Envisioning new directions in research on individual differences

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Abstract
In this article, we highlight the important achievements of the editors and contributors in this special issue. We argue that this collection of studies on individual differences (IDs) advances the field in terms of theoretical diversification, methodological improvement, and pedagogical innovation. We also contend that a renewed interest in ID research will enable second language acquisition (SLA) researchers and language educators to show how language education helps language learners acquire desirable attributes and dispositions. In turn, related findings will enable researchers and educators to articulate the value of language learning for the public as many language educators may fear that generative artificial intelligence and translation tools will remove a major motivation for learning languages.

Keywords: individual differences (IDs); second language acquisition (SLA); theoretical diversification; methodological improvement; pedagogical innovation

1. Introduction

Research on individual differences (IDs) in second language acquisition (SLA) explores the factors that contribute to variations in second and foreign language (L2) learners' attainment and identifies the extent of the variation that can be accounted for by particular ID variables (e.g., Dörnyei, 2014; Gregersen & MacIntyre, 2014; Li et al, 2022; Pawlak, 2021; Pawlak & Kruk, 2022). In the 1990s and the early 2000s, the SLA field saw an explosion of studies on ID variables, including language learning motivation, beliefs, and strategies (e.g., Dörnyei & Skehan, 2003; Ehrman et al., 2003; Gardner & MacIntyre, 1993). In our view, however, a hiatus followed until recent efforts have generated renewed interest in ID research. These recent efforts move the field of ID research forward by critically engaging with ID constructs (Oga-Baldwin et al., 2019), diversifying theoretical underpinnings (Griffiths & Soruç, 2020), and conducting in-depth methodological discussions (Li et al., 2022). These efforts, together with the studies in this special issue, sustain ID research as a highly productive line of inquiry in the SLA field.

Inspired by collective efforts to engage with individual differences, as documented in this special issue, our commentary highlights the significant breakthroughs that the contributors have achieved for ID research. These studies will help SLA researchers shift the focus of ID research beyond the traditional association with language learners' contributions to their own language-learning attainment (Cohen, 2014; Doughty, 2019; Kidd et al., 2018; Turker et al., 2021). It is very likely that a renewed interest in ID research will help define new goals of language education in what can be called a "brave new world," in which technological developments, such as the rise of generative artificial intelligence (AI) and translation tools, may change perceptions of reasons for learning languages and undermine traditional pedagogical approaches in language classrooms (Burston, 2014; Gao, 2024; Kern, 2024; Morgana & Kukulska-Hulme, 2021; Pawlak & Kruk, 2022; Stockwell, 2021). In the following sections, we discuss the theoretical, methodological, and pedagogical contributions that the thought-provoking articles in this special issue offer SLA researchers and language educators. We then propose a new direction in ID research based on critical insights generated by these articles. We contend that ID research will enable SLA researchers to articulate the value of language learning to the public as a crucial means of meeting "the situated needs of individual learners" in this era of rapid technological development (Yang & Gao, 2022, p. 3).

2. Theoretical diversification

The studies in this collection follow Oga-Baldwin et al.'s (2019) critique that language learning researchers have "long relied on a handful of longstanding individual

difference models" (p. 117). The collection effectively pushes further the incorporation of "a plurality of theories" to "offer new directions for empirical research [and] create dialogue between the fields of SLA and learning sciences" (2019, p. 119). Indeed, Oga-Baldwin et al. (2019) have effectively diversified the theoretical foundation for research on individual differences in SLA by promoting the use of theories such as self-determination theory and expectancy-value theory.

By incorporating new theories and constructs, this special issue continues the efforts of Oga-Baldwin et al. (2019) to broaden the impact of ID research in SLA and beyond. For instance, Oga-Baldwin and Ryan (this special issue) outline the importance of competence need satisfaction as the driving force underlying learners' efforts to learn languages. They propose a highly significant thought experiment on the development of language learners' competence beliefs. Their thought experiment can be regarded as an effort to usher in a new perspective to guide future research on how language teachers can support learners in traversing from unmet competence needs to a high level of competence beliefs and need satisfaction. This coincides with what Bjork and Bjork (2011) describe as "desirable difficulties" that motivate learners to analyze their errors, engage with meaningful feedback from teachers, and achieve competence beliefs. In this way, language learners' competence growth through reflective practice is the key to the formation of a triad that connects quality instruction by teachers to enhanced motivation and ability beliefs among learners (Fryer & Oga-Baldwin, 2019). Ultimately, Oga-Baldwin and Ryan call on ID researchers to undertake a new quest to explore the dialectical interaction between the learner and the learning environment that underpins the learner's competence growth. They advance a developmental perspective on learners' perceptions of competence to explore how learners recognize their initial reliance on external affordances and gradually develop an internal sense that they are capable of acting on their own. Such research will continue to generate critical insights to inform pedagogical initiatives aimed at helping language learners develop competence beliefs, a process which is closely connected to their language development. In the meantime, pedagogical initiatives should support language teachers who are able to respond to learners' needs by providing appropriate instruction and feedback and developing their competence. These insights may also change or at least diversify the foci of language curricula, orienting them toward the satisfaction of language learners' need for competence development and internalization of positive beliefs regarding what they can do with language.

