

Tracking ‘learning behaviours’ in the incidental acquisition of two dimensional adjectives by Japanese beginner learners of L2 English

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Abstract

The purpose of this article is to examine both the process and product of vocabulary learning in a task-based instructional context. The article reports a study that investigated the acquisition of two dimensional adjectives (‘big’ and ‘small’) by six year old Japanese children who were complete beginners. It tracked the ‘learning behaviours’ that occurred in the classroom interactions involving the use of these adjectives in nine task-based lessons to show how these behaviours developed over time. It also collected test data to establish whether the learners had developed the receptive and productive knowledge required for the independent use of two adjectives. In this way, the study shows how L2 learning evolves through interaction by exploring the relationships between the learners’ different learning behaviours and the differences in their test performance. The main finding was that differences in the success of the individual learners in acquiring productive control over the dimensional adjectives – as shown in the tests – was directly traceable to their learning behaviours in the task-based interactions.

Key words: dimensional adjectives; task-based instruction; interaction; tracking learning behaviours; incidental acquisition

I. Introduction

1. Interaction and L2 acquisition

Some years ago Hatch (1978) proposed the Discourse Hypothesis according to which:

One learns how to do conversation, one learns how to interact verbally, and out of this interaction syntactic structures are developed (p. 404).

Hatch pursued this illuminative idea by examining how conversations with young children and adults in a second language created opportunities for learning. Her approach was essentially socially-situated, descriptive and data-led but subsequently, through the work of Long (1981; 1996), a more theory led approach based on the Interaction Hypothesis (IH) evolved. Long argued that one specific type of interaction – the negotiation of meaning that occurs when interlocutors experience a communication problem – ‘facilitates acquisition because it connects input, internal learner capacities, particularly selective attention, and output in productive ways’ (1996, p.452). The IH has spawned a number of studies which have shown that the interactional adjustments that arise when meaning is negotiated facilitate the acquisition of new linguistic forms – both lexical (e.g., Ellis, Tanaka & Yamazaki, 1994) and grammatical (e.g., Mackey, 1999). These studies were experimental in nature involving a pre-test, a treatment that provided opportunities for the negotiation of meaning, and post-tests.

Implicit in the IH is the view that acquisition involves cognitive processes that are activated through social interaction. One particular process that has assumed special importance is ‘noticing’ (Schmidt, 2001). The negotiation of meaning induces learners to pay conscious attention to exemplars of the specific linguistic forms that led to a communication problem. It provides them with opportunities to both notice-the-gap between their own non-standard choice of linguistic form and the target form and also to modify their own output to

make it more target-like when they receive feedback. In this way, connections are established between input/ output and ‘internal learner capacities’.

Sociocultural SLA (Lantolf, 2000) provides a different account of the role played by interaction in L2 acquisition. In this theoretical paradigm learning is not viewed as primarily a mental phenomenon but as a social accomplishment that occurs when participants in a conversation strive for intersubjectivity. Sociocultural theorists such as Lantolf (2000) have drawn on Vygotsky’s ideas about mediated learning to propose that initially ‘learning’ occurs within interaction when the interlocutors jointly construct a Zone of Proximal Development (ZPD) that enables a novice to perform a function (e.g., produce a new linguistic feature) that they are not yet able to produce independently. Social interaction involving collaborative dialogue (Swain, 2000) mediates both initial ‘learning’ and subsequent ‘development’ when the new linguistic feature is internalized and learners achieve self-regulation. In this way intermental (i.e., social) processes serve as the basis for subsequent intramental (i.e., cognitive) processes. In contrast to the IH, therefore, interaction in SCT is seen as the site of learning; learning takes place not in the mind of the learner but in flight, so to speak, as ZPDs are constructed with the learner.

In this respect, then, SCT’s account of the role of interaction in L2 learning appears much closer to what Hatch had in mind when she formulated the Discourse Hypothesis. This is reflected in the fact that SCT researchers have generally avoided experimental designs in favour of detailed examinations of the affordances that arise in interaction (e.g. Ohta, 2001)¹ and have resisted drawing a clear line between ‘participation’ and ‘acquisition’ (Sfard, 1998). Thus, the essential difference between the IH and SCT lies in how these theories view the role of interaction in learning. Whereas the former sees interaction as triggering learning in the mind, SCT views interaction as the actual site of learning.

2. Investigating acquisition

In the study reported below we will draw on both paradigms and the methodologies they have employed to investigate (1) the ‘learning behaviours’ that beginner learners of English demonstrated in their interactions with a teacher, which often involved the negotiation of meaning and (2) their acquisition of two dimensional adjectives as demonstrated in tests administered at the end of a period of instruction. In so doing, we accept Sfarid’s (1998) argument, namely that a full understanding of how L2 development takes place involves accepting the legitimacy of both the ‘participation’ and ‘acquisition’ metaphors. Our aim is to track the learning behaviours that took place over time and then to show how these behaviours are related to test performance.

Drawing on Larsen-Freeman’s (2007) observation that ‘any definition of learning must involve the transcendence of a particular time and space’ (p. 783), we propose that it is necessary to distinguish four different levels of learning/ development – as in Ellis (2010, p. 44):

1. The learner could not perform x at time a (the ‘gap’)
2. The learner performed x at time b by means of co-adaption (‘social construction’).
3. The learner initiated the performance of x at time c in a similar context as at time b (‘internalisation/ partial self-regulation’).
4. The learner performed x at time d in a new context (‘transfer of learning and full self-regulation’)

where x refers to some micro or macro feature of language (e.g., a specific lexical item or a particular grammatical structure) and a , b , c , and d to different times. Ellis argued that acquisition can occur at different depths reflecting levels 2, 3 and 4.

The most impressive account of learning-as-participation can be found in the work of Markee. Markee (2008) adopted a 'learning tracking methodology' that involved (1) learning object tracking and (2) learning process tracking. The former involved identifying when a specific learning object occurred in the interactions involving the same learner(s) over a period of time. The latter involved showing 'how and when participants orient to, and potentially incorporate, particular learning objects that occur in different speech events in their interactional repertoires' (p. 409). Markee tracked the use of the word 'prerequisites' in the interactions that took place between a teacher and a group of Chinese professors in a language skills development course, showing how one learner gradually increased control over the use of this word in the interactions in which it occurred. In a later study, Markee (2011) demonstrated how the same methodology can be used to re-frame cognitive accounts of avoidance as a socially-situated activity. Markee and Kunitz (2013) illustrate how the so-called cognitive activity of pre-task 'planning' can be re-specified in terms of 'massively occurring, naturalistic, socially distributed language learning behaviours' (p. 29). These studies illustrate how mentalistic notions of cognition can be understood as socially-distributed actions.

