

Language Aptitude in Second Language Learning: The Role of Analytical Ability

Takashi Oba

Abstract

To date, a number of second language acquisition (SLA) studies have found that individual difference factors, such as language aptitude, influence L2 learning processes and attainments. Focusing on language aptitude, this article will review the theoretical models of language aptitude (e.g., Carroll, Skehan) and illustrate the significant role of language analytical ability in second language learning processes. The association between analytical ability and various factors, such as age, instructional types, will also be reviewed and discussed.

1. Introduction

Individuals do not usually show variations in their first language acquisition, but they greatly vary in rate, speed, and ultimate level in learning foreign/second languages (Ellis, 1997). As an EFL instructor in Japan, I realized the large variation of students' second language (L2) abilities despite receiving the same type of L2 instruction for the same amount of time in classrooms, and sharing a similar first language background. I wondered what kind of individual difference (ID) factors moderate their L2 learning processes and attainments.

In second language acquisition (SLA) research, it has been claimed that individual differences are certainly crucial in predicting learner success in L2 acquisition. Factors that are easily manipulated, such as motivation, beliefs, and learning strategies, are expected to have a potential influence in classrooms. Other factors, such as aptitude and personality, are more or less fixed (Dörnyei & Skehan, 2003). Therefore, it is important for teachers and learners to acknowledge and better understand influence in classrooms rather than try to alter them.

A number of studies have demonstrated convincing evidence for the assumption that language aptitude is one of the strongest predictors of success of L2 attainment. For example, in their large scale survey of IDs, Ehrman and Oxford (1995) found that among individual differences language aptitude correlates most closely with foreign language performance, explaining 25% of the variance. In addition, Sparks, Patton, Ganschow, and Humbach (2009) refer to aptitude as the “single best predictor of achievement in an L2” (p. 727). Furthermore, more advanced conceptualizations of multidimensional aptitude introduced new components of aptitude.

Focusing on one of the most influential ID factors—language aptitude (e.g., analytical ability)—this paper begins by illuminating the components of language aptitude and

multidimensional models proposed by Skehan (2002). The role of aptitude, particularly, analytical ability, in relation to various factors, such as age, learning and proactive instructional types, and corrective feedback (CF), will also be discussed.

2. Language Aptitude

2-1. Components and models of language aptitude

Language aptitude is traditionally considered as a ‘special talent’ for language learning. However, as Kormos (2013) notes, it can also be referred to as a conglomerate of cognitive abilities dynamically interacting with the situation where learning occurs. As Carroll (1965, cited in Johnson, 2001) noted, language aptitude accounts for the ‘rate’ at which learners successfully acquire L2. Therefore, L2 learners who possess a higher level of these abilities and can appropriately make use of them in the learning situations are likely to achieve a high level of L2 proficiency (Ellis, 2015).

A model of aptitude was originally developed by Carroll (1962). He developed a series of tests and selected corresponding tests that correlated most strongly with measures of L2 proficiency. He then proposed the Modern Language Aptitude Test (MLAT), in which the construct of aptitude consisted of four components: (a) phonetic coding ability, (b) grammatical sensitivity, (c) rote learning ability, and (d) inductive learning ability (Carroll & Sapon, 1959; Skehan, 2002). The detailed definitions of these abilities are demonstrated in Table 1. The MLAT was followed by the Pimsleur Language Aptitude Battery (PLAB), which emphasized auditory factors but also incorporated motivation as an integral part of aptitude (Pimsleur, 1966, cited in Erlam, 2005).

Table 1 Carroll’s model of language aptitude (adopted from Ellis 2015, p. 40)

Ability	Definition
Phonetic coding ability	The ability to code unfamiliar sounds in a way that they can be remembered later.
Grammatical sensitivity	The ability to recognize the grammatical functions of words in sentences.
Inductive language-learning ability	The ability to identify patterns of correspondence and relationships between form and meaning.
Rote-learning ability	The ability to form and remember associations between L1 and L2 vocabulary items.

