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Metalinguistic awareness in primary schoolers in multilingual partial immersion education

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Introduction: This paper reports selective findings from original research into the effects of early multilingual partial immersion education on children's metalinguistic awareness and performance in English.

Procedure and method: The study we present was carried out in two elementary schools in North Tyrol, Austria. Two groups of children participated in the research. Group 1 is enrolled in a multilingual instructional programme. Group 2 is in mainstream education. For Group 1 (the experimental group) English is the third language, for Group 2 (the control group) it is the second language. The study carried out by the third author explores how pupils in multilingual partial immersion programmes compare to their incipient bilingual counterparts in the control group on an English proficiency and a metalinguistic test. As part of a mixed methods approach a vocabulary knowledge test, a picture description test, and a language awareness test were administered.

Results: The results of the study show a clear advantage for the pupils in the multilingual programme compared to those in mainstream schooling. The results are in line with previous research which found that early and extensive contact with an L2 benefits the acquisition of English as a third language and has positive effects on young learners' metalinguistic awareness.

Discussion: To contextualise our discussion and anchor the present research in terms of its theoretical grounding we first consider definitions of metalinguistic awareness (MeLA). We explain what MeLA is and what it entails, and we discuss different manifestations of MeLA and the role it plays in language(s) learning and multilingual development. The aim is to propose a situated meta-cognitive description for the development of metalinguistic awareness (MeLA.) in children with extensive language experience and to pin down possible implications of multilingual learning for MeLA and multilingual development more generally. Particular attention is given to how primary schoolers use their linguistic and metacognitive resources, and how these resources and the ability to leverage them change as a function of multilingual learning in formal instructional contexts. The findings are considered against established (and our own recent) research.

KEYWORDS

metalinguistic awareness, multilingual awareness, multilingual education, metacognition, early multilingualism

Introduction

A significant body of research in multilingualism has shown that bi/multilingual educational programmes foster high-level metacognitive and metalinguistic skill without detrimental effects for a child's first language and overall linguistic and cognitive development (cf. Genesee, 1987; García and Sylvan, 2011; Hofer, 2015; Peal and Lambert, 1962). Learning through several languages is in this sense not only an additive (in the sense of having more languages in one's repertoire), but more so, a cumulative educational experience (with concomitant changes at the level of meta-cognition and language; cf. Herdina and Jessner, 2002; Carlson and Meltzoff, 2008), and one which does not (if implemented sensibly and if pupils are sufficiently supported and motivated to engage) entail costs for children's cognition and language development (cf. Genesee and Cloud, 1998, p. 65; Beardsmore, 2008; De Angelis and Jessner, 2012, and see recommendations by the European Commission 2002). This said, if contextual conditions are unfavorable, learning outcomes may be less than satisfactory, and children may lag behind, failing to progress at an age-appropriate pace and thus failing to meet the expected linguistic/academic target benchmarks. As well, even in cases where adequate levels of support and motivation are given, children who grow up with or are schooled in two or more languages may for a range of reasons experience difficulties (cf. Complexity Framework of Multilingual Competence, short CFMC, on how complex factor effects can influence learning; Hofer, 2023). Such difficulties can relate to vocabulary building, word retrieval, morpho-syntax, grammar learning, etc. Temporary lags and/or poor performance in single languages or domains have indeed been reported in studies conducted in various contexts around the world (cf. Ardila, 2012; Hoff, 2021; Van Gelderen et al., 2003; see also Berthele, 2016, p. 432 on fossilization).

This granted, there is compelling evidence to show that bi/multilingual children outperform their monolingual and incipient bilingual age-mates on a number of measures, particularly when learning an additional language (e.g., De Angelis and Jessner, 2012; Sanz, 2000; Cenoz, 2003; Jessner, 2006; Hofer, 2015; Hofer and Jessner, 2016/2019; Repplinger and Budke, 2025). This seems to hold true for children who are raised bilingually as well as for children who acquire their second languages through formal schooling in late(r) childhood. Literacy acquisition has been found to be a critical moment and one that boosts metalinguistic understanding and skill development (Nagy and Anderson, 1995; Thomas, 1988). Research has also shown that the gains that derive from bi/multilingual¹ learning experiences (Jessner, 2006, 2015; Bialystok, 2018; Ntelioglou et al., 2015; Spechtenhauser, 2022) extend to various linguistic and metacognitive/metalinguistic faculties (see Cenoz, 2003 for an overview; see also Hofer and Spechtenhauser, 2024; Jessner, 2019; Repplinger and Budke, 2022). Our paper contributes to this line of research. It examines how formal multilingual schooling impacts pupils' MLA and knowledge of English (as a second or third language).

¹ Bilingual here relates to two languages, multilingual to more languages. We understand multilingual to subsume bilingual but not vice versa. This said, there is no consensus on the use of these termini in the research community.

Defining and conceptualizing metalinguistic awareness

MeLA has been varyingly defined and conceptualized depending on scholars' epistemological and ontological background and perspectivation, which may explain why to this day no universally agreed definition is available. This need not be seen as a handicap though as, anyways, MeLA can hardly be conceptualized as a unitary construct that we can pack into a single definition. The general understanding is that different language-related tasks draw on different metalinguistic knowledge and skill (cf. (Pinto et al., 1999, 2004; Roehr-Brackin, 2024)), and that MeLA is a composite of differentiated faculties which include awareness about language forms and functions (e.g., phonological, lexical, morpho-syntactic, and pragmatic awareness). Accordingly, we can think of metalinguistic awareness (MeLA) as inclusive of (meta)linguistic knowledge, awareness and ability. If MeLA extends across several languages the term multilingual awareness (MLA) can be applied. Conversely, the broader notions of language and linguistic awareness refer to awareness of language in very general terms without direct reference to mono- or multilingualism (Hofer and Jessner, 2022, p. 166). They can include dimensions of critical awareness as relate to socio-political issues linked to language normativity and prestige, power hierarchies, and typified (negative) ascriptions based on language use (cf. Hofer and Jessner, 2022).

Scholarship conceptualises MeLA as “an awareness of the underlying linguistic nature of language use” (Malakoff and Hakuta, 1991, p. 147) which allows the individual to step back from the comprehension or production of an utterance to consider the form and structure behind the meaning. Tunmer and Herriman (1984) refer to MeLA as the ability to think and reflect about the nature and the functioning of language and the capacity to adapt and modify language. They note that to be metalinguistically aware is

“to appreciate that the stream of speech, beginning with the acoustic signal and ending with the speaker's intended meaning, can be looked at with the mind's eye and taken apart” (184:12).