There is, however, a problem with an approach that is based on data consisting entirely of naturally-occurring interactions as it is difficult to find clear evidence that level 3 and, in particular, level 4 learning have occurred. Markee (2008) noted that often 'it is impossible to demonstrate successful language learning behaviour because there is no evidence of independent productive use of a new learning object' (p. 409). In fact, he failed to demonstrate this in his own study. His 'learning behaviours tracking' (LBT) methodology successfully demonstrated learning at Levels 2 and 3 but was unable to provide evidence of Level 4.² Nor does a close inspection of the two later papers provide conclusive evidence that

full self-regulation (what we have called Level 4 learning) has occurred. Thus while we acknowledge the power of a post-cognitive account of learning we also see its limitations.

We propose therefore to complement a socially-situated approach to investigating learning by collecting test data to show whether learners have internalized a learning object (i.e., achieved level 4 learning). Test data provide no information about the interactional practices where the learning originated but they can show whether learners are able to deploy a linguistic feature independently of the specific contexts in which it was first learned. However, we acknowledge that questions arise as to whether test data are actually able to demonstrate that learning has taken place (see Larsen-Freeman, 2011). Tests are themselves social events and as such constitute evidence of how learners ‘do’ socially-situated cognition in the context of the tests. In recognition of this we will report not just the results of the tests but also provide evidence of how the tests were accomplished by examining the interactions that occurred between the learners and the researcher administering the test. In this way we aim to show whether and in what way Level 4 learning was evident in a ‘new’ context.

3. The acquisition of dimensional adjectives

The learning objects we will investigate are the dimensional adjectives ‘big’ and ‘small’. Such adjectives are used both categorically and comparatively. Some objects (e.g., an elephant or a mouse) are seen as prototypically ‘big’ or ‘small’. However, the same adjectives can be used to indicate the relative size of two objects that share the same categorical meaning. For example, both an elephant and a hippopotamus are ‘big’ but a hippopotamus is ‘smaller’ than an elephant.

According to the Semantic Feature Hypothesis (Clark, 1973), children learn dimensional adjectives by addition of semantic features (e.g., +Dimension, +Vertical). Clark suggests that children begin by learning the most general dimensional terms (i.e., ‘big’ and

‘little’) and then acquire more specialized terms as they add semantic features. This hypothesis, however, has been challenged (Ryalls, 2000; Tribushinina, 2008). Children do not learn adjectives by adding semantic features but rather in lexically-specific units; they learn to use specific adjectives with specific nouns (e.g., ‘big elephant’ and ‘tall tower’). In other words, they learn their categorical use first and only later discover their comparative use. Such a view of learning is compatible with usage-based accounts of how children learn (e.g., Tomasello, 2000).

There are different explanations for why children learn the categorical use of dimensional adjectives before the comparative use. One possibility is that children’s conceptual development follows an object-to-relations path (Gentner, 1978). Children initially respond to ‘thinglike’ objects in their world and thus view adjectives as referring to the integral features of concrete objects. The ability to understand the relational nature of words appears only later. However, another possibility is more compatible with a usage-based view of language learning. Children may simply respond to the way in which dimensional adjectives are used in the input. That is, they acquire the categorical meanings of words like ‘big’ and ‘small’ first because their caretakers employ such words in combination with nouns that prototypically display the characteristics labelled by these adjectives. Tribushina (2008) examined the adjective-noun combinations in the CHILDES corpora. She found that ‘tall’ was used overwhelmingly with ‘people’ and ‘tower’ in parental input and argued that children learn dimensional adjectives in ready-made units that denote the best exemplars of their meanings.

L1 acquisition researchers who have examined the acquisition of dimensional adjectives focused on ‘input’ rather than ‘interaction’ and were primarily concerned with how children acquire the semantic meanings of dimensional adjectives. There is, however, an

important interpersonal dimension to the use of these adjectives which we will show is relevant to how they are acquired. To illustrate this important point, we will briefly illustrate how ‘big’ and ‘small’ are used in two interactions involving the six year old children investigated in the study reported below.

The first extract was taken from the controlled practice stage of a lesson based on a present-practice-produce methodology.³ See Appendix A for the transcription conventions. The teacher requested the children to produce the word ‘big’ by showing the class a flash card depicting two balloons, one big and one small, with an arrow pointing at the bigger one (line 1). This led to the correct response (line 2). The teacher then showed another card with the same two balloons but with the arrow pointing at the smaller balloon. The children again responded correctly (line 4), which the teacher confirmed (line 5). In this excerpt, the function served by the use of the adjective is representational – i.e., labelling a dimensional feature of a ‘balloon’.

Extract 1

1. T: ((showing a card)) okay, this balloon i:s?
2. Ss: (1.0) big.
3. T: ((showing another card)) this balloon i:s?
4. Ss: small.
5. T: small.

The second extract was taken from data collected from one of the task-based lessons that are the focus of the study reported below. In this task, the students were required to select the card that matched the teacher’s oral command. As the children did not understand the command, they responded by requesting clarification. In this interaction, then, ‘big’ is used

not just to label a dimensional feature of the polar bear but interpersonally to help the children identify the referent to which it is applied and to achieve a communicative goal.

Extract 2

1. T: the next one. next one. please take the polar bear to [the zoo].
2. Yoshi: [po:lar bear]
3. T: polar bear
4. Shige: ((looks at the teacher)) /whito/?
5. T: white, yes. yes. white a:::nd ((gesture of 'big'))
6. Hiro: (1.0) big?
7. T: yes, bi:::g and heavy::: ((gesture of 'heavy'))
8. Hiro: *a wakatta* (=I know) ((walks to the wall and points something)) *konoiro desyo* (= This colour right?)

The 'learning behaviours' evident in these two extracts are very different, reflecting two very different uses of 'big' and 'small' – referential in Extract 1 and interpersonal in Extract 2. We argue that these behaviours cannot be properly understood by focusing narrowly on the semantic meanings of adjectives; it is necessary to also consider how they are used in interaction. In other words, if we want to understand how children learn dimensional adjectives such as 'big' and 'small', we need to consider how they are used in talk-in-interaction and how they help children to achieve a communicative goal. This is the approach adopted in the study we now describe.

