Building a language learner’s profile

Characteristics which inform training and pedagogy

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The characteristics and needs of individual learners are very important to consider when creating profiles that will inform their training. Language training should take into account not only differences in learners’ goals and what they hope to accomplish but also characteristics which may affect the kind of training they receive. Building on the premise that “people look as different on the inside of their heads as they do on the outside…” (Diller, 1976, p. 342), researchers have long considered individual differences in learners as possible sources of variability in the effectiveness of instruction. Individual differences include characteristics such as learners’ motivational states, personality traits, starting proficiency, and previous learning experiences. Learners may also differ in their cognitive abilities, which are relatively stable characteristics affecting how they benefit from particular learning situations (Snow, 1998). Some examples of cognitive abilities include perceptual acuity, working memory, and executive functioning. All of these characteristics factor into a student’s readiness to learn. Much research has looked at how these characteristics relate to the effectiveness of instruction, and findings show that learners with different characteristics can respond differently to particular instructional techniques, resulting in more or less learning. In the following sections, we outline the steps necessary to gather relevant information about language learners’ characteristics as well as summarize how and why this information is relevant to pedagogical decisions. These characteristics are intended to inform the learner profiles used in the LanguageNation platform. LanguageNation, an adaptive program developed through a collaborative effort between IBM, the US government, and the University of Maryland Center for Advanced Study of Language (CASL), will aim to bring the latest research and technology to bear on the goal of individualizing language training.

LEARNER INTERESTS AND GOALS

One aspect of individual learner characteristics that should be considered in language training is determining an individual’s interests, needs, and goals, which is often considered to be the first step in curriculum design (Brown, 2009). Determining learners’ needs through a needs analysis is a process defined as the “systematic collection and analysis of all information necessary for defining a defensible curriculum” (Brown, 2009, p. 269). The defensibility of the curriculum refers to satisfying the needs of...
the learners, the teachers, and the broader institutional and situational requirements as a whole. Needs analysis is a multi-step process that involves preparing to do the needs analysis, collecting the data and analyzing the results, and applying the results to the curriculum and pedagogical approach (Brown, 2009).

Multiple decisions regarding the scale and scope of the needs analysis are the first steps in the process. First, consider different perspectives of needs, which may include, but are not limited to, the learner’s wants and interests, the teacher’s perceptions of what’s important, and what is known about cognitive learning processes (see Long, 2005 for an overview of second language (L2) needs analysis). In this sense, it is important not to rely only on the learner-reported needs; specialized language experts, such as teachers or domain experts, should also be consulted (Long, 2005, p. 62). The scale of the needs analysis can range from the individual or classroom level to the local, national, or international language learning program level, although as Brown (2009) notes, needs assessments are most commonly conducted locally. The nature of the syllabus—i.e., the organization and sequencing of the course material—should also be established. While many traditional language learning materials focus on a grammatical syllabus that is based on starting with purportedly simple grammatical concepts, such as subject/verb agreement and moving toward intuitively increasingly complex grammatical concepts, there are alternative, more effective, options for designing syllabi based on empirical evidence of a learner’s needs (see Robinson, 2009, for an overview of syllabi types in second language learning). Other common types of syllabi are the notional-functional syllabus (e.g., designed around communication functions such as “leave taking” or “socializing”), the lexical-based syllabus (e.g., driven by most frequent words and collocations), or the task-based syllabus (e.g., focused on the accomplishment of specific target language tasks that increase in difficulty throughout the course). Constraints on the extent and nature of the needs analysis assessment process, such as institutional and societal restrictions, economic factors, and governmental language policies, can be mitigated in the early stages by setting realistic expectations and goals (Brown, 2009).

Once the approach and scale of the needs analysis has been established, the next steps are collecting the necessary information and evaluating and reporting on the needs analysis. Assessing these needs and tasks can and should take multiple forms as it is important not to rely on one data source for an overview of needs (Doughty et al., 2013). Some possible methods of assessing needs are: learner questionnaires, surveys, or interviews, interviews with experts in the field in question, or computer aided corpus analysis (Brown, 2009; Long, 2005). Sources may include the learner or learners in question (particularly useful if they are in situ, that is, in the position of currently trying to use their L2 for real-world purposes), experienced language instructors, online language corpora, or experts in the field in question. Interpretation of the information collected is generally analyzed in a qualitative manner (Brown, 2009). A sample checklist is included in Appendix 1 that was utilized to assess a learner’s needs prior to entering six-months of intensive language training for business purposes; Appendix 2 provides a list of follow-up questions for the interviewer or course designer to further discuss language learning needs with the learner (Vatz et al., 2013a).

Applying the results of the needs analysis as the basis for curriculum design depends on the kind of syllabus being used. For example, needs analysis results can be linked to course objectives in a task-based approach to language learning by finding and incorporating relevant tasks that are directly related to the needs of the learners (see Doughty & Long, 2003, for a discussion of a task-based approach in distance learning). From a task-based perspective, having learners study lists of business–related vocabulary, or reading business themed newspaper articles with multiple-choice comprehension questions is not sufficient for maximal language acquisition. A learner must engage in
business-related tasks in order to merge their needs with the real-life tasks they may engage in. One example of a successful task-based course designed based on specific needs and for specific purposes is the Eurocatering language training program (Eurocatering Language Training, 2013). Developed by the European Union with collaboration from eleven countries, the Eurocatering program is an online, task-based language training program for workers to learn communicative skills to work in a kitchen or restaurant throughout the European Union. Learners interact in a virtual environment where various people in the kitchen or restaurant ask questions, and the learner must figure out the correct response by reviewing pictures and phrases in the target language.

With respect to the LanguageNation platform, finding authentic resources for highly specific language needs may be challenging for low resource languages, such as Somali or Farsi, but easier for languages such as Portuguese. Nonetheless, the mere presence of authentic materials in the topic(s) desired by the learner will not suffice: techniques will be necessary to elaborate authentic materials, assess their approximate level of complexity, and design tasks for learners to engage with the materials in a meaningful way.

As noted by Doughty et al. (2013), although conducting needs analysis can be time consuming, the implementation of some, if not all, of the steps of the needs analysis process, especially upon creating new language learning programs or platforms, is vital to create an optimal learning environment for learners with varied needs and goals.

LEARNER CHARACTERISTICS

The effect of individual characteristics on various kinds of learning has been extensively researched in the field of psychology, and, more recently, in the field of second language acquisition (SLA). We first review an example of adaptive training based on learner characteristics from educational psychology followed by examples from studies on language training with respect to various learner characteristics (e.g., motivation, starting proficiency, experience).