Möller et al. (this issue) examine L2 self-concept through a plethora of theoretical lenses, including expectancy-value theory (Eccles & Wigfield, 2020). Their discussion first assesses the importance of self-concept in expectancy-value theory. This prominent theory of motivation incorporates a variety of socialization

and psychological factors that impact individuals' self-concepts and academic achievements. The theory posits that self-concept is an indicator or precursor which motivates L2 learners to make academic choices and reach high L2 achievement levels. Möller et al. further demonstrate how research on L2 self-concept can benefit from the integration of two processes of comparison (i.e., social and dimension comparisons) that serve as determinants of academic self-concepts. While social comparison involves the use of others to evaluate the self, dimension comparison sets one's own language-learning ability alongside one's ability to learn skills in other domains.

In this way, Möller et al. foreground the central role of dimensional comparisons and disclose that a student's successful achievement of self-concept in one language does not automatically transfer to other languages. They remind us that we should focus separately on facilitating language development and fostering language learners' self-concept of their ability in different languages. They also draw attention to the complex ways in which these ID variables mediate language development as efforts to develop positive L2 self-concept among language learners may not necessarily lead to an increase in their overall language development. Based on such theoretical premises, Möller et al. highlight the significance of domain-specific language self-concepts in language learning and encourage language teachers to design specific learning tasks pertaining to learners' IDs, creating positive interventions for different language learners in order to cultivate their multilingual self-concepts independently.

Li et al. (this issue) move beyond the application ability or competence-oriented goals related to achievement goal theory in SLA research by introducing a variety of other goal constructs associated with the goal content approach, such as work avoidance goals (e.g., language learners' intention to do a minimal amount of work while learning), social goals (e.g., language learners' aim to fulfill their social responsibilities while learning), and "personal best" goals (e.g., language learners achieving more than they have previously achieved). A key message of their paper is that there is a need to problematize the conceptualization of goals as being related to individual learners, and to contextualize our understanding of learners' goals in terms of the social contexts (e.g., classrooms) in which learners find themselves. In other words, goals can be also social in nature; this echoes Duff's (2019) proposal that the social dimensions involved in L2 learning should be taken into account.

While language learning is considered to be a situated process influenced by social context, more research is needed to examine the dynamism of social goals in close association with learner motivation and achievements. Generating important theoretical insights, Li et al. (2022) bring to the fore the goal-setting theory (Locke & Latham, 1990), a generative theoretical framework that can guide teachers

in the creation of effective goal-setting interventions, sustain focused efforts among learners, and improve learners' language learning outcomes. They also call for a shift toward the integration of multiple goal theory components in SLA research. Such an expansive approach not only enriches the theorization of SLA with a wide range of goal-achieving processes, but also yields useful practical implications that can be deployed in L2 classrooms to develop the competences of individual learners.

Finally, Lou's (this issue) proposal that language learners' growth mindsets should be situated within ecological systems follows another promising direction of ID research in SLA. Certainly, Lou's mindset X ecological-system framework offers valuable insights for research and practice by facilitating the interplay between the diverse individual and social learning environments that foster the effectiveness of a growth mindset. The framework addresses a potential critique of ID research in SLA that learning contexts and ecology have not received sufficient attention. The focus of future research can be diverted to the ecological perspective, which posits that learning environments generate situational moderators which can support the enactment of learners' beliefs and effectively nurture learners' growth. The framework will be instrumental in guiding further investigations to identify the affordances required to sustain the impact of growth-mindset interventions on language learners. In this regard, Lou may find his conceptualization confirmed by the recent endeavor to promote the Douglas Fir Group's (2016) framework as an approach to synergizing the variety of theoretical underpinnings in SLA research.