II. The study

The study focuses on the acquisition of two adjectives – 'big' and 'small'. These two adjectives occurred incidentally in the input that arose in a series of task-based lessons. The purpose of these lessons was not to 'teach' these adjectives but to provide a meaning-centred

context in which learners happened to be exposed to them as they struggled to respond to commands given in English. It should be noted that the commands that triggered the interactions between teacher and learners did not themselves contain ‘big’ and ‘small’ (i.e., they consisted of nouns and verbs only). The use of the two adjectives – initially only by the teacher but over time by some of the learners – occurred in the interactions that arose naturally out the joint efforts of teacher and learners to achieve the outcomes of the tasks — in much the same way as happens in caretaker talk in L1 acquisition.

The decision to investigate the acquisition of the two adjectives was taken only after the data for the study had been collected. It was motivated in part by how young children acquire the meanings of these adjectives (see above) and by the fact that the use of the two adjectives occurred regularly in the lessons.

1. Research question

In what way do the learning behaviours of children who were successful and unsuccessful in acquiring two dimensional adjectives differ?

Test data were used to establish to what extent six young children were successful in fully acquiring ‘big’ and ‘small’. Data collected from audio and video recordings of the interactions that took place while the children were performing the same two tasks nine times over a five week period were used to track their learning behaviours.

2. Participants

The participants were six Japanese children all aged six years old. There were four boys and two girls. The children had all been enrolled by their parents in a special English class in a small private language school in Japan. The teacher, who was also one of the researchers, was

a native speaker of Japanese with eight years experience of teaching young children and a master-level degree in TESOL.

The children were all complete beginners with no prior experience of learning English either inside or outside of the classroom context. Thus, they had no prior knowledge of ‘big’ and ‘small’ although it is possible that they had some knowledge of ‘*biggu*’, which Daulton (1999) lists as one of the Japanese loan words from English. During the period of instruction, the participants had no exposure to English outside the classroom. In other words, their learning was totally dependent of the task-based instruction they received in the classroom.

3. Instruction

The instruction was task-based. Because the children were all beginners, a decision was taken to use input-based tasks of the listen-and-do kind (see Ellis, 2003). These involved the learners listening to the teacher’s commands and then carrying out actions (i.e. selecting pictures that matched the words contained in the commands) to demonstrate their understanding and achieve the outcomes of the tasks. For example, in one of the tasks the learners listened to the teacher’s command ‘Take the crocodile to the zoo’ and then searched for the card depicting a crocodile from their array of cards. The learners could elect to speak in Japanese or English whenever they felt the need (i.e. production was not proscribed). There was no attempt to directly teach ‘big’ or ‘small’.

Two listen-and-do tasks were employed. The same two tasks were repeated nine times over a five week period. The decision to repeat the same tasks was taken because research has shown that task-repetition is beneficial for learning (Bygate & Samuda, 2005) and because young children in particular benefit from engaging in repeated routines (Ferrier, 1978). However, as we will see, the tasks-as-process changed over time. The two workplan tasks are described below.

a. Task 1: Help the zoo and the supermarket

In Task 1 the students were told that they had to ‘help the zoo and the supermarket’ by finding the correct picture cards from a set of cards. The learners listened to the teacher’s commands and tried to select the cards that matched the animals and objects mentioned in them. The materials consisted of 30 small flash cards for each child arranged in front of them and one three-sided board with pictures of the zoo and supermarket. Located on the board were 30 pockets for holding the cards that the children had selected correctly. Each child also had a small empty box to deposit any cards chosen incorrectly. The children listened to a command and then tried to find the card(s) that matched the instruction. When told to do so by the teacher, they all displayed the card(s) they had chosen. The teacher then showed them the correct card(s). Care was taken to prevent the students from copying what other students did in two ways: (1) the three-sided board was designed to keep each learner’s responses hidden from other learners and (2) the students were told to hide the card they had chosen in their hand until the teacher asked them to show it. Those children who chose correctly placed their card(s) in the pocket on the board while those children who chose incorrectly replaced the card(s) on the table and then put the correct card(s) into their ‘incorrect’ box. At the end of the task, each student counted the number of cards in his/her incorrect box. The student with the fewest cards was the winner.

b. Task 2: Help the animals

Task 2 asked the children to ‘help the animals’ by finding the item(s) the animal(s) needed. The aim was to collect as many cards as possible. The same 30 flash cards as in Task 1 were used. The children were requested to find the pairs of cards that corresponded to the teacher’s commands. For example, if the teacher said ‘The polar bear needs the batteries’ they had to find the card showing a single polar bear and the card showing two batteries. The students

held up the pair of cards they had selected so that the teacher could indicate whether they had chosen correctly. They were allowed to change their selection until they chose the correct card(s). Altogether each student collected ten pairs of cards.

4. Vocabulary Items

The tasks provided a means of exposing the learners to a total of 24 nouns. The teacher also used a set of colour and dimensional adjectives to help the children select the correct cards. While exposure to the nouns was pre-planned, exposure to the adjectives arose incidentally when the teacher elaborated a command to help the children understand it. Table 1 shows the nouns with which ‘big’ and ‘small’ occurred. It should be noted that the instruction also exposed learners to a wide range of other English words in the teacher’s meta-talk and social talk as is normal in task-based teaching.

[Table 1: NEAR HERE]

5. Tests

The teacher administered the same four tests prior to the instruction (the pre-test), immediately at the end of the instruction (post-test 1), and two weeks later (post-test 2). Two of the tests measured receptive knowledge of the nouns and adjectives and two measured productive knowledge. Although the learners were complete beginners it was considered necessary to include a pre-test to check that they had no prior knowledge of ‘big’ and ‘small’.

a. Multiple-choice word comprehension test (receptive knowledge)

This test required the participants to listen to an audio-recorded word and choose the matching picture from six pictures. The pictures they could choose from are shown in Appendix B. There was one item each for ‘big’ and ‘small’.⁴

b. Category task test (receptive knowledge)

The learners were asked to listen to sentences and decide which specific situation was represented in a set of pictures. For example, the learners listened to the sentence ‘the boy’s cap is big’ and identified the relevant picture depicting a boy wearing a big cap. Again there was one testing item each for ‘big’ and ‘small’.

c. Discrete-item word production test (productive knowledge)

In this test, individual participants were asked to label/describe 36 flash-cards representing 24 nouns, six colour adjectives and six dimensional adjectives. For example, the flash-card for ‘big’ showed two referents (e.g. a big balloon and a small balloon on the same card with a red arrow pointing at the big balloon). The teacher said ‘this balloon is ___?’ and waited for a participant to complete the sentence.

d. Same or Different task test (productive knowledge)

The test was performed by the teacher working individually with each participant. Each participant had a sheet showing pictures of objects. The learners had to find out whether their pictures were the same or different from those of the researcher. For example, for ‘big’ the learners’ sheet showed a big eggplant, whereas the teacher’s showed a small eggplant. The teacher used elicitations such as ‘What do you have?’ or ‘My one is small. What about yours?’ to help the participant complete the task but never used the target items herself. The interactions that arose when performing this test were audio-recorded and transcribed in the same way as for the task-based interactions.