Educational psychology

An important example from research that demonstrates the value of optimizing training based on learner characteristics is a large-scale literacy study, led by Connor and colleagues (2009). Connor et al. developed web-based software that provides recommendations and planning strategies for teachers for how to individualize literacy instruction in the classroom based on individual students’ language and literacy skills. This software was implemented with over 450 first-grade students. Students were administered a battery of language and literacy assessments at three points during the school year. Based on these assessments, which included the students’ word reading skills, reading comprehension skills, and expressive vocabulary, the software algorithm computed a recommended type of instruction (e.g., teacher vs. child-managed and code vs. meaning-focused) and amount (minutes per day) of literacy instruction for individual students. To illustrate, students with lower vocabulary skills at the beginning of the year were prescribed lesser amounts of child-managed/meaning-focused instruction, whereas students with higher vocabulary scores at the beginning of the year were prescribed greater amounts of child-managed/meaning-focused instruction. Adjustments to the recommended type of instruction continued throughout the year to take into account students’ changing ability and updated language and literacy assessment scores.
Results show that students who received the software-recommended amounts of literacy instruction, that is, instruction tailored to their individual ability, achieved greater literacy growth than students who did not receive individualized instruction. Furthermore, simply providing greater amounts of reading instruction that did not complement the students’ ability was not as effective as providing the recommended amount of the recommended type of instruction. In other words, the interaction of the individual child’s ability and tailored instruction resulted in maximum reading ability growth, and demonstrates the value of matching instruction to ability to increase learning outcomes.

Given their synchronization of instruction to current and potentially changing abilities, Connor et al. (2009) are unique in their approach to individualizing instruction. Continually tailoring instruction at the individual level is not always possible due to time, financial, and logistical constraints. Developing a software tool to assess individual needs in a specific subject area requires a financial investment, and furthermore, a teacher may not be able to deliver classroom material through more than one type of instructional method, as recommended by the software.

This study points to the effectiveness of individualization (even from only three points during the school year) and necessity of larger-scale platforms which can take into account learners’ frequently changing skills and needs. LanguageNation aims to bring this type of continuous adaptivity to the task of language learning by tracking students’ learning progress, as in the study described above, as well as taking into account other characteristics such as those described in the next section. This level of individualization should result in even greater benefits than have been shown in the literature.

Second language acquisition

Individual characteristics which have been investigated extensively and are particularly relevant to second language learning include current L2 proficiency, communication style, motivation, attitudes toward language learning, and language learning history. Here we present cases which investigated how learners with different levels of these characteristics varied in their language learning. Underlying cognitive aptitudes, another source of individual differences, will be discussed in the next section.

Proficiency

Many studies of second language learners have considered starting proficiency in the L2 as an individual characteristic that may interact with a treatment method (i.e., type of instruction). Hashemi and Gowdasiaei’s (2005) study of this interaction focused on vocabulary instruction. Prior to instruction, learners of L2 English were determined to be of high or low L2 proficiency. They were then assigned to one of two instructional treatments, which consisted of four 45-minute sessions over a two week period. New vocabulary items were presented either in lexical sets, in which the words were grouped into 13 semantic domains (e.g., ways of looking: stare, gaze, glare), or presented in semantically unrelated sets, in which related words were isolated from each other. Learners in both the lexical set and semantically unrelated set treatment groups heard sentences containing the new vocabulary items, were given the opportunity to guess the meanings of the new words, and were provided with the definition, and when necessary, the L1 translation. Prior to and one week after instruction, the learners completed a measure designed to assess students’ depth and breadth of knowledge of the experimental vocabulary words.
Three main findings emerged. First, both methods of vocabulary instruction led to a significant gain in vocabulary depth and vocabulary breadth. Second, the learners with a high starting proficiency in both treatment groups made significantly more gains than the learners with a low starting proficiency, although, as posited by the authors, this may be due to the vocabulary items being more appropriate for the more proficient group. Third, the learners in the lexical set group made significantly more gains than those in the semantically unrelated group. However, no interaction between instructional method and starting proficiency was found. In other words, the lexical set method was more effective than the semantically unrelated set method overall, but did not differ as a function of L2 proficiency.

Researchers have also looked at learners’ initial L2 listening proficiency as a variable by which to group students. In a study designed to investigate L2 listening, Vandergrift and Tafaghodtari (2010) found an interaction between instructional approach and learner proficiency level. Six intact L2 French classes were assigned to either the quasi-experimental or control instructional approach, and participants were determined to be either “less” or “more” skilled listeners based on a listening achievement placement test. Both treatment groups listened to an authentic text once a week throughout the 13-week semester. The students in the quasi-experimental group were guided through the listening task with structured activities, including prediction and planning, monitoring, evaluating, and problem solving. Students worked through the activities in a scaffolded fashion, first as a class, then in pairs, and finally individually. The students in the control group listened to the same texts, however, they were not given any direction on listening strategies, such as anticipating information and vocabulary, nor were they given the opportunity to compare and discuss notes with their peers.

The less skilled listeners in the experimental group made significantly greater gains in listening comprehension than both the more skilled listeners in the same group and the less- and more-skilled listeners in the control group. This interaction of learner characteristics and treatment indicates that providing meta-cognitive instruction was more effective for listeners starting with less proficiency.

These studies suggest that the relationship between L2 proficiency and training types is complex, in that certain types of training may be more or less effective for students at varying proficiency levels. Though, it should be noted that instructed SLA studies often show higher gains for students starting at lower proficiency levels, likely because it is easier to make significant gains early on before more complex learning is occurring. With regard to LanguageNation, continually tracking learners’ proficiency and how they perform on different training exercises will allow researchers to determine if learners at different proficiencies are varying in their language gains. This information can then feed back into the platform so that learners train using the exercises that would help them improve most.

**Attitudes and Motivation**

MacIntyre, Baker, Clement, and Donovan (2003) investigated variables related to learners’ communication in the L2 (i.e., willingness to communicate, communication apprehension, perceived competence, frequency of communication) and attitude/motivational variables (integrativeness, attitude toward learning situation, motivation) in learners of French who reported having previously experienced immersion, an intensive classroom program, or a traditional classroom. The study investigated whether the communication and attitude/motivational variables differed based on the previous L2 learning experience. The university students responded to a questionnaire designed to measure the four communication and three attitude/motivational variables described above.
Students who had participated in a full immersion program demonstrated a significantly greater perceived competence and willingness to communicate compared to the traditional classroom students, and a significantly greater frequency of communication compared to both the intensive program and traditional classroom students. However, no differences in communication apprehension were found among the three groups, nor were any significant differences found among the three groups for any of the attitude/motivational variables. The experience of the immersion group may have influenced their skills and attitudes regarding communication compared to students in the other learning contexts. Thus, factors such as how and when students have previously studied a language are important to determine, as we describe in the next section on language learning history to inform students’ LanguageNation profiles.

