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## THE COGNITIVE PROFILE OF A TALENTED FOREIGN LANGUAGE LEARNER. A CASE STUDY

The article examines a variety of cognitive individual variables of a talented foreign language learner. The research complies with the qualitative and quantitative criteria of choice of a talented learner proposed by Arancibia et al., (2008); Hartas et al., (2008); Hewston et al., (2005), and Skehan, (1998). Cognitive variables included tested: foreign language aptitude, verbal and non-verbal intelligence, learning styles, and learning strategies. The purpose of the research was to construct an extended cognitive profile of a 21-year-old student proficient in three languages. The research revealed that the subject is linguistically talented, especially in the area of phonological, analytical, and memory abilities. It is hypothesized that her superior abilities result from an extraordinarily efficient short-term phonological memory (Mackey et al., 2002). She uses miscellaneous learning strategies and her learning styles are versatile. The final conclusion is that research into linguistic talent is scarce, therefore further investigation, especially in the field of working memory of talented foreign language learners, is required.

*Key words:* language aptitude, linguistic abilities, talent, cognitive factors, learning styles and strategies

### Introduction

#### Exceptional linguistic abilities – criteria of selection

So far, little research addressing exceptionally talented foreign language learners has been conducted and cognitive factors probed generally. Researching exceptional talents is difficult, because such talents are quite rare and it is virtually impossible to sort a sizeable group to conduct a factor analysis. Moreover, the criteria of choice of case studies presented in the literature are to some extent inconsistent (cf. Ioup et al., 1994; Morgan et al., 2007; Obler, 1989; Sawyer & Ranta, 2001; Schneiderman & Desmarais, 1988; Skehan, 1998). According to Fein & Obler (1988), the performance of a talented individual is outstanding in one of two ways: either it is outstanding by comparison to the performance of others in society, or it is outstanding for

the individual in question. This definition is similar to a more contemporary one proposed by Arancibia et al. (2008), who define talented individuals as those who display significantly superior ability in comparison with peers of similar demographic characteristics. Individuals placed within the top 10 % (Arancibia et al., 2008), or 5% (Selinker, 1972) of the normal curve are considered talented. Definitions of giftedness also vary to include terms such as bright, able, more able, highly able, gifted, and talented, denoting degrees of exceptionality. Notions of gifted, able and highly able are used interchangeably (Hartas et al., 2008). It should be noted that some researchers operationalize aptitude differently, for example, Grigorenko et al. (2000) and Sternberg (2002) conceptualize the aptitude construct as partly based on expertize, which, as other kinds of expertize, can be developed. In this view, aptitude is perceived as a form of developing expertize, not a trait.

Nęcka (2003, pp.166-169) regards an exceptional ability as a specific complex of individual factors, emerging in early childhood in a few individuals. The most often used criterion is high intelligence quotient (IQ): over one hundred and thirty points. Other criteria embrace: the speed of learning, extended knowledge, early intellectual maturity, and extraordinary achievements in some area, for example, science, arts, or languages. Most researchers agree that high intellect does not guarantee a talent (cf. Skehan, 1998), and that high abilities are specific sets of individual cognitive, emotional, personal, and even social features (cf. Corno et al., 2002; Crowell, 2004; Nęcka, 2003; Robinson, 2002, 2007).

Special abilities, such as linguistic, are referred to as special, as they are probably determined by a specific brain anatomy or greater brain plasticity in talented foreign language learners (de Bot, 2006). Greater grey matter density was found in the inferior parietal cortex in bilingual learners (Golestani et al., 2006). This phenomenon is not fully explored in the literature and the question whether this structural change is a specific characteristic of the brain affecting the aptitude, or a change evoked by learning a new language, remain unanswered (Golestani et al., 2002; Golestani et al., 2006; Goswami, 2004).

