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New Conceptualizations of Language Aptitude— The Potential of Working Memory in Second Language Acquisition (SLA)

Abstract: Foreign language (FL) aptitude is generally understood as a talent for foreign language learning. For many years, it has been researched and combined with intelligence and language proficiency. At present, foreign language aptitude construct is experiencing a growing interest in its memory component which was slightly bypassed in its research history.

The paper sheds light on new conceptualizations of foreign language aptitude by emphasizing the role of working memory (WM) in the second language acquisition (SLA) process. It is organized into 3 sections. The first section of the paper presents a brief historical overview of the research on language aptitude based on John Carroll's work. The second part elaborates on the working memory construct, discussing Baddeley's multi-component model of WM and its functions. Further discussion concentrates on a combination of two significant notions by proposing to incorporate working memory as a crucial component of language aptitude construct. In light of the issue mentioned above, the third section of the article focuses on the newest and original empirical studies which support the role of WM in different aspects of L2 learning, i.e. speaking and bilingual interpretation as well as vocabulary and grammar learning. Its concluding part reflects upon the relevance of language aptitude, paving the way for future research.

Keywords: language aptitude, working memory, Second Language Acquisition (SLA)

Language Aptitude—A Brief Overview

It is generally agreed that individuals have different capabilities for foreign language learning (Skehan, 1998, p. 185). Undoubtedly, there are people who acquire foreign languages in a fast and effective way. But on the other hand, some people have difficulties with this process no matter how hard they try and how high their motivation is (Carroll, 1981, p. 85). Gardner and Lambert

(1972, p. 2) point out that people could differ in the ease and rate of achieving a satisfactory level of mastery in foreign language acquisition. The issues mentioned above are strongly connected with the notion of language aptitude. As Oxford (1990, p. 74) emphasizes language aptitude seems to be a simple notion, but in fact it is complicated to define it. John Carroll, an American psycholinguist whose contribution to the development of foreign language aptitude research cannot be omitted, provided a comprehensive definition of language aptitude: "Foreign language aptitude is considered as the individual's initial state of readiness and capacity for learning a foreign language" (Carroll, 1981, p. 86). Gardner and Lambert (1972, p. 2) define this term as 'a knack' for learning a foreign language. Gardner and McIntyre (1992), however, name it a 'cognitive sponge' meaning that new knowledge and skills are associated with those already acquired. Language aptitude can also be described as a specific talent for learning languages (Dornyei & Skehan, 2003). As we can see, there are many attempts to clarify this notion which slightly differ from each other and as a result we still do not know precisely what language aptitude is (Arabski, 1998, p. 9; Grymska, 2015, p. 30).

The golden period of language aptitude research. Research on language aptitude had its golden period in the 1950s and 1960s (Rees, 2000) thanks to the work done by Carroll, who provided the following three theses referring to language aptitude: there is a distinction between language aptitude and other cognitive abilities, including intelligence; aptitude is relatively fixed and hard to change; and it is componential (Skehan, 2014, p. 381). His fundamental contributions can be subdivided into two areas: he is the author of a four-component view of language aptitude, and the second area refers to the measures of language aptitude. Carroll (1981, p. 105) indicated that there are four major components of language aptitude:

- phonetic coding ability—the ability to make distinctions between sounds, to associate sounds and symbols representing them and keep them in mind;
- grammatical sensitivity—the ability needed for recognizing grammatical functions of words in sentences;
- rote learning ability for foreign language materials—the ability to distinguish sounds and meanings at a fast rate and to retain them;
- inductive language learning ability—a talent to induce both explicit and implicit rules from the chaos of language material (Arabski, 1998, p. 9) and to be able to produce language based on the generalizations (Skehan, 2014, p. 381).

The second area of his work and contribution was more practical. As Skehan (2014, pp. 381–382) indicates, Carroll developed a large number of foreign language aptitude tests. Together with Stanley Sapon, he was the author of the *Modern Language Aptitude Test* (the MLAT) (Carroll & Sapon, 1959)

which was devised to measure several separate components that form an individual's aptitude to learn a foreign language (Parry & Child, 1990, p. 37). As Gregersen and MacIntyre (2014, p. 66) note, the MLAT measured the rate at which a person could learn a foreign language, but, which is worth emphasizing, it did not predict whether an individual could learn a language at all or not. The battery consists of five sub-tests: *Number Learning*, *Phonetic Script*, *Spelling Clues*, *Words in Sentences* and *Paired Associates* (Skehan, 2014, p. 382; Dornyei, 2005, p. 37). Carroll's particular view of aptitude construct and the MLAT have been employed since the 1950s, beginning the new period of language aptitude research (Rees, 2000).