Language history

In addition to assessing a learner’s starting proficiency in the target language, a common task when enrolling a learner in a language course is evaluating his or her prior experience with other foreign or second languages, either from formal study or early childhood experience. The actual and perceived relatedness of already known languages and languages to be learned can be important factors that will contribute to how the language is learned and pedagogical recommendations of how the course should be structured (Linck et al., 2013a). Linck et al. (2013a) conducted a review of psycholinguistic research related to the cognitive processes of learning three or more languages. One important conclusion the authors noted is that learners with high proficiency already in an L2 may benefit more from learning a closely related third language (L3) than those with lower proficiency in the same L2. Therefore, evaluating both a learner’s L2 proficiency and defining optimal pairings of L2 and L3 is recommended in order to structure a course in line with the particular language competencies of each individual learner. Assessing language competence often takes the form of a placement or proficiency test in the target language (see Clark et al., 2013, for details on assessment in language courses). Another method to evaluate a learner’s current and past proficiency in all languages is through a language history questionnaire, which typically includes a section on languages spoken or exposed to throughout childhood, formal experiences with other languages through schooling, current proficiency test scores for any foreign languages spoken, and questions regarding motivation and attitudes towards all foreign languages studied. An example of a language history questionnaire is included in Appendix 3.

The individual characteristics described above represent the many facets of students and how they contribute to success in language learning. Assessing characteristics such as proficiency at the outset of training may inform the type of training implemented. While these characteristics play some role in acquisition, researchers have hypothesized that particular cognitive aptitudes may be necessary for learners to attain higher language skills.

LANGUAGE APTITUDE

Language learning is a unique process which may require high levels of specific cognitive abilities, such as memory, processing speed, and perceptual acuity. Researchers have long hypothesized that some learners have an aptitude for language learning: “L2 aptitude is the individual’s initial state of readiness and capacity for learning a foreign language, and probable facility in doing so [given the
presence of motivation and opportunity]” Carroll (1981). Much of the research on language aptitude has focused on predicting the initial rate of learning at earlier stages of proficiency development. Traditional aptitude tests such as the Modern Language Aptitude Test (Carroll and Sapon, 1959) and the Defense Language Aptitude Battery (Lett et al., 2004; Peterson and Al-Haik, 1976) have been used to predict success in achieving basic proficiency in the second language (Doughty, 2014). Only recently have scholars identified cognitive aptitude measures that predict adult learners’ high-level scores (3+) on the Inter-agency Language Roundtable scale (Doughty et al. 2007; Mislevy et al., 2008). Specifically, an aptitude for high-level language learning means that the learner has high scores on measures of the types of cognitive and perceptual abilities that are required for high-level language learning above and beyond individual characteristics held constant compared to other learners, such as motivation, personality, and learning experience. Thus, aptitude is considered to be a student’s ceiling on language ability, or the highest level that an individual is likely to achieve. Measures of aptitude which provide this information can be very useful to predict who among a group of learners has the capacity to attain the highest success in language learning and who is less likely to progress beyond an average skill level.

To address the need for a modern aptitude battery that predicts high-level language proficiency, CASL developed the High-Level Language Aptitude Battery (Hi-LAB; Doughty et al. 2007). This battery of tests is designed to “predict the ultimate success of adult language learners in reaching high levels of language ability, where advanced levels are considered to be ratings on the Inter-agency Language Roundtable scale of ILR 3+ and above” (Mislevy et al., 2008, p. 4). Hi-LAB measures an individual’s cognitive and perceptual aptitude and is built upon the following constructs hypothesized to be relevant to adult language learning: executive functioning (working memory, inhibitory control, task-switching), rote memory, perceptual acuity, processing speed, primability, and implicit and explicit induction. Previous work has established the theoretical construct validity of these measures in the context of language aptitude research (e.g., Doughty et al., 2010) and demonstrated sufficient reliability of these measures (Mislevy et al., 2010). A recent validation study used group discrimination analyses to show that scores on Hi-LAB measures discriminated high- and low-level language learners and that high-level attainment was related to working memory, associative learning, and implicit learning (Linck et al., 2013b). Some of these constructs (e.g., working memory, explicit learning) have also been shown to be predictive of intermediate-level language attainment (Bunting et al., 2011).
SLA researchers have examined individual differences in learners’ cognitive aptitudes and how those differences interact with instructional methods using Aptitude-by-Treatment Interaction (ATI) research designs. The purpose of the ATI research design is to take advantage of findings on individual differences in cognitive language aptitude in order to optimize training and learning outcomes for learners with differing abilities. Many ATI studies systematically design instructional treatments to match instruction style to learners’ cognitive ability, and then assess whether this enhances learning for those who are appropriately matched. The ATI design is a method for studying the effects of what may already be occurring in classrooms. By intentionally matching and mis-matching the measured aptitudes with instructional treatment variables, researchers can investigate the success of matching aptitudes to treatments by looking at whether an interaction of effects occurs, namely whether the students with differing aptitudes perform differently under the different training conditions. Below we provide a few examples from the research literature on ATI studies in SLA with commentary regarding how the results relate to LanguageNation platform development (for a complete review of ATI research in SLA, see Vatz et al., 2013b).

Two measures of working memory storage capacity (the ability to hold in mind and update information) were utilized in Payne and Whitney’s (2002) study testing their hypothesis that individual differences in working memory would relate to L2 learning. Specifically, they examined the possible interaction between participants’ working memory skills and how they practiced L2 conversations and its effect on the outcome of their L2 speaking proficiency. The treatment conditions involved students either engaging in traditional classroom-based conversational practice or in online chat-room conversation with their classmates. The chat room situation was hypothesized to place fewer demands on students’ working memory because the record of the conversation stays up on the screen and students would type slower than they would normally speak. More students were expected to benefit from this treatment because of the reduced demands of the task. The researchers designed a proficiency measure for the study that would be sensitive to changes in a student’s ability over the short span of the semester.