Bialystok (1991, p. 116) distinguishes between MeLA as in control of processing and MeLA as in analysis of representation. She defines MeLA “in terms of the development (see also Bialystok, 2001) of 2 language skill components—the analysis of linguistic knowledge and the control of the linguistic processing” (1986, p. 498). More recent definitions of metalinguistic awareness highlight “the ability to focus attention on language as an object in itself or to think abstractly about language and, consequently, to play with or manipulate language” (Jessner, 2006, p. 42). Based on the above, MeLA can then be said to relate to speakers' ability to grasp language forms and functions, capture layers of meaning and see through manipulative usage of language; it includes speakers' capacity to dissect and analyze the constitutive parts of language, as well as the ability to deploy language strategically for their own communicative purposes (cf. Hofer, 2017). For a detailed description of how metalinguistic ability is represented and processed online, the reader is referred to Sharwood Smith

(2021; see also Karmiloff-Smith, 1992 on developmental aspects of cognition).

How does metalinguistic awareness manifest and can we observe it in children's linguistic behavior?

MeLA can manifest in different ways depending amongst other things on learners' age and language experience, their (meta)cognitive faculties, their understanding of language structures and functions, etc. Very young children are only just starting to discover the world and the language(s) around them and thus operate with a limited resource toolkit. This invariably reflects in their understanding of language(s) and linguistic structures. Their language learning and life experiences, their cognitive operations and linguistic processing, as well as their grasp of formal aspects of language are naturally distinct from those of older children and more mature speakers. As children grow older and gain experience their understanding of language structures and functions, i.e., their MeLA increases (cf. Roehr-Brackin, 2024; Roehr-Brackin and Tellier, 2019; Spit et al., 2021; Wehr, 2001; and see Karmiloff-Smith, 1983; Pinto et al., 1999; Gombert, 1992 on epi- vs. metaprocesses). In young learners MeLA reflects in spontaneous self-corrections, metalinguistic questions concerning for instance word choice, grammatical adequacy, or the nature of language more generally. It can also manifest in children's language play or in comments that children make about their own or other persons' language use. In more mature speakers on the other hand, MeLA shows in their ability to creatively use and manipulate language, and in their (varyingly explicit and developed) capacity to explicate their metalinguistic cognitions and articulate their understanding of language rules and regularities. Indeed, speakers "can be aware of their language at many different levels, from the automatic, virtually unconscious monitoring of their own speech to the rapid switching of languages by professional translators to the detailed analytic work of linguists" (Clark, 1978, p. 17).

Shifting focus from monolingual to multilingual awareness

Recent work on metalinguistic awareness takes a demonstrably multilingual perspective favoring the notion of multilingual awareness which subsumes both, metalinguistic and crosslinguistic awareness and ability (Hofer, 2023; Jessner and Allgäuer-Hackl, 2022). While MeLA relates to knowledge and metacognitive skill in single languages, crosslinguistic awareness and ability include "knowledge about the links between languages (notably similarities and differences, etymological relationships, etc.)." Beyond that, multilingual awareness (MLA) refers to "that special multilingual awareness that manifests in multilingual learner-users' distinct dexterity and versatility in tackling multilingual situations" (Hofer and Jessner, 2022; see above). Over and above, MLA is closely tied up with "language learning, language management, and language maintenance skills which multilinguals develop due to their continuous use of several languages" (Hofer and Jessner,

2022). Translating, mediating, code-switching/code-mixing,² and just generally, transferring elements between languages are paradigmatic instances of crosslinguistic awareness and ability and typical languaging practices in multilinguals. It is worthy of note that they can obtain in experienced and mature but also in young learners (Roehr-Brackin, 2018; see below for a more detailed discussion of crosslinguistic awareness/XLA).

Research carried out over the years (with mono- or bilingual children in different parts of the world) has gained us important insight into MeLA. Likewise, advances in multilingualism research have contributed to our understanding of MeLA and language processing in multilinguals (i.e., MeLA). Multilingual processing is particularly dependent on (and benefits from) metalinguistic/multilingual awareness. Studies have shown that multilingual (meta-cognitive) operations are facilitated in children who have developed a sound understanding of lexico-structural and/or functional aspects in and across languages (Poarch and Van Hell, 2012). In the Dynamic Model of Multilingualism (DMM; Herdina and Jessner, 2002) which provides the theoretical framework for the present study particular attention is given to the metalinguistic/metacognitive underpinnings of multilingual development and to metalinguistic/multilingual awareness as an emergent property in multilingual learners. The more recently proposed CFMC and Continua of Multilingual Development (Hofer, 2023) further elaborate on the relationship between MeLA/MLA and wider contextual factor bundles and their impact on multilingual competence building.

In the subsequent we discuss meta- and crosslinguistic development in speakers of multiple languages in some detail. The discussion is conducted from a systems theoretical perspective as applicated in Herdina and Jessner (2002)'s DMM and Hofer (2023)'s CFMC and The Continua of Multilingual Development. This is followed by an outline of the study, a discussion of the main results, and the conclusion.

A framework for the conception and discussion of multilingual awareness

In multilingual speakers, metalinguistic awareness comes with entirely new, added dimensions due to the presence and interaction of multiple languages or, to borrow from Herdina and Jessner (2002), psycholinguistic systems. Multilingual speakers constantly find themselves in situations where they need to alternate between languages, activating one and inhibiting another. Orchestrating multiple languages requires high degrees of control and flexibility, constant alertness, reactivity, and adaptability. Arguably therefore, multilinguals (need to) make increased use of their meta-linguistic and meta-cognitive functions, more so we are inclined to say than monolinguals and bilinguals (Jessner, 2006; Jessner and Allgäuer-Hackl, 2022).

In the Dynamic Model of Multilingualism (DMM), on which we base our conception of multilingual learning, metalinguistic awareness is theorized as *the* key component in multilingual

² It is not entirely clear at this point in time how multimodal, 'speak' including gesture and sign language relates to meta- or multilingual development. Future research might look into this in some detail.

development with “a catalytic effect on further language learning” (Herdina and Jessner, 2002, p. 116). The understanding is that in learners of three or more languages learning is eased due to the availability of an enhanced monitor which supervises and coordinates all language activity, and by high levels of meta- and cross-linguistic ability which support and scaffold language processing operations (Jessner, 2006, 2014; Jessner et al., 2016). Crucially, the increased (meta)cognitive and attentional demands involved in juggling multiple (continuously interacting) language systems come with a significant training effect and result in a more flexible language system overall due to the emergence of elevated levels of elasticity and plasticity and new systems properties (Jessner, 2008).

