

A Psycholinguistic Instrument for Detecting Language Loss: The Project HALA

Putra Yusuf Khomar
Bela Rizky Utami
English Education

yusuf.khomar@gmail.com
avianajaalvian@gmail.com
belarizkyutami83@gmail.com

Abstract

The lack of a simple psycholinguistic measure of language strength makes it difficult to diagnose language loss early on and evaluate efforts to maintain language. A body-part naming task being developed as part of the Hawai'i Assessment of Language Access (HALA) project is the subject of this paper. Like the other tasks in the HALA inventory, this one takes advantage of the fact that bilingual speakers' relative language strength can be sensitively measured by how quickly they access lexical items and structure-building operations in their two languages. In support of the central assumption underlying the HALA tests, we were able to establish a strong correlation between language strength and naming times even in highly fluent bilingual speakers in a pilot study with Korean-English bilinguals. This finding has practical implications for work on language loss, maintenance, and revitalization as well as for the larger study of language strength, which we discuss.

Keywords: *Dececting Language, Psycolinguistic*

INTRODUCTION

It seems safe to assume that there is no such thing as a natural tendency to switch languages (F. M. Sari & Wahyudin, 2019a). Always in response to external economic (Kardiansyah & Salam, 2021), social, and political pressures (Kardiansyah, 2021), a community switches to a new language (Kasih, 2018). Despite this, language impairment is ultimately a neurological condition (Qodriani & Wijana, 2021). It necessitates altering the words (Amelia & Daud, 2020), structure-building processes (Puspita, 2021), and other resources that are implemented in the brain as "language" and utilized in communication (Afrianto et al., 2021). This simple fact, as we will demonstrate in this paper (Nurmala Sari & Aminatun, 2021), paves the way for the psycholinguistic assessment (Kuswoyo et al., 2020), of individuals' and communities' language loss (Suprayogi & Novanti, 2021), providing researchers with new tools for tracking this phenomenon and even assessing the effects of programs for language revitalization and maintenance (Gulö & Nainggolan, 2021).

LITERATURE REVIEW

Proficiency in a language in access to a lexicon containing tens of thousands of words (Mandasari & Wahyudin, 2021), and a set of routines for combining those words into phrases (Wahyudin & Sari, 2018), and sentences comes with language proficiency (E. Putri & Sari, 2020). Up keep of such a mind boggling framework presents exceptionally critical difficulties (F. M. Sari & Wahyudin, 2019b). It's not about how much memory space we have to store language material because there probably isn't a real limit there

(Suprayogi, Samanik, et al., 2021), rather, it's about how much time (S. N. Sari & Aminatun, 2021), and resources we need to keep all parts (EWK, 2018), of the system in the forefront of processing (N. R. Putri & Sari, 2021). Learning a new language does not remove older languages (Amelia, 2021b), from memory rather (Suprayogi & Pranoto, 2020), it pushes them further to the background and makes it harder to access them (Qodriani, 2021). It is not easy to maintain two language systems at comparable activation levels—the kind of bilingual state that prevents language loss (Puspita & Amelia, 2020). "less stable than monolingual ones (Kardiansyah & Salam, 2020), and repair or reactivation procedures are constantly required to maintain the system in a steady state (Suprayogi & Eko, 2020)," states "psycholinguistic systems containing two or more language systems" (Oktaviani et al., 2020).

The frequency with which a linguistic system is used is the factor that contributes most directly to its upkeep (Nurmalasari & Samanik, 2018). Simply put, the more frequently a language's words and structure-building routines are activated (Puspita & Pranoto, 2021), the more accessible they are (Fithratullah, 2021). Naturally, speakers are more likely to use the system with confidence if it is easily accessible. There is a characteristic cycle here (Aminatun, Ayu, et al., 2021). Speakers of a language become reluctant to use it as it becomes less accessible due to infrequent use (Amelia, 2021a), further reducing its accessibility and starting (Suprayogi, Pranoto, et al., 2021), the downward spiral that eventually leads to language loss (Aminatun, Muliya, et al., 2021).

The HALA project focuses on a comparative measure: a speaker's speed of access to words (Aminatun, 2021), and structure-building operations (Fakhrurozi & Puspita, 2021), in one language in comparison to their other languages (Sartika & Pranoto, 2021). Therefore, it does not matter if speaker A is faster than speaker B at accessing the word "nose" in, say, Chamorro; what matters is whether speaker A is faster than speaker B at accessing the word "nose" in English or vice versa (F. M. Sari & Putri, 2019). These kinds of asymmetries can ultimately be used as indicators (Kuswoyo et al., 2021), of language proficiency (Fithratullah, 2019). We will outline this point with the assistance of a lexical access test including body part terms — one of the stock of assignments in the HALA project.