Participants were asked to speak in the L2 on a set of topics for a span of 5 minutes. Their speaking was rated on comprehensibility, fluency, vocabulary usage, grammar, and pronunciation by examiners who were asked to consider a very fluent, but non-native speaker as the highest score. There was a strong main effect for using a chat room conversational environment, with the students in that condition performing better on the oral proficiency outcome measure than students engaging in traditional practice. There was also evidence of an interaction effect, supporting the idea that working memory load was lessened in the chat room condition. The correlation between working memory and the oral proficiency outcome measure was higher for those students in the traditional classroom condition compared to those in the chat room condition, suggesting that working memory ability played less of a role in students’ ability to engage in chat room conversational practice. These results may serve to inform LanguageNation activity development in that students with lower working memory may benefit more from activities like text chat that impose fewer cognitive demands than other activities without the same kind of scaffolding.

Working memory has also been shown to affect L2 learners’ noticing of feedback. Goo (2012) examined the role of working memory capacity in Korean students’ learning of an English grammatical construction, in two different feedback conditions: recasts and metalinguistic comments. The participants completed two working memory tests and two pre-tests, a grammaticality judgment task and a written production test, both designed to assess their knowledge of the target construction. The treatment involved an information-gap activity that elicited the target construction (questions with
a *that*-trace). Learners worked with a native speaker instructor to complete the activity and received different types of feedback in response to incorrectly formed questions. Learners either heard a recast, which is a reformulated version of the sentence that corrects the error, or received metalinguistic feedback, which is explicit linguistic information about how well formed the learner’s utterance was. The last session involved participating in the information-gap activity again, and then completing the post-test grammaticality judgment and written production tests. The control group only took the pre-and post tests.

The analysis focused on which type of feedback was associated with the greatest gain in correct understanding of the construction and whether working memory predicted gains differentially for students receiving the two types of feedback. The results showed that gains in the recast and metalinguistic conditions were not different from each other, and both groups performed better than the control on the posttest. Interestingly, working memory capacity was predictive of gains in the recast condition but not in the metalinguistic feedback condition. The researcher argues that working memory is more necessary for success in the recast condition because the feedback is implicit in nature and, thus, more difficult to notice than the more explicit metalinguistic feedback. The recast feedback also required learners to keep their original construction in mind while processing the corrections in the recast, which would require more working memory capacity. Thus, there was an interaction between learners’ aptitudes and how well they were able to take advantage of this particular type of instructional feedback. This study suggests that different types of possible feedback may be optimal for learners with different aptitude profiles; intelligent feedback on error which can take into account learner characteristics such as this is one of the major challenges that LanguageNation will undertake. This type of automatic, relevant feedback has long been considered necessary for improving language learning; however, it has yet to be successfully implemented in an automated environment.

In a study explicitly designed to test an aptitude-treatment interaction, Brooks, Kempe and Sionov (2006) examined the role of participants’ executive functioning in their learning of Russian noun gender. The cognitive tests included Cattell’s Culture-Fair Nonverbal Intelligence Test, which has been shown to be a good measure of executive functioning (Duncan et al., 1996; Grigorenko et al., 2000). The treatment variable was the amount of “type variation” of the nouns in the input that students heard when learning the correct gender declensions during six separate training sessions. In this study, type variation was represented by the number of different words that were presented in the training input. All participants heard the same number of examples (24), but were pseudo-randomly assigned to three conditions where they (1) heard 24 different words once each, (2) heard 12 different words repeated twice, or (3) heard 6 different words repeated four times.

The question of interest was the extent to which individual differences in the cognitive assessments could explain how learners are able to make use of the type variation in the learning materials when learning Russian inflectional morphology. The outcome measure was their production of accurately inflected new nouns in the testing session. The greater type variation condition did not lead to more learning across all learners; only the participants above the median executive functioning score could effectively utilize the extra vocabulary types to learn the grammar rules. This significant aptitude-by-treatment interaction suggests that greater executive functioning, specifically attention allocation, allowed participants to take advantage of increased variation in the learning materials when learning Russian morphology. These results point to another element of LanguageNation training materials, namely the number of different examples provided in the L2 input, that can be adjusted to individual learners’ strengths and weaknesses. Allowing for these elements to be dynamic will allow flexibility in adapting training continuously.
In another input variation study, Perrachione, Lee, Ha, and Wong (2011) investigated the interaction between learners’ perceptual ability and training of non-native phonological contrasts. Sixty-four English native speakers completed a test assessing their basic perceptual abilities for pitch, which is hypothesized to predict success in learning lexical tones. Participants were divided into high (n = 31) and low (n = 33) aptitude groups based on their scores. The two treatment conditions were low-variability and high-variability versions of the training input, in which participants listened to 18 pseudowords, composed of six different syllables produced with a level, rising, and falling pitch contour (that is, each of the six syllables represented three words minimally distinguishable by pitch contrast). Each pseudoword was associated with a common object, (e.g., bus, table) during the training. In the low-variability condition, participants heard the pseudowords produced by one speaker, and in the high-variability group participants heard the pseudowords produced by four speakers. Generally, a high-variability training environment is considered superior to a low-variability training environment in that learners are exposed to different exemplars of the feature that they are learning, which should support generalizations. However, the researchers point out that lack of consistency or predictability in phonetic features across input trials increases processing costs, which may impair some learners’ ability to benefit from this type of training. To investigate the effectiveness of the variability in training conditions based on perceptual aptitude, half of the low and half of the high aptitude learners were each assigned to the low-variability and high-variability conditions.