MeLA as one such property is closely interwoven with and increases with language experience. As such MeLA is likely to be more developed in bi- and multilinguals than in monolinguals (and possibly also more developed than in incipient bilinguals). Bialystok (2018)’s work has been foundational in the field. Her research shows that bilingual speakers who perform their daily functions through two or more languages develop greater control capacities than monolingual users because their brains constantly manage and coordinate multiple language systems. Processing information through several linguistic codes requires them to be alert at all times gauging the adequacy of their speech and language choice and making amends when comprehensibility and communication are compromised. In other words, they must adjust swiftly and flexibly to the requirements of the situation and, more particularly, to the needs of their respective interlocutors. Bialystok (2005)’s work suggests that bi- and multilingual children develop precocious metalinguistic abilities, especially if they also acquire literacy skills through school exposure. The implication seems to be that certain metalinguistic skillsets develop (better or in some cases only) in consequence of formal schooling.

In multilinguals, as noted, MeLA extends to several languages and contributes to the emergence of MLA (see below). It includes awareness of structural and functional aspects across languages, an understanding of how languages relate to one another, where they are similar and where they differ, and it includes strategic awareness of how to leverage this knowledge for one’s own purposes and communicative needs. In multilingual children metalinguistic awareness is then distributed and shared across linguistic codes which is to say that it serves as a skills- and knowledge-fund for all their languaging practices. Indeed, what is learned in/for one language is also available in/for other languages and it increases children’s overall understanding of languages. This is important for several reasons. First, children who have a more developed sense of how language(s) work “are likely also to have more developed language skills in general” (Malakoff and Hakuta, 1991, p. 148). Second, children who have a good understanding of language abstractions are advantaged with regards to literacy development (cf. Rauch et al., 2011), and finally, children who have a good grasp of how languages function are better equipped for learning new languages.

Based on the above, we anticipate MeLA (and by extension MLA) to be enhanced in children attending multilingual programmes where two or more languages are used to transport academic content and where children (meta)cognitively engage

with multiple linguistic systems and therefore develop an expanded sense of language (cf. Scharf, 2014, p. 102); Studies carried out by DyME Research at Innsbruck University point in precisely this direction (see also Cummins, 2024 on the effect of multilingual programmes on students’ academic performance more generally). Hofer (2015, 2023) conducted her studies in South Tyrol. She examined the impact of multilingual education on primary schoolers’ MeLA and XLA and proficiency in L1, L2, and L3 and found important linguistic and metacognitive benefits for pupils in multilingual education programmes. Similar effects of multilingual learning are described in Spechtenhauser (2022)’s study with lower secondary students (see also Spechtenhauser and Jessner, 2024). Spechtenhauser’s multilingually trained participants outperformed the control group on a number of linguistic and metalinguistic measures. Research conducted by Allgäuer-Hackl (2017) in Vorarlberg, Austria, likewise illustrates that MeLA and XLA can be trained. Her research focuses on metalinguistic/crosslingual ability in upper secondary students with extensive experience in several languages. Participants attended a multilingual elective over the course of two semesters and were administered a MeLA/XLA test at the end of the intervention. The results of the study yielded significantly higher test scores for the experimental group in the training programme compared to those of the control group who had not taken part in the multilingual awareness (MLA) training.

In MLA training the focus is typically on the analysis and comparison of forms and structures across languages and on transversal skill development (cf. see Hofer, 2015 on special *Riflessione Lingua* classes in multilingual programmes in South Tyrol; and Roehr-Brackin and Tellier, 2019 on the benefits of explicit, form-focused instruction). A primary aim of MLA training classes is to fine-tune pupils’ antennae for different aspects, functions and properties of language (Perren, 1974; Hawkins, 1987). It is worth pointing out that MLA skills can also be trained in or through an L2, even if equivalent skills are not yet developed in the child’s L1 (Snow, 1991, p. 109). This is doubly important because it indicates that L2 learning supports L1 development in so far as that skills which are acquired in L2 are then also available for L1. It also shows that transfer between languages can enhance learning and foster children’s knowledge base in the single languages, thus proving wrong monolingual assumptions of the type “multilingual acquisition is harmful and deleterious to single language proficiency.” Moreover, it is in keeping with an important body of research which shows that being multilingual does not overburden the cognitive and/or linguistic system but can (favorable conditions providing) stretch the child’s mental and language-related capacities (see also Cummins, 2023 on the role of the teacher as language activist and knowledge generator in the multilingual classroom). In the DMM a special M(ultilingualism)-effect is anticipated to take effect in multilingual learning which comes with heightened language learning, language management and language maintenance skills and with powerful (auto)catalytic and transformative effects for the entire system (Herdina and Jessner, 2002).

Next, we present the research. The findings provide tentative evidence for the linguistic and meta-cognitive advantages of multilingual schooling and support calls for a wider implementation of early multilingual instructional programmes.

The study: background, procedure, and methodology

The research reported here was carried out in North Tyrol (Austria), an Alpine region on the border to South Tyrol, Italy's northernmost province. The majority of the people in North Tyrol speak German, i.e., an Austrian variant of German. This said, with over 111,000 non-Austrian citizens, North Tyrol is also a thoroughly multilingual and multicultural region. Historically and culturally, the state of North Tyrol has for centuries been at the junction of Central European and Mediterranean cultures and traditions (Carpentieri and Hosp, 2015, p. 15), and the Italian language—Italian is the second most widely taught language after English—and the Italian way of life have long found their way into North Tyrolean life reality.³ Austria's accession to the European Union in 1995 and the subsequent establishment of the Euroregion Tyrol-SouthTyrol-Trentino resulted in an important intensification of multi-level close cooperation between Austria and Italy. The opening of borders saw increasing numbers of Italian families move to the North Tyrol region, which in turn resulted in an increase in bilingual Italian/German school children and prompted demands for new educational arrangements that could cater to the needs of a growing bilingual student population. Cross-border exchange programmes with Italian schools in the Trentino region were set up, and in 2005 a partnership between two newly established German/Italian bilingual schools, one in Trento (Italy), and one in Innsbruck (Austria) was given the go-ahead.

Aims

As indicated, the current study pursues two goals. It examines how early multilingual experience affects children's MeLA/MLA, and how multilingually schooled children perform in English compared to a control group in mainstream German-medium education who are introduced to English (L2) in grade one (i.e., a year earlier than the experimental group), but who do not study Italian.

The study is guided by the following research questions and hypotheses:

- RQ1: Do children in multilingual partial immersion programmes show heightened levels of (meta)linguistic/multilingual awareness compared to children in mainstream programmes?
- RQ2: Do children in multilingual partial immersion programmes develop higher levels of proficiency in English than children in mainstream programmes?
- RQ3: Does a higher level of metalinguistic/multilingual awareness correlate with better performance in English?
- H1: Early multilingualism, as in the case of the children taking part in the partial immersion multilingual pilot project, fosters children's (meta)linguistic/multilingual awareness.

H2: Early and extensive contact with an L2, as provided by the North Tyrolean multilingual pilot project, carries positive implications for the acquisition of English as third language.

