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Describing Bilinguals Through a Conceptual Bridge: Integrating Second Language Acquisition Into Bilingualism Research

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Abstract—**Over the last decade, research on bilingualism has placed increasing importance on the accurate and detailed description of bilingual experiences. This shift has arisen as bilingualism is now understood as a continuum rather than a dichotomous condition, emphasizing the dynamic experiences that shape the bilingual mind. While the field has made substantial progress in describing linguistic and contextual variables, it still lacks a coherent framework to capture the full range of individual differences. This paper adopts a conceptual synthesis approach (Jaakkola, 2020) to build a bridge between Bilingualism and Second Language Acquisition (SLA)—two related, but traditionally separate fields, that share a common object of study: individuals who learn and use more than one language. Drawing on SLA's established frameworks for conceptualizing and measuring individual differences—such as proficiency, motivation, aptitude, and personality—this synthesis explores how these constructs can enrich the ecological and experience-based understanding of bilingualism. Furthermore, this work situates this integration within the broader framework of the Science of Learning, a transdisciplinary field that connects cognitive science, linguistics, psychology, and education to explain learning as an adaptive, context-sensitive process. By aligning SLA, bilingualism, and the Science of Learning, the paper advances a view of language learning as a lifelong, dynamic phenomenon that reflects how humans learn, adapt, and transform through experience.**

Index Terms—**bilingualism, Second Language Acquisition, Science of Learning, individual differences, education**

I. Introduction

Bilinguals are individuals who use two or more languages daily (Bialystok, 2017; de Bruin, 2019; López et al., 2021). As this definition is very broad, it describes a wide variety of people worldwide who are very different from one another. For example, some bilinguals learn two languages from birth, others learn a second language at school, and others learn a community language that is different from the one used at home. These are just a few ways in which people can be bilingual; of course, there are many others.

The importance of these divergent features is that each one shapes how our cognitive system adapts to the experience of learning a second language (Kroll & Rossi, 2023; Pliatsikas, 2023). For this reason, the field of bilingualism has made a tremendous effort to describe them fully, especially because these differences have been thought to explain the distinct results obtained in studies that looked for the bilingual cognitive advantage during the first decade of the 2000s (de Bruin, 2019). One of the many critiques of this alleged advantage has been the poor description of bilinguals, as studies have grouped people under the category of monolingual or bilingual as if they were dichotomous variables (van den Noort et al., 2019).

In this context, the field of bilingualism has moved away from traditional ways of describing bilinguals. In the early days of bilingualism research, individuals who used two languages were classified according to the stage in which they acquired the second language (L2), dividing them into either "early" (during the 'Critical Period', see Lenneberg, 1967 for more details) or "late" (after the 'Critical Period') bilinguals (Paradis & Genesee, 1996). A second traditional classification was based on the order of language acquisition, where bilinguals who acquired the two languages simultaneously were characterized as "simultaneous bilinguals," and those who acquired the L2 after the first was already developed were labeled as "sequential bilinguals" (Swain & Cummins, 1979). A third traditional classification was based on the level of proficiency in each language, distinguishing those individuals with equal proficiency in both languages, labeled as "balanced," from those whose proficiency in one language was more advanced than the other, called "unbalanced" bilinguals (Peal & Lambert, 1962).

Instead of labeling bilinguals and classifying them into categories, research has shown that these descriptions fall short, mainly because we now understand that being bilingual is not a dichotomous variable, but a continuum (Luk & Bialystok, 2013). For these reasons, the field has pointed out that linguistic individual differences, such as age of acquisition, proficiency, language use, and code-switching should be considered to describe a specific sample (Bialystok & Craik, 2021; Bialystok, 2017; de Bruin, 2019; López et al., 2021). Recent developmental research further demonstrates that even

among bilinguals with similar exposure patterns, there is substantial intra-individual variability in linguistic outcomes, highlighting the need for more fine-grained and dynamic descriptions of bilingual experience (Kroll & Rossi, 2023; Meir, 2023; Paradis, 2023).