Skehan’s model

Based on Carroll’s model, Skehan (1998) adapted the model to an information-processing model of L2 acquisition in line with research in cognitive psychology. He claimed that success of L2 acquisition is largely determined by general learning mechanisms. He also categorized Carroll’s four-part model into a three-part model by incorporating *grammatical sensitivity* and *inductive language-learning ability* into a single “language analytical ability.” He argued that

three abilities in the aptitude component differently operate in adult L2 learning. More specifically, as shown in Table 2, language learning abilities are related to different learning stages: *input* (perception), *central processing* (analysis), and *output* (storage and retrieval). *Language analytical ability*, closely related to general intelligence, is involved throughout the process of L2 learning. This ability may enable learners to work out the grammar rules and develop the core process of handling language. Meanwhile, *phonemic coding ability* serves a crucial role only in the early stages of L2 learning, allowing learners to process input more readily and easily. *Memory* is related to all stages and allows learners to store and retrieve language rapidly (Ellis, 2015).

Table 2 Relationship of components of language aptitude to stages of information processing (based on Skehan, 1998)

Processing stage	Aptitude component
Input	Phonemic coding ability
Central processing	Language analytic ability
Output	Memory

Skehan (2002) further developed his model by relating the different aptitude abilities to four stages of L2 acquisition: (1) *noticing*, (2) *patterning*, (3) *controlling* and (4) *lexicalizing* (see Table 3). Based on information-processing theory, he outlined L2 learning processes in which a specific linguistic feature is: (1) attended to in the input, (2) generalized in the form of a rule, (3) restructured and integrated into the *interlanguage* (IL) system, and (4) lexicalized (i.e., converting rule-based knowledge into ready-made chunks facilitating communicative exchanges: Ellis, 2015).

Table 3 Skehan's (2002) model of language aptitude and L2 acquisition (adopted from Ellis, 2015, p. 44)

Stage	Processes involved	Aptitude components
1. Noticing	Learner directs attention at some specific feature in the input	auditory segmentation; attention management; working memory; phonemic coding
2. Patterning	Learner constructs a hypothesis (implicitly or explicitly) about the feature, subsequently extends the domain of the hypothesis before recognizing its limitations and restructuring it and integrating the new representation into the interlanguage system.	working memory; grammatical sensitivity; inductive language learning ability; restructuring capacity
3. Controlling	Learner is able to use the integrated feature with increasing ease and accuracy	automatization; proceduralization; retrieval processes
4. Lexicalizing	Learner is now able to produce the feature as a 'lexicalized element' (i.e. it is accessed as a whole rather than by applying a rule).	integrative memory; chunking; retrieval processes

The development of the models allows SLA research to further investigate whether L2 aptitude can be profiled and matched with corresponding instructional approaches. Skehan's model indicates that some learners are good at one or more of the processing stages (e.g., *noticing* or *lexicalizing*), but poor or average at the rest of the stages (e.g., *patterning* or *controlling*).

2-2. Language aptitude and age

It has been argued that language aptitude differently affects L2 learning for young and older learners (Ellis, 2015). DeKeyser (2000) tested the hypothesis that language analytical ability contributes to the success of adult learners (after puberty), but not for young learners. Participants in the study consisted of 57 adult Hungarian-speaking immigrants to the U.S.: some of them had arrived there as children or adults. He found that language analytical ability significantly correlated with adult arrivals' performance on a grammatical judgment test, but not so in the case of young arrivals. Only adult learners who had high analytical ability performed as well as young arrivals. He argued that adult arrivals tend to rely on an explicit L2 learning system in which analytical ability is required to perform well, while young arrivals generally learn the L2 implicitly. This study, thus, suggests that language analytical ability varies depending on the type of learning (implicit vs. explicit) learners engage in.

However, as Ellis (2015) points out, DeKeyser's study explored only one component of language aptitude. It may be possible that other components, such as phonetic coding ability and memory, are just as crucial for children as for adults. Harley and Hart's (1997) study of French immersion learners in Canada indicated a positive correlation between memory and L2 proficiency of earlier starters. Meanwhile, analytical ability was positively related to L2 proficiency of late starters (from Grade 7). They also argued that this result could be attributed to the different instructional approaches. In fact, the instruction for earlier starters focused on memory-related activities, while the instruction for late starters required learners to use analytical skills.