III. Results

1. Test results

Table 2 shows the results for 'big' and 'small'. As there was only one item for each word in each test, the scores are shown as 'correct' (i.e. '1') or incorrect (i.e. '0'). Overall, there is little evidence that the learners understood the meanings of the two adjectives prior to the instruction. However, immediately following the instruction, all the children demonstrated receptive knowledge of both adjectives. Productive knowledge of 'big' was only evident in the controlled production of two learners and in the free production of only one (Aki). In the delayed post-test all the learners demonstrated knowledge of 'big' in controlled production and four in free production. Four of the learners produced 'small' in the immediate discrete-production test but only one learner (Aki again) produced it in the free-production test. In the delayed post-test four learners demonstrated full productive knowledge of 'small'. If these tests are taken as evidence of Ellis' level 4 learning, it would seem that the instruction was successful in enabling these learners to achieve receptive knowledge of 'big' and 'small' and, in the case of some of the children productive knowledge as well.

[Table 2: NEAR HERE]

We noted earlier that tests constitute social events. By examining the interactions that took place as the tests were performed we can obtain a clearer understanding in what sense 'development' (i.e. Level 4 learning) has occurred. In Extracts 3 and 4, we show how Aki, the most successful of the children, was able to produce 'small' and 'big' in the Same-or-Different delayed post-test.

These extracts show that the social context of the test was both similar and different from the social contexts created by the tasks. It was similar in that the talk was directed at achieving an outcome (i.e. establishing whether the learner's and the researcher's pictures were the same or different). It was different, in that Aki was interacting one-on-one with the

researcher in the test rather than as a member of a group of learners. It was also different in that, the test clearly required Aki to display her ability to produce the adjectives.

Extract 3

T: number 7. what do you have?

S: ((looking at her sheet)) two: *etto* (= well)... two ((*sotto voce*))

T: (3.0) two...

S: *wakaranai* (= I don't know)

T: okay. I have two squirrels (2.0) squirrels?

S: *eh. risu dayo* (= I mean, squirrels).

T: yes, squirrels. and my squirrels are very big.. what about yours?

S: ((looking at the picture)) ... **small**

T: small? then different ((shaking head)).

S: ((crossing out the picture)) *chichai* (= Small).

T: ((copying the student)) *chichai*

Extract 4

T: number 22.. what do you have?

S: ((shaking head)) *wakaran* (= Don't know)

T: okay. I have one eggplant.

S: one eggplant. purple?

T: purple. yes. and my eggplant is. very small.. is that small?

S: ((looking down the picture)) (3.0) **big**

T: big, okay then it's different ((shaking head)).

S: ((crossing out the picture))

In what sense, then, can it be said that Aki manifested self-regulated (i.e. Level 4) learning in this test? Clearly, Aki was able to produce the two adjectives on her own. But it is also clear that her production was carefully scaffolded by the researcher who took charge of the interaction. Self-regulated learning, then, was evident only in Aki's ability to produce the adjectives as the second part of question-answer adjacency pairs and only when her responses were triggered by the researcher's use of the opposite adjectives to describe her own pictures. What the extracts show, then, is that Aki was successful in displaying her productive knowledge of the adjectives in a new social context involving interactional assistance. They do not show whether Aki was able to independently initiate production of the adjectives to describe referents of her own choosing.

2. Tracking learning behaviours

The nature of the tasks the learners were asked to perform inevitably created problems for the students given their non-existent knowledge of English at the start. Thus, the learning behaviours we observed arose as the participants (the teacher and the students) sought to repair these problems.

We begin by examining a lengthy repair sequence from lesson 1. Extract 5 is taken from this sequence while the students were performing Task 2 for the first time. In line 1, the teacher initiates the sequence by instructing them to find two cards (i.e. polar bear and chestnut) among their picture cards. In line 2, the students indicate the need for repair through their failure to carry out the command and by looking at each other. This results in a negotiation of meaning sequence. In line 3, the teacher other-repairs by repeating the command, using the adjectives 'white' and 'small' to help the students locate the correct cards and by also signalling their meanings using a hand gesture in the case of 'small'. The exchange then continues with the students holding up the cards they have chosen but mainly

failing to select the correct ones (lines 4 to 30) until the teacher shows them the correct cards (line 31). In this exchange, the teacher used ‘small’ a total of six times and ‘big’ twice but there was no evidence the learners understood its meaning and no child produced either adjective or their L1 equivalents. At this time, the students were clearly engaged in the task, responding in Japanese to work out what they were supposed to do and guessing which cards to pick up.

Extract 5:

1. T: The polar bear wants to eat the chestnut. The polar bear wants to eat the chestnut.
2. Ss: ((look at each other without picking up any cards))
3. T: a polar bear is white, right? polar bear is white. ((shows a piece of white paper)) and the chestnut is (.) **small** ((gestures with one hand)) and brown.
4. Yoshi: wakatta (= I know)
5. T: Okay? The polar bear wants to eat the chestnut.
6. Shun: hai ((shows two cards up))
7. T: Oh that’s a leak. The polar bear is okay. Chestnut is a **small** brown vegetable.
8. Yoshi: *kore, haitteru yatsu desyo* (= I should choose from those in here right?)
9. T: ((giving hands)) no no no, *kono nakakara* (= From here).
10. Aki: eh, *do:yu:imi?* (= What does it mean?)
11. Shun: ((shows his cards))
12. T: ((to Hana)) *sore wa mo: iranai. owatta yatsu desho?* (= You don’t need them. We have done them, right?)
13. Shun: *atteru?* (= Are these correct?)
14. T: *kononakakara, sagasuno.* ((to Hibiki)) no no no no.
15. Aki: *e, dooiuimi?* (= What does it mean?)
16. Shun: *sensei, kore wa?* (= Teacher, how about this?)