More recently, environmental variables have gained more attention (e.g., Bratlie et al., 2025; Yow & Li, 2024), especially after the publication of the study by Beatty-Martínez et al. (2020). The authors compared three groups of second language learners in three different contexts. In the first group, bilinguals used their languages in separate contexts and lived in Spain. In the second group, bilinguals used their languages in an integrated context and lived in Puerto Rico. In the third group, bilinguals used their languages in a varied context where they could code-switch if they had the chance. These bilinguals lived in the United States. The results showed that bilinguals recruited cognitive control to regulate their languages differently according to the context in which they operated. While bilinguals in Spain recruited cognitive control reactively, individuals in the U.S. recruited it proactively. Bilinguals in Puerto Rico used a mixture of both. These results shed light on how bilinguals, who, in other studies, could have been grouped together under the label of second language learners, are different from one another.

In this context, the field of bilingualism has made significant progress in describing bilinguals accurately and is now open to incorporating variables that are not strictly linguistic. However, despite this progress, the field still lacks a coherent framework of individual differences that can guide how bilingual experiences are measured and compared across studies. Interestingly, the field of Second Language Acquisition (SLA) has long addressed these same individual differences—such as proficiency, motivation, aptitude, personality, and learning context—and has developed validated instruments and theoretical models to describe them. Yet, these constructs have rarely been systematically adopted in bilingualism research.

Therefore, this paper seeks to build a conceptual bridge between SLA and bilingualism by identifying how SLA-based individual difference constructs can inform the evolving, ecological understanding of bilingualism. The aim is not to conduct an exhaustive review, but to propose a conceptual framework that allows the field of bilingualism to integrate these constructs and move toward more precise and experience-sensitive descriptions of bilingual populations. To accomplish this goal, the study adopts a conceptual synthesis approach (Jaakkola, 2020), described in the following section.

Beyond this disciplinary dialogue, the present work also aligns with the broader principles of the Science of Learning, an emerging field that integrates insights from cognitive science, linguistics, psychology, and education to understand learning as a dynamic, adaptive, and context-sensitive process (OECD, 2018; Bowen et al., 2025; Dumont et al., 2010; Tokuhama-Espinosa, 2011). From this perspective, both SLA and bilingualism can be seen as complementary lenses for studying how humans learn and adapt through language across the lifespan. The integration of constructs from SLA into bilingualism research—and vice versa—represents a concrete way of advancing this transdisciplinary vision, where learning is understood not only as the acquisition of knowledge, but as a complex interaction among cognition, emotion, and environment (Immordino-Yang & Damasio, 2007; Fischer et al., 2010).

Recent contributions within this field emphasize that advancing the Science of Learning requires connecting theoretical models to contextually grounded practices (Meltzoff et al., 2009; Ferreira & Rodríguez, 2022). In this sense, integrating frameworks from Second Language Acquisition (SLA) and bilingualism offers a concrete example of how transdisciplinary dialogue can enrich both theory and practice. It positions language learning not merely as an instructional process, but as a lifelong, adaptive phenomenon that reflects how humans learn and transform through experience (Ferreira & Rodríguez, 2022; Thomas & Ansari, 2020).

By establishing a conceptual dialogue between bilingualism, SLA, and the Science of Learning, this paper contributes to the ongoing shift toward a more ecological, integrative, and human-centered understanding of bilingual experience. Integrating SLA-derived constructs and measurement tools offers the field a more systematic way to operationalize bilingual experience, while situating this effort within a larger framework that connects language learning to the general principles of how humans learn.

II. Methodological Orientation

This paper follows a conceptual synthesis approach (Jaakkola, 2020) to connect frameworks and constructs across disciplines. Rather than testing empirical hypotheses, the purpose is to articulate how theoretical models and measurement tools from SLA can inform current efforts to describe bilingual experience. This synthesis draws on established constructs within Second Language Acquisition (SLA) that have demonstrated strong theoretical and empirical foundations. The next subsections present these constructs—proficiency, motivation, context of acquisition, aptitude, and personality—from an SLA perspective. By revisiting them conceptually, the paper highlights their potential relevance for advancing the description of bilingual experience. To provide an overview of the constructs that guide this synthesis, Table 1 summarizes the key individual differences described in SLA, their theoretical bases, measurement instruments, and their potential contribution to the study of bilingualism.