3. Methodological advances

Research on individual differences in SLA has been dominated by psychometric measurement and quantitative analysis (Alamer & Lee, 2021; Bokander, 2022; Crowther et al., 2021; Pawlak et al., 2020). These techniques have helped deepen our understanding of the interactions between various ID variables, such as ability beliefs, goals, and language development. Recent studies in the field have also used alternative measurement techniques such as the idiodynamic approach, which relies on computer software to collect the "moment by-moment ratings" of language learners through self-reporting (e.g., Boudreau et al., 2018). Nevertheless, the use of questionnaires completed by a large number of participants remains the most popular approach in research on individual differences. However, some researchers have challenged the domination of psychometric measurement, and individuality is often lost in the numerical calculations and statistical procedures characteristic of quantitative research (e.g., Benson & Cooker, 2013; Ushioda, 2009).

Al-Hoorie and Hiver (this issue) raise a significant methodological issue for SLA researchers, reminding readers that the most important goal of our research

endeavors is the determination of cause-and-effect relations. They urge us to address causal claims explicitly and make robust causal inferences when performing quantitative ID research in language education. Causal inference in research enables us to design actions that will effect change in language learners. As regular manuscript reviewers for numerous applied linguistics journals, we have noted an excess of studies that include variables atheoretically; indeed, many studies include a few variables, such as "controls, predictors, or covariates," without theorization or convincing justification. For this reason, the article by Al-Hoorie and Hiver offers critical insights that may inform future researchers' endeavors by encouraging them to include variables that support the achievement of causal inference in ID research. To achieve this goal, they highlight the importance of using informed and transparent variable selection processes, a laudable step that includes the use of graphical representations known as directed acyclic graphs (DAGS) to offer simple and explicit causal models. This allows SLA researchers to build a diagram that delineates the most plausible causal web for the variables of interest. Al-Hoorie and Hiver also point to the issue of sampling procedures being subject to researchers' preferential selection. Such endogenous selection bias requires researchers to proceed with caution and perform careful empirical analysis in order to correlate genuine causal relationships. Ultimately, such research and related findings will increase language educators' understanding and confidence in the development of pedagogical strategies that support language learners' learning and growth.

In addition, Rubie-Davies and Li (this issue) offer ID researchers a new way to conduct interview studies. In most studies that explore the role of teachers' expectations in learning, teachers have been interviewed to identify their expectations or their perceptions of learners. Rubie-Davies and Li encourage researchers to interview learners in order to capture their academic or psychosocial achievements and relate them to their teachers' expectations. Interestingly, and importantly, interviews with learners contribute to a virtuous circle in which methodological changes lead to pedagogical improvements. As explained by Rubie-Davies and Li, focusing on learners through extended interviews can help researchers delve deeper into language learners' responses to their teachers' expectations and generate new knowledge about learners' needs and expectations; in turn, this can inform teachers' pedagogical efforts. When they are motivated to achieve a fuller understanding of learners, teachers become more agentic in making pedagogical decisions to improve their teaching effectiveness.

Methodological advances are also reported in Fryer's (this issue) systematic review on the role of self-efficacy in the learning of new languages. He critically evaluates emerging empirical pathways in studies of self-efficacy. While the majority of self-efficacy studies have remained conventional in terms of design,

sampling, and analysis for over three decades, attempts have been made to take advantage of technological advances in SLA research by experimenting with new methodological approaches. On the one hand, Fryer emphasizes that longitudinal research using novel analytical techniques opens new frontiers in our understanding. For example, latent curve and growth mixture models facilitate effective examination of long-term changes in self-efficacy across extended periods of learning. These models can also relate changes in self-efficacy to diversified learning outcomes. On the other hand, Fryer points out that mobile technology expands on-task measurement of self-efficacy at a larger scale. This kind of research pushes the empirical boundaries of self-efficacy in ID research as mobile technology allows micro-analytic designs, such as the tracking of cumulative tasks and the peer assessment of experiences of individual self-efficacy development, to be used effectively in research.

4. Pedagogical innovations

A reservation we have about recent trends in ID research involves the use of sophisticated statistical procedures without explicitly spelling out the potential implications of their results. Contrary to these trends, the contributors to this special issue successfully make the pedagogical relevance of their research explicit. For instance, Fryer's (this issue) systematic review focuses on studies related to the role of self-efficacy within language learning across formal education. In particular, Fryer's review identifies how the notion of self-efficacy has been integrated into language learning and teaching, highlighting language classrooms as sites full of modeling experiences that can be used to enhance language learners' self-efficacy beliefs for self-regulated language learning beyond the classroom.