17. T: okay, polar bear
18. Shun: ((showing his cards)) okay? okay?
19. T: no. polar bear wants to eat a chestnut. Chestnut is brown ((showing a piece of brown paper)) brown, and very **small** ((gesture with her fingers)).
20. Aki: ((shows her cards to the teacher))
21. T: no, no, no, no. that's a persimmon. persimmon is finished right? ((walking to Hana to check her cards))
22. Hiro: ((shows one card))
23. T: ((to Hiro)) that's a cutting board. a **small** ((gesture)), brown vegetable.
24. Aki: ((shows one card to the teacher))
25. T: no. that's not **small**.
26. Yoshi: ((shows two cards to the teacher))
27. T: ((pointing one card of Yoshi's)) his is okay. this is a squirrel right? polar bear. I said polar bear. polar bears are a ((showing a white paper)) white, and ((gesture with both arms)) **big, big** animal and very heavy ((gesture)).
28. Yoshi: *omoi yatsu?* (= Heavy one?)
29. T: that's right. let's find a polar bear. a white one.
30. Shun: *dore?* (= Which one?)
31. T: you are right. okay ((showing the 'polar bear' card to the class)) polar bear, the polar bear wants to eat the chestnut ((showing the 'chestnut' card)). look look, the chestnut is **small** and brown, right?
32. Aki, Noko: ((showing their cards)) *sensei, o:ke:?* (=Teacher, okay?)

In lesson 2 we find the first evidence of learning behaviours arising in the ongoing repair work. In Extract 6, the teacher's initial turn creates multiple problems for the learners. They are faced with a stream of speech containing words that they have no or very partial

knowledge of. Shun responds not to what the teacher said but to the teacher's gesture signalling the meaning of 'small', producing the Japanese word for 'small' ('*chiichai*'). The teacher confirms that he is right and repeats 'small'. Shun, however, still does not make the connection between the form of the word and its meaning and so ventures the Japanese word for 'big' ('*ookii*'). The teacher then says 'big' twice using rising intonation to indicate he is not correct and then explicitly states he is wrong. At this point Shun's cousin, Aki, helps out, gesturing the meaning of 'small' and whispering the word. This was the first occasion that any student produced 'small'. Shun then goes on to select the correct card. We see here, then, the genesis of form-meaning mapping in Shun and evidence of both receptive and productive knowledge of 'small' in Aki, who momentarily took on the role of 'expert'. The learning behaviour displayed in this extract is a collaborative accomplishment arising out the repair work undertaken by the teacher, Shun and Aki.

Extract 6

1. T: the squirrels, squirrels, squirrels want to use the pan to cook something.
2. they are going to cook something. the squirrels want to use the pan.
3. the squirrels. squirrels. there are two. brown. **small** ((gesture of 'small')),
4. little, brown, **small** animal. squirrels.
5. Shun: (1.0) *chiichai?* (=small?)
6. T: very, very **small**. [squirrels].
7. Shun: [ookii?] (=big?)
8. T: (1.0) **big?** (.) **big?** no.
9. Aki: ((looks at Shun and indicates 'small' with her hands) **small**. ((in a very soft voice))
10. Shun: ((selects his squirrel card))

Extract 6 also illustrates the interactional means used to repair problems. The teacher regularly uses gesture to demonstrate the meaning of 'small'. Shun searches for meaning via

his L1. Aki makes the link between the paralinguistic representation of ‘small’ and its spoken form. The importance of this link for Aki is evident again in Extract 7 from lesson 3. The teacher’s command again poses multiple problems for the students — whether ‘squirrel’ is singular or plural, the meaning of ‘brown’ and the meaning of ‘small’. Yoshi picks up on ‘brown’ and the teacher provides an ostensive definition of its meaning. Aki then picks up on the problem of number and, when that is clarified by the teacher, resorts to private speech to make the link between ‘small’ and its Japanese equivalent. In this extract, then, we see how learning behaviours are mediated by repair work involving gesture, the learners’ repetition of key words, private speech and the use of the L1. Aki can be seen consolidating the form-meaning mapping for ‘small’ that she had established in lesson 2.

Extract 7:

1. T: let’s take the squirrel to the zoo. squirrel to the zoo. squirrel is brown.
2. Yoshi: brown
3. T: ((gesture of ‘small’)) **small** brown animal. brown.
4. Aki: ((looks at her cards and frowns)) BROWN?
5. T: do you know brown? brown (2.0) ((looks around)) I need some colour.
6. ((picks up and shows a brown piece of paper)) this is brown, right? brown. brown.
7. Aki: ((shows one finger to the teacher)) ONE?
8. T: yes, that is right.
9. Aki: ((looks at the card in her hand and talking to herself)) **small, chitha:i** . (=small)

As the learners gradually develop the ability to segment words in the teacher’s commands, they increasingly adopt the strategy of repeating them after the teacher. In Extract 8 from Lesson 5, the teacher has instructed the learners to find the squirrel and take it to the zoo. When they experience difficulty in identifying the correct picture card, the teacher, provides a clue by referring to its size (i.e. ‘small’). Yoshi repeats ‘small’, signalling

uncertainty through rising intonation. Hiro also repeats ‘small’ but with a falling intonation indicating, perhaps, understanding. The teacher then shows the correct card and repeats ‘small’ (accompanied by a gesture) to help Yoshi see why he has chosen the wrong card. Hiro, who had chosen the right card, imitates both the teacher’s gesture and says ‘small’. Self-initiated repetition in this way demonstrates the children’s ongoing attempts to participate in the discourse and potentially helps them to establish a form-meaning mapping for ‘small’.

Extract 8

1. T: the squirrel is very **small**.
2. Yoshi: [**small?**]
3. Hiro: [**small.**]
4. T: **small, small.** (2.0) three (.) two (.) one (.) [go!]
5. Yoshi: [go:::]
6. T: squirrel ((shows the correct card)). ((to Noko)) that’s a toothbrush. okay. ((to Yoshi))
7. oh, that’s a polar bear. a squirrel is very **small** ((gesture of ‘small’ with her hand)),
8. I said.
9. Hiro: **small** ((copying teacher’s gesture))
10. T: right? (.) okay.