H3: MeLA/MLA test scores correlate with English test scores and thus with second/third language learning and proficiency.

A profile of the participating schools

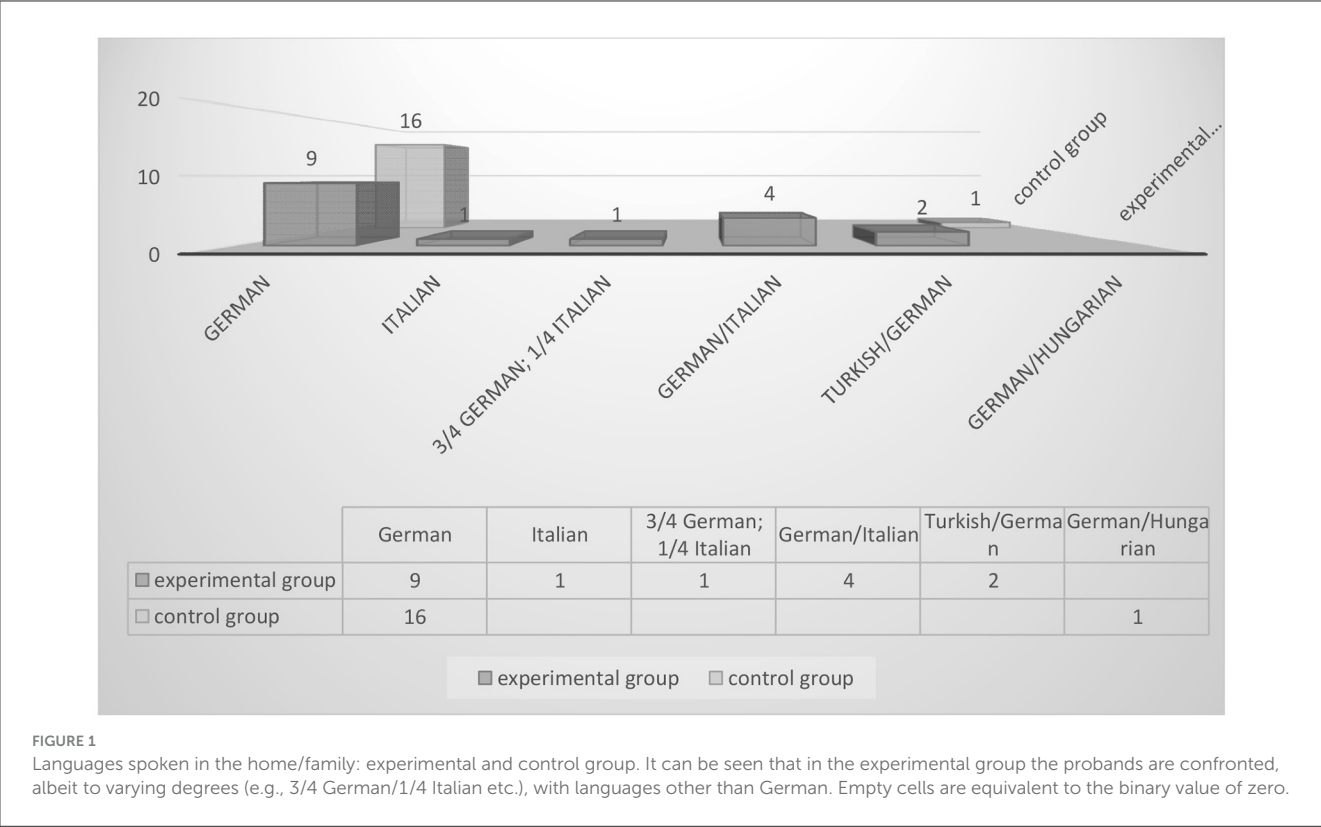
As indicated, the study was carried out in two Austrian primary schools of whom one, (School A), offers multilingual partial immersion, while the other (School B) provides traditional German-medium instruction. Purposive sampling (i.e., practical reasons) motivated the selection process for the participating schools and pupils: The experimental group, whose school is located in the capital of the North Tyrol region, was drawn from an urban context. The control group, by contrast, was recruited from a rural context in the periphery of the capital city. The gender distribution was relatively balanced in both groups with 8 female and 9 male pupils for both test groups. The two groups included third and fourth graders ($N = 34$). Seventeen children were enrolled in the multilingual programme at School A. Their group (the experimental group) was made up of children aged 9 to 10. The other 17 children (between the ages of 8 and 11) were in the control group at school B and received traditional German-medium instruction. In the multilingual class at school A, German and Italian are used to approximately equal degree. In School B, subject matter instruction is provided in German only.

In school A, a good part of the overall learning time (i.e., about 11 lessons per week) is provided bilingually. During this time, the German and Italian (native speaker) teacher are in class together teaching subjects like music, crafts, physical education, environmental sciences, and mathematics in two languages. The teachers take it in turns to deliver content in their respective languages. Sometimes the Italian teacher plans and coordinates the lesson while the German teacher helps out with language- and concept-related issues. At other times, the roles are reversed, and the German teacher does most of the teaching while the Italian colleague provides language support and clarifications regarding subject matter content, etc. Teachers follow the “one person – one language” principle, which is to say that the Italian teacher only speaks Italian, and the German teacher only speaks German. However, code-switching or mixing on the part of the pupils is fully accepted by the teachers, and cross-lingual activation and transfer are much appreciated and even encouraged.

Importantly, the experimental group acquired literacy in and through German and Italian from grade 1 and was introduced to English L3 in grade 2, which is 1 year later than the control group for whom English L2 was introduced a year earlier, in grade 1. Though starting a year later, they received—from the beginning of grade 2—enhanced English input in the sense that they used English alongside German and Italian in the Physical Education class, during lunchtime and for after-school activities. It is important to note that in School B English was likewise used for some limited subject matter learning and during break or play times.

Given these diverse learning settings how the two cohorts fared on the single tests and how they compared to each other

³ Note that the predominantly German-speaking South Tyrol as well as the Italian province of Trentino are former provinces of the Austro-Hungarian Empire so cultural links have historically been strong.



presented eminent research goals. Based on the initially formulated hypotheses and current understandings of how the multilingual mind works, an advantage for the multilingually educated group was anticipated.

