

RESEARCH ARTICLE

Extramural English as an individual difference variable in L2 research: Methodology matters

Pia Sundqvist

University of Oslo, Norway

Email: pia.sundqvist@ils.uio.no

Abstract

In light of findings from research on informal foreign/second language (L2) learning, with a focus on English as a target language and using the concept of extramural English (EE), this position paper argues that learners' engagement in EE (through activities such as watching television or films or playing digital games) constitutes an important individual difference (ID) variable that needs to be included in studies that aim to measure L2 English proficiency or development. In addition, it is suggested that if EE as an ID variable is left out in such studies in the future, the rationale for exclusion should be clearly stated. This position paper also discusses research instruments and methods used in this area of research, the benefits and drawbacks of different methods, and identifies research gaps and under-researched learner groups. Further, it is argued that in some contexts, EE has replaced classroom activities as the starting point for and foundation of learning English.

Swedish Abstract

Baserat på resultat från forskning om informellt lärande av främmande-/andraspråk och med fokus på engelska som målspråk samt med användning av begreppet extramural engelska (EE), argumenterar detta 'position paper' för att elevers engagemang i EE (exempelvis genom aktiviteter såsom att se på tv eller film, eller att spela dataspel) utgör en viktig individuell skillnad (en ID-variabel), som bör inkluderas i studier som syftar till att mäta språkfärdighet eller utveckling i L2 engelska. Dessutom föreslås det att ifall EE som ID-variabel exkluderas i sådana studier i framtiden, bör motiveringen för exkluderingen tydligt anges. Detta 'position paper' diskuterar dessutom olika forskningsinstrument och metoder som används inom forskningsfältet samt för- och nackdelar med olika metoder, och det identifierar även forskningsluckor och underbeforskade elev- och studentgrupper. Vidare argumenteras det för att EE i vissa sammanhang har ersatt klassrumsaktiviteter som utgångspunkt och bas för att lära sig engelska.

Keywords: ecological validity; engagement; extramural English; EE Scale; incidental learning; individual differences; informal L2 learning; research methodology; second language acquisition; self-regulation

Some 30 years ago, Skehan (1991) published a paper on individual difference (ID) variables in second/foreign language (L2) learning, with a focus on aptitude, motivation, learner strategies, and learner styles. Among other things, he discussed the importance of identifying IDs that contribute to successful L2 development and describing the interrelatedness of different IDs. Moreover, he also pointed to the necessity of accounting for the effect that learning can have on IDs, as well as what effect IDs can have on L2 learning, if any. In this position paper, I argue that learners' involvement in informal learning of L2 English constitutes an ID variable that needs to be considered in L2 acquisition research because it influences the learning of the target language, as shown in several studies over the past 15 years (see, e.g., Arndt & Woore, 2018; De Wilde et al., 2020b; De Wilde & Eyckmans, 2017; Hannibal Jensen, 2017; Lee & Drajati, 2020; Lindgren & Muñoz, 2013; Peters, 2018; Puimège & Peters, 2019; Schwarz, 2020; Sundqvist, 2009, 2019; Sundqvist & Wikström, 2015; and Sylvén & Sundqvist, 2012). In addition, if informal learning of L2 English is not included as a variable in a future study that aims to measure proficiency or development, I also argue that the rationale for the exclusion must always be clearly stated. At present, this is not standard procedure. Thus, the overarching aim of the paper is to zoom in on informal language learning as an important – but sometimes overlooked – ID variable in second language acquisition (SLA) research and to discuss research methodology specifically related to English as a target language. There is an imminent need for new, innovative ways of investigating this topic.

Extramural English research

The focus of this paper is specifically on English as a target language, and the concept of extramural English (EE) will be used. EE encompasses both intentional and incidental informal learning of English through learner-initiated activities that can take place either online or in real life (Sundqvist, 2009; Sundqvist & Sylvén, 2016). Engagement in activities occurs outside (from the Latin word “extra”) the walls (from the Latin word “mural”) of the classroom and is not connected with school(ing). Some typical extramural activities are listening to music in English, watching English-medium television/films, reading books in English, and playing digital games using L2 English. There is a great variety of types of EE exposure or input, and some can be pedagogical in nature, although technically, they are examples of informal learning (e.g., Instagram accounts such as @englishgeekz and @englishlifewithbenjamin). Despite being a contradiction in terms, some individuals may also engage in EE inside the classroom – at least in some settings. For example, during English lessons, students may view English-language YouTube videos on their own laptops when they should be doing something else.