Both groups heard each pseudoword 4 times, resulting in 72 trials during each of the eight training sessions. Learning was assessed by asking participants to match the spoken pseudowords to the correct object. Perrachione et al. (2011) assessed learning on three levels: learning progress during the training, learning achievement after training, and ability to generalize learning to novel speakers. The results of learning progress show that the high aptitude group learned significantly faster than the low aptitude group, regardless of training condition, and both the high and low aptitude groups learned significantly faster in the low variability condition than the learners in the high-variability condition, though this was especially the case for the low aptitude learners. The results of ultimate learning achievement also reveal that the high aptitude learners outperformed the low aptitude learners in both training conditions. However, a significant interaction between aptitude group and training condition was found. The high aptitude group demonstrated significantly greater final learning outcomes in the high-variability condition than in the low-variability condition, whereas the low aptitude group demonstrated significantly less learning in the high-variability condition as compared to the low-variability condition. In other words, the high aptitude learners benefitted from the high-variability training and the low aptitude learners were impaired by it. Despite this impairment, both high and low aptitude learners in the high-variability group were better able to generalize their ability to novel speakers than high and low aptitude learners in the low-variability group. Overall, Perrachione et al. (2011) conclude that, while the high-variability training resulted in better generalization ability for all learners in that treatment, the high aptitude learners benefited even more from high- than low-variability training, though not without cost given their slower learning rate, and the low aptitude learners not only benefited more from the low-variability training, but were acutely impaired by the high-variability training. Similar to the previous study, these results provide insight into how training can be more or less beneficial for specific learners; that is, building in dimensions, such as the variability of the input, which can be adjusted for individuals will give the LanguageNation system more flexibility. This study also points to several different kinds of assessment measures, including the ability to generalize training to novel instances, which illustrate how well a target language element has been learned.
Although ATI research has thus far been fairly limited, the key conclusion from the research findings is that cognitive aptitudes can interact with instructional treatments to yield differential outcomes for language learners with lower versus higher, or qualitatively different, aptitude. Each study provides some information about how these different cognitive and perceptual constructs may be related to learning; this information can be leveraged to individualize training for students with varying aptitudes. Building a platform such as LanguageNation which can leverage “big data” analytics to tailor treatment to individuals will add to this growing body of research by reaching many more participants than have been tested in prior research.

Aptitude testing for learner profiles

The Hi-LAB test currently consists of 12 tests which assess various cognitive and perceptual abilities; this battery runs about 3 hours in length and is therefore not always logistically possible to administer. Certain aptitude constructs also have more research literature upon which to base instructional adaptations and have been found to predict language learning at both initial and higher levels. Based on these considerations, Table 1 presents the proposed aptitude tests for LanguageNation participants. The first three are highly recommended; given more test administration time, two additional tests would also be very informative regarding learners’ aptitudes.

Table 1. Proposed tests for Language Nation participants.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Test Name</th>
<th>Approximate Time (minutes)</th>
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<tbody>
<tr>
<td><strong>Tier 1 (highly recommended)</strong></td>
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<tr>
<td>Explicit Learning/Rote Memory</td>
<td>Paired Associates</td>
<td>10</td>
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<tr>
<td>Working Memory</td>
<td>Running Memory Span</td>
<td>12</td>
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<tr>
<td>Implicit Pattern Learning</td>
<td>Serial Reaction Time</td>
<td>13</td>
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<tr>
<td><strong>Tier 2 (time permitting)</strong></td>
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<tr>
<td>Inhibitory Control</td>
<td>Simon</td>
<td>10</td>
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<tr>
<td>Perceptual Acuity</td>
<td>Phonemic Discrimination</td>
<td>15</td>
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</table>

These tests target a variety of aptitudes. Below we provide descriptions of the tests and a discussion of the application of the constructs to language learning.

*Paired Associates (Explicit Learning/Rote Memory)*

In this test, examinees are asked to study 20 pairs of words, consisting of one English word and one non-word, which are presented visually one at a time for a few seconds each. They are then asked to recall the pairs during the test trials. The non-words are described as words “in a foreign language” equivalent in meaning to their corresponding English words. The score is the total number of correctly recalled pairs, with higher scores reflecting a better ability to learn new word pairs. This test measures
how well a language learner can quickly associate meanings with new words, which is similar to learning new vocabulary words in a foreign language (DeKeyser, 2003; Hulstijn, Hollander, & Greidanus, 1996).

**Running Memory Span (Working Memory)**

In this test, examinees are asked to recall the last 6 letters from an auditory list of 12-20 letters. This test is a measure of working memory capacity and, more specifically, the executive function of updating. This test measures the ability to keep information in memory while updating that information without making mistakes. The test score is the average number of letters correctly recalled across the lists. This ability is hypothesized to help language learners in a variety of ways, such as allowing them to be able to more easily maintain novel words in memory while making associations with words they already know or to map the new word forms to meanings and functions (Engle & Conway, 1998; Michael & Gollan, 2005).

**Serial Reaction Time (Implicit Learning)**

In this test, a series of asterisks are presented one at a time in one of four locations on the computer screen, and examinees are asked to press a button corresponding to the position of each asterisk at each presentation. This test is designed to measure implicit learning of the underlying sequence, since examinees are not explicitly informed that there is an ordered sequence and are often unaware of any such patterns in the stimuli. The implicit learning score measures the degree of speed-up in response time after repeated presentations of the ordered sequence, relative to a random order. A person scoring highly on this measure is hypothesized to learn patterns or sequences without explicit instruction (Willingham, Nissen, & Bullemer, 1989). Better implicit learning may play a role in language learning, since different aspects of language contain patterns and structural regularities (e.g., grammatical rules), and the ability to pick up on these patterns without heavy reliance on explicit instruction should be beneficial.

**Simon (Inhibitory Control)**

In this test, a series of colored boxes are presented one at a time in one of three locations on the computer screen. Examinees are instructed to respond to each box by making a button press corresponding to the color of the box (red or blue), while ignoring the location of the box (right of fixation, center, or left of fixation). The two buttons are located side-by-side (e.g., right button for ‘red’ responses, left button for ‘blue’ responses). On congruent trials, the box is presented on the same side of the screen as the correct response button (e.g., red box presented right of fixation, requiring a right button press). On incongruent trials, the box location and correct response location are mismatched (e.g., red box presented left of fixation). On these incongruent trials, examinees must suppress their natural tendency to respond in the direction of the box in order to make the correct response, leading to slower responses relative to congruent trials (i.e., a conflict effect). A smaller conflict effect indicates better executive inhibitory control abilities (e.g., Linck, Schwieter, & Sunderman, 2012). Individuals who demonstrate better inhibitory control are hypothesized to be at an advantage when learning or using a foreign language, because they are better equipped to inhibit their native language to prevent or reduce interference with the foreign language.
Phonemic Discrimination (Perceptual Acuity)

In this test, the examinee listens to three words and must indicate which one of the three is different from the other two. All three words in a trial are distinct recordings of real foreign words, and to a native English speaker, all three sound similar to each other to the extent that they are likely to be considered phonologically identical in English. The languages included test three different phonological contrasts: Hindi (voicing); Igbo (place); and Thai (tone). On each trial, one of the words is phonologically distinct from the other two in the (foreign) language of origin. Because each stimulus is a distinct recording, the two items that are instances of a single word on each trial are acoustically distinct. Hence, a listener cannot simply listen for any acoustic difference - the only way to reliably determine the correct response is by attending to the acoustic cues that distinguish the categories in the foreign language. The test score for a block is the number of correct responses. A person who is readily able to distinguish such sounds is likely to have an advantage in learning foreign languages, particularly at the beginning of the language learning process, when many students struggle with the basics of speech perception in L2 (Silbert, et al. 2012).