Talent can be defined as a very high level of a specific ability, or a set of abilities, observable in the relative ease of learning a skill or gaining knowledge. Talents are relatively weakly connected with intelligence, however the correlation is not negative (Nęcka, 2003). The specificity of linguistic talent is even less transparent. In the view of Schneiderman & Desmarais (1988), linguistic talent is defined as an exceptional ability to achieve native-like competence in a foreign language after puberty. This definition is consistent with Skehan's position that exceptional foreign language learners master a foreign language relatively quickly, postpubertally and to a native-like level (1998). Nevertheless, research in the field of linguistic talents somehow contrasts with these claims as far as criteria of choice of talented individuals are established. Different criteria are chosen and operationalizations of talent vary. A talented polyglot savant, Christopher, age 45, examined by Smith & Tsimpli (1991) and Morgan et al. (2007) is presented as a person able to read, write,

understand and translate in 20 languages. However, his ability ranges from fluency to mastery only in the bare elements of the languages. What is more, analysis of excerpts of his translations, as well as his very low intelligence quotient, questions his abilities, in particular in the field of pragmatics. The researchers (Morgan et al., 2007) admit that it is rather the range of languages he learned, not the mastery of them that impresses. Totally different criteria were chosen by Ioup et al. (1994), who examined a woman who learned Arabic as an adult in a naturalistic environment. Her knowledge of Arabic was scrupulously examined by linguists and native speakers and evaluated as native-like in all aspects: pronunciation, grammar, vocabulary, and accent recognition. At the moment of the research she had lived in Egypt for 25 years, was married to an Egyptian and her children were native speakers of Arabic. Although her mastery of Arabic is unquestionable, the criterion of speed of learning is doubtful in this case. It might be concluded that the choice of subjects in the field of exceptional linguistic abilities is differentiated. Age varies from 23 years (Obler, 1989), to 45 years (Morgan et al., 2007), the number of languages varies from 1 (Ioup et al., 1994), to 20 (Morgan et al., 2007), so does the level of mastery: from basically indistinguishable from native (Ioup et al., 1994), to rudimentary (Morgan et al., 2007). The starting age of learning a language is also variable: from 11 (Schneiderman & Desmarais, 1988), to over 40 (Morgan et al., 2007).

Qualitative and quantitative criteria of choice of a talented learner are proposed in *High Ability Studies* (Arancibia et al., 2008; Hartas et al., 2008; Hewston et al., 2005; Threlfall & Hargreaves, 2008). Qualitative criteria encompass teacher, parent, peer, or self nomination on the basis of academic results. Quantitative criteria embrace data relative to the student's school history and standardized tests, such as the Wechsler intelligence test and aptitude tests.

The research in the field of exceptional linguistic abilities is scarce in both English and Polish literature although the need for selecting and developing talents is recognized (see Bates & Munday, 2005). The following sections define the investigated measures: foreign language aptitude, memory, intelligence, and learning styles and strategies.

### **Foreign Language Learning Aptitude(s) – a set of special abilities**

Language aptitude is one of the individual differences that significantly contributes to success in foreign language learning (Dörnyei, 2005). Foreign language learners differ from one another in their language-learning abilities. As a result, their learning outcomes are different: some learners achieve a high degree of proficiency, some must exert an enormous effort to achieve satisfying results, whereas others fail to achieve at least a communicative level, despite hard work. There is considerable evidence of failure in Second Language Acquisition (SLA) (Sawyer & Ranta, 2001), but there is also evidence in support of existence of the other extreme of the continuum – exceptional foreign language learners (cf. Morgan et al., 2007; Moyer, 1999; Obler, 1989, pp.141-159; Skehan, 1998, pp.207-222;). These exceptions

as well as a variety of outcomes among learners, question the universalist models of SLA, which generalize the SLA processes rejecting individual differences as irrelevant in a communicative approach (Neufeld, 1979; Krashen, 1981).

The contemporary concept of foreign language aptitude is based on the definition proposed by the founder of the notion Carroll (1959;1981;1985): „there exists such a thing as aptitude for learning foreign or second languages, [...] aptitude can be measured, [...] measurements of aptitude can be useful in a variety of ways in connection with the teaching and learning of foreign languages.” (Carroll, 1981,p. 83). Carroll emphasized the specificity of this ability:” ...foreign language aptitude, considered as the individual’s initial state of readiness and capacity for learning a foreign language, and probable degree of facility in doing so...” (ibid. p. 85). In terms of structure, Carroll described it as consisting of four, relatively independent sub-components:

1. Phonemic coding ability – the ability to make sound discriminations, and, more importantly, to analyze and code unfamiliar sounds in a way enabling retention and allowing successful retrieval after a time interval.
2. Grammatical sensitivity – the capacity to identify and understand grammatical functions fulfilled by words in sentences. This ability is considered passive as it is concerned with recognition of function of given material, rather than explicit representation.
3. Inductive language learning ability – an aspect of general reasoning capacity enabling learners to make generalisations and extrapolate from input to produce new sentences. This ability is perceived as active as it refers to the ability to examine a corpus of language material, notice and identify patterns.
4. Associative memory – the capacity to form associations in memory between stimuli and responses, for instance, native language lexical items and target language equivalents and to strengthen such connections. This ability is of special importance in vocabulary development which is an essential part of foreign language learning.

Pimsleur (1966) proposed his view of aptitude as composed of three factors: verbal intelligence, comprising the ability of logical reasoning about verbal material, auditory ability, and motivation, as an extra factor which provides the major distinction between Pimsleur’s and Carroll’s view of aptitude.

In recent years, interesting and challenging reconceptualizations of aptitude have emerged. Skehan (1989, 1998, 2002), proposed a concept of aptitude, which consists of stages that could be related to the stages of information processing. Phonemic coding ability could be related to input processing, language analytic ability, encompassing Carroll’s grammatical sensitivity, and inductive language learning, could be related to central processing, and memory-as-retrieval could be related to output and fluency. This view of aptitude is consistent with a cognitive view of SLA (Dörnyei & Skehan, 2005, p. 596). Phonemic coding ability is essential

for the effective processing of input. This capacity is important at the beginning stages of language learning as it determines how much comprehensible input is transmitted to the subsequent stage of information processing. Language analytic ability is crucial to the central stage of information processing. At this stage input material, adapted at the phonemic coding stage, is examined in terms of its suitability for patterning and, subsequently, serves as a foundation for rule formation. Memory ability is of special importance in the storage and retrieval of lexical elements. It allows the orchestration of output into fluent performance especially at an advanced stage of foreign language learning.

Language aptitude is not a homogeneous construct, but constitutes sets of abilities (Robinson, 2002). It is retheorized as a dynamic concept (Sternberg & Grigorenko, 2000), potentially trainable (Sternberg, 2002). Abilities contributing to aptitude have their effects in interactions in foreign language situations (Corno et al., 2002, Grigorenko et al., 2000; Robinson, 2002). It is hypothesized that there is one language aptitude for the first and other languages. According to Sparks et al.'s Linguistic Coding Deficit Hypothesis (1998a, 1998b), there is one common factor of linguistic ability underlying learning both the mother tongue and a foreign language.

## Memory

The role of memory, in particular verbal working memory has been consequently emphasized since the works of Carroll (1959) and Pimsleur (1966). Ellis and Sinclair (1996) argue that working memory is heavily involved in language acquisition, because a major part of language learning is the learning of memorized sequences of language.. Differences in immediate verbal memory span would predict success in second language vocabulary acquisition (Atkins & Baddeley, 1998; Miyake & Friedman 1998; Service, 1992). Mackey et al. (2002) and Robinson (2002) claim that verbal working memory, which is the ability to recall verbal auditory input while simultaneously processing the input, and phonological short-term memory, which is the ability to repeat novel verbal input immediately following its presentation, are important in second language learning. In a similar vein, Engle et al. (1999), provide evidence that short-term and working memory reflect separate but highly related construct and that many of the tasks used in the literature reflect a common construct. Moreover, they hypothesize that working memory shows a strong connection to fluid intelligence. Researchers suggest that extraordinary memory capabilities of talented foreign language learners is a common factor they share (Obler, 1989; Skehan, 1998; Schneiderman & Desmarais, 1988).