Methodology

Prior to the data collection phase, the principals and teachers at both schools were informed about the aims of the study, and permission was obtained to conduct the research and administer a series of oral and written tests. Consent was also obtained from the children’s parents who completed a background questionnaire providing information about their offspring’s language biography (including language use in the home, any contact with languages other than German), age and gender, as well as their own educational background, their current profession and their attitudes to multilingualism. As well, interviews were conducted with the principals and with the academic advisors who supervised and supported the multilingual pilot project at School A. In addition, classroom observations (5 lessons á 50 min in total) were carried out in the multilingual stream. The data collected provided important insights relative to participants’ sociolinguistic and -cultural life realities. For most children German was the L1 (i.e., 30 out of a total of 34 children; 13 in the experimental group, 17 in the control group). Two children in the experimental group used German and Italian to approximately equal degree, one child was Italian-dominant, another had Turkish as L1. The data also showed that 7 children, 6 in the experimental group and 1 in the control group, were raised bilingually or used a language other than the

language(s) of instruction at home (see Figure 1 below). As for parental education, it emerged that the parents in the experimental group were more highly educated than the mothers and fathers in the control group (see Traxl, 2015 and see Table 1 below).

TABLE 1 Summary of the sample characteristics.

Characteristics/variables	Experimental group	Control group
Number of participants	17	17
Gender	47% female (8), 53% male (9)	47% (8), 53% male (9)
Average age (years)	9.7 years	9.0 years
Language spoken		
- German	12 (70.6%)	15 (88.3%)
- Italian	2 (11.8%)	0 (0%)
- Turkish	2 (11.8%)	0 (0%)
Highest completed educational level (Mother)	6.5 (average level)	4.5 (average level)
Highest completed educational level (Father)	7.6 (average level)	4.4 (average level)

It was reasoned that if level of parental education does provide an advantage, then it would be to the benefit of the experimental group. Parental educational background is known to influence children’s academic trajectories and success to a significant degree (Dubow et al., 2009, p. 224; Martin, 2019, p. 57; Nikolov, 2009,

p. 97). (Highly) educated parents tend to engage their children in conversations, they tend to read to and with their children and are in that sense good role models (see also [Hofer, 2023](#)).

Analysis of the background questionnaires further revealed that the mothers ($M = 3.12$; $SD = 0.78$) and fathers ($M = 3.36$; $SD = 0.93$) of the children in the multilingual programme speak more languages than the mothers ($M = 1.80$; $SD = 0.41$) and fathers ($M = 1.87$; $SD = 0.64$) of the children in the mainstream model. Again, if number of languages spoken by the parents does provide an advantage for a child's linguistic and/or metacognitive development and performance, this, we surmised, would be to the advantage of the experimental group.

Instruments

Three separate tests were administered: the Peabody Picture Vocabulary Test (henceforth PPVT) based on [Dunn and Dunn \(2007\)](#), a Picture Description Test (henceforth PDT), and a Language Awareness Test (henceforth LAT). The LAT test is adapted from [Hakuta \(1987\)](#) and [Bialystok \(1986\)](#) and measures children's awareness of language. It consists of three parts including a language mix test, a grammaticality judgement test and a word order awareness test. The PPVT and the PDT assess children's mastery of L2/L3 English; the former measures "receptive (hearing) vocabulary of children [...]" ([Dunn and Dunn, 2007](#), p. 1), the latter assesses speaking and listening skills. All the tests were administered individually to each child. Since all three tests were administered in oral mode, there was no set time frame or limit. Care was taken to put the children at ease and allow for sufficient thinking time (cf. [Gutiérrez, 2013](#), p. 442). The PPVT, the PDT and the LAT have been widely used in different international contexts (cf. [Pinto and Zuckerman, 2019](#), p. 2629⁴). This and the fact that they present a straightforward, transparent and easy to implement method, do not overstreich children's attentional and linguistic/cognitive capacities, and tap the targeted faculties (including metalinguistic/metacognitive understanding, grasp of specific language forms and functions and children's understanding of how language is used in actual discourse) were reason enough to deploy them in the current research. The following gives a detailed account of the single test procedures.

The peabody picture vocabulary test

The PPVT developed by [Dunn \(1959\)](#) is widely used to assess children's knowledge of (standard American) English words ([Dunn and Dunn, 2007](#), p. 3). Children are shown sets of four images (which increase in terms of their conceptual abstraction) and are invited to identify (i.e., point to) the correct image. The experimenter documents the child's responses on a score sheet. When children start getting eight or more out of twelve items wrong, the test session is discontinued.

⁴ But see also the alternative Colour Book method they propose.

The picture description test

The development of English speaking and listening skills is a prime concern at the primary level in the Austrian school system (cf. [BGBl, 2012](#)). It was therefore consequential to include a test procedure that could measure speaking and listening skills. The PDT is a picture description test and as such taps children's active vocabulary in English through the elicitation of words, phrases and sentences. Children are shown pictures and are invited to describe what they see. Since the examiner also provides scaffolding by way of prompts such as "How do the kids feel?" "Why do you think so?" or "What's the weather like in the picture?" this allows for listening to be assessed alongside speaking.

The language awareness test

The Language Awareness Task (LAT) measures pupils' language/metalinguistic awareness. As indicated, it comprises a language mix test (LMT), a grammaticality judgement test (GJT), and a word order awareness test (WOAT). Items include vocabulary that Austrian primary school children can be expected to be familiar with.

The language mix test

An adapted version of [Hakuta's \(1987\)](#) Language Mix test was used in this study. It included ten sentences which were (one after the other and with pauses in between sentences) read aloud to each child. Sentences feature an English language matrix with other-language insertions. The sentences are adduced here below in [Table 2](#):

TABLE 2 Language mix test items.

Language mix test items
1. The sun is <i>gelb</i> .
2. I like to play <i>Spiele</i> .
3. Today it is very <i>caldo</i> .
4. The elephant is <i>gray</i> .
5. The <i>Vogel</i> is singing.
6. I am very <i>dodo</i> .
7. <i>Ich</i> meet my friends.
8. The grass is green.
9. Today I am very <i>yorgun</i> .
10. I have got 2 <i>hermanos</i> .

Eight of the above sentences contain a foreign language word (in German, Italian, Turkish or Spanish) or a nonsense word. The children were asked to identify the OL (i.e., Other-Language) word and explain why they thought it was different⁵ and why

⁵ With [Bialystok \(1991: 131\)](#) we would agree that explaining inconsistencies in sentences puts high demand on speakers' analytical capacity.

it stood out from the other words in the sentence. Children’s responses to each sentence were scored according to a right/wrong dichotomous measure.

The grammaticality judgement test⁶

In an adaptation of Bialystok (1986)’s test children were required to judge the grammaticality of 6 sentences (see Table 3 below) and correct⁷ the erroneous ones. As in the previous test parts, sentences were read out one by one to each child individually.

TABLE 3 Grammaticality judgement test items.

Grammaticality judgement test items
1. I like strawberry ice-cream.
2. I <i>be</i> 9 years old.
3. Elephants are big.
4. <i>Me</i> name is Anna.
5. The sea is blue.
6. I have got 10 little <i>finger</i> .