2-3. Analytical ability and types of learning and instruction

2-3-1. Analytical ability and learning and instructional conditions

As previously suggested by DeKeyser (2000) and Harley and Hart's (1997) studies, the relevance of language aptitude in rate and attainment of L2 acquisition depends on the type of learning/instruction (i.e., implicit or explicit). Krashen (1981, 1982) claimed that implicit learning (i.e., natural learning settings and immersion) is more effective than explicit learning (i.e., formal L2 classrooms and metalinguistic provision), particularly in the acquisition of complex grammatical features. For Krashen, *aptitude* plays a minor role in formal L2 learning environments (explicit learning), whereas *attitude* plays a key role in informal real-world situations (implicit learning). On the contrary, other researchers, such as de Graaff (1997a) and

Robinson (1997), found that explicit learning, involving some degree of metalinguistic awareness and instruction, was at least as effective as implicit learning conditions in acquiring complex rules and was more effective on the acquisition of simple rules. They also found that aptitude and memory ability positively correlated to both learning conditions. This section will introduce representative empirical studies to discuss the role of language aptitude in different learning and instructional conditions.

De Graaff (1997a) examined the relationship between language aptitude (grammatical sensitivity and memory) and the learning of simple and complex grammatical structures by adult learners of eXperanto (an artificial language) and Spanish. The participants were assigned to either explicit instruction (metalinguistic explanation was provided) or implicit instruction (no metalinguistic explanation). He found that language aptitude significantly correlated with the test scores of both groups for both grammatical structures. In addition, there was no difference between the two groups. That is, language aptitude proved to be a predictive factor irrespective of the instruction type.

In a similar vein, Robinson's (1996) laboratory study closely explored the relationship between aptitude and awareness during L2 learning. Participants were assigned to four different learning conditions: implicit (i.e., memorize examples), rule-search (i.e., induce rules from example sentences), incidental (i.e., respond to comprehension questions) and instructed (i.e., receive explicit explanation) learning conditions. In each condition, the participants were presented with English sentences exemplifying two structural patterns. Learning outcomes were measured by immediate post-tests consisting of grammatical judgment tests. Furthermore, in addition to aptitude tests (analytical ability), self-reported levels of awareness of rules were assessed.

The study revealed significant correlations between aptitude and learning outcomes in all learning conditions except the incidental condition. This is probably due to the fact that learners in the incidental condition only answered comprehension questions without attending to any linguistic features. In addition, a large number of participants in all conditions reported looking for rules. Furthermore, implicit learners with high analytical ability were more likely to report looking for rules and to be able to verbalize rules. Taken together, this study suggests that some participants may have learned explicitly regardless of the learning conditions. In addition, aptitude played a role not only in explicit learning conditions (rule-search and instructed), but also in the implicit learning condition. Robinson (1996, 1997) further explained that adult L2 learning under all conditions is *fundamentally similar*. In other words, learning in the implicit conditions of these studies, as in the explicit conditions, involved a conscious process. The differences in the extent of learning conditions were determined by IDs in the conscious, information-processing abilities, such as aptitude and memory tests.

Ranta (2002) investigated intensive Grade 6 English as an ESL in classrooms in Canada, where the instruction primarily consisted of a variety of oral tasks (e.g., games, puzzles, and

interviews). The L2 performance of 135 students was assessed by using various language measures including aural vocabulary recognition, listening comprehension, cloze test, and metalinguistic ability. Language analytical ability was measured by a metalinguistic task in their L1 (French). The results showed that language analytical ability was associated with strong performance for the most successful learners and weak performance for the least successful learners. Therefore, this study suggests that language aptitude is relevant to L2 success even in highly communicative classroom contexts.

The findings of the aforementioned studies are consistent with earlier studies (Reves, 1983, cited in Dörnyei & Skehan, 2003; Harley & Hart, 1997, 2002). For example, in Reves (1983), L1 Arabic learners learned L2 Hebrew in naturalistic conditions and L2 English in instructed conditions. The results indicated that aptitude tests were the best predictors of language learning success in both contexts. Similarly, Harley and Hart (1997, 2002) found that aptitude is a predictor of L2 success even in the acquisition-rich context of a bilingual exchange program in Canada, where the primary focus was on communication and meaning rather than grammatical form. Taken together, these studies along with those of de Graaff (1997a), Robinson (1996), and Ranta (2002) demonstrated that language aptitude had predictive validity across different instructional types. In other words, the studies provided counter-evidence to the claim made by Krashen (1981) that language aptitude was only related to successful L2 learning in explicit, grammar-focused, instructional contexts.