Engagement is a fundamental concept in EE research. It encompasses (at least) three interconnected dimensions: behavioral, cognitive, and affective/emotional engagement (Fredricks et al., 2016). Schmitt (2008) has specifically applied the concept of engagement to L2 vocabulary learning. He emphasizes the importance of learners' self-regulation in the learning process, asserting that increased exposure, attention, manipulation, and time dedicated to lexical items contribute to learning. Schmitt's reasoning

can be extended to EE engagement, which is also self-regulated. Increased exposure, attention, and time invested in specific EE activities have been shown to enhance the acquisition of abilities and content knowledge associated with them. The frequency at which a learner engages in EE activities reflects behavioral engagement, and the voluntary nature of participation reflects emotional engagement. Learners tend to engage in activities they enjoy but discontinue their involvement once their emotional connection diminishes (Sundqvist, 2019). Moreover, any form of EE engagement implies cognitive engagement, as learners utilize their L2 skills. Certain EE activities necessitate higher levels of cognitive demand, particularly when interaction with others is involved (the interaction hypothesis, see, e.g., Gass & Mackey, 2006).

EE research is a relatively young area of applied linguistics research and finds its home in the field of SLA. The relationship between EE and vocabulary knowledge has been most extensively researched, with positive findings (e.g., De Wilde et al., 2020a; De Wilde & Eyckmans, 2017; Peters, 2018; Peters et al., 2019; Puimège & Peters, 2019; Schwarz, 2020; Sundqvist, 2009). Some studies have focused on vocabulary related to a specific EE activity, such as playing digital games (e.g., Hannibal Jensen, 2017; Sundqvist, 2019; Sylén & Sundqvist, 2012). Further, empirical studies have consistently demonstrated the advantageous impact of audiovisual material consumption on L2 learning (e.g., Lindgren & Muñoz, 2013; Muñoz et al., 2018). Additionally, EE research has explored connections with writing skills (e.g., Olsson & Sylén, 2015; Sundqvist & Wikström, 2015) as well as with listening and reading comprehension (e.g., De Wilde et al., 2021; Muñoz, 2020; Sylén & Sundqvist, 2012). However, the relationship between EE and speaking skills has received considerably less attention, with a few exceptions (see De Wilde et al., 2021; Lyrigkou, 2019; and Sundqvist, 2009). Furthermore, engagement in EE activities has been shown to have positive effects on cognitive and affective domains, including increased confidence (Lai et al., 2015) and enhanced willingness to communicate (Lee & Dražati, 2020). This suggests that EE can benefit learners in ways that extend beyond the actual acquisition of English language skills.

In sum, in a relatively short period of time, EE research has yielded important findings related to L2 learning and overall L2 development and shown potential to contribute to learners' psychological attitudes toward language learning. Thus, the importance of EE as an ID variable should not be overlooked. In addition, quite recently, there has been a structural change, which will be discussed next, that puts new demands on EE research, as this change is bound to influence the methodology employed in future EE research.

A structural change

While EE research has only been around for about two decades, the phenomenon itself is not new. People have always learned languages informally. That said, access to English is abundant thanks both to technology and the fact that English is a global language (e.g., Graddol, 2006). To move EE research forward at this point in time, current theoretical perspectives, conceptual frameworks, and methodological approaches need to be expanded and improved (discussed further below) because of the structural change, which has to do with EE replacing lessons in school as a beginning of and basis for L2 English learning.

Supposedly, the change is a result of a widespread general increase in learners' engagement in EE – at least as observed in the European context. For example, while an early EE study by Sundqvist (2009) reported that 15- and 16-year-old Swedish learners, on average, spent 18.4 hours per week on EE, a decade later, Schwarz (2020) reported that learners of the same age in Austria averaged 28.9 hours per week (i.e., 10 more hours per week). This increase can largely be explained by young people's expanded use of English-mediated media that is easily accessible via smartphones, including the emergence of numerous streaming services and more social media during the period. YouTube, launched already in 2005, has become extremely popular all over the world. For instance, as of January 2023, the YouTube audience (all ages) in the Asia–Pacific region reached approximately 467 million users (Hughes, 2023). Media councils/agencies in several countries report high and fairly similar frequencies of media habits among young people, such as in Austria (where German is the majority language, Saferinternet.at, 2022), Norway (where Norwegian is the majority language, Norwegian Media Authority, 2022), and Sweden (where Swedish is the majority language, Swedish Media Council, 2023). While some media consumption occurs through the majority language, a vast proportion occurs through English. As an example, in Norway, a majority of 9–18-year-olds answered that they use mainly English for viewing films/series/television (62%), gaming (63%), and YouTube (64%), whereas mainly Norwegian was used for reading, watching, or listening to news (68%) (Norwegian Media Authority, 2022).

The structural change can be illustrated with the help of the L2 English language learning pyramid that was originally introduced in Sundqvist and Sylvén (2016, see Figure 1), here revised and split into two L2 English learning pyramids, one for high EE users and one for low EE users (see Figure 2).