METHOD

We begin with a brief discussion of what it means to be proficient in a language and how the demands of proficiency increase with bilingualism—the usual precursor to language weakening and loss. We then introduce a project that we have undertaken to assess the relative strength of particular pairs of languages in bilinguals, and report on the results that we have obtained in a preliminary series of experiments. We conclude with some remarks about the possible usefulness of this type of work for the study of language loss and language revitalization.

RESULTS AND DISCUSSION

Each participant was tested in both languages. One can expect that naming times will be shorter on the second run through the test, so we balanced the testing order between participants. Half were tested first in Korean, and then in English, while the other half received the reverse order. Each testing session began with simple instructions and a set of 12 practice items so that the speakers could become accustomed to the task. The main set of items were ordered so that the high-frequency subset always appeared first, followed by

the medium-frequency subset and then the low-frequency subset. However, within each subset we provided a different random order of the items for each language. The randomization within each subset minimized the likelihood that the participants would generate expectations in their second testing session about which item would appear next. In addition, some earlier piloting results suggested that separating the items by strata facilitated the participants' progression from more basic vocabulary items to more specialized ones, making it easier for them to respond rapidly to each item in turn.

One likely effect of this ordering was to make clear to participants that we were expecting the most basic term that applied to the depicted body part (e.g., "arm," not "appendage" or "limb"). For each item, a trial began with the onset of a photo, displayed in the center of a computer monitor in a quiet room. Each photo was a black and white image of an area of the body, in which the critical body part was encircled in red, as shown in figures 3 and 4. The onset of the photo was synchronized with a short beep, to draw the speaker's attention. In this version of the HALA test (we have also developed a more portable implementation), the photo remained on the screen until the participant responded by naming the item aloud or asking to skip the item. Naming times were recorded by a millisecond-accurate response box equipped with a voice key. Following the onset of the naming response, a version of the photo without the red circle remained on the screen for another 2000 ms, allowing the speakers time to complete their response and prepare to attend to the next item. The entire session was audio recorded so that inaccurate responses and other errors could later be eliminated.

Consistent with well-established psycholinguistic principles (Gollan et al. 2008 and the many references cited there), naming times are inversely correlated with frequency of use: high-frequency words have shorter naming times than low-frequency words. The stronger language thus produces, on average, shorter naming times than the weaker language. In addition, this effect increases as item frequency decreases, leading to the following predictions.

- A main effect of frequency, which also holds within each language: faster response times for more frequent words.
- A main effect of language strength: faster response times for the stronger language.
- An interaction between frequency and language strength: the language strength effect is greater for lower frequency words than for higher frequency words, we expect naming times to be shorter for high-frequency vocabulary items than for lower-frequency items, and we expect that items from the same stratum to have shorter naming times in the stronger language. These expectations were borne out.

CONCLUSION

At first glance, the most obvious way to measure a language's strength would be to probe knowledge of specialized vocabulary (fish or plant names, for instance), intricate inflectional paradigms, complex structural patterns, register-related contrasts, and the like. However, such an approach encounters many obstacles. Not only do the test materials have to be tailored to each specific language, their formulation would require detailed knowledge of the language's workings. This is fundamentally impractical in the case of many languages, including almost all endangered languages, which are typically little studied in the first place. Our idea is very different. The starting point is the simple observation that the mastery and maintenance of virtually all aspects of language, from

vocabulary to morphosyntax, are sensitive to frequency of use, which in turn correlates with accessibility (strength). This in turn makes it possible to exploit another simple fact: accessibility is indexed by speed of access. We can thus get a good initial indication of a language's strength by measuring the speed with which speakers access its vocabulary and structure-building operations relative to those of their other language(s). The test of body part terms outlined above illustrates this approach, showing how a very simple naming task can yield easy-to-interpret results about lexical access.