Good phonological skills accompanied by good memory for sound and words are connected with a highly efficient phonological loop. In Baddeley's et al.'s (1998) work, the phonological loop is referred to as that element of working memory that serves as language acquisition device. They hypothesize that a talent for foreign language learning, including not only the phonological component, but also the ability to learn vocabulary and grammar of a foreign language, might be the result

of an extremely efficient phonological loop. Baddeley's concept of a multi-component working memory (2003) is not reflected in language aptitude tests, which is a shortcoming preventing comparison of results among different researchers. Another notion connected with memory is *Noticing* (Robinson, 1995; 2005; Schmidt, 1990; 1993). Noticing, defined as the ability to pay attention to input, in particular, to formal properties of language, depends on working memory, and is linked to attention and awareness in SLA as a prerequisite for second language development. According to Sawyer and Ranta (2001), it is possible that there are individual differences between learners in noticing abilities, therefore, working memory should be represented in language aptitude test batteries.

### Intelligence

Intelligence, in Scarr's estimation (1997, p. 4), is defined as "scores on cognitive tests, including standard intelligence tests (...) most often intelligence will mean general intelligence, or g". Intelligence is referred to as multileveled, with a general intelligence factor presiding over lower-level specific cognitive abilities. Higher-order general factor is related to abstract (analytical) reasoning, tantamount to a part of foreign language ability defined as analytical ability, and lower-level specific abilities, such as lexical knowledge (Sasaki, 1999, p. 3). There were empirical studies investigating the relationship between IQ and foreign language aptitude (Sasaki, 1999; Wesche et al., 1982). Their results are reasonably consistent in that they found a significant relationship between aptitude and IQ. There is a general agreement among researchers that a success in foreign language learning does not depend entirely on intelligence, however it is definitely a facilitating factor, especially in learning formal structures of a language (Sawyer & Ranta, 2001; Skehan, 1998). What is more, evidence is provided that the role of intelligence increases with increasing the reasoning demands of a task (Robinson, 2007). The correlation between general intelligence and language aptitude is positive, but the correlation between intelligence components and language aptitude factors has not been established yet.

### Learning strategies

Learning strategies are regarded as "steps taken by students to enhance their own learning" (Oxford, 1990b, p. 1). According to Oxford they are of crucial importance in the process of foreign language learning as tools for self-directed learning promoting empowerment and autonomy. Learning strategies, when efficient, facilitate the process of foreign language acquisition and increase proficiency. Since the beginning of the 1990s the concept of language learning strategy has gained both teachers' and researchers' attention (O'Maley & Chamot, 1990; Oxford, 1990a, 1990b; Rubin & Wenden, 1987). Firstly, it intuitively focused on so called 'good language learners', described as those that possess characteristics that made them more successful than others in learning a second language (Rubin, 1975). Secondly, most widely acknowledged definitions and taxonomies of learning strategies, were



offered by O'Maley & Chamot (1990) and Oxford (1990b). Both systems are highly compatible in that they generally comprise four groups of strategies (Dörnyei & Skehan, 2005, p. 609):

- Cognitive strategies, which encompass different manipulations with language input, like repetition, translation, and deduction;
- Metacognitive strategies, which encompass higher-order strategies of managing the process of learning, like monitoring, planning, and evaluating. This group is believed to be of special importance in augmenting learner autonomy, because their development results from learner maturity and the ability to take responsibility for the learning process;
- Social strategies, which encompass interpersonal behaviors, like cooperation or asking for help;
- Affective strategies, which encompass emotional self-control of the learner.

The role of strategies as contributors to the success of exceptionally talented foreign language learners is unclear (Dörnyei, 2005). Research on the correlation between language proficiency and other cognitive factors among educated adults (Ehrman & Oxford, 1995), provides evidence of a low correlation between cognitive language learning strategies, and no correlation between metacognitive, affective, and memory strategies and their proficiency level. It also indicates no particular strategy preference among the subjects. It might be concluded that in the case of successful (and perhaps gifted) learners, their language ability contribution to their proficiency surpasses the assumed benefits from efficient strategy use. On the other hand, learners who already know a few languages might use strategies automatically, unconsciously, and unreflectively (Ehrman & Oxford, 1995).

## Learning styles

Whereas learning strategies are often consciously chosen by learners, learning styles are based internally and often used unconsciously to process input (Reid, 1998, p. ix). They are defined as „an individual's natural, habitual, and preferred way(s) of absorbing, processing, and retaining new information and skills" (Reid, 1995, p. ix). They exist independently of contents, teaching methods and techniques. Broadly speaking, learning styles can be divided into:

- cognitive, encompassing such styles as field-dependent/independent, analytical/global, reflective/impulsive;
- sensory, encompassing modalities: auditory, visual, tactile, kinaesthetic;
- personality, encompassing such characteristics as extraversion/ introversion, feeling/ thinking, and tolerance of ambiguity which is the ability to accept inconsistency in a foreign language.