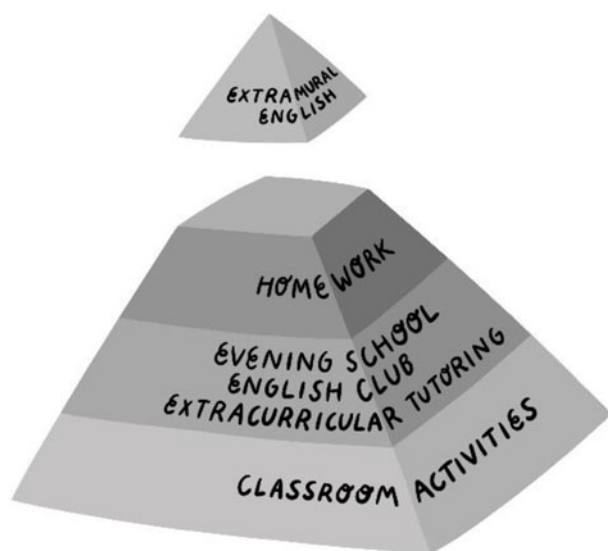


Figure 1. The L2 English learning pyramid (based on Sundqvist & Sylvén, 2016, p. 222).

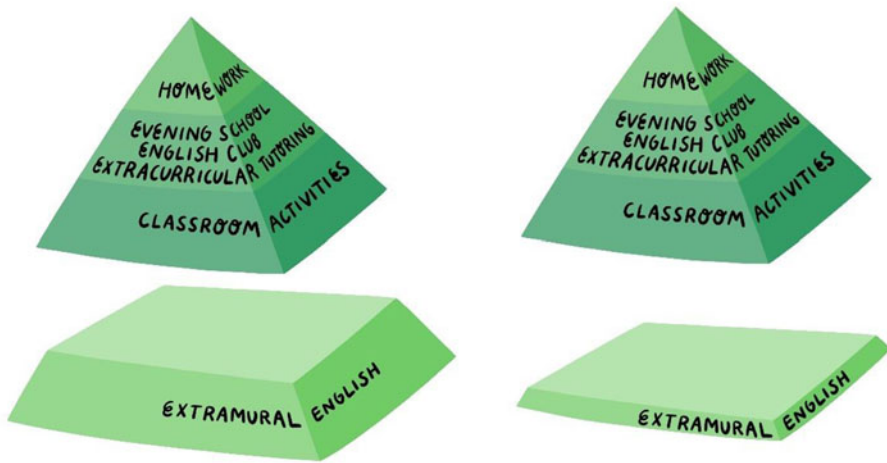


Figure 2. The revised L2 English learning pyramid split into two: high EE users (left) and low EE users (right).

In the original L2 English learning pyramid (Figure 1), EE is floating on the top, detached from the rest of the pyramid and its base. EE is described as flexible: “for some learners EE is minute, for others EE constitutes by far the largest part of their L2 English” (Sundqvist & Sylvén, 2016, pp. 222–223). The detachment is important as it symbolizes that EE does not have any connection with school or schooling, that is, no connection with formal (or “intramural”) learning. It should be stressed that in the original pyramid, the base consists of classroom activities. Individuals may be involved in other learning activities, too, such as evening school or extracurricular tutoring, which is very common in some countries, not least in East Asia (see, e.g., Butler, 2014, for China). In the revised version(s) of the L2 English learning pyramid (Figure 2), the base consists of EE instead of classroom activities. This is the actual structural change: in a very short period, EE has gone from being viewed as something extra (i.e., the floating on the top) to being viewed as something fundamental. In essence, the revised pyramids illustrate that EE is an ID variable that, for many (but not all), has replaced the classroom as the starting point and foundation for learning English. For learners who use a lot of English outside of the school context (high EE users), the base of the learning pyramid is thick (the left pyramid in Figure 2), whereas the base is very thin for low EE users (the right pyramid in Figure 2). Altogether, this means that in settings where English is easily accessible to anyone, including children, EE is an ID variable that will play a role in learning even from an early age, and as a consequence, something that both researchers and teachers will need to acknowledge and be aware of (cf. Schurz & Sundqvist, 2022; Schwarz, 2020; and Sundqvist & Sylvén, 2016).

The structural change proposed here, where EE replaces classroom activities in school as the starting point and foundation for L2 English learning, finds strong empirical support in studies from Flanders, the Dutch-speaking part of Belgium, where formal English instruction is not introduced until in school years 7 or 8. Studies among Flemish primary school learners have shown that children know more than 3,000 English words without having had a single English lesson in

school (Puimège & Peters, 2019), and some already score at level A2 according to the Common European Framework of Reference (Council of Europe, 2020) for listening comprehension, writing, and speaking before even beginning formal English L2 learning in school (De Wilde et al., 2020b). Not only does this change in exposure to English have pedagogical implications but it also affects how we research EE. Clearly, the situation calls for new tools and methods to capture and measure learners' engagement in different EE activities. To quote Bob Dylan (1964): “[t]he times they are a-changin’.”