Three of the sentences (item 1, 3, 5) are correct English sentences. Item 2, 4, and 6 each contain a grammatical error. Mistakes include incorrect usage of pronouns, verb forms and plural noun markers as illustrated in the following:

- a) *Me* name is Anna. Mistake: me = personal pronoun;
Correction: my = possessive pronoun;
- b) I *be* 9 years old. Mistake: be = base form of the verb *to be*;
Correction: am = 1st person singular;
- c) I have got ten little *finger*. Mistake: finger = here used in the singular form;
Correction: fingers = plural form;

The word order awareness test

Like the grammaticality judgement test, the word order awareness test is based on Bialystok (1986). For this part

6 GJTs have been used in SLA research to study implicit and explicit knowledge of language (cf. Gutiérrez, 2013: 424), they are however also used in research on metalinguistic awareness where they are seen as providing a window onto test takers’grammatical and morpho-syntactic understanding.

7 The corrections made by the examinees are not included in the present data. The reader is directed to Traxl (2015) for more on this. Suffice it to say here that none of the children in the control group commented on the grammar mistakes, whereas 8 children in the multilingual group remarked and explicitly stated that in item 6, the word *finger* had to be changed into the plural form *fingers* since the number 10 required a plural marker on the noun.

of the study children were asked to judge the correctness of seven sentences, identify the mistakes and rearrange the words. Sentences included erroneous subject/verb/complement positions and inversion errors. The following seven sentences were (individually and with pauses in between sentences) read aloud to the children (see Table 4). After each sentence the children were then invited to comment on the word order, i.e., the (in)correctness of the respective sentence.

TABLE 4 Word order awareness test items.

Word order awareness test items
1. Flower nice the smells.
2. The green is ball.
3. Susi old years 7 is.
4. Happy am I very.
5. Tennis plays Mary.
6. Is name her Sarah.
7. Old you are how?

Procedure

The three tests were administered in fixed order. All the children were tested individually. Task instructions were provided in German to make sure the children fully understood what was requested of them. Testing items were read aloud by the experimenter and not pre-recorded, as is common practice nowadays. Testing took on average between 20 and 25 min. Children’s responses were audiotaped and subsequently transferred to score sheets. Each child was given a pre-prepared “Stempelpass” (see Figure 2) and for each completed test section children were rewarded with an English stamp (see Figure 3).

Scoring

PPVT

Children’s responses on the PPVT were recorded on a special score sheet as provided by the authors of the PPVT. The number of total errors was counted, and both the Raw and Standard Score were calculated based on the scoring protocol that accompanied the manual.⁸

PDT

For the PDT lexical complexity was operationalized as number of types (different words in a text), number of tokens (total number of words in a text), type-token ratio (henceforth TTR), and sophisticated TTR.⁹ These were calculated from the transcripts of the children’s picture descriptions by means of the Vocabulary

8 For more detailed information on the calculation of the Raw and Standard Score (see Dunn and Dunn, 2007).



FIGURE 2
"Stempelpass."

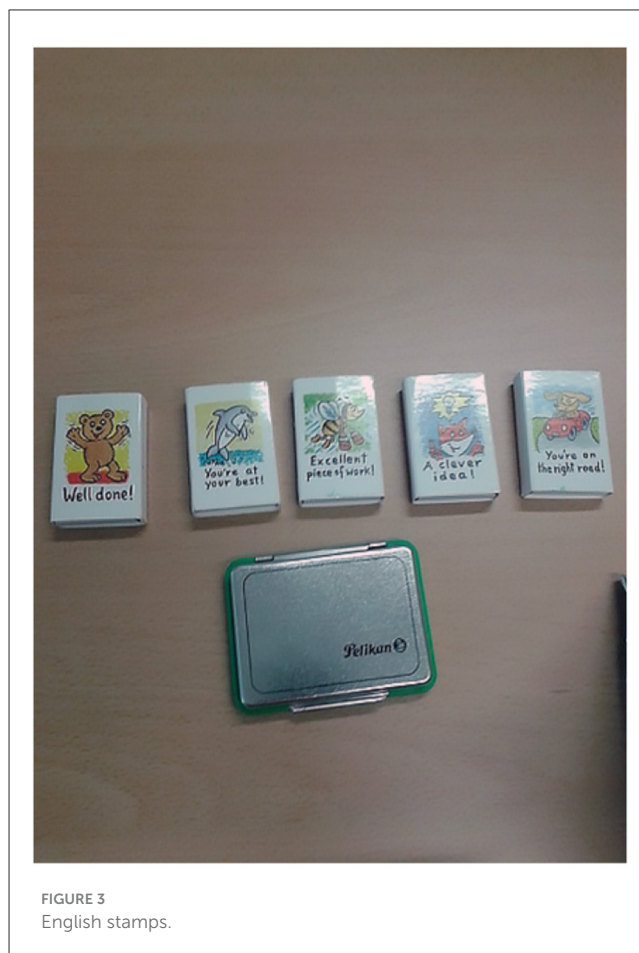


FIGURE 3
English stamps.

Profiler on www.lex tutor.ca. Initially, the plan had been to evaluate the collected data based on the CHAT transcription convention and with CLAN software as proposed by *The CHILDES Project*,¹⁰ but practical considerations called for a different procedure.

The audiotaped texts were fully transcribed manually and then entered into Lextutor. German or Italian utterances, false starts, pause fillers, repetitions, punctuation marks, and the instructions given by the examiner were deleted. The edited texts were then fed into Lextutor. Lextutor itemizes the texts, calculating the total number of types and tokens present in each text and providing an alphabetical list of the types. The itemized lists as well as the other scores are then entered into an Excel spread sheet.

9 The sophisticated TTR was proposed by [Larsen-Freeman and Cameron \(2008, p. 143\)](#). Conceptualised as the number of word types divided by the square root of two times the number of tokens it takes into account "the length of the sample."

10 The CHILDES Project tool is a very useful instrument for evaluating spoken language. It offers a wide-ranging potential for examining manifold aspects of talk and is strongly recommended by the authors of the present contribution for the evaluation of collected data on spoken language (cf. [MacWhinney, 2000](#)). *The CHILDES Project: Tools for Analyzing Talk*. 3rd Edition. Mahwah, NJ: Lawrence Associates. For pragmatic reasons, i.e., because the study at hand does not only focus on spoken language, it was decided not to use the CHILDES Project.