Applying aptitude profiles to learning

Part of CASL’s ongoing research on aptitude-by-treatment interaction is to establish how foreign language pedagogy can be tailored to match individual differences in cognitive and perceptual abilities as measured by Hi-LAB. Each Hi-LAB sub-score provides unique information about students’ aptitude. Thus, tailoring training to the different scores encompassed by a learner’s aptitude profile should be beneficial to assist the learner to achieve higher learning outcomes. Further, other affective variables could also be improved by matching training to a learner’s specific abilities, such as lowering levels of anxiety, increasing motivation, and fostering more positive attitudes towards language learning. Below, we present pedagogical recommendations related to the proposed aptitude constructs/tests.

Explicit Learning/Rote Memory

Exposure to input in an original context, such as a newspaper article, is essential for language acquisition, but some learner profiles may also benefit from occasional decontextualized (e.g., isolated words), or semi-contextualized (e.g., phrases) language input. With regard to the contextualization of input, such as new vocabulary words, learners with low Rote Memory scores may benefit from focusing on word meaning within a greater context, whereas learners with high Rote Memory will not only be able to handle decontextualized input, such as target words presented with L1 translations, but may even learn more efficiently when new words are presented in this manner.

Learners with excellent Rote Memory may also be able to learn chunks of language (phrases or even entire utterances) at one time, and then ‘unpack’ the chunks later. As noted above, learners with high Rote Memory should be able to handle lengthy vocabulary lists without the words in context, or use practice techniques such as electronic flashcards in order to remember words. However, it should be noted that even though individuals with high Rote Memory ability may find it easy to memorize words out of context (e.g., with flashcards), this may or may not be effective for building the kind of lexical knowledge that will be useful for the ultimate goals of the learner. For those with low Rote Memory, rather than focus on L1/L2 translations, it would be more helpful to build associations for new vocabulary via tasks in the target language. Allowing the learners to discover the meaning of the
lexical item/form independently by providing multiple contexts, or visually enhanced input or illustrations along with the target words, will also help those with low Rote Memory.

Rote Memory falls under a category of aptitudes which indicate Explicit Learning abilities. Hi-LAB includes a test which more directly assesses explicit induction which could be added to the LanguageNation battery in the future as it also provides valuable information about the learner. Explicit learners tend to benefit from more metalinguistic and direct instruction of grammatical structures, such as word order patterns or verb paradigms. For learners who are strong in explicit induction, one strategy to teach structures, such as subject/verb agreement, is to give learners examples so that they can induce the grammatical rules, and then provide opportunities for learners to summarize and organize grammatical rules. This kind of focused, explicit activity would ideally be followed up with exposure to the L2 structures in context. In contrast, learners without strengths in explicit learning may benefit from having patterns and grammatical rules pointed out very clearly in a deductive manner (e.g., rule explanation, followed by application).

Working Memory

The tasks or activities that learners perform in the target language may be adapted according to their aptitude profiles, in particular, those abilities related to Working Memory. For those with high Working Memory, learners are better able to handle online tasks in real time (e.g., interpretation, listening comprehension, etc.) and more cognitively complex tasks (e.g., tasks about ‘there and then’ rather than ‘here and now,’ tasks on unfamiliar topics, tasks with no planning time, or two-way interactive tasks). One such task would be transcribing a phone message in real time as a native speaker relays lengthy information on an unfamiliar topic. Learners with low Working Memory on the other hand, may need more scaffolding or modifications to such tasks; for example, including additional planning time before a complex task, providing opportunities to engage in pre-task activities to familiarize learners with the content, or allowing learners to engage in shorter, less complex tasks off line before engaging in a more complex, online task. For those with low Working Memory, providing multiple repetitions of language tasks with slight variations will encourage frequent memory store updating for better long-term retention. Task repetition will also be beneficial for those with high Working Memory, although the benefit for them may be additional exposure to the language, which will allow for different, and potentially deeper, processing of the input.

For those individuals with high Working Memory, they are better able to learn new words in context than those with low Working Memory, who may benefit from additional glossing or highlighting to draw learners’ attention to relevant vocabulary in a textual context such as a newspaper article.

Oral or written feedback is important in L2 learning to assist learners to notice errors. Feedback can be explicit (e.g., providing the corrected target form with a grammatical explanation) or implicit (e.g., responding with a corrected version of the learner’s utterance but not explicitly explaining the source of the error). Those with high Working Memory ability may benefit from implicit feedback because they are able to notice various language aspects while performing a language task, while those with low Working Memory may need more explicit feedback prior to, during, or after the task.
Implicit Learning

In general, learners with high Implicit Learning ability are better able to handle complex or unfamiliar language in a full context, while those with low Implicit Learning ability may need more support, such as drawing the learner’s attention to forms or words they may not know, in order to handle unfamiliar topics or structures in context.

If a learner is strong in Implicit Learning, it may be best to avoid explicitly discussing grammar rules, instead focusing on using many examples of the target language structure in context; this stands in contrast to an explicit, inductive approach for a learner with a high explicit learning aptitude. A strong Implicit Learning ability means a learner is able to process language holistically and in context rather than analytically and out of context. Learners who have high Implicit Learning ability can benefit from exposure to input (extensive listening and reading) in meaning-based tasks. Learners with low Implicit Learning ability can also benefit from these kinds of tasks, but may need more scaffolding (e.g., introduction of a topic/vocab/structure before meaning-based tasks) in order to maximize task benefits.

For those with high Implicit Learning ability, teaching multi-word units (e.g., solve a problem) as opposed to words in isolation can capitalize on their ability to derive meaning from contexts, while those with low Implicit Learning may need more practice with the single word components in various multi-word units. Generally, those with high Implicit Learning ability will be able to build vocabulary through authentic materials rather than lists.

For learners with high Implicit Learning, implicit feedback in the form of recasts, that is, repeating a learner’s output correctly but not explicitly explaining the source of the error, may be the most effective and least disruptive during language use.

Inhibitory Control

All foreign language learners, especially at higher levels, need to be able to handle L2 input that is highly variable due to sociolinguistic factors such as different speakers’ accents, dialects, ages, or gender. Learners with high Inhibitory Control ability should be able to handle more variety, while those with a low ability may need additional exposure to the same input, or, alternatively, focus on one accent or dialect initially with an incremental increase in the variety of speech.