Methodology matters

Interestingly, Skehan (1991) uses *formal* versus *informal learning* as an example of how learning contexts tend to change, so in a way, he predicted the structural change discussed above. From a methodological perspective, he rightly claims that it is essential to “probe how consistently a particular relationship is found” (Skehan, 1991, p. 290) between different ID variables (e.g., EE) and learning outcomes (e.g., measurements of English proficiency) when contexts do not necessarily stay the same – and contexts seem to be changing rapidly. The present situation with English as a prestigious lingua franca combined with digitization on a global scale certainly makes EE engagement fertile ground for informal learning. However, a well-known problem in this line of research is how to capture learners' contact with EE validly and reliably. Some studies, especially the early ones (including some of my own), lack sufficient accounts of validity and reliability. However, such problems have diminished somewhat as EE research has made progress, most likely thanks to general methodological advancements in the broad field of applied linguistics, including recommendations provided in publications that describe how to report and interpret quantitative and qualitative findings, as well as improved author guidelines announced by high-impact journals and publishing houses (see, e.g., Chapelle & Duff, 2003; Mackey & Gass, 2023; Norris et al., 2015; Paltridge & Phakiti, 2015; Plonsky & Oswald, 2014; and Twining et al., 2017).

As EE engagement occurs outside educational institutions, it obviously cannot be “controlled” and, thus, poses challenges in terms of methods, not least ethical ones. Compared to the 2000s, current ethical demands are much stricter due to new data protection legislation, such as the *General Data Protection Regulation* in Europe, implemented in 2018 (European Union, 2018). For reasons such as these, the time is ripe to address methodological challenges in studying EE and to provide suggestions for how EE research may be conducted in the future. Some guidance for the future can be found in previous work on ID variables, to which we turn next.

Hierarchical and concatenative approaches in naturalistic and confirmatory research

In his description of types of ID research, following Skehan (1989), Ellis (1994, pp. 474–475) distinguishes two approaches that concern the relation between theory and research: the *hierarchical approach* (“a theory that affords predictions about how particular IDs affect learning”; research typically involving hypotheses that are tested empirically) and the *concatenative approach* (“a research-then-theory approach”; research typically involving data collection followed by correlational analyses between

independent variables – i.e., the IDs – and dependent variables, such as measures of L2 learning). Further, Ellis brings up two general traditions in ID research: naturalistic and confirmatory research. Research on EE started out in the naturalistic tradition, adopting a concatenative approach. It was common with exploratory studies that mapped how young people engage in various EE activities in their spare time, often in the home, and analyzed the relationship between EE data and measures of different aspects of L2 English proficiency (see, e.g., De Wilde & Eyckmans, 2017; Hannibal Jensen, 2017; and Sundqvist, 2009). This research-then-theory approach, in comparison with the hierarchical approach, adopts a less prescriptive stance and encourages extensive data collection and the formulation of broad generalizations. However, a drawback of the approach is that the researcher risks being overwhelmed by an abundance of data, with little guidance about how to move forward. While the endpoint for an EE research design would be a theory-then-research design, current EE research appears to be in what Skehan (1991) refers to as a “ground-clearing phase” (p. 296). He argues that this phase is necessary in order to reach the endpoint, and at present, exploring new ways forward in EE research is, thus, welcomed.

Methods, research instruments, and ways forward

Lee’s (2022) systematic review of articles published between 2010 and 2020 examines instruments utilized in L2 learning beyond the classroom. An analysis of 76 documents (covering 144 research tools) revealed that questionnaires were the most frequently used instrument, but that interviews and observations had also been used often and consistently. Less commonly used instruments or methods were language logs/diaries, group interviews, reflective journals, computer tracking, stimulated recall, and language learning history. A key reason for using questionnaires is, of course, that data can be collected from large samples, and depending on the sampling method and size, generalizations can be made about the statistical population. In EE research, many researchers have developed their own questionnaires to capture EE. This can be expected in a relatively new area of research, but the differing formats and (sometimes) lack of reports about validity and reliability make study comparison and replication difficult (Sundqvist & Uztosun, 2023). Since it is important to yield research results “that are robust, credible, and reproducible” (Gass et al., 2021, p. 249), this multitude of instruments is problematic for research on informal L2 learning.

In response to the problem, two new instruments have recently been developed: the *Informal Second Language Engagement* (ISLE) questionnaire among L2 English learners in Germany ($N = 382$) (Arndt, 2023) and the *Extramural English Scale* among L2 English learners in Denmark, Norway, Sweden, and Turkey ($N = 907$) (Sundqvist & Uztosun, 2023). Both instruments build on a multi-dimensional conceptualization of engagement and were developed in stages (including piloting, exploratory factor analysis, confirmatory factor analysis, and different validation procedures). High reliability is reported for both.