REFERENCES

- Afrianto, Sujatna, E. T. S., Darmayanti, N., & Ariyani, F. (2021). Configuration of Lampung Mental Clause: a Functional Grammar Investigation. *Proceedings of the Ninth International Conference on Language and Arts (ICLA 2020)*, 539(Icla 2020), 222–226. <https://doi.org/10.2991/assehr.k.210325.039>
- Amelia, D. (2021a). Antigone's Phallus Envy and Its Comparison to Indonesian Dramas' Characters: A Freudian Perspective. *Vivid: Journal of Language and Literature*, 10(1), 23–30.
- Amelia, D. (2021b). UPAYA PENINGKATAN KOSAKATA BAHASA INGGRIS MELALUI STORYTELLING SLIDE AND SOUND. *Journal of Social Sciences and Technology for Community Service (JSSTCS)*, 2(1), 22–26.
- Amelia, D., & Daud, J. (2020). FREUDIAN TRIPARTITE ON DETECTIVE FICTION: THE TOKYO ZODIAC MURDERS. *Language Literacy: Journal of Linguistics, Literature, and Language Teaching*, 4(2), 299–305.
- Aminatun, D. (2021). *STUDENTS ' PERSPECTIVE TOWARD THE USE OF DIGITAL COMIC*. 2(2), 90–94.
- Aminatun, D., Ayu, M., & Mulyah, P. (2021). ICT Implementation during Covid-19 Pandemic: How Teachers Deal with a New Style of Teaching. *The 1st International Conference on Language Linguistic Literature and Education (ICLLLE)*.
- Aminatun, D., Mulyah, P., & Haryanti, H. (2021). the Effect of Using Dictogloss on Students' Listening Comprehension Achievement. *JURNAL PAJAR (Pendidikan Dan Pengajaran)*, 5(2), 262–269. <https://doi.org/10.33578/pjr.v5i2.8246>
- EWK, E. N. (2018). Redefining Hybridity of Chicano Literature in Jimenez's Fictions. *The Center for Asia and Diaspora*, 8(2), 293–319. <https://doi.org/10.15519/dcc.2018.06.8.2.293>
- Fakhrurozi, J., & Puspita, D. (2021). KONSEP PIIL PESENGGIRI DALAM SASTRA LISAN WAWANCAN LAMPUNG SAIBATIN. *JURNAL PESONA*, 7(1), 1–13.
- Fithratullah, M. (2019). Globalization and Culture Hybridity; The Commodification on Korean Music and its Successful World Expansion. *Digital Press Social Sciences and Humanities*, 2(2018), 00013. <https://doi.org/10.29037/digitalpress.42264>
- Fithratullah, M. (2021). Representation of Korean Values Sustainability in American Remake Movies. *Teknosastik*, 19(1), 60. <https://doi.org/10.33365/ts.v19i1.874>
- Gulö, I., & Nainggolan, T. (2021). The Functions of Nias Personal Pronouns. *The 1st International Conference on Language Linguistic Literature and Education (ICLLLE)*.
- Kardiansyah, M. Y. (2021). Pelatihan Guru dalam Penggunaan Website Grammar Sebagai Media Pembelajaran selama Pandemi. *English Language and Literature International*

- Conference (ELLiC) Proceedings*, 3, 419–426.
- Kardiansyah, M. Y., & Salam, A. (2020). The Translator's Strategy as a Cultural Mediator in Translating Indonesian Novel into English. *4th International Conference on Language, Literature, Culture, and Education (ICOLLITE 2020)*, 413–418.
- Kardiansyah, M. Y., & Salam, A. (2021). Reassuring Feasibility of Using Bourdieusian Sociocultural Paradigm for Literary Translation Study. *Ninth International Conference on Language and Arts (ICLA 2020)*, 135–139.
- Kasih, E. N. E. W. (2018). Capitalism as The World View in Valdez's The Dirty Social Club. *Language in the Online and Offline World 6 (LOOW): The Fortitude, May 2018*, 105–109.
- Kuswoyo, H., Sujatna, E. T. S., Indrayani, L. M., & Rido, A. (2020). Theme Choice and Thematic Progression of Discussion Section in Engineering English Lectures. *Asian EFL Journal*, 27(4.6), 171–203.
- Kuswoyo, H., Tuckyta, E., Sujatna, S., Indrayani, L. M., & Macdonald, D. (2021). *SOCIAL SCIENCES & HUMANITIES 'Let ' s take a look ...': An Investigation of Directives as Negotiating Interpersonal Meaning in Engineering Lectures*. 29(1), 47–69.
- Mandasari, B., & Wahyudin, A. Y. (2021). Flipped Classroom Learning Model: Implementation and Its Impact on EFL Learners' Satisfaction on Grammar Class. *Ethical Lingua: Journal of Language Teaching and Literature*, 8(1), 150–158.
- Nurmala Sari, S., & Aminatun, D. (2021). Students' Perception on the Use of English Movies to Improve Vocabulary Mastery. *Journal of English Language Teaching and Learning*, 2(1), 16–22. <http://jim.teknokrat.ac.id/index.php/english-language-teaching/index>
- Nurmalasari, U., & Samanik. (2018). A Study of Social Stratification In France In 19th Century as Portrayed in 'The Necklace 'La Parure'' Short Story by Guy De Maupassant. *English Language & Literature International Conference*, 2, 2. <https://jurnal.unimus.ac.id/index.php/ELLIC/article/view/3570>
- Oktaviani, L., Mandasari, B., & Maharani, R. A. (2020). IMPLEMENTING POWTOON TO IMPROVE STUDENTS'INTERNATIONAL CULTURE UNDERSTANDING IN ENGLISH CLASS. *Journal of Research on Language Education*, 1(1).
- Puspita, D. (2021). TED-Talk: A Listening Supplemental Material for Learning English. *The 1st International Conference on Language Linguistic Literature and Education (ICLLLE)*.
- Puspita, D., & Amelia, D. (2020). TED-TALK: A SUPPLEMENT MATERIAL TO PROMOTE STUDENTS' AUTONOMY IN LISTENING. *ELTIN JOURNAL, Journal of English Language Teaching in Indonesia*, 8(2), 91–102.
- Puspita, D., & Pranoto, B. E. (2021). The attitude of Japanese newspapers in narrating disaster events: Appraisal in critical discourse study. *Studies in English Language and Education*, 8(2), 796–817.
- Putri, E., & Sari, F. M. (2020). INDONESIAN EFL STUDENTS'PERSPECTIVES TOWARDS LEARNING MANAGEMENT SYSTEM SOFTWARE. *Journal of English Language Teaching and Learning*, 1(1), 20–24.