As noted by Fryer, the development of self-efficacy among individual learners is closely connected to learners' classroom experiences as teacher feedback and clarity of teacher instruction play essential roles in sustaining learners' self-efficacy and learning achievements. Fryer reminds readers that self-efficacy represents an important predictor and outcome of L2 learning. Language learners' self-efficacy is evaluated through participatory activities that involve the use of basic SLA language skills like writing, speaking, and reading, as well as other advanced language tasks such as consecutive translation, oral presentation, and online learning. Evaluating self-efficacy involves creating multiple learning opportunities for language learners to apply a wide array of language learning skills and tasks to enact their self-efficacy.

In a situation where online technology has given rise to many pedagogical innovations, however, Fryer finds that there is a significant research gap in the

field as systematic examinations of the application of online technology to the promotion of self-efficacy and learning outcomes are required. This concern is echoed by Jiang et al. (2023), who investigated the effects of automatic speech recognition technology on Chinese students' willingness to communicate. However, the findings imply that this pedagogical innovation requires further monitoring and reflection on its implementation, as well as further research to inform the design of effective learning activities so that individual learners are willing to have (and capable of having) in-class peer interactions. In other words, further research is needed to examine the role of online technology in facilitating the growth of learners' self-efficacy and willingness to communicate in L2 classes.

Nakata et al. (this issue) further elaborate on the application of ideas such as ability beliefs, self-efficacy, strategy use, and social regulation in language classrooms, using these to develop frameworks for language learners' development of self-regulated learning. First, they conceptualize a framework that establishes the cyclical and reciprocal relationships between self-efficacy, strategy use, and learning outcomes that propel and sustain self-regulated learning. In order to improve learning outcomes, learners need to enhance their self-efficacy by using effective strategies, while enhanced learning outcomes in turn improve strategy use and boost learners' self-efficacy. Nakata et al. refer to Gao's (2007) emphasis on language learning strategy as an important means for language learners to drive their learning and improve learning outcomes. They contend that teachers' use of strategy-integrated instruction in the framework provides valuable strategic support toward improving L2 learners' self-efficacy, fostering target strategy use and ultimately contributing to more effective learning outcomes.

Second, Nakata et al. expand the framework and connect the self-regulated learning process to the learning environment. They confirm that pedagogy needs to advance to the extent that learners become more capable of self-regulation, with appropriate guidance and feedback given by teachers and classmates during the learning process. When they feel supported but autonomous, learners develop ability beliefs in themselves and become agentic in completing different learning tasks. The framework is thus situated in autonomy-supportive language classrooms, in which teachers are encouraged to be pedagogically innovative and create opportunities for co-regulated and socially shared learning. To continue this important line of research, Nakata et al. remind us that we must identify more effective pedagogical strategies and broaden our understanding of pedagogical dynamics to motivate individual learners to more effectively interact with their peers in L2 classes. Thus, the frameworks developed in the article have significant pedagogical implications. In particular, they can be used to develop language curricula and strategies focusing on the development of language learners toward self-regulated learning.

Rubie-Davies and Li's (this issue) systematic review confirms a message familiar to many language teachers: Teachers' expectations have a significant impact on the self-concepts and ability beliefs of language learners. Rubie-Davies and Li underscore the importance of developing high-quality teacher-student interactions as an effective pedagogy to address issues of individual difference and create congenial learning environments for diverse groups of language learners, develop supportive teacher-student relationships, and enhance learners' psychosocial well-being and academic achievement. In particular, more attention should be given to the increasingly international environment of language education. In this context, language teachers have struggled to handle multicultural classes because teacher training and teaching resources are not necessarily useful for updating teachers' knowledge about multicultural L2 learners and enhancing the ability to apply internationally appropriate pedagogy.

In a global environment where language teachers actively embrace multicultural diversity in the classroom, Rubie-Davies and Li contend that it is more vital than ever for language teachers to have a strong support system to facilitate their role in mediating the growth of desirable attributes among language learners, including ability beliefs and self-efficacy. Indeed, we firmly believe that ID research should generate practical insights to inform language teachers' pedagogical decisions so that these insights can help language learners to learn more effectively.