The ISLE captures affective, cognitive, behavioral, and linguistic aspects of learner engagement with informal L2 practices and is intended to be implemented as an online survey as part of an event-contingent experience sampling method (ESM) approach (Arndt, 2023). In ESM, participants are contacted several times per day to provide

data right then in the moment, and this happens every day for a period of time (e.g., for a week). One benefit of this approach is that real-time experiences are reported, which means high ecological validity (Arndt et al., 2023). The method minimizes the impact of recall bias and can lead to more reliable data, allowing researchers to examine the dynamics of activities and experiences over time. Further, Arndt et al. (2023) propose that ESM allows for new types of analyses because of a three-level “nested” structure of data: several responses/moments per day and several days per participant. The assumption is that “measurements are likely to be more similar if they stem from the same individual than across different participants, and if they are collected on the same day versus different days” (Arndt et al., 2023, p. 43). However, as discussed by the authors, there are drawbacks too, such as the burden put on participants to frequently respond to survey questions, which risks leading to attrition and disrupting participants’ natural behavior. There is also a risk of selection bias, and there can be habitual effects or reactivity, which means that participants might become more attentive to their experiences and can potentially start changing their behaviors, consciously or subconsciously.

The second instrument, the EE Scale, captures the total frequency of learners’ EE engagement per eight factors: EE Digital Creativity, EE Gaming, EE Internalized, EE Music, EE Niche Activities, EE Reading and Listening, EE Social Interaction, and EE Viewing (Sundqvist & Uztosun, 2023). The 7-grade EE Scale is intended as a one-off retrospective survey and includes 32 items. Some benefits of this instrument are that it is easily administered (10 minutes, online or on paper), flexible (e.g., all items, or a selection based on factors, can be used), and sustainable. As regards its sustainability, unlike the ISLE and many other surveys tapping into informal learning, the EE Scale does not use any brand names in any questions; instead, all items are created based on learner agency and language skills connected with engagement in different activities, and whether activities are carried out alone or with others. However, a known problem with this type of questionnaire is that the answers are recall-based, and it is not possible to know how participants conceptualize the scale.

As regards the development of innovative research instruments for capturing EE, including questionnaires, new software, and apps, they appear at such a speed that any comments on them here would risk becoming outdated overnight; still, a safe recommendation would be to consider data protection carefully.

While relationships between EE on the one hand and L2 proficiency/skills/abilities or cognitive and affective domains on the other have been investigated, some relationships are less explored than others. There is a clear need for more studies on links between EE and language production—that is, speaking, including interactional competence (Salaberry & Kunitz, 2019), and writing. Moreover, very little is known about the relationship between EE and grammar knowledge (cf. Cadierno et al., 2020). In addition, the role of specific EE activities in learning (e.g., gaming) and the context-specific nature of EE need further exploration, preferably in transnational studies, which are still quite rare. EE research considering cognitive and affective domains has recently grown more common, not least in a number of studies from Asia (see, e.g., Lai & Zheng, 2018; Lee & Dressman, 2018; and Lee & Taylor, 2022), but more such studies from other contexts would be welcome. Furthermore, some parts of the world are clearly under-represented in EE research, namely South America and Africa

(for an exception, see Dressman, 2020). In addition to the need to explore new regions and regional differences, it would be valuable to consider socioeconomic or class differences as well, and the question of access to various forms of EE (including digital resources and the internet) within particular regions or countries, as EE exposure may be viewed as a global form of social and cultural capital (cf. Bourdieu, 1973).

To date, quantitative methods are frequently used in EE research, but combining quantitative and qualitative methods by adopting a mixed-methods approach also occurs (e.g., Lai & Zheng, 2018; Schwarz, 2020; Sundqvist, 2019). Some studies are qualitative interview studies (e.g., Soyoof, 2023; Sundqvist, 2015), at times ethnographically oriented (Hannibal Jensen, 2019; Rothoni, 2017). An advantage of interviews is that they yield in-depth data, and such data are needed to shed light on learners characterized by high, mid, and low EE engagement and why they choose (not) to be involved in EE. Popular science descriptions of such different types of learners would be very helpful in communicating results from EE research to important stakeholders. Moreover, there is room for improvement in terms of interview data elicitation techniques, such as well-structured EE interview guides. In addition, since many learners are exposed to EE from an early age, more interviews with very young learners (pre- and primary school level) would be useful, possibly even home interviews with guardians and siblings participating, too. Overall, young learners are an under-researched group, as are old learners (see problems with sampling bias, Andringa & Godfroid, 2020). It would be valuable to develop the conceptualization of EE in relation to adult and old learners since many may not spend time in educational institutions, begging the question of whether “extramural” is applicable and, if so, what it would mean.

Many quantitative EE studies are correlational, but recent work may encompass more advanced methods, such as mixed effects modeling and structural equation modeling (SEM; e.g., Zhang & Liu, 2022). While related, mixed effects modeling is predominantly employed for the analysis of hierarchical data structures, whereas SEM is frequently used to assess complex theoretical models and investigates the connections between observed and latent variables, which makes it possible to test cause and effect based on correlational data (Dörnyei, 2007; Field, 2013; for recent reviews of EE/informal L2 learning research, see Soyoof et al., 2024 and Zhang et al., 2021). Considering the ground-clearing phase mentioned above, EE research seems well underway in the theory-then-research design stage.