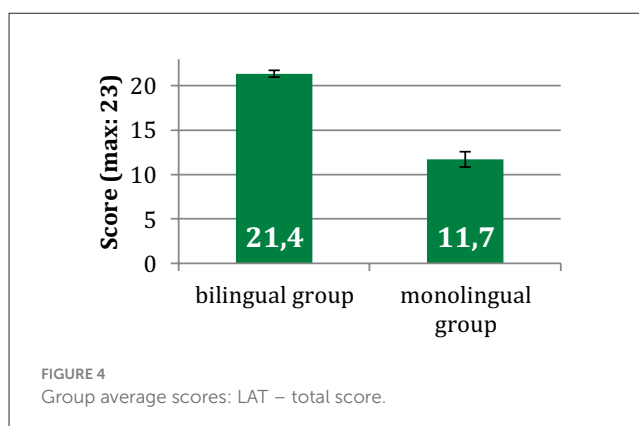


FIGURE 4
Group average scores: LAT – total score.

LAT

Scoring for the LAT test followed a right/wrong dichotomous procedure. Children were given 1 point for each correct answer and 0 points for items they got wrong. For task 1 (LMT), the maximum score was 10 points; for task 2 (GJT) the maximum score was 6 points, and for task 3 (WOAT) the maximum score was 7 points. The final score (23 points) was calculated by adding up the single task item scores. As a final step all the test results were entered into an Excel file.

TABLE 5 Random sample values: LAT – total score.

Class	Mean	% correctly answered	Standard deviation	Standard error of mean	N
Multilingual	21.35	92.8%	1.62	0.39	17
Incipient bilingual	11.71	50.9%	3.60	0.87	17
Total	16.53	71.9%	5.62	0.96	34

Statistical analysis

To establish whether multilingual education has any significant effect on pupils' metalinguistic awareness and mastery of English, we first ascertained whether there was a difference in how the experimental and the control group performed on the three tests. For this purpose, independent sample *t*-tests and Pearson correlations were run. In cases where the data did not fulfill the requirements for the *t*-test, the Mann-Whitney-U-Test was applied. The statistical software used was SPSS v.22 (SPSS Inc., Chicago, Ill., USA). Multivariate analysis was not applied as the prerequisites were not met.

Results

The results obtained from the quantitative analysis of the PPVT, PDT, and LAT reveal that the children attending the multilingual educational programme differ from those in mainstream schooling with regards to both, their MeLA and English language skills. Indeed, we found that the children in multilingual partial immersion performed significantly better compared to the control group. They significantly outdid the control group on all test tasks. Results for the LAT are particularly interesting. The Mann-Whitney-U-Test found a highly significant difference between the experimental and the control group ($U_{32} = 2.0$, $Z = -4.94$, $p < 0.001$) and a large effect size ($d = 3.45$) for the overall LAT score (Traxl, 2015, p. 98). The experimental group demonstrably outperformed ($M = 21.35$, $SD = 11.62$) the control group ($M = 11.71$, $SD = 3.60$) (see Figure 4 and Table 5). With regards to children's mastery of English (tested by way of the PPVT and PDT) the results also show a significant superiority for the multilingual partial immersion group (see Traxl, 2015). As well, the results reveal a large positive and highly significant correlation ($p < 0.01$) between the three LAT (language awareness) subtests, a medium to large positive correlation between PPVT and LAT (with correlations either approximating or reaching statistical significance) and between PDT and LAT (where correlations were either significant or highly significant). The findings thus corroborate the initial research hypothesis that heightened level of metalinguistic awareness correlate with English language skill.

To gain a better understanding of how multilinguals reflect on their language(s) during language and metalinguistic task completion a qualitative analysis of children's metalinguistic utterances. Despite the small subsample of participants. This notwithstanding, the children's articulations give a good insight

into the way young multilingual learners think about and use language(s) (Traxl, 2015). It is telling that the multilinguals were more verbally agile and more precise when articulating their reflections. In some cases the multilingual children provided quite elaborate explications relative to L3 word formation and grammar rules based on their linguistic knowledge in L1 and L2 (see examples below). Interestingly, they also produced more code-mixes and code-switches (see below) which we interpret to mean that the availability of a multilingual repertoire and the cognitive flexibility they have developed as a function of their constant balancing of several languages enables them to communicate more fluently and effectively. The ensuing examples are adduced for illustrative purposes. They report verbal comments produced by the multilingual probands and give an impression of the latter's heightened metalinguistic awareness. It is worthy of note that the children make use of all the languages in their repertoire, visibly striving to express themselves correctly and get their message across; as well they show a clear concern for lexico-syntactic accuracy as evidenced by their verbalized metalinguistic reflections and queries.

EXAMPLES recorded during the PDT

- (1) CHILD1: "I can see sunglasses ... and three – ma *des hob I am Montag no g'wusst Wolkenkratzer* – and three *towers* and the sky." [Oh, on Monday I still knew that one, Wolkenkratzer.]

Example (1) shows that the child is aware of the fact that he actually knows the English word "skyscraper" needed for an accurate description of the picture, but as he cannot at this moment recall the appropriate item, he cleverly resorts to a substitute, i.e., a semantically similar word 'tower' which to his mind best describes what he means.

- (2) CHILD2: "*Wie sagt man gelb?* ... Hmmm ... *gelbes Haar* – *na hair blond ... blond hair* ... yeah!" [How do you say yellow? ... Emmmm ... yellow hair – no hair blond ... blond hair ... yeah!]

In example (2) the child ponders the appropriateness of the lexical item "gelb" in reference to hair color. He first considers the word yellow but promptly dismisses it in favor of "blond." The child's metalinguistic thinking extends to both, his L1 German and L3 English and even includes grammatical considerations relative to word order, which he seems to be unsure about as his use of the noun + adjective construction shows. This said, the child presently replaces the erroneous word order with the correct adjective + noun structure, sanctioning his choice with a smug "Yeah!"

In the following example we witness how another child (child3) initially struggles to retrieve the English translation for the German word "Kinder," but (persisting in what presents a clearly effortful cognitive undertaking) eventually succeeds in doing so.

- (3) CHILD3: "I can see *Personen... Kinder... Kinder Kinder Kinder... was heißt Kinder... ki ... ky... kids*." [I can see

persons ... *Kinder ... Kinder Kinder Kinder ...* how do you say *Kinder ... ki ... ki ... ky ... kids.*”]

- (4) CHILD4: “I see **un white and black dog, three kids, one fish, un boat, un ship**

[...] I see a ... no two men.” [un = indefinite Italian article]

The above example presents a rare instance of trilingual mixing. The child first makes use of the Italian indefinite article *un* (perhaps to scaffold and facilitate his thinking and linguistic processing) but then activates the correct English equivalent “a.” The example shows that the child has at this stage already developed the concept of indefinite article use in all her/his languages.

Next, example (5) shows how the child in question is mentally elaborating the plural form of the word “house.”

- (5) CHILD5: “I can see two kids... playing ball...**hmmm... three aaaa... house... ok houses** oder?” [... isn’t it?]

Examples (6) and (7) below report instances of code-mixing and code-switching.