Language aptitude—Post-Carroll research. After the publication of the MLAT we can observe the culmination of further test development as aptitude measurement tools, e.g., the widely used PLAB (the *Pimsleur Language Aptitude Battery*, Pimsleur, 1966), the *York Language Aptitude Test* (Green, 1975), the *Defense Language Aptitude Battery* (Petersen & Al-Haik, 1976), the *German Aptitude Test* (Miller & Phillips, 1982) and *VORD* (Parry and Child, 1990). Another instance of aptitude measurement is *CANAL-FT* (Grigorenko et al., 2000) which in contrast to the MLAT is theory driven, especially based on the theory of intelligence (Sternberg, 2002). It is generally agreed in the literature that the new batteries did not exceed the MLAT in its superiority (Dornyei, 2005; Sparks & Ganschow, 2001; Sawyer & Ranta, 2001). Parry and Child concede: "the MLAT was the best overall instrument for predicting language-learning success" (Parry & Child, 1990, p. 52). In order to deepen and enrich our understanding of the research on language aptitude, it is worth adding that the MLAT was somewhat modified. On Polish ground it functions as FLAT-PL (Foreign Language Aptitude Test-Polish) and consists of 6 parts emphasizing the role of inductive language learning ability (see Rysiewicz, 2011).

Most of the research studies referring to language aptitude, which spread after the creation of the MLAT, can be subdivided into three areas: the research aiming at measurement of language aptitude and publication of aptitude tests; research referring to the components of aptitude construct as proposed by Carroll; and research on the relationship between language aptitude and treatment (Wen & Skehan, 2011, p. 18).

It is worth adding that even though language aptitude was criticized in the 1970s and 1980s, it is still essential in the research concerning second language acquisition (SLA). Wen and Skehan (2011, p. 18) emphasize that the research concentrating individually on the components of language aptitude construct is scarce, especially with the memory component. As Dornyei (2005, p. 63) observes, the role of working memory in second language acquisition (SLA) as well as language aptitude is an area of future research which is now revealing

a growing interest. More attention referring to working memory and its role in SLA as the component of language aptitude will be drawn in next sections.

Working Memory (WM) Construct

For the purposes of illustrating what working memory is, we must look at the following explanation by Ellis (2005, p. 338): "If I ask you what 397 x 27 is, you do not look up the answer from long-term memory, you work it out." Working memory has its origin in unitary short-term memory that is the site of temporary storing of small amounts of material in short periods of time (Baddeley, 1992; 2009). Baddeley (1992) explains that working memory is 'a brain system' which is needed to hold information (the storage function of working memory) and to manipulate new information with known material (processing function). As Baddeley adds, the system is necessary in keeping information in mind while performing everyday cognitive tasks, for example, remembering a phone number or doing mental arithmetic (Williams, 2014, p. 427) as well as problem solving, academic achievement, mapping, language comprehension, learning and reasoning (Baddeley, 1992; Rysiewicz, 2013; Profozic, 2013).

Working memory, like language aptitude, is a multi-component construct (Wen & Skehan, 2011, p. 21). A current model of working memory was worked out by Baddeley (2015, p. 21) and consists of four components: *central executive*, *phonological loop*, *visuo-spatial sketchpad*, and *episodic buffer*. Central executive is described as the core which controls entire system of working memory (Baddeley, 1998, p. 50). Different authors have tried to enumerate the most significant functions of the central executive and they are the following:

- the central executive coordinates information coming from different sources (Baddeley, Pressi, Della Sala, Logie, & Spinnler, 1991; Baddeley & Logie, 1999);
- it controls two tasks which are performed simultaneously (Baddeley, 1986);
- supervising operations which are performed in mind (Baddeley, 1996; 1997; Miyake, Friedman, Emerson, Witzki, & Howeter, 2000);
- the central executive enables us to get to information stored in our long-term memory (Baddeley & Logie, 1999).