Conclusion

In light of findings from research on informal L2 learning, with a focus on English as a target language and using the concept of EE, some main points made in this position paper are that (a) learners’ involvement in informal learning of L2 English (EE) constitutes an ID variable, (b) this ID variable should always be considered in L2 acquisition research that claims to measure L2 proficiency or development, (c) if the ID variable is not included, the rationale for the exclusion should always be clearly stated, and (d) there is a need for new methods of investigating EE, to move the field forward. In addition, extensive research on EE (which encompasses both incidental and intentional informal learning) has revealed positive relationships with several aspects

of L2 proficiency as well as with cognitive and affective factors. In light of English as a global language, digitization, and results from EE research, I argue that a structural change has taken place in settings where learners are exposed to a lot of English, which, in short, means that EE has replaced classroom activities in school as the starting point and foundation for learning English, which was illustrated with revised L2 English language learning pyramids presented in Figure 2 (based on the original learning pyramid introduced in Sundqvist & Sylvén, 2016). Some suggestions for how EE has been investigated and may be investigated in the future were also presented. Thus, in a relatively short time, EE has turned into an important ID variable in SLA research that should not be overlooked. It will continue to be an important focus in the field for understanding the variability in learning outcomes and determining the factors that contribute to successful L2 English learning.

References

- Andringa, S., & Godfroid, A. (2020). Sampling bias and the problem of generalizability in applied linguistics. *Annual Review of Applied Linguistics*, 40, 134–142.
- Arndt, H. L. (2023). Construction and validation of a questionnaire to study engagement in informal second language learning. *Studies in Second Language Acquisition*, 45(5), 1456–1480.
- Arndt, H. L., Granfeldt, J., & Gullberg, M. (2023). Reviewing the potential of the Experience Sampling Method (ESM) for capturing second language exposure and use. *Second Language Research*, 39(1), 39–58.
- Arndt, H. L., & Woore, R. (2018). Vocabulary learning from watching YouTube videos and reading blog posts. *Language Learning & Technology*, 22(1), 124–142.
- Bourdieu, P. (1973). Cultural reproduction and social reproduction. In R. Brown (Ed.), *Knowledge, education, and cultural change: Papers in the sociology of education* (pp. 71–112). Tavistock Publications.
- Butler, Y. G. (2014). Socioeconomic disparities and early English education: A case in Changzhou, China. In N. Murray & A. Scarino (Eds.), *Dynamic ecologies: A relational perspective on language education in the Asia-Pacific region* (pp. 95–115). Springer.
- Cadierno, T., Hansen, M., Lauridsen, J. T., Eskildsen, S. W., Fenyvesi, K., Hannibal Jensen, S., & Aus der Wieschen, M. V. (2020). Does younger mean better? Age of onset, learning rate and short-term L2 proficiency in Danish young learners of English. *Vigo International Journal of Applied Linguistics*, 17, 57–86.
- Chapelle, C. A., & Duff, P. A. (2003). Some guidelines for conducting quantitative and qualitative research in TESOL. *TESOL Quarterly*, 37(1), 157–178.
- Council of Europe. (2020). *Common European Framework of Reference for Languages: Learning, Teaching, Assessment – Companion volume*. Retrieved February 18, 2022, from <https://www.coe.int/en/web/common-european-framework-reference-languages>
- De Wilde, V., Brysbaert, M., & Eyckmans, J. (2020a). Learning English through out-of-school exposure: How do word-related variables and proficiency influence receptive vocabulary learning? *Language Learning*, 70(2), 349–381.
- De Wilde, V., Brysbaert, M., & Eyckmans, J. (2020b). Learning English through out-of-school exposure. Which levels of language proficiency are attained and which types of input are important? *Bilingualism: Language and Cognition*, 23(1), 171–185.
- De Wilde, V., Brysbaert, M., & Eyckmans, J. (2021). Young learners' L2 English after the onset of instruction: Longitudinal development of L2 proficiency and the role of individual differences. *Bilingualism: Language and Cognition*, 24(3), 439–453.
- De Wilde, V., & Eyckmans, J. (2017). Game on! Young learners' incidental language learning of English prior to instruction. *Studies in Second Language Learning and Teaching*, 7(4), 673–694.
- Dörnyei, Z. (2007). *Research methods in applied linguistics*. Oxford University Press.
- Dressman, M. (2020). Informal English learning among Moroccan youth. In M. Dressman & R. W. Sadler (Eds.), *The handbook of informal language learning* (pp. 303–318). John Wiley & Sons.