Different styles can be equally valid and advantageous, therefore individual differences are not likely to contribute to the outcome in second language learning, provided teaching methods are compatible with the style. However, some styles are described in the literature as more facilitative than others. Field independence,

Table 1. Languages learned by the subject of the study

Language	Age at the beginning of learning	The number of years of learning	Proficiency level
Japanese	19	3	Advanced
English	7	14	Advanced
German	11	10	Advanced
Russian	15	4	Communicative
French	17	1	Communicative
Chinese	20	1	Elementary
Tibetan	20	2	Elementary
Sanskrit	21	1	Elementary

for example, positively correlates with language learning achievement (Dörnyei & Skehan, 2005, p. 603), so does analytic style (Ehrman & Oxford, 1995), or tolerance of ambiguity (*ibid.*).

## Method – a case study

### Research objectives

The objective of the research into exceptional language abilities was to analyze cognitive characteristics of an exceptional foreign language learner, in particular, the components of language aptitude: memory, analytical (grammar), and phonological abilities, the ability to analyze discourse, and the range of vocabulary in Polish and in English. Next, verbal and non-verbal intelligence, and learning styles and strategies were analyzed.

### Participant – choice criteria

It was decided to comply with the qualitative and quantitative criteria of choice of a talented learner proposed by Arancibia et al. (2008); Hartas et al. (2008); Hewston et al. (2005); Threlfall & Hargreaves, (2008). The qualitative criteria encompassed teacher nomination on the basis of academic performance, persistence, perseverance, motivation and interest. The student was appointed as the highest performing student in the area of work. The quantitative criteria embraced data relative to the student's school history and standardized tests (the MLAT, Polski Test Zdolności Językowych – the Polish Language Aptitude Test).

The subject of the study is a twenty-one year old female who is currently a third-year student of Japanese philology and a first-year student of Indo-Tibetan philology at a university. To date, she has studied ten foreign languages mastering



them to different levels of proficiency. The languages include: English, German, Russian, Latin, French, Chinese, Mongolian, Tibetan, Sanskrit and Japanese. Natively, the subject speaks Polish. Currently, she is learning Japanese, Tibetan and Sanskrit as part of her university education. Simultaneously, she is continuing an English course.

Ann studies Japanese philology and is one of the best students in her group. Taking into account the selection criteria, competitiveness, and the rate of failure (50%) during the first year, it was hypothesized that she is gifted in the area of foreign language learning. Her proficiency and rate of progress in spoken and written Japanese, as well as outstanding pronunciation were confirmed by her teachers, both Polish and Japanese. Her proficiency in eight languages was confirmed by certificates: English – Certificate in Advanced English (CAE) – mark B, German – Zertifikat Deutsch – mark ‘very good’, and by positive (good and very good) marks in the student record book, or school reports at Russian, French, Japanese, Tibetan and Sanskrit. The large number of studied languages, the advanced proficiency level obtained in three of them, and relatively young age of the subject were the basis for the assumption that she is an exceptionally talented language learner.

### Instruments

*Wechsler Adult Intelligence Scale – WAIS-R (PL)* a Polish adaptation by Brzezinski et al. (1996). The results obtained in six verbal subtests: information, digit span, vocabulary, arithmetic, comprehension, similarities, and five performance subtests: picture completion, picture arrangement, block design, object assembly, digit symbol – coding were analyzed. A general intelligence quotient as well as each scale quotients were obtained. At the second stage of analysis scores for three indices: verbal comprehension, perceptual organisation, memory and resistance to distraction, were determined.