Multimodal input, that is, two modalities presented simultaneously (e.g., audio and visual, written text and pictures), generally will aid learners to process input more deeply. For those with high Inhibitory Control, learners will benefit from, but not necessarily rely on, the multimodality. In contrast, those with low ability may be more easily overwhelmed by multiple sources of input and thus only benefit from the use of multimodalities as a support for the main modality (e.g., providing subtitles for video input or including pictures to support comprehension of textual input).

Learners with high Inhibitory Control may be able to handle authentic materials with less modification, while those with low Inhibitory Control may benefit from additional modification or elaboration to increase comprehensibility.

For those with low Inhibitory Control, it is recommended that only the L2 is used for communication and activities in order to maintain consistent cognitive activation of the L2 and reduce competition from the L1. Learners with high ability may be able to handle switching between both languages to a
greater degree. In other words, these learners should be able to hold metalinguistic discussions in the L1 without it negatively impacting their ability to “stay” in the L2 during activities.

Inhibitory Control may be especially relevant for cross-training between similar languages and learning cognates (e.g., words that share similar roots in the L1 and L2): those with low Inhibitory Control may have more difficulties with false cognates (e.g., words in the L2 that look similar to the L1 but have different meanings), while those with high Inhibitory Control are better able to handle L1 influences because they will be better able to suppress the L1 and focus on the L2.

**Perceptual Acuity**

For learners with low Perceptual Acuity ability, it may be helpful to draw the learners’ attention to the ways in which difficult sounds in the foreign language are produced. For instance, a lesson may point out similarities and differences of the L2 phoneme pronunciation compared to the native language and explicitly point out differences in their articulation, thus putting a stronger focus on having the participant articulate the sound, rather than on hearing the difference. Another strategy is to encourage the students to practice writing down what they hear to enforce the connection between the auditory and visual signal, promote phonological categorization, and help the teacher or coach identify any confusion. When presenting new material (vocabulary, grammar, content), it would be best to avoid exposing learners with low Perceptual Acuity to “noisy” audio files (e.g., distracting or obscuring background noise, speakers talking over one another). Learners with low Perceptual Acuity ability may ultimately require more practice with “noisy” input in order to be able to handle such materials in their jobs, but the use of noisy materials for the purpose of other learning goals (e.g., learning vocabulary or structures) may present too much of a challenge. For those learners with high Perceptual Acuity, they may not need the explicit support that learners with low Perceptual Acuity need. Rather, with sufficient input, they may more easily detect fine grained sound distinctions without further explicit instruction. For those with low Perceptual Acuity ability, including text with audio input may aid learners to process the input, while those with a high Perceptual Acuity ability may not need textual support.

**SUMMARY**

The aim of the report has been to outline various components of learner characteristics which can be used to create learner profiles. These profiles, in turn, may inform the pedagogical approaches used to individualize language training. While much research still needs to be done to determine the implications of these various characteristics and aptitudes for language training, the existing literature confirms that these individual differences do play a role in learning outcomes. Therefore, gathering information to build profiles for learners interacting with the LanguageNation platform can inform both current training decisions as well as aid in testing hypotheses for future language learners. The capability of LanguageNation to track how learners with these characteristics have performed on various exercises and their developing proficiency will allow researchers to contribute to the growing body of ATI research and help improve the adaptivity of the LanguageNation platform itself.
REFERENCES


APPENDIX 1

Sample language needs checklist tailored for learning a foreign language for business purposes

Communicative Objectives

☐ Arrange a taxi ride (directions, payment)
☐ Meet business contacts for the first time (formal)
☐ Set up cell phone service
☐ Navigate public transportation (payment, directions)
☐ Handle issues with apartment (kitchen appliances, trash pickup, etc.)
☐ Order food in restaurants
☐ Open a bank account
☐ Return a product to a store
☐ Ask for and follow directions/instructions
☐ Communicate basic medical needs
☐ Describe daily activities
☐ Express personal interests
☐ Communicate simple biographical information

Business practices

☐ Invite people to a meeting
☐ Fill out forms
☐ Participate in an interview (as the interviewee/interviewer)
☐ Prepare and deliver a presentation
☐ Negotiate and close deals
☐ Discuss deals informally (drinks, dinner)
☐ Arrange meetings by phone
☐ Conduct meetings
☐ Compose letters/emails

Language Analysis

☐ Understand a dialog between well-educated native speakers on a complex topic
☐ Interpret that dialog into English
☐ Understand a dialog between native speakers using slang
☐ Interpret that dialog into English
☐ Translate/interpret complex materials from a particular scientific domain
☐ Translate/interpret spoken materials when the input is fragmented or contains errors
☐ Understand the context of a dialog when background information is not supplied or must be inferred
☐ Understand when speakers are “talking around a subject”
☐ Understand when speakers are deliberately lying or trying to deceive unintended recipients
☐ Translate/interpret speech from English into that language
[] Translate/interpret written material from English into that language
[] Other:
APPENDIX 2

Sample follow-up questions from language needs checklist

Questions about the tasks in the checklist

1. Please tell me more about the tasks/jobs/assignments that require using your foreign language at your level.
2. Which in the above list was the most important task?
3. What strategies did you use to complete that task most efficiently?
4. Which in the above list was the second most important task?
5. What strategies did you use to complete that task most efficiently?
6. Were there any tasks you needed/would have liked to have been able to perform, but which your knowledge of that language prevented you from performing? If yes, please describe.
7. Were there any tasks you needed/would have liked to have been able to perform, but which your knowledge of non-language matters (such as subject-matter expertise) prevented you from performing? If yes, please describe.

Questions about job and language-related abilities

1. Can you tell me about some of the language-related challenges you face in your daily work?
2. Ask the interviewee if the language problems were due to deficiencies in the following areas and if the deficiency was:
   
   VERY SERIOUS
   SOMEWHAT SERIOUS
   NOT VERY SERIOUS

3. General vocabulary?
4. Technical/subject-specific vocabulary?
5. Command of the appropriate register, e.g., with respect to politeness, friendliness/solidarity, or formality?
6. Pragmatic knowledge (e.g., how to deny a request politely, how to inquire indirectly, how to disagree firmly but politely, how to discern a speaker's or writer's level of supportiveness or irony) were?
APPENDIX 3

Sample language history questionnaire

Language Background

1. As a child, did you live in a home where a language other than English was spoken?
   
   Circle One:  Yes  No

   (If you answered “Yes” please continue to Questions 2a-2e. If you answered “No”, please skip ahead to Question 3.)