5. Beyond language: Further benefits of language learning

The studies in this special issue emphasize the importance of ID constructs, such as ability beliefs, goals, mindsets, and self-efficacy, in language learners' learning and development. Further efforts in related research will generate critical understandings for SLA researchers to reorient the teaching and learning of languages toward the satisfaction of basic human needs, the enhancement of learners' self-efficacy and ability beliefs, and the empowerment of learners with goal-setting for strategic language learning. These practical applications can encourage language teachers to appreciate that the findings of ID research can help them go beyond the learning of languages as systems of linguistic knowledge (e.g., grammar and vocabulary). To quote Atkinson (2011), SLA has "the profound embeddedness of language learning in the world . . . where learners need it to survive and prosper" (p. 276). For this reason, we contend that ID research will help SLA researchers and language teachers articulate the value of language learning in relation to the personal growth of language learners (Wenden, 2002). Below we chart three promising new directions for ID research to move forward in the realm of SLA.

5.1. ID studies in the era of generative AI-assisted language learning

As recent technological developments, such as the rise of generative AI tools, prompt us to reconsider the value of language learning, it has become increasingly important for SLA researchers to identify how language learning contributes to language learners' growth that can be captured in terms of ID variables (e.g., self-efficacy) (Burston, 2014; Kern, 2024; Morgana & Kukulska-Hulme, 2021; Pawlak & Kruk, 2022; Stockwell, 2021). It should be noted that the widespread use of technology facilitates human interaction across language barriers without the need to learn different languages. As language class enrollment numbers are dropping and language teaching is increasingly marginalized in the context of higher education, it is time to consider the value of studying language beyond remedial courses or in terms of activities operated in the language center of each university (Kern, 2024). If transactional use (e.g., information exchange) is the sole reason for learning languages, the need to learn languages will change. For this reason, SLA researchers and language teachers must promote the fact that more than just language knowledge can be gained through learning languages, better articulating the value of learning languages to persuade the public to support continued language learning (Gao, 2024; Kroll & Dussias, 2017). Otherwise, the public may not comprehend the need to invest resources and time in learning languages, and such an attitude may undermine the significance of ID research and language-learning research more broadly.

More than transactional in nature, language learning embraces a diverse range of individual differences in the pursuit of learner goals and expectations. Learners are humans, but AI tools like ChatGPT systems are impersonal. Kern (2024) notes that ChatGPT is programmed as a cooperative interlocutor, maintaining a polite and ingratiating discourse, but the active interaction between ChatGPT and learners eludes intersubjectivity. When learners feel emotionally disconnected from those with whom they interact, this learning process fails to meet the learners' needs for developing a deep understanding of the people around them, as well as an understanding of themselves. Furthermore, behind the facade of AI's polite and encouraging manner, an inherent problem can be detected; as Chomsky et al. (2023) have recently observed, AI technology lacks "critical capacity of any intelligence" (p. 17). Programmed with prescribed ingredients of explanation, description, and prediction, this technology avoids extending to sensitive topics or stances, thereby detaching from the purpose of language learning the cultivation of learners as critical human beings capable of understanding the world in different languages.

This critical awareness of technological constraints helps us reflect on the role of this technology in developing individual learners' linguistic, intercultural

communicative, and cognitive competences. In essence, language learning not only involves acquiring normative functional practices; rather, it is a process that also consists of adaptive activities that interact with its cultural and technological mediations. At this time, whether or not future AI tools can be designed to respond to individual learners' need for intercultural communication in order to actively engage learners in critical dialogue is an under-researched question (Gao & Yang, 2023). However, these AI tools are expected to support cognitive development in language learners through the concept of "the extended mind." In this way, they could facilitate a positive language learning experience, in which technologies, cognition, individual learners, and social context work together to form an interactive and relational support system (Ellis, 2019).

5.2. ID studies in nurturing multilingual learners

The ID studies included in this special issue confirm the increasing importance of SLA researchers re-engaging with ID constructs. Certainly, the ID constructs explored in this special issue, such as competence beliefs, self-efficacy, and goal-setting, are important attributes and dispositions that language learners must develop as human beings living in an increasingly challenging and uncertain world. Thus, rather than focusing research on how these variables of individual difference contribute to learners' language development, we suggest that SLA researchers should examine how language learners develop these attributes and dispositions through language learning.