TABLE 1
OVERVIEW OF INDIVIDUAL DIFFERENCE CONSTRUCTS IN SLA AND THEIR POTENTIAL RELEVANCE FOR BILINGUALISM

Construct	Definition (SLA perspective)	Key References / Theoretical Source	Measurement / Instruments	Potential Relevance for Bilingualism
Proficiency	Communicative ability across skills (reading, writing, listening, speaking) as defined by CEFR.	Council of Europe (2020); Cambridge English (2024)	CEFR, TOEFL, Cambridge Exams	Provides standardized way to describe bilingual competence.
Motivation	Degree of autonomy, competence, and relatedness driving L2 learning.	Deci & Ryan (2012); Ryan & Deci (2017)	BPNS / BPNSS	Helps capture affective and social dimensions of bilingual experience.
Context of Acquisition	Environment and exposure conditions where L2 is learned (natural vs. foreign).	Krashen (1982)	Contextual classification (ESL/EFL)	Aligns with ecological and usage-based views of bilingualism.
Aptitude	Cognitive ability to learn a language efficiently (phonetic, grammatical, memory).	Carroll (1959, 1962, 1989)	MLAT	Explains variability in bilingual performance and adaptation.
Personality	Stable individual traits influencing behavior and learning.	Goldberg (1992); Jung (1971); Dörnyei (2005)	Big Five Inventory; MBTI	Adds a socio-cognitive layer to bilingualism; may explain variation in usage and control.

Note. CEFR = Common European Framework of Reference for Languages; BPNS = Basic Psychological Need Satisfaction Scale; MLAT = Modern Language Aptitude Test; MBTI = Myers-Briggs Type Indicator.

A. Individual Differences in Second Language Acquisition (SLA)

Individual differences have long been at the center of Second Language Acquisition (SLA) research, as they account for much of the variability in learners' success and learning trajectories (Dörnyei, 2005; Hummel, 2021). These variables capture both cognitive and socio-affective dimensions of language learning, providing a multidimensional view of how individuals differ in their capacity, motivation, and opportunities to acquire a second language. In this section, five of the most extensively studied individual differences in SLA—proficiency, motivation, context of acquisition, aptitude, and personality—are revisited conceptually. Each subsection outlines how these constructs have been theoretically defined and operationalized within SLA and considers their potential relevance for enhancing the description of bilingual experience. By examining these variables, this paper seeks to establish conceptual connections that may inform future empirical work in bilingualism.

(a). Proficiency

Although proficiency is a measure that has long been addressed in the field of bilingualism, here it will be examined solely from an SLA perspective. The Council of Europe (2001, 2020) published a document called "Common European Framework of Reference for Languages: Learning, Teaching, Assessment – Companion Volume" (CEFR), which is considered an international standard for describing second language ability and is used worldwide to guide the teaching of a second language (Cambridge English, 2024). It defines L2 proficiency, proposes L2 proficiency levels and descriptors, and provides key aspects for teaching and learning a second language. This widely accepted and used document is key to describing and assessing L2 proficiency anywhere in the world.

The CEFR defines proficiency as the "ability to perform communicative language activities ("can do…") while drawing upon both general and communicative language competences (linguistic, sociolinguistic, and pragmatic) and activating appropriate communicative strategies" (Cambridge English, 2024, p. 34). In this sense, the CEFR (2020) describes proficiency as a general ability, which can be developed by mastering the four skills: reading, listening, writing, and speaking. Additionally, the document classifies L2 proficiency on a six-point scale that is meant to represent progress, ranging from beginner to advanced stages. Each point on the scale represents a level, known as Common Reference Levels. These levels are A1, A2, B1, B2, C1, and C2, which can also be grouped into three broad categories: Basic user (A1 and A2), Independent user (B1 and B2), and Proficient user (C1 and C2). Having these general guidelines makes it easy for anyone involved in the field of SLA, from researchers to teachers, learners, and evaluators, to see the levels with their descriptors and make informed decisions. The standardization of the levels also allows for worldwide comparison and has helped international institutions develop standardized tests to give accurate descriptions of the proficiency level each bilingual has. Recent findings indicate that multilingual experience itself interacts with proficiency, influencing vocabulary size, lexical depth, and semantic organization across languages (Šifrar Kalan et al., 2025). These results underscore the importance of measuring proficiency as a multidimensional construct that reflects both language-specific and crosslinguistic competences.