The second component of WM—*phonological loop*—is responsible for storing and rehearsing phonological information. In order not to forget the information which is needed, it must be kept in a special place in our mind—this means *processing*, and apart from this, information must be constantly rehearsed, which is called *rehearsal*. If the information is not rehearsed, it disappears from our

memory system. This phenomenon is called *retention*. Thanks to the functions mentioned above, phonological loop has the influence on the understanding of language and both L1 and L2 acquisition (Service, 1992).

The third component, *visuo-spatial sketchpad*, handles information referring to spatial location, color and shape as well as information concerning touch and kinesthesis. Similarly as in phonological loop, in visuo-spatial sketchpad information is in constant motion (Piotrowski, 2004, p. 25). The last component of WM, *episodic buffer*, is a new component which was added to the model a few years ago by Baddeley (2000). It is a buffer kind of memory which links information between different components of WM. Furthermore, it also combines information from working memory with long-term memory.

Baddeley and Hitch (1974) add that working memory is the place of executive control as well as consciousness. Furthermore, it functions as "the home of explicit induction, hypothesis information, analogical reasoning, prioritization, control, and decision-making" (Ellis, 2005). It must be highlighted that this is the place where metalinguistic insights referring to L2 are developed, improved, and applied (Ortega, 2009, p. 90). To deepen and enrich our understanding of working memory, two features must be analyzed. First, working memory is of limited capacity (Baddeley, 2007), in contrast to long-term memory, meaning that in normal conditions, the information can exist in WM for two seconds, and after that it is forgotten unless it can be rehearsed in the phonological loop (the component of working memory that has been discussed above). The second feature of WM is called temporary activation. Cowan (2005) observes that activation is a central characteristic of working memory, meaning that it is a part of the entire memory system and WM is activated in a processing event. It is important to note that working memory functions as a kind of gateway to our long-term memory, because the material we store and process in WM may become a part of long-term memory. This is the reason why WM is different from short-term memory (Wen & Skehan, 2011, p. 22).

Working memory in SLA process. As was indicated in the section *The golden period of language aptitude research*, the height of the research on language aptitude was the 1950s and 1960s, but in those days the role of memory in foreign language learning was considered to be nothing but rote learning which takes place mechanically or refers to creating associations between information (Wen, 2015, p. 10). But, the growing interest in working memory in SLA has occurred since the mid-1990s (Ortega, 2009, p. 90). It has been combined with one of the aspects of SLA—individual differences. It is obvious that WM, being dependent on developments in modern cognitive science, may be a crucial point to evolve the concept of foreign language aptitude. Wen (2015, p. 10) adds that this proposal should be based on the following condition: there are individual differences among learners in their WM which can be measured.

Furthermore, Miyake and Friedman (1998, p. 340) propose that "WM may be one (if not the) central component of language aptitude." There are some reasons why this concept is so significant. First, the elements of language aptitude construct proposed by Skehan (the model of language aptitude presented by Skehan in 1998)—language analytic capacity, memory ability, and phonetic coding ability—function as cognitive elements and are strongly connected with WM. Second, based on the available research findings, the process of developing skills and achieving proficiency in L1 is strongly related to the role of WM. Therefore, it is likely to influence learning of L2 in a significant way. Third, for adults who learn L2, the stage of language acquisition can be limited, for example, from phonological or syntactic points of view, because maturational changes occur in the critical period (Johnson & Newport, 1989). Because of this, the L2 learning process may be based on general learning mechanisms and principles more than L1 acquisition. It is the working memory which plays an important role in the acquisition of knowledge and development of skills, for example, logical problem solving or computer programming (Shute, 1991; Kyllonen & Stephens, 1990) and this is the reason why it can be a 'candidate mechanism' (Miyake & Friedman). Wen and Skehan (2011, p. 24) provide that a number of SLA and cognitive psychology researchers built their arguments for incorporating WM as language aptitude component on the following three assumptions:

- first language acquisition is based on universal grammar while second language acquisition is built on general learning mechanisms where working memory is one of them.
- first language acquisition is based on "automatic processing" while SLA is strongly connected with "controlled processing" in which cognitive resources dependent on WM are necessary (Wen & Skehan, 2011, p. 24).
- the role of WM in SLA is self-evident because the elements of WM take part in different stages of SLA which are "input processes, central processing and output processing" (Skehan, 1998; Wen & Skehan, 2011, p. 24), as well as cognitive processes and operations in SLA (pattern recognizing or noticing).