- (6) CHILD: “... **with their smile Weil sie lächeln.**” [...with their smile because they are smiling.]
 (7) CHILD: “A boy **taucht** and **sieht** one fish.” [A boy is diving and sees one fish.]

EXAMPLES recorded during the LAT

Next up, examples (8, 9) report instances of self-correction. In both cases, the children showcase their understanding of L3 morphosyntactic features and more specifically singular and plural marking.

- (8) CHILD8: “**Finger? Sollten das nit mehrere sein? Also müsste es doch fingers heißen. Finger is ja die Einzahl.**” [Finger? Oughtn’t it to be more? It would have to be fingers. Finger is the singular.]
 (9) CHILD9: “**Des is falsch...weil die Mehrzahl fingers ist.**” [This is wrong ... because the plural is fingers.]

In our final example (10) the child correctly identifies the German-language item “gelb” as “out of place.” The item, she states is a German word and since the remainder of the sentence is in English this adjective too needs to be in English:

- (10) CHILD10: “The sun is **gelb ist falsch**, weil **gelb ein deutsches Wort** ist und **des müsst ja yellow heißen**” [The sun is *gelb* is wrong because *gelb* is a German word and would have to be called yellow.]

Discussion

The results of the study reveal significantly better metalinguistic and English language ability for the multilingually schooled children in the partial immersion programme. This is in confirmation of our initial assumption. Our tentative conclusion is therefore that multilingual schooling as a special learning

experience equips children with important language-related and metacognitive knowledge and skills.

The results of our study provide good support for Jessner (2006, p. 34) proposition that “the learner who has already been in contact with two language systems develops certain skills and abilities which the monolingual learner of a second language in this form lacks.” The results are also in line with a large body of research which shows that children derive linguistic and metacognitive benefit from exposure to multiple languages. Griessler (2001) for instance concludes from her study that being multilingual benefits all the children’s languages, as well as their grammatical awareness linguistic abilities more generally (Andreou, 2007; Cenoz, 2003; Clyne et al., 2004; De Angelis and Jessner, 2012; Dolas et al., 2022; Hofer, 2015, 2023; Kemp, 2007; Mazzaggio and Lorusso, 2023; Torregrossa et al., 2023). Multilingual advantages are also reported in Hofer (2023) for highly multilingual primary schoolers who were asked to identify, correct, and explain grammatical and morpho-syntactic errors in sentences in their three curricular languages (German, Italian, and English). Hofer found that her experimental groups in multilingual education programmes significantly outperformed the control groups in mainstream education (see also Spechtenhauser, 2022).

For its part, the interdependence between MeLA scores and English proficiency scores (as established by the present correlation analysis) supports Herdina and Jessner (2002, p. 116)’s claim that MeLA has catalytic effects on further language learning (see also Jessner, 2006, p. 34). The children in our study who obtained better results on the metalinguistic awareness test (LAT) also scored higher on the English proficiency test. This might be taken to mean that children who are more meta-linguistically versed are also better at learning additional languages (in the present case English) (see also Hofer, 2015, 2023). Again, our findings are in keeping with prior research which found that having two or more languages is linked to metalinguistic advantages and can translate to high(er) language learning ability and more successful (Ln) language acquisition (Ringbom, 1987; Cenoz and Valencia, 1994; Lasagabaster, 1997; Repplinger and Budke, 2025). Summing up then, our results point to increased metalinguistic awareness in our multilingually schooled participants. Our tentative estimation is that the initially formulated hypotheses can be regarded as verified. This said, our study has several limitations, and it is clear that the results need further and more robust substantiation.

Limitations

Since our test population ($n = 34$) comprises but a modest number of participants the results of this study are not easily generalizable or for that matter applicable to other contexts. It is, as we have already pointed out, clear that more research is needed to elucidate the many questions that for the moment (must) remain unanswered, particularly those centering on the relationship between multilingual learning and the development of linguistic and meta-cognitive ability. Future research will also need to give due attention to pupils’ home and wider sociolinguistic situatedness. Socioeconomic status is a major confounding factor which has been neglected in this study but clearly needs to

be investigated closely to obtain a more comprehensive picture of children's home ecology (Martin, 2023; Spechtenhauser and Jessner, 2025). A further limitation of our research is its somewhat conservative approach to testing. The aim should be to include more innovative (and child-friendly) test procedures (e.g., Ambridge et al., 2008; Hofer and Jessner, 2016/2019; Pinto and Zuckerman, 2019; Spit et al., 2021) as have been employed in different contexts in more recent research (cf. Torregrossa et al., 2023).

Conclusion

The above limitations notwithstanding, we are nevertheless hopeful that our findings will enrich the field of multilingualism and incentivise pre- and in-service teachers, school principles, language-education policymakers, and educational stakeholders more generally to approach multilingualism with an open mind, so that children's special multilingual abilities and repertoires are acknowledged, and their overall multilingual competence actively promoted. Multilingual pupils it is widely lamented, mix their languages, have a less diversified lexicon in their single languages, or take longer to retrieve lexical items. However, what is typically ignored in these debates is that multilingual children have several lexico-semantic, phonological and grammatical systems to juggle and still (or, as we are inclined to think, perhaps because of that) develop a more diversified (and possibly larger) resource pool complete with an eclectic range of multilingual skills and abilities including enhanced meta- and crosslinguistic awareness (cf. Orcasitas-Vicandi, 2021, p. 13). The results of our study show that children can derive advantages from multiple languages and multilingual education and that early multilingualism can increase their linguistic and metalinguistic awareness. Though hardly generalizable to other contexts, our findings point to specific linguistic and metalinguistic benefits and enhanced multilingual awareness and agency for the multilingually schooled cohort. It is this special meta- and crosslingual awareness and skill—the unique emergent property of multilingual systems—that this contribution aims to spotlight in order that prejudiced monolingualism-grounded misgivings may be overcome and the multiple benefits of multilingualism (and, by extension, multilingual education) be valorised more widely.

Data availability statement

The original contributions presented in the study are included in the article, further inquiries can be directed to the corresponding author.

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Ethics statement

Ethical approval was not required for the study involving human samples in accordance with the local legislation and institutional requirements because reason ethics approval was not required. Written informed consent for participation in this study was provided by the participants' legal guardians/next of kin. Written informed consent was obtained from the minor(s)' legal guardian/next of kin for the publication of any potentially identifiable images or data included in this article.

Author contributions

BH: Conceptualization, Formal analysis, Visualization, Writing – original draft, Writing – review & editing. UJ: Conceptualization, Resources, Supervision, Writing – review & editing, Methodology, Writing – original draft. CT: Conceptualization, Data curation, Investigation, Methodology, Visualization, Writing – review & editing, Writing – original draft.

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The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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