In terms of measurement, the standardized tests that have been developed to assess L2 proficiency focus on English since it is considered today's *lingua franca*. In this context, Cambridge English, part of Cambridge University, developed Cambridge English qualifications using the CEFR as standard. This organization offers different tests that focus on specific levels. The most famous ones are the A2 Key, B1 Preliminary, B2 First, C1 Advanced, and C2 Proficiency. All these tests measure the four linguistic skills: reading, listening, speaking, and writing, plus grammar and vocabulary. The tests are subject to a constant review process and are assessed by Cambridge-certified professionals. They can be taken in certified locations around the world, making them easily accessible to anyone. Furthermore, test-takers receive a certificate with their score and the CEFR level obtained, which does not expire.

Another alternative for English learners is the TOEFL Internet-Based Test (IBT). This test also aligns with the CEFR standards and therefore assesses overall English proficiency by evaluating the four language skills, plus subskills such as grammar. Unlike the Cambridge exams, the TOEFL IBT is a single test that can measure academic English from a beginner (A1) to an advanced level (C2). As this is an internet-based test, people can take it in the comfort of their homes as long as they have an internet connection. Individuals can take the TOEFL IBT through the official webpage. Another difference from the Cambridge exams is that the certificate for this test expires after two years. This is based on the premise that languages are dynamic and change according to use.

(b). Motivation

Even though motivation is a topic that has been addressed in studies of bilingualism (mainly with heritage speakers, e.g., Jurado & García, 2018), in this paper the focus, as mentioned, will be from a Second Language Acquisition perspective. In this context, the framework that has been used to study motivation is the self-determination theory.

Self-determination theory (SDT) (Deci & Ryan, 2012; Ryan & Deci, 2017) is a psychological framework that focuses on human motivation. This theory suggests that people are inherently motivated; that is, motivation for an activity comes from within ourselves. In this sense, humans are "inherently active, intrinsically motivated, and oriented toward developing naturally through integrative processes" (Deci & Ryan, 2012, p. 417). To achieve this internal motivation, people are driven by three innate and universal psychological needs: autonomy, competence, and relatedness. Even though these three qualities are innate, they continue to develop over time and play a role in learning in general, and in language learning in particular.

Autonomy refers to the need to make one's own decisions about what to do. In other words, it is the need to be in control of one's own behaviors. If people develop autonomous motivation, they will not be subjected to external input and support from external influences. Autonomous motivation is self-sustaining, and therefore represents a higher quality of motivation (McEown & Oga-Baldwin, 2019). Competence refers to the need for learning and achieving mastery in the activities we perform. As a result, people may feel a sense of success because of their own abilities (Deci & Ryan, 2000). Relatedness refers to the need for a sense of belonging, to a feeling of connection to other people. This need is met if we establish meaningful and satisfying relationships with others (Furrer & Skinner, 2003; Deci & Ryan, 2012).

The core idea that SDT tries to promote is that the goal in language learning should be to develop autonomy, competence, and relatedness in the learners, so that they develop internal (or intrinsic) motivation. Teachers can "make students feel welcome and part of the language learning classroom community (relatedness), capable of successfully using the new language (competence), and that engaging with the language aligns with students' sense of self (autonomy)" (McEown & Oga-Baldwin, 2019, p. 7). Recent studies confirm that motivational processes in multilingual learners are not static but dynamic, shaped by both intrinsic and extrinsic motives that interact across different linguistic and cultural contexts (Göksu & Louis, 2025). This evidence reinforces the need to conceptualize motivation in bilingual and SLA research as a context-dependent construct rather than a fixed trait.