     Studies have already started to explore the positive impacts of language learning. Regarding cognitive development, it has been confirmed that the brains of bilingual individuals show far greater plasticity throughout their lifespan than those of monolinguals (Baum & Titone, 2014; Kroll & Dussias, 2017). This neuroplasticity underlies a highly interactive language system that ultimately benefits individuals from infancy to adulthood and into older age. Exposure to multiple languages encourages young learners to develop sophisticated cognitive strategies to enhance literacy and become more agile and sensitive to linguistic acquisition. For older adults, bilingualism has been found to contribute to cognitive resources, which are critical in maintaining cognitive health (e.g., slowing down the decline of cognitive function) (e.g., Bialystok, 2021). Research indicates that when cognitive resources are constrained by diseases such as Alzheimer's, the active use of two or more languages can provide protection against cognitive decline (Bialystok et al., 2007; Calabria et al., 2020; Perani et al., 2017).

     Moreover, in terms of personal development, multilingualism has been associated with indicators of growth, including executive control and tolerance of ambiguity

(e.g., Luo & Wei, 2021; Wei et al., 2022). For example, bilinguals and multilinguals show a significant advantage on executive control tasks, such as ignoring irrelevant information, resolving conflicts across different alternatives, and maintaining a high degree of attentional control (Barac et al., 2014; Bialystok et al., 2012). More strikingly, learners of two or more languages can "change the mind and brain in ways that create resilience under conditions of stress" (Kroll & Dussias, 2017, p. 7).

Along these lines, we wonder if the development of attributes and dispositions achieved through language learning, such as ability beliefs and self-efficacy, may also contribute to the learning of other academic subjects and skills. For example, it is particularly encouraging that multilinguals have been demonstrated to possess enhanced social interaction skills, as well as financial advancement and intercultural understanding (Engel de Abreu et al., 2012; Kroll & Dussias, 2017). It appears that their experiences of setting up and pursuing appropriate language-learning goals may enhance their ability to strive for similar success in other domains of learning, work, and life.

While future studies may further explore the connections between language learning and ID constructs beyond current trends, this special issue has highly relevant implications for SLA researchers. Indeed, theoretical diversifications are still required so that new ideas and concepts can be incorporated to reveal more about the attributes and dispositions that learners may better develop through learning languages. Future research should also focus on the identification of cause-and-effect relations as solid empirical evidence is needed to articulate for the public the value of language learning in relation to language learners' holistic development as human beings. Furthermore, ID research must offer explicit pedagogical implications or relevance so that these findings can in turn be translated into pedagogical practice.

5.3. Becoming human language teachers in a multilingual world

As rapid technological developments contribute to fundamental changes in language education, it is crucial for language teachers to "prepare for the shifting priorities in their professional practices" (Gao, 2024, p. 560). Language teachers must learn to use AI tools to develop and orchestrate multiple tasks in order to meet the learning needs of "culturally and linguistically diverse learners" (Gao & Yang, 2023, p. 6). With technological affordances, human language teachers are motivated to develop and refine their pedagogy, aiming to facilitate the development of skills, subject content and linguistic knowledge among learners that will help them respond actively and creatively to real life challenges in this multilingual world.

While AI tools help address the instrumental needs of learners, the continued role of human language teachers lies in satisfying the intrinsic needs of learners that

lead to their intended learning outcomes. On the one hand, human teachers play an important role in developing language learners' many desirable attributes as human beings, such as intercultural communicative competence, which enable learners to detect and respond to cultural nuances and participate in intercultural communication. On the other hand, language education must focus on cultivating learners' inner growth by enriching their internal resources, including their agency, motivation, confidence, and resilience. For example, self-efficacy as one ID research focus closely relates to learners' beliefs and confidence. We suggest that language teachers, as reflective practitioners, need to invite learners to develop positive self-efficacy through critically reflective practices. Moreover, language teachers must render emotional support and humanistic empathy as AI tools so far do not have the capacity to strengthen learners' resilience against the adversities they may encounter when learning. Finally, the efforts of human language teachers to meet the integrative needs of learners consistently build learners' inner strength and develop a stronger sense of belonging in multilingual learning environments supported by technological development.

6. Conclusion

The editors of this special issue should be congratulated for producing this important collection of studies, which will drive future research on individual differences to achieve further theoretical diversification, methodological advances, and pedagogical innovations. We encourage our colleagues to further explore the ways in which ID research can help us better articulate the value of language learning in this "brave new world" (Gao, 2024, p. 556).

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