So far we have focussed on the learning behaviours involving ‘small’. Very similar behaviours occurred for ‘big’, as illustrated in Extract 9 from Lesson 7. This followed an exchange involving ‘camel’, which the teacher had described as ‘big’. In Extract 9, ‘big’ is associated with ‘ostrich’. In this way, the children have an opportunity to see that ‘big’ can be applied to referents that differ in absolute size (i.e. they can see its relative use). The teacher begins by repeating ‘big’ twice. Shun immediately imitates the teacher and receives confirmation from her. Other students then negotiate further clues about the bird’s colour.

The teacher then again refers to its size, repeating ‘big’ a further two times and also using gesture to show the students its meaning. The children, however, continue to seek clarification about its colour until Aki correctly identifies these. This done, the teacher returns to ‘big’, once more gesturing its meaning and also elongating the vowel to mimic its meaning. Yoshi privately repeats ‘big’ *sotto voce* while Shun mimics the teacher’s gesture indicating size and then shows he has identified the correct referent by gesturing a bird flapping its wings. Once again we see how the teacher and the children jointly set about repairing the linguistic problems created by the teacher’s command and, in the process, how opportunities for form-meaning mapping arise and are taken up by some of the children.

Extract 9

1. T: ok the next. next. (.) please take the ostrich to the zoo. ostrich to the zoo.
2. ostrich is also **big. big.**
3. Shun: **big.**
4. T: yes.
5. Shun: green?
6. T: no.
7. Shige: white?
8. T: white, yeah white and black. white and black. and **big** ((gesture)).
9. ostrich is **big**, right? (1.0) do you know ostrich?
10. Noko: ((shows one card)) *kore?* (=this one?)
11. T: no. white and black.
12. Aki: (1.0) white and black (.) *desho* (=right?).
13. T: yeah that’s right. and a **bi:g** bird ((gesture)) **bi:g.**
14. Yoshi: ((with small voice)) **big.**

15. Shun: ((copies the teacher's gesture and then moves his arms up and down) *pa:ta pa:ta*.
(=*flap flap*)
16. T: *pa:ta pa:ta*. (=flap flap) (.) three (.) two (.) one (.) go.
17. Noko, hurry up. (2.0) ostrich is this ((shows the correct card)).
18. Ss: ehhhhh
19. T: Yoshi ((points the object on the card)) I said, black and white, right? this is only black.

We will now take another look at Extract 2. This illustrates how the children repeated 'big' or 'small' after the teacher. Here we see Hiro producing 'big' by himself. His production is, however, clearly assisted by the teacher, who provides a prompt ('white a:nd ___?') and gestures the meaning of the word. The teacher confirms he is correct by repeating 'big' and then offers a further clue before going on to model the form of 'heavy' and its meaning through gesture.

Space limitations do not allow us to explore the learning behaviours of all six learners in detail. In Table 3, however, we summarise the six learners' learning behaviours relating to 'small' and 'big'. The table shows the number of times that each learner produced 'big' and 'small' and their use of a translation equivalent and gestures signalling the words' meanings. The behaviours involving 'small' outnumbered those for 'big' (23 versus 13). In one respect, this is surprising as 'big' was used with more nouns than 'small' in the teacher's commands (see Table 1). It is possible, however, that the children already knew the Japanese loan word 'biggu' and thus experienced less difficulty in making the form-meaning connection for 'big' than for 'small', which has no L1 loan word equivalent in Japanese.

The learners' use of gesture mainly occurred in interactions involving 'small', sometimes accompanying its use and sometimes as stand-alone signals of its meaning. Translation of 'small' ('*chiichai*') was also common but occurred only once for 'big' ('*ookii*'). The most

conspicuous feature is the prevalence of repetition, which served two different functions. Frequently, the children appeared to be addressing themselves in private speech. One of the children (Hiro) used repetition as form of language play, defined by Cook (1997) as ‘behaviour not primarily motivated by human need to manipulate the environment and to share information for this purpose and to form and maintain social relationships’ (p. 227). For the other children, however, it functioned as ‘rehearsal’, which can also be considered a type of language play (Lantolf, 1997). Repetition in private speech helped the children to hold the new word in working memory. In speech that was more clearly social, the repetitions functioned as clarification requests, generally eliciting a confirmation or correction from the teacher. In two of the children (Aki and Hiro), a progression from the first to the second function of repetition is evident. The table also shows that there was considerable variance in the frequency of the learning behaviours of the six children. Aki and Hiro were both very active, engaging in a total of 18 and 11 learning behaviours respectively in the nine lessons. In contrast, Noko and Shige did not participate in any. They were, however, exposed to the interactions involving the other children.

[Table 3: NEAR HERE]

IV. Discussion

Our aim was to track the learning behaviours of two dimensional adjectives with a view to identifying if and how they come to be learned by the six children. Our approach was informed by the view that social ‘learning’ precedes ‘development’ (Vygotsky, 1978) and that in order to investigate how this takes place it is necessary to investigate both the behaviours that arise in social interaction (i.e. as evidence of ‘learning’) and whether independent use of newly learned linguistic features (i.e. ‘development’) has been established as shown by tests. In terms of Ellis’ (2010) levels of learning we wanted to see if and how the

children moved from Level 1 (i.e. the learners could not understand or produce the adjectives) to Level 4 (i.e. the learners were able to employ the adjectives on a new occasion and in a different context). We propose that the tests can be construed as affording different contexts as they were conducted in an obvious ‘assessment’ environment.

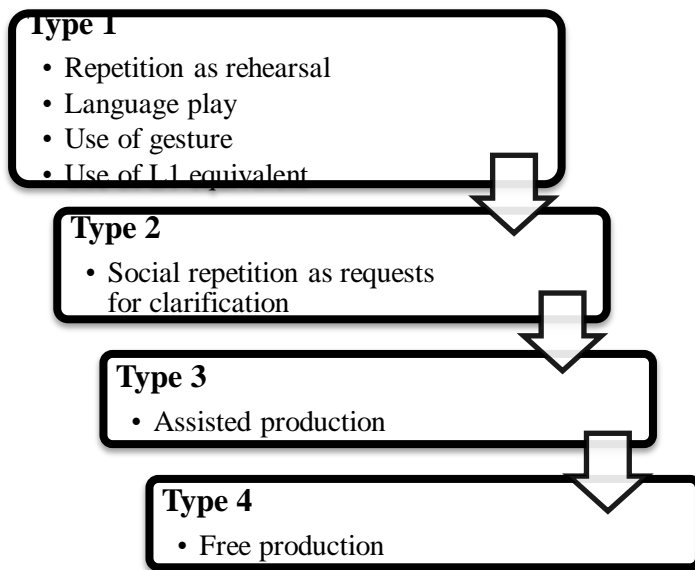
The pre-test results (see Table 2) show that with the possible exception of Aki the children had no receptive or productive knowledge of either ‘big’ or ‘small’ prior to the instruction. In other words, they were at Level 1. This lack of knowledge is also clearly evident in lesson 1 where no learning behaviours centred on these adjectives occurred. By the end of the instruction, however, the test results show that receptive knowledge was firmly established in all the learners and that Aki demonstrated the ability to use both adjectives in free production (i.e. in the Same or Different Test) and Hiro ‘small’. Overall, the test results confirm the well-established finding that receptive knowledge of words precedes productive knowledge.