Self-determination theory can be assessed through the "Basic Psychological Need Satisfaction Scales" (BPNSS). These instruments are a set of questionnaires that assess the degree to which individuals meet the three needs (autonomy, competence, and relatedness). There is a general questionnaire called "Basic Psychological Need Satisfaction Scale" (BPNS) and others specific to topics such as work and relationships. The BPNS (Deci & Ryan, 2000) has 21 items, and participants rate on a Likert scale the extent to which they agree or disagree with a given statement. This scale can be downloaded for free on the self-determination theory website.

(c). Context of Acquisition

Context of acquisition refers to the way in which bilinguals acquire their second language. In the field of Second Language Acquisition (SLA), this variable gained prominence following Stephen Krashen's Acquisition–Learning Hypothesis (Krashen, 1982), one of several influential proposals that together shaped his theory of second language acquisition. This particular hypothesis distinguishes between two contexts of acquisition that will be discussed here.

For Krashen (1982), acquisition and learning are distinct processes. Acquisition occurs implicitly and effortlessly; it is natural and informal, similar to how children develop their first language. Learning, on the other hand, is conscious, explicit, and effortful, involving the understanding of grammar rules. The author suggested that "acquisition" is superior to "learning" for mastering a second language. He emphasized that naturalistic contexts, in which the target language functions as the community language, facilitate acquisition by providing rich and meaningful input. This view builds on Chomsky's (1965) notion of the Language Acquisition Device (LAD), which Krashen adapted to explain adult second language acquisition. This belief also aligns with Krashen's (1981) input hypothesis, which states that for second language learners to activate the LAD, the input must be frequent and slightly beyond their current level of competence (i+1). Because Krashen remains an influential figure in SLA, immersion continues to be considered—by some—the most effective method for acquiring a second language.

Although most contemporary authors do not distinguish between acquisition and learning, Krashen's original idea created two contexts of acquisition: natural and foreign. A natural context aligns with Krashen's concept of "acquisition" and refers to learning the L2 in a geographical location where the L2 is the dominant community language. This implies that learners should travel and immerse themselves in the target language, providing numerous natural and informal opportunities to acquire the language. A foreign context, on the other hand, is related to "learning" and typically occurs

in locations where the L1 is dominant. In this context, opportunities to use the L2 outside the classroom are scarce and limited to formal instruction. This distinction is so embedded in the field of SLA that, in the case of English learning, the acquisition process can have different labels depending on the context of acquisition. If English is acquired in a natural context, it is called English as a Second Language (ESL). However, if it is acquired in a foreign context, it is called English as a Foreign Language (EFL).

This variable has been operationalized by comparing immersion (natural context) and instruction (foreign context) and instead of applying a specific instrument to determine the context, they just consciously choose the participants based on the geographical location where they live.

(d). Language Learning Aptitude

In the field of SLA, aptitude refers to an individual's potential to learn a second language (Dörnyei, 2005; Hummel, 2016). It has been hypothesized that some learners have more language aptitude, making them better learners. Carroll (1962, 1989) is the most influential author related to this variable, and he distinguishes four constituent abilities of this individual difference: phonetic coding ability, grammatical sensitivity, rote learning ability, and inductive learning ability. Phonetic coding ability refers to the ability to identify phonemes and strings of phonemes, prosody, and intonation. It also refers to the ability to associate phonemes and graphemes. Grammatical sensitivity refers to the ability to identify the morphology and syntax in a language, such as word order, word function and form, and word meaning. Rote learning ability refers to the ability to learn associations between sounds and meanings, and between words and phrases. Inductive learning ability refers to the ability to abstract the rules and patterns of the language from new (and sometimes small) linguistic input and store them in long-term memory.