More recently, several studies (e.g., Erlam, 2005; Hwu & Sun, 2012) further explored the relationship between language aptitude and different instructional techniques (i.e., explicit/implicit FFI with/without metalinguistic information). Erlam (2005) investigated the interactions between two aspects of language aptitude (*phonetic-coding ability* and *language analytical ability*) and three types of instruction (deductive, inductive, and structured-input instruction). Participants in the study were high school students learning direct objects in French L2 in New Zealand. Deductive instruction was explicit and included metalinguistic explanations; learners engaged in form-focused activities and output practice, and teachers provided corrective feedback. In inductive instruction, students were involved in consciousness-raising activities and output practice without receiving explicit grammar explanations (implicit FFI). Learners in the structured-input condition received metalinguistic information and engaged in aural and written input-based activities and error identification activities. Corrective feedback was provided but there was no output practice.

Learning outcomes were measured by assessing the four L2 skills of reading, writing, listening, and speaking. Erlam found that *phonemic-coding ability* did not play a major role in any instructional groups. However, *language analytical ability* served a crucial role only in the inductive and structured input groups. In other words, analytical ability came into play more strongly when learners were required to search grammar rules by themselves. Meanwhile, deductive instruction leveled the playing field for all learners, as this instruction was more

explicit and enabled learners with weaker analytical ability to perform at a similar level as those with high analytical ability. However, learners with high analytical ability benefited more from inductive and structured input instruction than other learners.

Hwu and Sun (2012) also examined the relationship between language analytical ability and the two instruction types (inductive and deductive). However, inconsistent with Erlam (2005), there were no significant associations between the analytical ability and the two types of instruction. This result may be attributed to the fact that metalinguistic explanation was provided in both learning conditions. Therefore, along with Erlam's (2005) deductive group, the provision of metalinguistic information may even out the role of the learner's analytical ability. Why did language analytical ability positively associate with learning outcomes in Robinson's (1997) instructed group (deductive instruction)? As Li (2015) points out, Robinson included a variety of linguistic structures, which require higher processing demands on learners' analytical ability compared to simpler target structures used in Erlam (2005) and Hwu and Sun (2012). Taken together, it seems that language analytical ability may be strongly related with implicit instructional conditions, in which learners are asked to induce grammar rules without being provided metalinguistic information. In addition, language analytical ability may be modestly related to the case of learning complex structures under deductive instruction, but not of learning simple forms.

2-3-2. Analytical ability and reactive instruction (CF)

Several studies have investigated the relationship between language analytical ability and the effectiveness of CF (e.g., Sheen, 2007; Trofimovich, et al., 2007; Robinson & Yamaguchi, 1999, cited in Robinson, 2007). For example, Sheen (2007) investigated the link between language analytical ability and two types of CF, recasts and direct correction with metalinguistic explanation, while ESL learners performed an oral narrative task. She focused on their acquisition of English articles and its relation to language analytical ability. She found a moderately strong correlation between analytical ability score and immediate- and delayed-gain scores for the learners in the metalinguistic group. Meanwhile, there was no relationship between language analytical ability and the gains from recasts.

Trofimovich, Ammar, and Gatbonton (2007) investigated the correlation between five cognitive individual differences (i.e., *proficiency level*, *attention control*, *phonological short-term memory*, *working memory capacity*, and *analytical ability*) and adult learners' ability to notice and benefit from recasts. Adult Francophone learners of English ($n=32$) were presented with some pictures on a one-on-one basis and were required to describe each picture by using the target structure (English possessive determiners: *his* and *her*). The learner's description of each picture was accompanied by a recorded native speaker's response serving as a recast. Two types of memory tests were adopted: a non-word repetition test measured phonological short-term memory (STM) and the Letter-Number Sequencing subset of Wechsler Adult Intelligent Scale

(Psychological Corporation, 1997, cited in Trofimovich, et al., 2007) measured working memory capacity. The Words in Sentences subset of the MLAT was used to measure analytical ability, and attention control was measured by the Trial Making Test of the US Army Individual Test Battery. A post-test and a delayed post-test eliciting knowledge of target structure and vocabulary were administered.

The results showed that the overall amount of noticing reported by participants was not significantly correlated with their L2 learning. In addition, none of the cognitive variables predicted noticing but two of the factors (*attention control*, *analytical ability*) played a crucial role to determine the effectiveness of recasts in their IL development. These findings suggest that although the individual difference in variables did not predict noticeability of feedback, *attention control* and *analytical ability* played a key role in enhancing the effectiveness of recasts.