*Modern Language Aptitude Test MLAT* (Carroll & Sapon, 2002). It is a language aptitude test designed to provide an indication of a foreign language. MLAT is a test entirely in English suitable for native and near-native speakers of English. It is considered a useful tool for predicting success in foreign language learning (Skehan, 1998). It measures aptitude traits by 5 part scores:

1. Number learning – measures verbal short-term memory, in particular, ‘auditory alertness’, which might play a role in auditory comprehension of a foreign language;
2. Phonetic script – measures sound-symbol association ability, that is, the ability to learn correspondence between speech sounds and orthographic symbols. It also measures memory for speech sounds and the ability to mimic speech sounds;
3. Spelling clues – this part score depends on the student’s vocabulary knowledge;

4. Words in sentences – measures sensitivity to grammar structure and depicts the student's ability to learn grammatical aspects of a foreign language;
5. Paired associates – measures the rote memory aspect of foreign language learning.

Modern Language Aptitude Test (MLAT) is considered the best available predictor of language learning success and the best predictor of extremes, i.e., extremely good and bad language learners (Ehrman, 1998).

*Language Ability Test (Test Zdolności Językowych TZJ)* by Wojtowicz (2006). The test was constructed to diagnose foreign language abilities. It includes 3 scales: Discourse, Vocabulary and Grammar. The Discourse scale includes gap filling with a phrase or word, and a choice of the best summary of a text – all in the Polish language. The Vocabulary scale comprises recognizing prefixes and suffixes, finding synonyms and antonyms, and guessing the meaning of phrases in a foreign language. The Grammar scale includes translation of a foreign (artificial) language, analysis and modifying reproduction of a conjugation in a foreign language, and constructing of analogous grammatical form in the Polish language.

*Second Language Tolerance of Ambiguity Scale* (Ely, 1995). The responses in Likert-scale format indicate the degree of ambiguity tolerance in foreign language learning, which denotes the ability to accept inconsistencies in a foreign language.

*Motivation and Strategies Questionnaire (MSQ)* (Ehrman, 1996). This tool consists of three parts: Aptitude and Motivation, Learning and Teaching Techniques and Personal Learning Techniques. The responses indicate the student's perception of his aptitude, motivation, and learning/ teaching preferences.

*Style Analysis Survey (SAS)* (Oxford, 1995). Designed to assess the student's learning style and learning preferences.

## Procedure

The research took place on the 18th and 19th of February 2008 and consisted of two parts and an interview. The first part of the investigation took part on the 18th of February and lasted about three hours. This part was conducted by a linguist and contained language aptitude tests, and style and strategy tests. The second part of the research on the 19th of February, contained the interview and the intelligence test, and lasted about 2 hours. It was accompanied by observation. This part was conducted by a professional psychologist, to comply with the criteria of credibility and validity, as well as formal requirements.

## Observation

Ann is willing to cooperate. She works fast and with high task motivation. She has good interpersonal skills and minimizes personal distance. She is willing to talk both about herself and about general, topics unrelated to the task. She is persistent, thorough and tries to complete all tasks. She revealed a high interest in the obtained results. Only 'arithmetic' – in the WAIS -R intelligence test discouraged

her. She immediately claimed that she is unable to solve mathematical problems. This sort of task made her anxious and any failures seemed to discourage her and weaken her task motivation. As far as MLAT is concerned, she worked with ease and pleasure. The only part that discouraged her a bit was 'spelling clues', as she did not know all the English words.

### Interview

The interview was prepared in advance and encompassed questions referring to the personal history of the subject, such as birth, health, parental care, development and education.

Ann was born 2 weeks before time by caesarean. She does not know the reasons for the premature birth. As her parents relate it, she was developing well, never suffered from any serious illnesses. She started to speak very early, but she does not know the exact age. She is the only child and was brought up in a full, healthy, happy family, who strongly stimulated the child's development. Both parents are teachers by profession. The mother is a history teacher in primary school, the father owns a book shop. Ann also mentions her grandfather – a teacher who was teaching her reading and counting in her early childhood.

As far as foreign languages in the family are concerned, her parents and grandmother know Russian, her grandfather knows Latin. She has been learning languages in all possible contexts; school, university, courses, private lessons, self-study, and living abroad. Her preferred learning context is naturalistic – in the language-speaking country. Interests, aptitude and school curriculum are the main reasons for learning languages. She learns languages for pleasure and her future profession. Her natural linguistic environment learning experience is short: 3 months in Great Britain, and 3 months in Japan. Both stays were connected with work.