Carroll (1959, 1962, 1989) thought that these four components that constitute language aptitude could predict success in second language learning. For this reason, he created a standardized test to measure this individual difference based on these components. The test is the Modern Language Aptitude Test (MLAT). Originally, this test was designed for adults, but it is also appropriate for younger learners aged 14 and up.

The MLAT consists of five sections. The first section, Number Learning, assesses the ability to learn and recall associations between numbers and sounds in the second language. The second section, Phonetic Script, assesses the ability to associate sounds with graphemes. The third section, Spelling Clues, assesses vocabulary, more specifically, the ability to infer meaning from context. The fourth section, Words in Sentences, assesses grammatical sensitivity without using linguistic terminology. Learners must read sentences and identify the grammatical function of words. The fifth section, Paired Associates, assesses the ability to learn and recall new words in the second language.

This test takes about 60 to 90 minutes to complete, and each section has a specific time limit of 10-15 minutes. Currently, this test is owned by the Language Learning and Testing Foundation, a non-profit entity based in the United States founded by Dr. Charles Stansfield. This test is only available for purchase by government agencies, missionary groups, and licensed clinical psychologists.

(e). Personality

Personality has been defined as "all the attributes that characterize a unique individual" (Dörnyei, 2005, p. 11). These attributes tend to follow a pattern; that is, personality is stable and does not change according to the situation in which a person engages. Unlike temperament or mood, personality shows consistency in the way a person behaves, regardless of the situation they are in. Several attempts have been made to classify different personality types. The most famous ones are the 'Big Five' model (Goldberg, 1992; McCrae & Costa, 2003) and Jung's (1971) theory of personality types, which gave rise to the Myers-Briggs Type Indicator (MBTI) (Briggs & Myers, 1976).

The Big Five Model, unlike the MBTI, does not have a single author because it was developed over several decades with contributions from different researchers (e.g., Eysenck et al., 1985; Goldberg, 1992; McCrae & Costa, 2003).

The Big Five model identifies five broad dimensions of personality that are also called OCEAN because of its acronym. The first one is "Openness to experience" (O), which refers to the tendency to be imaginative, curious, flexible, creative, original, and open-minded. The second dimension is "Conscientiousness" (C), which refers to the tendency to be systematic, meticulous, efficient, organized, responsible, and hard-working. The third dimension is "Extraversion-Introversion" (E), which refers to the tendency to be either extroverted (sociable, active, assertive, talkative, outgoing) or introverted (passive, quiet, reserved, withdrawn). The fourth dimension is "Agreeableness" (A), which refers to the tendency to be compassionate, good-natured, cooperative, friendly, kind, trusting, and generous. The fifth and last dimension is "Neuroticism-Emotional Stability" (N), which refers to the tendency to experience anxiety, depression, moodiness, and emotional instability.

Jung's (1971) theory of personality types, which gave rise to the Myers-Briggs Type Indicator (MBTI) (Myers & Briggs, 1976), consists of dichotomous bipolar types: extraversion (E)-introversion (I), sensing (S)-intuiting (N), and thinking (T)-feeling (F). Briggs and Myers (1976) added a fourth dichotomy: judging (J)–perceiving (P). The first dimension refers to how individuals prefer to focus their attention and spend their energy. While extroverts are active, sociable, talkative, and energetic, introverts are reserved and withdrawn. The second dimension refers to how individuals prefer to collect information. While sensors prefer to focus on tangible objects, intuitives prefer to look at patterns. The third dimension refers to how individuals prefer to make decisions. While thinkers make decisions based on logic, feelers prefer to prioritize personal values. The last dimension refers to how individuals prefer to interact with the external world.

While judgers prefer structure and organization, perceivers are more flexible and spontaneous.

The MBTI is an instrument designed to categorize personality types, where each individual's personality is formed by a combination of four letters, one from each of the dichotomous options shown above. For example, someone with an ESTJ personality is more inclined to being extroverted, sensing, thinking, and judging.