Both SLA and cognitive psychology researchers have proposed to implicate WM as the crucial component of the language aptitude model, aiming at modifying Carroll's language aptitude construct or even replacing it by emphasizing the role of WM in the entire process of foreign language learning (Miyake & Friedman, 1998; Wen, 2007; Sawyer & Ranta, 2001).

Working Memory and Different Aspects of L2 Development—Research Studies Overview

In order to understand the significant role of working memory in SLA and to support the proposal for incorporating WM as a language aptitude component, it is necessary to analyze the research findings devoted to this subject. The following part of the paper will analyze the role of WM in the learning of new vocabulary and grammar in L2. Further discussion will present research findings supporting the importance of WM in the development of two L2 skills: speaking and bilingual interpretation, which learners encounter from the beginning of their experience in foreign language learning. The paper will present how WM influences the speed and quality of L2 learning as well.

Working memory and vocabulary learning. Available research shows that phonological working memory, which functions as a gateway for storing linguistic knowledge into long-term memory (Baddeley, Gathercole, & Papagno, 1998), plays a pivotal role in vocabulary learning. Baddeley et al. (1992) proposed that the phonological buffer of working memory functions as a device which is significant in the learning of new vocabulary in L1 by children. The above-mentioned thesis was based on research conducted by Gathercole (1999). According to Gathercole and Thorn (1998, p. 142) the phonological loop influences the learning of sounds of vocabulary in a foreign language. The claim was extended from L1 to L2 vocabulary learning in the study by Service and Kohonen (1995)—L1 Finnish students learnt English words. Similar results were achieved by Cheung et al. (1996) with L1 Cantonese and L2 English. Furthermore, Papagno and Vallar (1995) had similar observations for older students with the following languages: L1 Italian and L2 Russian. Masoura and Gathercole (1999) conducted another research project in which they measured short-term memory and skills at learning vocabulary in children whose L1 was Greek and L2 English. There was a significant correlation between phonological memory and vocabulary measures both in L1 and L2. The findings of the research studies presented above confirm that the phonological component of working memory has a crucial influence on vocabulary acquisition.

Working memory and grammar learning. The following section is going to discuss the role of phonological aspect of working memory in L2 grammar acquisition. Ellis and Sinclair (1996) found correlations between phonological working memory and learning of morphology basing on their theoretical work which focused on chunk learning and emphasized the role of frequency. The research conducted by Williams and Lovatt (2003; 2005) proved that phonological working memory has an influence on the learning of familiar morphemes

which is significant in grammar learning. There are also research findings on phonological memory and L2 grammar relationships which both emphasize and reject the role of vocabulary learning and its measures. French and O'Brien (2008), however, claim that phonological working memory correlates with the learning of grammar in L2 which is not dependent on vocabulary learning measures. However, another study conducted by Martin (2009) confirmed the importance of vocabulary in memory measures. The study measured both phonological short-term memory (PSTM) and working memory, and these measures correlated strongly with grammar and vocabulary measures. The analysis confirmed that "the relationship between grammar and memory measures was mediated by vocabulary knowledge" (Martin, 2009, p. 2).

Skehan (2014, p. 386) emphasizes that the research findings mentioned above do confirm the correlation between working memory and measures of language development, meaning that working memory can be a central component of language aptitude construct. Chan et al. (2011) observe that a significant issue in the process of L2 learning refers to understanding and acquisition of a syllable structure in the target language. Acquiring syllable structure refers to keeping it in mind and remembering sequences of sounds in L2, which is connected with phonemic coding ability. This is the reason why Chan et al. (2011) propose incorporating non-words for repetition into the tests measuring phonological working memory, because those non-words refer to the syllable structure in the L2. In a non-word repetition task, a student needs to repeat non-words after the examiner who presents them orally. The non-words usually contain a single consonant or consonant cluster (Comblain, 1999). The scholars note that there is a very domain-specific phonological element characteristic of language learning, and phonological working memory and the element of language aptitude—phonemic coding ability—shall be brought together to make the measures more specific and effective.

The paragraph highlighted the role of phonological component of working memory in grammar learning which was usually based on vocabulary knowledge and its measures. The importance of vocabulary knowledge is strongly emphasized in phonological memory measures.