On the contrary, in Robinson and Yamaguchi's study (1999, cited in Robinson, 2007), although students received recasts during five-week task-based instruction, their learning outcomes at post-test did not correlate with the scores on the grammatical sensitivity sub-test of the MLAT. However, they were significantly correlated with the scores of phonetic sensitivity and rote memory ability. These results, along with Robinson's other studies (Robinson, 1996, 1997), suggest that across contexts such as laboratory studies of incidental learning and classroom studies of focus on form during task-based instruction, there is "the non-influence of IDs in grammatical sensitivity on aptitude for incidental learning during process of meaning" (Robinson, 2007, p. 265). In other words, analytical ability may not be so relevant when the focus is entirely on meaning. As de Graaff (1997b) suggested, "the evidence cannot be generalised to non-instructional learning without any focus on form" (p. 158-159). That is, analytical ability may presuppose a requirement of at least some degree of focus on form.

Overall, it seems that analytical ability may be most relevant when learners are asked to implicitly attend to linguistic structures (implicit FFI) as found in the aforementioned studies (e.g., de Graaff, 1997a; Robinson, 1996; Ranta, 2002; Erlam, 2005; Trofimovich, et al., 2007). With the exception of Sheen's (2007) study, analytical ability may modestly associate with explicit language-focused instruction (e.g., Robinson, 1996; de Graaff, 1997a) or it may not correlate with the instruction (e.g., Erlam, 2005; Hwu & Sun, 2012). If target linguistic features are too complex for learners to understand the explicit instruction, high analytical ability may be required. Furthermore, as de Graaff (1997a) pointed out, analytical ability may not correlate with exclusively meaning-focused conditions such as Robinson's (1996) incidental learning, or task-based language learning (Robinson & Yamaguchi, 1999, cited in Robinson, 2007). In other words, as various types of implicit instruction can be implemented in research designs, some types of extreme implicit instruction may not tap learners' analytical ability. Robinson (2007) also noted that "learners may differ in their aptitude(s) for learning from one Focus on Form (FonF) technique versus another during opportunities for communicative practice" (p. 265).

3. Conclusion

This paper has reviewed and discussed the most influential ID predictors of success in L2 acquisition: language aptitude (focusing on analytical ability). A substantial number of empirical studies provide evidence that language aptitude influences L2 learning processes and attainments. More specifically, although the results are not consistent, the studies indicate that language aptitude (particularly analytical ability) may be strongly correlated with implicit instructional conditions, in which learners are asked to induce grammar rules without being provided metalinguistic information. In addition, language analytical ability may be modestly related to the case of learning complex structures under deductive (explicit) instruction (Robinson, 1996; de Graaff, 1997a). In some cases (e.g., Erlam, 2005; Hwu & Sun, 2012), analytical ability may not correlate with explicit instruction at all, suggesting that explicit instruction evens the playing field for all learners. Furthermore, as seen in Robinson's (1996) incidental learning and Robinson and Yamaguchi's (1999) task-based learning, analytical ability may not be so relevant in exclusively meaning-focused instruction (e.g., incidental learning condition) but hard to be measured under such conditions.

A more dynamic concept of aptitude has been developed in SLA research such as aptitude profiles by Skehan (2002). Skehan argues that L2 learners vary in their cognitive abilities underlying language aptitude. Some learners are hypothesized to be high in some cognitive abilities and low in others. Similarly, some learners can draw on specific abilities during some tasks whereas others rely on other abilities. The line of aptitude-treatment interaction research aims to use aptitude testing to identify aptitude profiles and consider the possibilities of matching learners with appropriate instructional techniques. However, little aptitude-treatment research has been carried out in classroom-based settings. In this sense, understanding ID variables in more multidimensional aspects will be required not only for SLA researchers, but also for L2 teachers.