2a. Please fill in the table below for each language that you heard spoken in your home as a child or teenager. For each person who spoke that language, indicate how often you heard it spoken by that person (rarely, occasionally, frequently, or all the time). Then indicate how old you were when you heard the language spoken. See the example for “Navajo” in the first line of the table.

<table>
<thead>
<tr>
<th>Language</th>
<th>Parent(s)</th>
<th>Grandparent(s)</th>
<th>Other</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ex., Navajo</td>
<td>Rarely</td>
<td>Frequently</td>
<td>(Aunt) Occasionally</td>
<td>Baby-Age 9</td>
</tr>
</tbody>
</table>

2b. Please fill out the table below for each language that you spoke in your home as a child or teenager. For each person with whom you spoke that language, indicate how often you used the language when speaking with that person (rarely, occasionally, frequently, or all the time). Then indicate how old you were when you spoke the language. See the example for “Telugu” in the first line of the table.

<table>
<thead>
<tr>
<th>Language</th>
<th>Parent(s)</th>
<th>Grandparent(s)</th>
<th>Other</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ex., Telugu</td>
<td>Rarely</td>
<td>Occasionally</td>
<td>(Aunt) All the time</td>
<td>Age 6 - 10</td>
</tr>
</tbody>
</table>
2c. For the language(s) that you spoke/heard spoken in your home as a child or teenager, indicate your current level of **oral (speaking) proficiency** in the table below. See the example for “Spanish” in the first line of the table.

- **a.** I am almost equally comfortable speaking in that language and in English/my native language.
- **b.** I speak that language well, even in formal situations or when unfamiliar topics are discussed.
- **c.** I speak that language well only in informal situations when familiar, everyday topics are discussed.
- **d.** I can speak that language, but only with some difficulty.
- **e.** I can speak that language, but only with great difficulty.
- **f.** I don’t speak that language at all.

<table>
<thead>
<tr>
<th>Language</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ex., Spanish</td>
<td>d</td>
</tr>
</tbody>
</table>

2d. For the language(s) that you spoke/heard spoken in your home as a child or teenager, indicate your current level of **listening comprehension**. See the example for “Mandarin Chinese” in the first line of the table.

- **a.** I am almost equally comfortable listening to that language and to English/my native language.
- **b.** I understand that language well, even in formal situations or when unfamiliar topics are discussed.
- **c.** I understand that language well only in informal situations when the discussion is about familiar, everyday topics.
- **d.** I can understand that language, but only with some difficulty.
- **e.** I can understand that language, but only with great difficulty.
- **f.** I don’t understand that language at all.

<table>
<thead>
<tr>
<th>Language</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ex., Mandarin Chinese</td>
<td>b</td>
</tr>
</tbody>
</table>

2e. Which language is your "native" (dominant, best, strongest) language now? (Circle One. If “other”, please write the name of the language on the line provided.)

1. English

2. Other → Which Language? ____________________

3. In chronological order, please list all the countries you lived in (for at least 3 months) until you were age 18

1. Country:    Months:

2. Country:    Months:

3. Additional information (if necessary): ______________________________________________________

4. Please list any foreign languages that you have studied in school (High school, University, DLI, etc…) and answer the questions about your ability in each language.

[For the questions on reading, writing, listening, and speaking ability, “Excellent” means an ability similar to a native speaker of that language. “Good” means you can use the language, but only in limited situations, with some errors in grammar or vocabulary. “Limited” means you can only use basic phrases or understand specific sentences or dialogues learned in class.]

Language #1: ________________________________________

<table>
<thead>
<tr>
<th>Reading Ability:</th>
<th>Limited</th>
<th>Passable</th>
<th>Good</th>
<th>Very Good</th>
<th>Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Writing Ability:</td>
<td>Limited</td>
<td>Passable</td>
<td>Good</td>
<td>Very Good</td>
<td>Excellent</td>
</tr>
<tr>
<td>Listening Ability:</td>
<td>Limited</td>
<td>Passable</td>
<td>Good</td>
<td>Very Good</td>
<td>Excellent</td>
</tr>
<tr>
<td>Speaking Ability:</td>
<td>Limited</td>
<td>Passable</td>
<td>Good</td>
<td>Very Good</td>
<td>Excellent</td>
</tr>
</tbody>
</table>

Where did you study this language? (Circle one)

High School  College  DLIFLC  Government Training  Other:________________

Why did you study this language? (For example, interest in a particular language or culture, as a school or job requirement…)____________________________________________________

How many semesters/years of Language #1 did you have? _______Semesters / Years (Circle one)

Have you ever lived in a foreign country where Language #1 is spoken? Circle one:  Yes  No

If so, which country and for how long? ______________________________________________________

How old were you when you lived in that country? (Example: from 5-8 years old): ____________________
5. Please provide your most recent test scores (ACTFL, OPI, ILR, DLPT, or any other test.) for the foreign languages you listed above. If you have never formally tested in a language, please circle “Not tested”. If you have tested for some skills and not others (for example, writing), please select “Not tested” for that particular skill.

Foreign Language 1: ACTFL OPI ILR DLPT Other__________________________
Year_______________
What ratings did you receive?

a) Listening  Not tested.  0 0+ 1 1+ 2 2+ 3 3+ 4 4+ 5
b) Speaking  Not tested.  0 0+ 1 1+ 2 2+ 3 3+ 4 4+ 5
c) Reading  Not tested.  0 0+ 1 1+ 2 2+ 3 3+ 4 4+ 5
d) Writing  Not tested.  0 0+ 1 1+ 2 2+ 3 3+ 4 4+ 5

6. How much do you enjoy using your foreign language skills? Please use the scale provided below and rate each foreign language separately, if you have more than one.

5 = I love it and actively search out opportunities to use my language.
4 = I enjoy using the language but do not go out of my way to find opportunities to use it.
3 = I’m indifferent. I don’t really enjoy the language, but don’t dislike it either.
2 = I don’t really like the language and prefer to not use it if possible.
1 = I really dislike the language and only use it when I absolutely have to (at work, for example).

Language # 1__________________        Rating_______
Language # 2__________________        Rating_______
Language # 3__________________        Rating_______
Language # 4__________________        Rating_______
Language # 5__________________        Rating_______

Are there any specific aspects of a language (or languages) that you particularly enjoy or dislike? (For example, “I really enjoy reading Chinese, but dislike speaking because of the tones”).

If yes, please explain:
__________________________________________________________________________________________
__________________________________________________________________________________________
__________________________________________________________________________________________
__________________________________________________________________________________________
____________________________________________________________________________________