Working memory and L2 speaking. In order to understand the process of speaking better, it is necessary to analyze the language production process. According to Fields, the meaning can be produced by creating and expressing it (Fields, 2004). The process of speech production is much more sophisticated from a neurological and psychological perspective than other linguistic processes (Scovel, 1998). In everyday life people of course are usually unaware of this process. One of the most popular models of speech production was developed by Levelt (1989) and consists of four stages which are the following: conceptualization, formulation, articulation, and self-monitoring. In the

first stage of speech production, we must have an idea of what we want to say (conceptualization). In the second stage, a speaker needs to change the idea into a particular linguistic plan (formulation). Then the idea and plan can be expressed on the basis of articulators—the organs of speech production (Roach, 2009, pp. 8–10)—this phase is called articulation. The final point in the model is called self-monitoring, because a speaker controls the speech meaning, checking what is said and how it happens.

Now our attention will be focused on the role of phonological component of working memory in the speech production process in L2. This component refers to phonological short-term memory. Campoy (2008) provides a good clarification of the term: the phonological loop is subdivided into a phonological store and a subvocal rehearsal process. The store is the place where verbal material is held in phonological form. The material is usually stored for a few seconds.

According to Wen (2015, p. 50) it is possible to predict narrative vocabulary at the early stage of learning L2 on the basis of phonological short-term memory (PSTM). Another component of working memory construct—Executive working memory (EWM)—refers to L2 speech accuracy. As Payne & Whitney (2002) note both for fluent and less fluent L2 speakers it is necessary to use their WM resources while speaking, for example, less fluent speakers need to use their attentional resources in deciding which lexemes or phonological elements they need in utterance, checking the correctness of syntax, or in looking for suitable words in their mental lexicon. What is more, the processes mentioned above need the phonological loop to keep their calculations in mind referring to the Levelt's model (Wen & Skehan, 2011, p. 30). The central executive of working memory is also needed in checking whether chosen lemmas and sound structures are correct. Furthermore, Profozic (2013, p. 66) adds that while speaking, a learner must choose words which are suitable for the intended idea from a semantic point of view. Both storage and processing functions of WM as well as their cooperation are used in the process mentioned. We also need WM to decide what information must be used and retrieved from our long-term memory. For fluent speakers, the above-mentioned processes do not occur so consciously, meaning that their attentional resources can be used in "greater subtleties of expression" (Skehan & Wen, 2011, p. 30).

Now we will put greater emphasis on some empirical evidence supporting the importance of WM in L2 speech production. The research conducted at the beginning of the 20th century confirmed that on the basis of WM, it is possible to predict L2 oral development both in computer meditated communication (see Payne & Whitney, 2002; Payne & Ross, 2005) and in the traditional classroom (Mizera, 2006; O'Brien, Segalowitz, Collentine, & Freed, 2006; 2007). The phonological loop can be used differently in various stages of L2 oral development: at the early level of L2 speech production it helps in the development

of narrative skills and at more advanced L2 levels it also contributes to the correct use of function words in (O'Brien et al., 2006; 2007). These research findings were similar to the study conducted by Payne and Whitney, suggesting that WM plays a different role at different levels of fluency of L2 speakers. Another study conducted by Fortkamp (1999) examined the relationship between working memory capacity (WMC—"the limited capacity of a person's working memory" (Wilhelm et al., 2013) and L2 speech production in a group of learners whose L1 is Portuguese and L2 English. The research revealed that learners with larger WM capacity have faster speech rates.

Working memory and bilingual interpretation. The last skill that will be discussed in the article is bilingual interpretation which is a complex task because it involves language processing (Christoffels & de Groot, 2006). In the process of Simultaneous Interpretation (SI) a learner has to listen to and understand input utterance in a particular language and retain this material in WM until it can be produced in the target language. Each of the tasks mentioned above needs WM resources (Mizuno, 2005, p. 741). Bilingual interpretation involves constant control of two languages and a person needs to understand and produce speech at the same time, and this is the reason why the role of Executive Working Memory must be emphasized (Wen & Skehan, 2011, p. 33).

As Wen and Skehan (2011, p. 33) indicate, there have been few studies addressing the relationship and role of WM in Simultaneous Interpretation. Padilla, Bajo, Canas, and Padilla (1996) emphasize that interpreting practice contributes to the development of WM meaning that professional interpreters have a higher working memory capacity than, for example students. Kopke and Nespolous (2006) presented empirical support regarding the significant role of Executive Working Memory (EWM) in interpreting and found the differences between interpreters and a novice group in a free recall task. The research conducted by Timarova et al. (2014) emphasizes the significance of EWM as well. The study confirmed that there is a relationship between working memory and simultaneous interpreting, meaning that different functions of WM are predictors of simultaneous interpreting processes. Furthermore, particular features of simultaneous interpreting are connected with the central executive component of working memory. This field is still awaiting further research.