## Results

### Intelligence

The results measured by the Wechsler Scale (WAIS-R) clearly indicate the high intellectual potential of the subject, both verbal and performance. Her general score was 126, verbal score – 126, and performance score – 123. She obtained above-average results for her age group in all subtests, but the profile of particular factors is uneven. She excels in all verbal abilities (the factor score for verbal reasoning was 132). She knows and interprets social-moral norms very well<sup>1</sup>. She is highly capable of abstract reasoning and generalising. She possesses rich vocabulary, large general knowledge, as well as the ability to define words. The arithmetic abilities – solving simple mathematical problems are much below her general score<sup>2</sup>. Arithmetic is

1 In the subtests 'comprehension' as well as in 'similarities' she gained 17 points, which is the maximal score in the WAIS-R.

2 'Arithmetic' score is 10 points, which is the lowest score obtained by the subject.

the weakest result in all the profile. It deviates significantly from both verbal and general results. Her attention and short-term memory are average in comparison to the general profile, but above average in the population (14 points). The results of the performance scale are less uneven. None of the subtests significantly deviates from the average. Below average is her ability to quickly perceive visual details and to differentiate important and unimportant details, as well as sequential reasoning. On the other hand, she is very good at synthesising concrete material and has a good pace of visual- motor learning..

Analyzing the profile of the results of the WAIS-R, statistically significant differences between particular indices results must be taken into consideration. Verbal comprehension is definitely most highly developed. Perceptual organization is also high, although significantly lower than verbal comprehension. The lowest is memory and the resistance to distraction index which comprises three subtests: digit-span, digit symbol – coding, and arithmetic<sup>3</sup>. The results gained for digit-span and digit symbol-coding were high: 14 and 15 points respectively, whereas arithmetic decisively lower – 10 points. The low score probably resulted not from poor memory, but rather emotional factors. The subject's low confidence with respect to mathematical abilities evoked anticipation of failure. This discouraged her and negatively influenced her performance.

### Aptitude

She excelled in foreign language aptitude tests. Ann gained maximal scores in parts I, II and V of the MLAT, 72 % in part III and 64 % in part IV. Comparing her results to the percentile norms for the MLAT for College Freshmen Women, she has a rank of 99. These results indicate her high phonetic abilities and excellent phonemic memory. Predictive validity of the MLAT is high – it was used in a considerable body of research and generally correlated at between 0.40 to 0.65 with end-of-course performance (Skehan, 1998, p.192). High scores in foreign language ability, as measured by aptitude tests is definitely a predictor of success in foreign language learning (Ehrman, 1998; Erlam, 2005; Harley & Hart, 1997).

There is no Polish version of the MLAT, but, as the subject was proficient in English, it was decided to use the English version of the MLAT, taking into consideration the drawbacks of such a decision when interpreting results. Therefore, the results in Part III – Spelling Clues, and Part IV – Words in Sentences, were expected to be much lower than they would be if the test was in Polish. In order, at least partly, to overcome this difficulty, a complementary test in Polish was conducted: Test Zdolności Językowych (The Language Abilities Test) by Wojtowicz. The test is based on tasks in the mother tongue of the subject in concordance with Sparks et al. (1998a, 1998b), who claim that there is one, general language ability for both native and foreign languages.

Ann gained an outstanding result of 100 % in the Polish Language Aptitude test, which, in fact, turned out to be far too easy for her. Her very high results in

<sup>3</sup> The factor score for these three subtests is 119.

Discourse, Vocabulary and Grammar in the Polish Test suggest high abilities in these domains as well as good command of her native language.

### **Learning styles and strategies**

Her results in all style and strategy questionnaires were miscellaneous. She does not represent any particular learning style, but her score for intuitive style was high. This means that she likes to speculate about future possibilities, enjoys abstract thinking and avoids step-by-step instruction. Ann describes herself as a very impulsive, divergent, holistic, intuitive, imaginative and emotional person. Her tolerance of ambiguity is average. She is field-independent. As far as learning strategies are concerned, she chooses many different strategies, finding most learning and teaching techniques helpful. She chooses learning in a group, reading articles, and discussions, as often as filling in verb forms, or explicit grammar instruction. She definitely rejects drills and learning meaningless things by heart, considering them a waste of time. Her favourite learning situation is a frequent interaction with other students, exploring possibilities, and practising the language. She declares she has a very good memory, finds learning languages very easy, and generally considers her foreign language learning ability above average. She does not feel anxious, or inhibited when speaking a foreign language. She is very motivated, with prevailing assimilative motivation. She enjoys learning foreign languages, has a very positive attitude towards the country, nation, and the language she is learning. As she declares, she is especially interested in learning Tibetan, as she is planning to work in a refugee camp. She frequently uses metacognitive strategies, such as planning work, monitoring work, and evaluating progress.