- Putri, N. R., & Sari, F. M. (2021). INVESTIGATING ENGLISH TEACHING STRATEGIES TO REDUCE ONLINE TEACHING OBSTACLES IN THE SECONDARY SCHOOL. *Journal of English Language Teaching and Learning*, 2(1), 23–31.
- Qodriani, L. U. (2021). English interference in bahasa Indonesia: A phonology-to-orthography case in Instagram caption. *English Language and Literature International Conference (ELLiC) Proceedings*, 3, 349–355.
- Qodriani, L. U., & Wijana, I. D. P. (2021). The ‘New’ Adjacency Pairs in Online Learning: Categories and Practices. *Ninth International Conference on Language and Arts (ICLA 2020)*, 121–125.
- Sari, F. M., & Putri, S. N. (2019). Academic Whatsapp group: Exploring students’ experiences in writing class. *Teknosastik*, 17(2), 56–65.
- Sari, F. M., & Wahyudin, A. Y. (2019a). Undergraduate Students’ Perceptions Toward Blended Learning through Instagram in English for Business Class. *International Journal of Language Education*, 3(1), 64–73.
- Sari, F. M., & Wahyudin, A. Y. (2019b). Undergraduate students’ perceptions toward blended learning through instagram in english for business class. *International Journal of Language Education*, 3(1), 64–73. <https://doi.org/10.26858/ijole.v1i1.7064>
- Sari, S. N., & Aminatun, D. (2021). STUDENTS’ PERCEPTION ON THE USE OF ENGLISH MOVIES TO IMPROVE VOCABULARY MASTERY. *Journal of English Language Teaching and Learning*, 2(1), 16–22.
- Sartika, L. A., & Pranoto, B. E. (2021). *Analysis of Humor in the Big Bang Theory By Using Relevance Theory : a Pragmatic Study*. 2(1), 1–7.
- Suprayogi, S., & Eko, P. B. (2020). The Implementation of Virtual Exhibition Project in English for Tourism Class for University Students. *Academic Journal Perspective: Education, Language, and Literature*, 8(2), 87–97.
- Suprayogi, S., & Novanti, E. A. (2021). EFL Learner’s Literary Competence Mapping through Reader-Response Writing Assessed using CCEA GCSE Mark Scheme. *Celt: A Journal of Culture, English Language Teaching & Literature*, 21(1), 1.
- Suprayogi, S., & Pranoto, B. E. (2020). VIRTUAL TOURISM EXHIBITION ACTIVITY IN ENGLISH FOR TOURISM CLASS: STUDENTS’ PERSPECTIVES. *Celtic: A Journal of Culture, English Language Teaching, Literature and Linguistics*, 7(2), 199–207.
- Suprayogi, S., Pranoto, B. E., Budiman, A., Maulana, B., & Swastika, G. B. (2021). Pengembangan Keterampilan Menulis Siswa SMAN 1 Semaka Melalui Web Sekolah. *Madaniya*, 2(3), 283–294. <https://doi.org/10.53696/27214834.92>
- Suprayogi, S., Samanik, S., Novanti, E. A., & Ardesis, Y. (2021). EFL Learner’s Literary Competence Mapping through Reader-Response Writing Assessed using CCEA GCSE Mark Scheme. *Celt: A Journal of Culture, English Language Teaching & Literature*, 21(1), 2. <http://journal.unika.ac.id/index.php/celt/article/view/2871>
- Wahyudin, A. Y., & Sari, F. M. (2018). The effect of Instagram on the students’ writing ability at undergraduate level. *The 1st International Conference on English Language Teaching and Learning (1st ICON-ELTL)*, 1–10.