The listen-and-do tasks required the students to listen to the teacher’s commands and select the pictures that matched the objects referred to. In other words, the tasks required the students to (1) process the phonological forms of the key words and (2) map these forms onto their meanings. The learning behaviours we have illustrated in extracts from the lessons are concrete manifestations of these processes as they occurred intermentally. We have seen that four of the children ‘borrowed’ from the teacher’s utterances, repeating ‘big’ and ‘small’ to themselves. Donato (1994) argued that the private speech that arises in the context of social interaction serves as a means of organizing, rehearsing and gaining control over new verbal behaviour. In the case of these children, it seems to have served as a means of establishing a representation of the phonological forms of ‘big’ and ‘small’. The social use of repetition to request clarification also helped the children as it elicited further repetitions from the teacher.

Other learning behaviours were needed to map form onto meaning. One was the teacher's use of gesture to help the children make the link between the phonological form and its meaning. This learning behaviour was taken up by several of the children, Hiro in particular. Another strategy for achieving form-meaning mapping was the use of the L1. As Jiang (2000) noted, learners begin by acquiring words in relation to their L1 equivalents. This was also evident in the children. These learning behaviours helped all the children to develop receptive knowledge although there was little evidence of the fast-mapping so characteristic of L1 vocabulary acquisition (Clark, 1995). This was perhaps because the learners were more focused on comprehending the meaning of the nouns in the teacher's commands.

So what was needed for the 'development' of these children's receptive and productive knowledge? The children could only achieve the task outcomes if they were successful in processing the teacher's commands. As willing participants in the interactions, they actively engaged with the teacher in the repair-work needed to resolve their difficulty in understanding the commands and thus gained exposure to 'big' and 'small'. The opportunity to repeat the same tasks enabled the children to make use of their available linguistic resources (Japanese and English) progressively. Within the repair work evident in all the extracts we examined a range of developmentally-ordered learning behaviours emerged as shown in Figure 1.

Figure 1: Learning behaviours involved in the development of receptive and productive knowledge



Two children (Noko and Shige) exhibited none of these learning behaviours during the nine lessons. However, both of these children demonstrated receptive knowledge of ‘big’ and ‘small’ in the tests and showed some productive knowledge although only in the delayed post-test. Shun and Yoshi engaged only in Type 1 behaviours. Yoshi demonstrated productive knowledge of both adjectives in the discrete point production test at both testing times and also in the delayed Same or Different test. Shun produced ‘big’ correctly but only in the delayed discrete point test. Hiro manifested Type 1, Type 2 and Type 3 learning behaviours for ‘big’ but only Types 1 and 2 for ‘small’. He manifested knowledge of ‘big’ in both controlled and free production but of ‘small’ only in controlled production. Aki displayed all four types of learning behaviours, initiating the use of both ‘big’ and ‘small’ when seeking clues from the teacher. She demonstrated knowledge of both adjectives in both controlled and free production.

This analysis strongly suggests that Types 1 and 2 learning behaviours suffice for the development of receptive knowledge while Type 3 learning behaviours enable learners to produce new words in controlled production. However, Type 4 learning behaviours are needed for free production. These may enable learners to form a sufficiently strong

representation of the L2 word to establish it independently of the L1 lemma, as claimed in Jiang's (2000) theory of the development of L2 lexical representation.

As we noted earlier there is also a cognitive dimension to the acquisition of dimensional adjectives such as 'big' and 'small'. Children typically master the categorical use of such words before their comparative use. One reason why most of the learners in our study failed to demonstrate full development of 'big' and 'small' might have been the way in which these words occurred in the input. The teacher used both words with a variety of different referents (see Table 1). This required the children to recognize that the same adjective could be used with objects that varied considerably in size. Thus, the adjectives were used relationally rather than prototypically although in different commands. It is quite clear that many of the learners struggled to pinpoint the meaning of these adjectives. In fact, they showed a notable preference for the clues provided by the colour adjectives that the teacher used to repair breakdowns and they demonstrated greater development of these adjectives in the tests.⁵

V. Conclusion

We noted earlier that L1 acquisition research on the acquisition of dimensional adjectives has focused on how children acquire their semantic meanings but that there is also an interpersonal dimension to their use and acquisition. This requires examining the interactions in which words occur and how learning arises out of learners' efforts to communicate. We have tried to show how the acquisition of 'big' and 'small' by young, beginner learners of Japanese did not just involve the mental processing of input but engagement in interpersonal activity that afforded learning behaviours.

We drew on Markee's (2008) learning behaviour tracking (LBT) methodology to show how the 'learning' of new words was a social accomplishment. Such an approach afforded

insights about the process of development. However, LBT methodology struggles to demonstrate that full development (i.e. the ability to employ a new linguistic form in a new context) has taken place. To overcome this problem we also obtained test data to provide evidence of the children's independent receptive and productive knowledge of the two dimensional adjectives. Drawing on Ellis (2010), we suggested that there are different levels of learning/ development and that it is necessary to show how learners progress from Level 1(zero learning) to Level 4 (transfer of learning). Our study illustrates how a methodology that combines the detailed analysis of the interactions that learners participate in with test data that demonstrates whether they have achieved independent control over specific words can offer rich insights about the nature of L2 vocabulary acquisition and help to explain why some learners are more successful than others.