### **Discussion**

In the researched person the linguistic abilities co-exist with high intellect, especially verbal reasoning. This conforms to the research results presented in the theoretical part. If we regard aptitude as componentially structured (Robinson, 2002; Skehan, 1998, p.209), an analytical ability is strongly implicated in the general cognitive factor, while memory and phonemic coding ability are weakly implicated. It might be assumed that aptitude partly overlaps with intelligence, as both refer to general cognitive functioning. Ann's high result in part IV of the MLAT (Words in Sentences), her high score in the Polish language aptitude test, part Grammar, as well as high general intelligence evidently relate to her above-average analytical abilities.

What is peculiar, the memory and resistance to distraction result was not particularly high in the WAIS test. The non-impressive result may be interpreted in a few ways, the most plausible of which seem to be either the motivational, or confidence factors (Ann knows that she memorizes linguistic elements with ease, whereas is much worse with numbers). On the other hand, Ann's performance in

Parts I, II and V of the MLAT test, which require efficient memory, was excellent. Part I includes number learning in a foreign language. A subject is expected to learn numbers 1,2,3, and 4, 10, 20, 30, and 40, 100, 200, 300, and 400. Finally, she is supposed to write the numbers she hears, such as, for example, 324. Such a task seems to require a high degree of attention, associated with working memory. It appears indispensable to measure Ann's working memory by, for example, Reading Span Test (Engle et al., 1999), to gain insights into her memory abilities, but this idea requires further research into a number of talented language learners to compare results.

Another impressive factor is Ann's phonological abilities. She has no problems distinguishing, recognizing, and repeating sounds of a foreign language. As visual material does not have an automatic access to the phonological store, it might be hypothesized that Ann uses effective cognitive strategies to memorize unfamiliar phonological material. Her attention span, not particularly impressive as measured by the WAIS, turned out efficient when it came to linguistic tasks. Ann notices linguistic properties of items, both phonological and morphological (parts II and III of the MLAT). As it was stated in the theoretical part, it is possible that there are individual differences between learners in noticing abilities, therefore, working memory should be represented in language aptitude test batteries (Robinson, 2005; Sawyer and Ranta, 2001). Because the used tools did not directly measure noticing abilities, further research is required.

Ann's native language skills and knowledge are outstanding. She always graduated with the highest grades and has never had any problems with Polish orthography which is very difficult for most Poles. As the Polish Language Aptitude Test results show, she has no problems with discourse, reading, and pragmatics. This confirms Sparks et al.'s Linguistic Coding Deficit Hypothesis (1998a), that there is one common factor of linguistic ability underlying learning both the mother tongue and a foreign language.

With reference to learning strategies Ann is a very flexible learner – she has no particular preferences. In Ellis' list of 'good language learner' characteristics, „a capacity to use strategies flexibly in accordance with task requirements” is given attention, next to factors such as: concern for language form, concern for communication, an active task approach and an awareness of the learning process (1995, p.546). Ann has been learning a number of European and exotic languages, which means that she was expected to adapt to different methods and approaches represented by her teachers, and to work out different learning strategies. Researching other talented foreign language learners might result in some regular patterns of styles and more or less commonly chosen strategies.

To conclude, the researched subject displays all features attributed to talented foreign language learners. Her analytical abilities are high, she has no problems with grammar in her mother tongue and in English. She is proficient in discourse analysis, has a wide range of vocabulary. High results in phonological as well as



memory abilities indicate that she has good verbal memory facilitative in learning a foreign language. These abilities might be associated with efficient working memory, therefore further research into working memory of linguistically talented foreign language learners is required.

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