- Dylan, B. (1964). The times they are a-changin' [Song]. On *The times they are a-changin'* [Album]. Columbia Records.
- Ellis, R. (1994). *The study of second language acquisition*. Oxford University Press.
- European Union (2018). *General Data Protection Regulation (GDPR)*. Retrieved December 28, 2023, from <http://data.europa.eu/eli/reg/2016/679/2016-05-04>
- Field, A. (2013). *Discovering statistics using IBM SPSS statistics: And sex and drugs and rock 'n' roll* (4th ed.). SAGE.
- Fredricks, J. A., Filsecker, M., & Lawson, M. A. (2016). Student engagement, context, and adjustment: Addressing definitional, measurement, and methodological issues. *Learning and Instruction*, 43, 1–4.
- Gass, S., Loewen, S., & Plonsky, L. (2021). Coming of age: The past, present, and future of quantitative SLA research. *Language Teaching*, 54(2), 245–258.
- Gass, S., & Mackey, A. (2006). Input, interaction and output: An overview. *AILA Review*, 19, 3–17.
- Graddol, D. (2006). *English next*. British Council.
- Hannibal Jensen, S. (2017). Gaming as an English language learning resource among young children in Denmark. *CALICO Journal*, 34(1), 1–19.
- Hannibal Jensen, S. (2019). Language learning in the wild: A young user perspective. *Language Learning & Technology*, 23(1), 72–86.
- Hughes, C. (2023). *Largest YouTube user bases APAC 2023, by country* [Chart]. Retrieved March 9, 2023, from <https://www.statista.com/statistics/1334225/apac-number-of-youtube-users-by-country/#statisticContainer>
- Lai, C., & Zheng, D. (2018). Self-directed use of mobile devices for language learning beyond the classroom. *ReCALL*, 30(3), 299–318.
- Lai, C., Zhu, W., & Gong, G. (2015). Understanding the quality of out-of-class English learning. *TESOL Quarterly*, 49(2), 278–308.
- Lee, J. S. (2022). Evaluation of instruments for researching learners' LBC. In H. Reinders, C. Lai & P. Sundqvist (Eds.), *The Routledge handbook of language learning and teaching beyond the classroom* (pp. 312–326). Routledge.
- Lee, J. S., & Drajati, N. A. (2020). Willingness to communicate in digital and non-digital EFL contexts: Scale development and psychometric testing. *Computer Assisted Language Learning*, 33(7), 688–707.
- Lee, J. S., & Dressman, M. (2018). When IDLE hands make an English workshop: Informal digital learning of English and language proficiency. *TESOL Quarterly*, 52(2), 435–445.
- Lee, J. S., & Taylor, T. (2022). Positive psychology constructs and Extramural English as predictors of primary school students' willingness to communicate. *Journal of Multilingual and Multicultural Development*, 1–19. <https://doi.org/10.1080/01434632.2022.2079650>
- Lindgren, E., & Muñoz, C. (2013). The influence of exposure, parents, and linguistic distance on young European learners' foreign language comprehension. *International Journal of Multilingualism*, 10(1), 105–129.
- Lyrikou, C. (2019). Not to be overlooked: Agency in informal language contact. *Innovation in Language Learning and Teaching*, 13(3), 237–252.
- Mackey, A. M., & Gass, S. M. (Eds.). (2023). *Current approaches in second language acquisition research: A practical guide*. Wiley-Blackwell.
- Muñoz, C. (2020). Boys like games and girls like movies: Age and gender differences in out-of-school contact with English. *Revista Española de Lingüística Aplicada/Spanish Journal of Applied Linguistics*, 33(1), 171–201.
- Muñoz, C., Cadierno, T., & Casas, I. (2018). Different starting points for English language learning: A comparative study of Danish and Spanish young learners. *Language Learning*, 68(4), 1076–1109.
- Norris, J. M., Plonsky, L., Ross, S. J., & Schoonen, R. (2015). Guidelines for reporting quantitative methods and results in primary research. *Language Learning*, 65(2), 470–476.
- Norwegian Media Authority. (2022). *Barn og medier 2022 – En undersøkelse om 9–18-åringers medievaner [Children and media 2022 – an investigation of 9–18-year-olds' media habits]*. [Report]. Retrieved December 28, 2023, from https://www.medietilsynet.no/globalassets/publikasjoner/publikasjoner/barn-og-medier-undersokelser/2022/231002_barn-og-medier_2022.pdf
- Olsson, E., & Sylén, L. K. (2015). Extramural English and academic vocabulary. A longitudinal study of CLIL and non-CLIL students in Sweden. *Apples – Journal of Applied Language Studies*, 9(2), 77–103.