In a sense, then, we have attempted to marry a post-cognitive methodology that views learning as a social activity with a cognitive methodology they deploys tests to establish that new knowledge has been acquired. Such a marriage necessarily raises the question of whether it is possible to reconcile social and cognitive accounts of learning and the methodologies they employ. We believe that it is possible. At the theoretical level, Markee and Kunitz (2013) suggest that socially-distributed language learning behaviours constitute the foundation for the frequency-driven individual learning assumed in cognitive accounts of L2 learning – an opinion clearly compatible with usage-based theories of L2 learning (e.g. N. Ellis, 2002), which are premised on the view that learning originates in social behaviour. At the methodological level, there remains the question of how to demonstrate that situated learning behaviours lead to changes in the representations that form in long-term memory. Ideally, perhaps, this is best achieved through longitudinal studies that track specific learning objects over time and across a variety of contexts. But in many cases (for example, Markee's (2008) study) this has not been possible. For this reason, we argue that tests still have a place in

showing whether long-term representations have been established. We do so, however, by acknowledging that tests are also social phenomena. They tell us what linguistic forms learners can access from their memories in the context of the tests and do not tell us whether learners can access the same forms in other, more natural contexts. For this reason the evidence of Level 4 learning that they provide is limited. Currently, both social and cognitive theories acknowledge that learning is context-dependent, progressive and adaptive; Level 4 learning, therefore, needs to be understood not as a steady state of knowledge representation but as an evolving one. Tests are useful if it is recognized that they only help to show that this evolution is under way.

A final comment – it could be argued that direct teaching would have been more successful in developing representations of ‘big’ and ‘small’. This is quite possible but we wish to point out that the listen-and-do tasks provided affordances for the learning of a whole range of words, not just ‘big’ and ‘small’ which the learners were successful in learning (see Shintani, 2013) and also that the performance of the tasks helped to the learners to develop their interactional confidence and competence in using the L2, evidence of which is to be found in the various extracts we examined in our study.

Notes

1. Some sociocultural researchers (e.g. Nassaji & Swain, 2000; Swain et al, 2009), however, have incorporated tests into the design of their studies in an attempt to demonstrate that ‘development’ has taken place.
2. Markee attempted to overcome this limitation by reporting the use of the item he tracked in an email sent to him by the same learner. It is unclear, however, (as Markee acknowledged) whether this demonstrated that development had taken place.

3. This extract is taken from a set of lessons involving present-practice-produce. These lessons, which were part of the larger study, involved the same type of students as the task-based lessons examined in this article (i.e. Japanese children who were complete beginners). One of the purposes of the larger study was to compare the interactions and learning that arose in a task-based and a PPP instructional context (see Shintani, 2011).
4. The test was also designed to test knowledge of a number of nouns and colour adjectives. However, in this article we are only concerned with the two items that tested receptive knowledge of 'big' and 'small'.
5. Shintani (2013) reported that all the learners were able to produce some of the six colour adjectives in the Same or Different Task, especially those that were frequently produced by them during the lessons.

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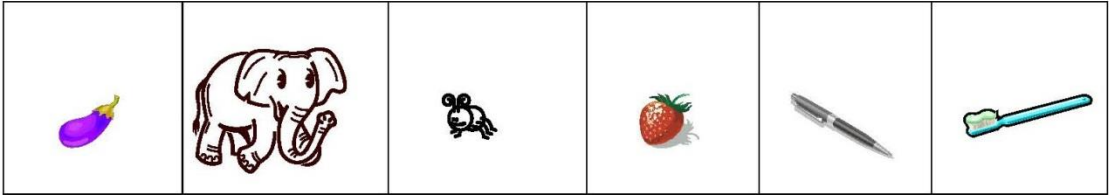
Cambridge, MA: Harvard University Press.

Appendix A: Transcription Conventions (adapted from Markee, 2008)

Name:	pseudonym of an identified participant
T:	the teacher talking
Ss:	several or all students talking simultaneously
[]	overlapped talk
(0.0)	length of silence
(.)	micro-pause
?	rising intonation
!	strong emphasis, with falling intonation
.	a period indicates falling (final) intonation
,	a comma indicates low-rising intonation suggesting continuation
::	noticeably lengthened sound
<u>underlined</u>	marked stress
CAPS	loud volume
((words))	comments by the transcriber
/ /	phonetic transcription
(=words)	English translation of the Japanese words

Appendix B: Pictures used in the multiple-choice comprehension test

Students hear "big" and requested to circle one picture.



Students hear "small" and requested to circle one picture.



Table 1: Nouns used with ‘big’ and ‘small’

Dimensional adjectives	Animate nouns	Inanimate nouns
<i>big</i>	<i>camel, ostrich, crocodile,</i> <i>hippopotamus, seal, polar bear</i>	<i>pear, radish</i>
<i>small</i>	<i>squirrel</i>	<i>soap, battery, chestnut</i>

Table 2: Individual scores for ‘big’ and ‘small’ on the tests

	Test	Discrete- Comprehension			Category task			Discrete- production			Same or Different		
		pre	post1	post2	pre	post1	post2	pre	post1	post2	pre	post1	post2
<i>big</i>	Shige	0	1	1	1	1	1	0	0	1	0	0	1
	Yoshi	0	1	1	1	1	1	0	1	1	0	0	1
	Hiro	0	1	1	0	1	1	0	0	1	0	1	1
	Aki	0	1	1	1	1	1	0	1	1	1	1	1
	Noko	0	1	1	0	1	1	0	0	1	0	0	0
	Shun	0	1	1	0	1	1	0	0	1	0	0	0
	Total	0	6	6	3	6	6	0	2	6	1	2	4
<i>small</i>	Shige	1	1	1	0	1	1	0	1	1	0	0	0
	Yoshi	0	1	1	0	1	1	0	1	1	0	0	1
	Hiro	0	1	1	0	1	1	0	1	1	0	0	0
	Aki	0	1	1	1	1	1	0	1	1	0	1	1
	Noko	0	1	1	0	1	1	0	0	0	0	0	0
	Shun	0	1	1	0	1	1	0	0	0	0	0	0
	Total	1	6	6	1	6	6	0	4	4	0	1	2

Table 3: Summary of learners' learning behaviours for 'big' and 'small'

Behaviours								
Name	<i>big</i>				<i>small</i>			
	L1 or Gesture	L2 Repetition	L2 Clarification request	L2 Other	L1 or Gesture	L2 Repetition	L2 Clarification request	L2 Other
Shige	0	0	0	0	0	0	0	0
Yoshi	1	1	0	0	1	1	0	0
Hiro	0	4	1	1	6	5	0	0
Aki	0	1	1	0	1	3	4	1
Noko	0	0	0	0	0	0	0	0
Shun	1	2	0	0	1	0	0	0