Working memory and speed and quality of L2 learning. As Miyake and Friedman (1998, p. 347) point out, the SLA research confirmed the interest in the role of WM and the level of L2 proficiency as well as the process of L2 learning itself. There are not many research findings concerning the issues already mentioned, but it is important to have a look at these providing the answer for what the influence of WM on speed and quality of language acquisition is. First, available research findings suggest that: "older children are capable of

juggling more information in their minds than are younger children" (Miyake & Friedman, 1998, p. 347). This means that they can develop knowledge in L2 more quickly than younger children do. Siegel (1994) examined children's performance in the reading span test (the measure of WM in which students need to read the sentence, state if it is true or false and remember the last word in each sentence (Daneman & Carpenter, 1980) and claimed that it increases between 6 and 18 years of age. Miyake and Freidman (1998) suggest that a larger WM capacity influences faster L2 learning.

Another study is associated with the quality of WM capacity associated with L2 learning. In this study (Ando et al., 1992) Japanese learners studied English for 20 hours, but they had not attended any English classes before. The English instruction focused on grammar and required learning new abstract rules and using them in language situations. The outcome of the research was the following: "children's reading and listening spans in L1 before English tuition were best predictors of their post-test performance in L2" (Miyake & Friedman, 1998, p. 347).

Conclusion

The current article attempted to combine two areas of research, namely, language aptitude and working memory, and to reveal the role of working memory in the SLA process. Presented research findings showed that different components of WM play a significant role in L2 skills development. Phonological component of working memory is a crucial element both in acquisition of L2 vocabulary and grammar. L2 speaking can be developed thanks to the role of phonological and executive components of WM. As far as Simultaneous Interpretation is considered, the significance of Executive Working Memory was confirmed in the development of this L2 skill. We have also noted that WM capacity influences the speed and efficiency in L2 learning. On the basis of the research findings cited from recent studies, it is clear that working memory may be a crucial component of language aptitude, because thanks to it learners can develop their L2 skills. It is obvious that working memory should be a subject of further research to follow, because it will allow a detailed clarification of how WM influences and correlates with the development of particular L2 skills.

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Neue Betrachtungsweise der Sprachbegabung – Leistungsfähigkeit des Arbeitsgedächtnisses im Prozess des Zweitsprachenerwerbs

Zusammenfassung

Die Sprachbegabung (eng.: *language aptitude*) heißt Talent für Fremdsprachenlernen haben. Viele Jahre lang wurde sie samt Intelligenz und sprachlicher Gewandtheit zum Forschungsgegenstand. Heutzutage konzentrieren sich solche Forschungen auf das Gedächtnis, das früher von den Forschern kaum behandelt war.

Der vorliegende Beitrag präsentiert neue Betrachtungsweise der Sprachbegabung, die die Rolle des Arbeitsgedächtnisses beim Zweitsprachenerwerb (eng.: *Second Languuage Acquisition*) hervorhebt. Der Beitrag besteht aus drei Teilen. Der erste von ihnen stellt in Grundzügen die Forschungen über Sprachbegabung dar und basiert dabei hauptsächlich auf John Carrolls Leistungen. Der zweite Teil handelt von dem Begriff „Arbeitsgedächtnis“ und betont die Bedeutung und die Funktionen des Mehrkomponentenmodells des Arbeitsgedächtnisses von Baddeley. Der Verfasser bemüht sich, zwei bisher behandelte Begriffe – Sprachbegabung und Arbeitsgedächtnis – zu verbinden: das Arbeitsgedächtnis wird zwar ans Modell der Sprachbegabungseigenschaften als Hauptelement des Modells angeschlossen. Im dritten Teil werden neue und originelle Ergebnisse der Forschungen präsentiert, die die Bedeutung des Arbeitsgedächtnisses für die Entfaltung verschiedener Aspekte des Zweitsprachenerwerbs: Sprechen, bilinguales Übersetzen, Wortschatz und Grammatik bestätigen. Im Resümee des Beitrags wird die Wichtigkeit der Sprachbegabung im Prozess des Zweisprachenerwerbs unterstrichen.