- Paltridge, B., & Phakiti, A. (Eds.). (2015). *Research methods in applied linguistics: A practical resource*. Bloomsbury Academic.
- Peters, E. (2018). The effect of out-of-class exposure to English language media on learners' vocabulary knowledge. *International Journal of Applied Linguistics*, 169(1), 142–167.
- Peters, E., Noreillie, A.-S., Heylen, K., Bulté, B., & Desmet, P. (2019). The impact of instruction and out-of-school exposure to foreign language input on learners' vocabulary knowledge in two languages. *Language Learning*, 69(3), 747–782.
- Plonsky, L., & Oswald, F. L. (2014). How big is “big”? Interpreting effect sizes in L2 research. *Language Learning*, 64(4), 878–912.
- Puimège, E., & Peters, E. (2019). Learners' English vocabulary knowledge prior to formal instruction: The role of learner-related and word-related factors. *Language Learning*, 69(4), 943–977.
- Rothoni, A. (2017). The interplay of global forms of pop culture and media in teenagers' 'interest-driven' everyday literacy practices with English in Greece. *Linguistics and Education*, 38, 92–103.
- Saferinternet.at. (2022). *Jugend-Internet-Monitor: Welche sozialen netzwerke nutzen Österreichs Jugendliche?* [Youth-Internet-Monitor: Which social networks do young people in Austria use?]. Retrieved November 23, 2023, from <https://www.saferinternet.at/services/jugend-internet-monitor/>
- Salaberry, M. R., & Kunitz, S. (Eds.) (2019). *Teaching and testing L2 interactional competence: Bridging theory and practice*. Routledge.
- Schmitt, N. (2008). Review article: Instructed second language vocabulary learning. *Language Teaching Research*, 12(3), 329–363.
- Schurz, A., & Sundqvist, P. (2022). Connecting extramural English with ELT: Teacher reports from Austria, Finland, France, and Sweden. *Applied Linguistics*, 43(5), 934–957.
- Schwarz, M. (2020). *Beyond the walls: A mixed methods study of teenagers' extramural English practices and their vocabulary knowledge* [Doctoral dissertation, University of Vienna]. Retrieved January 11, 2022, from <https://theses.univie.ac.at/detail/56447>
- Skehan, P. (1989). *Individual differences in second-language learning*. Edward Arnold.
- Skehan, P. (1991). Individual differences in second language acquisition. *Studies in Second Language Acquisition*, 13(2), 275–298.
- Soyoof, A. (2023). Iranian EFL students' perception of willingness to communicate in an extramural digital context. *Interactive Learning Environments*, 31(9), 5922–5939.
- Soyoof, A., Reynolds, B. L., Shadiev, R., & Vazquez-Calvo, B. (2024). A mixed-methods study of the incidental acquisition of foreign language vocabulary and healthcare knowledge through serious game play. *Computer Assisted Language Learning*, 37(1-2), 27–60.
- Sundqvist, P. (2009). *Extramural English matters: Out-of-school English and its impact on Swedish ninth graders' oral proficiency and vocabulary*. [Doctoral dissertation, Karlstad University]. <https://www.diva-portal.org/smash/get/diva2:275141/FULLTEXT03.pdf>
- Sundqvist, P. (2015). About a boy: A gamer and L2 English speaker coming into being by use of self-access. *Studies in Self-Access Learning Journal*, 6(4), 352–364.
- Sundqvist, P. (2019). Commercial-off-the-shelf games in the digital wild and L2 learner vocabulary. *Language Learning & Technology*, 23(1), 87–113.
- Sundqvist, P., & Sylén, L. K. (2016). *Extramural English in teaching and learning: From theory and research to practice*. Palgrave Macmillan.
- Sundqvist, P., & Uztosun, M. S. (2023). Extramural English in Scandinavia and Asia: Scale development, learner engagement, and perceived speaking ability. *TESOL Quarterly*. <https://doi.org/10.1002/tesq.3296>
- Sundqvist, P., & Wikström, P. (2015). Out-of-school digital gameplay and in-school L2 English vocabulary outcomes. *System*, 51, 65–76.
- Swedish Media Council. (2023). *Ungar & medier 2023* [Youth and media 2023]. [Report]. Retrieved December 13, 2023, from <https://www.statensmedierad.se/rappporter-och-analyser/material-rappporter-och-analyser/2023/ungar-medier-2023>
- Sylén, L. K., & Sundqvist, P. (2012). Gaming as extramural English L2 learning and L2 proficiency among young learners. *ReCALL*, 24(3), 302–321.
- Twining, P., Heller, R. S., Nussbaum, M., & Tsai, -C.-C. (2017). Some guidance on conducting and reporting qualitative studies. *Computers and Education*, 106, A1–A9.

- Zhang, R., Zou, D., Cheng, G., Xie, H., Wang, F. L., & Au, O. T. S. (2021). Target languages, types of activities, engagement, and effectiveness of extramural language learning. *PLoS One*, 16(6), e0253431.
- Zhang, Y., & Liu, G. (2022). Revisiting informal digital learning of English (IDLE): A structural equation modeling approach in a university EFL context. *Computer Assisted Language Learning*, 1–33. <https://doi.org/10.1080/09588221.2022.2134424>

Cite this article: Sundqvist, P. (2024). Extramural English as an individual difference variable in L2 research: Methodology matters. *Annual Review of Applied Linguistics*, 44, 79–91. <https://doi.org/10.1017/S0267190524000072>