In the field of SLA, the most researched personality aspect has been the extraversion–introversion dimension (Kim, 2022; Zafar & Meenakshi, 2012), present in both models (The Big Five and the MBTI). It has been hypothesized that extroverts would be better language learners than introverts because they are outgoing and energetic, are willing to make mistakes, and engage in conversations inside and outside of the classroom. However, the results are still mixed. Even though the advantage of extroverts has been documented in speaking skills, they have not been consistent (see Octaviani et al., 2023, for a literature review). Some studies have shown that introverts may be better at classroom learning (Zafar et al., 2017), especially because introverts benefit more from receptive skills (Araghi et al., 2011). Other studies, however, did not find significant differences in overall proficiency between the two personality types (Alagić, 2022; Chen & Tsai, 2015).

III. Discussion

A. Transdisciplinary Integration Between Bilingualism and SLA

The present paper sought to establish a dialogue between the fields of Bilingualism and Second Language Acquisition (SLA). While these two areas have historically evolved along parallel paths, they share a fundamental object of study: the individual who learns, uses, and adapts through more than one language. Bilingualism has focused on understanding how experience with multiple languages shapes cognition and neural organization, whereas SLA has primarily examined the mechanisms that underlie language learning and the variables that explain interindividual variation. What emerges from bringing them together is not merely an interdisciplinary exchange, but a truly transdisciplinary synthesis—one that aims to build a common conceptual ground from which both fields can rethink their assumptions.

In this sense, bilingualism can benefit from SLA's long tradition of theorizing individual differences and developing reliable instruments to measure them, while SLA can, in turn, benefit from bilingualism's ecological and dynamic view of language use. This reciprocal integration allows for a richer and more flexible understanding of the bilingual individual—not as a static category defined by linguistic boundaries, but as a learner embedded in continuous adaptation. This perspective aligns with recent syntheses highlighting emerging directions in bilingualism research, including social interactional dynamics, neural plasticity, and the lifelong adaptability of bilingual cognition (MacWhinney & Gao, 2025). Such developments further emphasize the need for integrative frameworks that connect cognitive, experiential, and social dimensions of bilingual experience.

B. Epistemological Shifts: From Learners to Learning Individuals

One of the most significant outcomes of this transdisciplinary dialogue lies in the epistemological shift it implies. Traditionally, SLA has conceptualized its subjects as language learners—individuals engaged in acquiring an additional language, often in formal or semi-formal contexts. Bilingualism, by contrast, has tended to view its participants as language users—individuals who already navigate multiple linguistic systems. By connecting these two perspectives, a new conceptual category emerges: the learning individual, whose language experience reflects a continuum of acquisition, use, and adaptation.

From this viewpoint, bilingualism is not a state, but a process—a dynamic expression of learning in context. Similarly, SLA is not confined to early stages of learning, but extends into the adaptive, integrative, and identity-related dimensions that characterize bilingual life. This reconceptualization challenges the dichotomy between learning and using a language, suggesting instead that both belong to the same spectrum of human learning and cognition.

This shift also contributes to redefining the epistemological boundaries of both fields. It positions language learning and use within a broader understanding of learning as adaptation, where cognitive, affective, and contextual factors constantly interact. By acknowledging that bilinguals are not simply speakers of two languages, but learners for life, this approach situates bilingualism within the wider framework of human development and plasticity.

C. Methodological Convergence

Beyond the theoretical implications, this synthesis has methodological consequences for how researchers describe and measure bilingual experience. SLA has long relied on theoretically grounded constructs—such as proficiency, motivation, aptitude, and personality—to explain variation in language learning outcomes. The systematic assessment of these variables, through validated instruments like the CEFR, BPNS, MLAT, or personality inventories, offers a structured way to capture dimensions of individual difference that have often been overlooked in bilingualism research. In line with this, recent theoretical work has called for reconceptualizing individual differences as dynamic, contextually embedded, and mutually interacting systems, encouraging methodological innovation and more holistic approaches to data integration (Yang & Gao, 2025). Such perspectives reinforce the idea that future research on bilingualism should adopt designs capable of capturing the evolving and interconnected nature of learner variability.

