepsilon = .85$). The results showed a significant main effect for Group ($F(2, 53) = 4.93, p = .01, \eta_p^2 = .16$), Time ($F(1.71, 90.13) = 15.47, p < .001, \eta_p^2 = .23$), and the interaction between Group and Time ($F(3.40, 90.13) = 3.48, p = .02, \eta_p^2 = .12$), suggesting that the three groups showed different patterns of progress over time.

To examine the interaction effect, post hoc pairwise comparisons were carried out. The results revealed no significant difference among the three groups in the pretest. In the immediate posttest, the two treatment groups performed significantly better than the control group with medium to large effect sizes: explicit correction ($p = .006, r = .46$) and recast ($p = .037, r = .42$). In the delayed posttest, the two treatment groups also performed significantly better than the control group with medium to large effect sizes: explicit group ($p = .002, r = .52$) and recast ($p = .023, r = .40$). No significant differences between the two treatment groups were observed in the two posttests.

6. DISCUSSION

The present study investigated the effect of explicit and implicit CF on acquiring the third person singular marker in video-based SCMC contexts. While explicit CF was operationalized as explicit correction, implicit CF took the form of recasts. The results showed that the two treatment groups that received feedback on target errors outperformed the control group on the UGJT and OEIT tests. In addition, the study found no significant difference between the two treatment groups on either assessment task. These findings indicate that CF had a positive effect on acquiring the third person singular marker and that explicit CF was as effective as implicit CF in video-based SCMC environments.

The study's results align with previous CF studies, which found that CF was effective for L2 acquisition (Li, 2010; Lyster & Saito, 2010; Nassaji, 2016; Nassaji & Kartchava, 2021). As most previous studies have been conducted in face-to-face or text-based SCMC conditions, the current study extends the existing body of research by showing that CF provided in video-based SCMC may also be beneficial for L2 acquisition. This result is consistent with the findings of a small number of prior studies that also reported positive results for CF in video-based SCMC (Canals et al., 2021; Monteiro, 2014; Rassaei, 2017). The finding that learners in the treatment groups made significant gains over time suggests that CF was effective in drawing their attention to the target form and contributed to the development of their internal L2 system (Abbuhl, 2021; Gass, 1997).

The study found that CF had a positive effect on both the UGJT test and OEIT test. However, a close inspection of the effect sizes reveals that the effect sizes for the UGJT test were consistently larger than those for the OEIT test. This suggests that CF had a greater effect on learners' explicit knowledge than on their implicit knowledge of the target form. A possible explanation for this result is the relatively short duration of CF treatment in this study (Li, 2010). The learners in the current study received CF during two treatment sessions which lasted for a total of 30 minutes. This may not have been sufficient for learners to fully benefit from CF in terms of the development of their implicit knowledge. Since the development of implicit

knowledge may require a longer period and more exposure to the target form (R. Ellis et al., 2009), a longer treatment may be necessary for CF to have a larger impact on learners' implicit knowledge.

The finding that there was no significant difference between the two treatment groups is in contrast to most previous studies that found an advantage for explicit CF over implicit CF (e.g., Carroll & Swain, 1993; Guchte et al., 2015; R. Ellis et al., 2006; Yilmaz, 2012). One possible explanation for the discrepancy is the learners' exposure to form-focused instruction. Research has suggested that learners with a background in form-focused instruction are more likely to benefit equally from explicit and implicit CF (Nicholas et al., 2001; Zhao & R. Ellis, 2022). The learners in the current study had studied English for nearly 12 years in instructed settings where explicit teaching of grammar was a key component. Their extensive exposure to form-focused instruction might have primed them to attend to CF and grammatical form, which in turn might have reduced the differences between explicit and implicit CF.

In addition to the form-focused instruction the learners had been exposed to, the individualised provision of CF might have also played a role in wiping out the possible edge conferred by explicit CF. Previous studies suggest that the effectiveness of implicit CF may be enhanced when it is provided during dyadic interaction as this may sensitise learners to the corrective nature of implicit CF (Lyster & Izquierdo, 2009; Monteiro, 2014). In the current study, learners received CF from the researcher during one-on-one interactions through video-based SCMC. This form of interaction might have made it easier for learners to perceive the corrective intent of CF, whether it was provided in the explicit or implicit form. In addition, the fact that CF was provided on only one target form might have also sensitised learners to the CF they received, which might have further obliterated the differences between explicit and implicit CF.

7. CONCLUSION

The study reported above contributes to the existing body of research by showing that CF provided during video-based SCMC may also be beneficial for L2 acquisition. It challenges the superiority of explicit CF over implicit CF, indicating that learners may benefit equally from these two kinds of CF when their exposure to form-focused instruction and the provision of CF make it possible for them to notice the corrective force of implicit CF. The key pedagogical implication of the study is that teachers may expect CF to be beneficial when students receive it through video chat. For students in learning contexts where grammatical form and accuracy is stressed, implicit CF may work as well as explicit CF as students are likely to be able to accurately perceive the corrective nature of CF whether it is made explicit or not.

The study contains several limitations that provide directions for future research. Firstly, since the study only focused on video-based SCMC, it remains unclear if the effect of CF would be affected by different modes of SCMC. Future studies should compare the effects of different kinds of CF across different modes of SCMC so that a more comprehensive view of the role of CF in SCMC could be established. Secondly, the study did not investigate how learners processed the CF they received so it remained unclear how learners reacted to the CF they received. Future studies may use introspective methods to explore this issue so that we could form a clearer view about how learners perceived the different kinds of CF they receive. Finally, the current study involved one-on-one interaction between the researcher and learners,

which imposed limitations on its ecological validity. To enhance ecological validity, future studies could explore the provision of CF in group video chat and examine how this would work to promote L2 acquisition.

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