References

- Carroll, J. B. (1962). The prediction of success in intensive foreign language training. In R. Glaser (Ed.), *Training research and education*. Pittsburgh: University of Pittsburgh Press.
- Carroll, J. B., & Sapon, S. (1959). *The modern languages aptitude test*. San Antonio, TX: Psychological Measurement.
- de Graaff, R. (1997a). The eXperanto experiment: Effects of explicit instruction on second language acquisition. *Studies in Second Language Acquisition*, 19, 249-276.
- de Graaff, R. (1997b). *Differential effects of explicit instruction on second language acquisition*. The Hague: Holland Institute of Generative Linguistics.
- DeKeyser, R. (2000). The robustness of critical period effects in second language acquisition. *Studies in Second Language Acquisition*, 22(4), 499-533.
- Dörnyei, Z., & Skehan, P. (2003). Individual differences in second language learning. In C. J. Doughty & M. H. Long (Eds.), *The handbook of second language acquisition* (pp. 589-630). New York: Blackwell.

- Ehrman, M. E., & Oxford, R. L. (1995). Cognition plus: Correlates of language learning success. *The Modern Language Journal*, 79(1), 67-89.
- Ellis, R. (1997). *SLA research and language teaching*. Oxford: Oxford University Press.
- Ellis, R. (2015). *Understanding second language acquisition* (2nd ed.). Oxford: Oxford University Press.
- Erlam, R. (2005). Language aptitude and its relationship to instructional effectiveness in second language acquisition. *Language Teaching Research*, 9(2), 147-171.
- Harley, B., & Hart, D. (1997). Language aptitude and second language proficiency in classroom learners of different starting ages. *Studies in Second Language Acquisition*, 19(3), 379-400.
- Harley, B., & Hart, D. (2002). Age, aptitude and second language learning on a bilingual exchange. In P. Robinson (Ed.), *Individual differences and instructed language learning* (pp. 301-330). Amsterdam; Philadelphia, PA: J. Benjamins Pub.
- Hwu, F., & Sun, S. (2012). The aptitude treatment interaction effects on the learning of grammar rules. *System*, 4(4), 505-521.
- Johnson, K. (2001). *An introduction to foreign language learning and teaching*. London: Longman.
- Kormos, J. (2013). New conceptualizations of language aptitude in second language attainment. In G. Granena & M. Long (Eds.), *Sensitive periods, language aptitude and ultimate L2 attainment* (pp. 131-152). Amsterdam: John Benjamins.
- Krashen, S. (1981). *Second language acquisition and second language learning*. Oxford: Pergamon.
- Krashen, S. (1982). *Principles and practice in second language acquisition* (1st ed.). Oxford: Pergamon.
- Li, S. (2015). The associations between language aptitude and second language grammar acquisition: A meta-analytic review of five decades of research. *Applied Linguistics*, 36(3), 385-408.
- Ortega, L. (2009). *Understanding second language acquisition*. London: Hodder Education.
- Ranta, L. (2002). The role of learners' language analytic ability in the communicative classroom. In P. Robinson (Ed.), *Individual differences and instructed language learning* (pp. 159-180). Amsterdam; Philadelphia, PA: J. Benjamins Pub.
- Robinson, P. (1996). *Consciousness, rules, and instructed second language acquisition*. New York: P. Lang.
- Robinson, P. (1997). Individual differences and the fundamental similarity of implicit and explicit adult second language learning. *Language Learning*, 47(1), 45-99.
- Robinson, P. (2007). Aptitudes, abilities, contexts and practice. In R. DeKeyser (Ed.), *Practice in a second language: Perspectives from applied linguistics and cognitive psychology* (pp. 256-286). New York: Cambridge University Press.
- Sheen, Y. (2007). The effects of corrective feedback, language aptitude, and learner attitude on the acquisition of English articles. In A. Mackey (Ed.), *Conversational interaction in second language acquisition: A collection of empirical studies* (pp. 301-322). Oxford: Oxford University Press.
- Skehan, P. (1998). *A cognitive approach to language learning*. Oxford: Oxford University Press.
- Skehan, P. (2002). Theorising and updating aptitude. In P. Robinson (Ed.) *Individual differences and instructed language learning* (pp. 69-93). Amsterdam: John Benjamins.
- Sparks, R. L., Patton, J., Ganschow, L., & Humbach, N. (2009). Long-term relationships among early first language skills, second language aptitude, second language affect, and later second language proficiency. *Applied Psycholinguistics*, 30(4), 725-755.
- Trofimovich, P., Ammar, A., & Gatbonton, E. (2007). How effective are recasts? The role of attention, memory, and analytical ability. In A. Mackey (Ed.), *Conversational interaction in second language acquisition: A collection of empirical studies* (pp. 171-195). Oxford: Oxford University Press.