At the same time, bilingualism offers SLA valuable insights into how learning unfolds in naturalistic, real-world contexts. Its emphasis on ecological validity, contextual diversity, and lived experience reminds us that learning does not

occur in isolation, but within specific social, cultural, and affective environments. Bringing these methodological traditions together opens the possibility for a more comprehensive framework—one that could be called an Ecological Individual Differences Framework for Bilingualism. Such an approach would integrate cognitive measures (like aptitude or proficiency) with contextual and motivational data, capturing the full complexity of bilingual experience.

This kind of methodological cross-fertilization would also strengthen both disciplines' capacity for replication and synthesis. Bilingualism studies could gain precision and reliability, while SLA research could expand its ecological reach. In doing so, both fields would converge toward a shared goal: developing integrative, multidimensional profiles of language learners and users.

D. Alignment With the Science of Learning

This transdisciplinary integration aligns naturally with the broader principles of the Science of Learning, an emerging field that seeks to understand learning as a complex, adaptive, and context-dependent process. From this perspective, language learning—and bilingualism as its natural extension—are not isolated phenomena, but manifestations of general learning mechanisms shaped by cognition, emotion, and environment. The Science of Learning encourages precisely the kind of dialogue proposed here: one that transcends disciplinary boundaries to build models that reflect the richness of human experience.

Within this framework, both SLA and bilingualism can be understood as complementary lenses for studying how humans learn, adapt, and create meaning through language. SLA contributes insights into individual variability and the mechanisms of acquisition, while bilingualism contributes an understanding of how experience reshapes those mechanisms over time. Together, they advance a vision of language learning that is dynamic, developmental, and deeply human.

This view also resonates with the efforts of research initiatives such as Chile's Millenium Nucleus for the Science of Learning (MiNSoL) (MiNSoL, 2025), which promote collaboration between cognitive, linguistic, and educational sciences to generate integrative accounts of learning. By situating bilingualism and SLA within this transdisciplinary landscape, we can move beyond describing language as a system and toward understanding it as a vehicle of adaptation, identity, and continuous learning. Ultimately, such an approach does not merely connect two fields—it expands the very meaning of what it means to learn.

In summary, the integration of SLA and bilingualism represents more than a conceptual bridge; it is a reimagining of language learning itself. Through transdisciplinary collaboration, epistemological rethinking, and methodological renewal—anchored in the Science of Learning—both fields can contribute to a shared understanding of the bilingual individual as an active, adaptive learner across the lifespan.

IV. Conclusion

The fields of Bilingualism and Second Language Acquisition (SLA) share a common object of study—the individual who learns and uses more than one language—but they have traditionally approached it from distinct disciplinary perspectives. While bilingualism has drawn primarily on cognitive science and neuroscience to explain how experience shapes the mind and brain, SLA has evolved within psychology, linguistics, and education to explain the mechanisms and variability underlying language learning. These different trajectories have produced rich, yet parallel, bodies of knowledge that have only recently begun to converge.

This paper proposed a conceptual bridge between the two fields, illustrating how SLA-derived constructs—such as proficiency, motivation, context of acquisition, aptitude, and personality—can contribute to a more systematic and multidimensional understanding of bilingual experience. By revisiting these constructs through an SLA lens, the paper highlights new ways of operationalizing individual differences in bilingualism research and invites bilingualism scholars to consider well-established tools that capture cognitive and affective variability.

Beyond this disciplinary connection, the paper aligns with the broader principles of the *Science of Learning*, which calls for integrative, context-sensitive approaches to understanding how humans learn and adapt. From this perspective, uniting bilingualism and SLA represents more than theoretical alignment; it is a transdisciplinary effort to understand language learning as a lifelong, adaptive process that reflects the dynamic interplay between cognition, experience, and environment.

Ultimately, bridging these fields opens the door to more precise, ecologically valid, and human-centered research. It encourages us, as researchers, to move beyond categorical labels and instead describe bilinguals as learning individuals whose linguistic and cognitive trajectories are shaped by diverse experiences. In doing so, we not only refine how we study bilingualism but also contribute to a larger conversation about how learning—through language—defines the human experience.

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