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Measuring metalinguistic awareness among heritage speakers in the US-based L3 context

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Metalinguistic awareness is considered by many to be a crucial ingredient for successful adult foreign-language acquisition. Researchers further suggest that it helps bilinguals learning a third language (L3) even more than it does monolinguals learning their second language (L2). In response to a recently proposed hypothesis that differences in metalinguistic awareness may be responsible for the variation in L3 grammatical development often witnessed amongst bilingual university students, and that teaching methods should accordingly be modified as a result, research that actually measures these varying levels of metalinguistic awareness has now become urgently needed. However, due to a lack of standardized assessments and an inability to converge on how best to measure this set of abilities in adults, few studies have yet attempted to operationalize this variable in the US-based L3 context, and those that did adopted diverse methods, raising issues of comparability. For multilingual language learners, especially those who grew up speaking a heritage language, the challenge that researchers face is whether to measure metalinguistic awareness in a native language, a prior-learned L2 (if one such language exists), the learner's current target language, or a language unknown to the learner entirely. This article highlights these methodological complexities and calls for a principled approach to measuring metalinguistic awareness before implementing any pedagogical changes in terms of how third languages are taught.

KEYWORDS

metalinguistic awareness, L3 acquisition, heritage language, heritage speakers, L3 classes, multilinguals, university students, L3 teaching

1 Introduction

Within applied linguistic research, it has often been asserted that metalinguistic awareness (MA) plays a vital role in adult foreign-language acquisition, with some researchers anecdotally identifying it as a key contributor to why bilinguals tend to learn a third language (L3) more efficiently than monolinguals learning their first foreign language (e.g., [Cenoz and Perales, 2002](#); [Cenoz and Valencia, 1994](#); [Sanz, 2000](#); [Thomas, 1988](#)). Others have gone even further by suggesting that within the university-level L3 classroom, differences in MA serve to explain differential performance in grammatical development, and that these differences should in turn affect how third languages are taught ([Carvalho, 2021](#)). Only in rare instances, however, has this variable been operationalized within the specific L3 context in the United States, and in the only two such studies to have done so ([Fiorenza, 2019](#); [Travers, 2024](#)), although both found that MA plays an important role in

L3 acquisition, the widely varying approaches that the researchers used to test for MA raise important methodological questions about how comparable the studies truly are.

To a large extent, this inconsistency in evaluation is hardly surprising, due in part to the limited number of available assessments, as well as to a general lack of consensus among researchers surrounding the best way to operationalize MA in adults. With respect to multilinguals, and in particular heritage speakers, a further problem has arisen whereby researchers have faced a choice between measuring MA in the current target language, in each learner's most easily identifiable native language, in a prior-learned second language (should one exist), or by using a language unknown to the learner altogether. The present article lays bare the current methodological complexities surrounding the issue of assessing MA in adult heritage speakers (and to a lesser extent, other multilinguals), before pointing to ways in which the field may be able to move forward. It is argued that prior to making pedagogical or curricular changes based on assumptions about how MA manifests within different multilingual populations, researchers are obligated to take a more principled approach as to precisely how—and more specifically, in which language(s)—MA is being measured.

2 Metalinguistic awareness in L3 classes: approaches and instruments for testing

In the main part of this article, we offer a brief overview of the various methods that have been adopted to test for MA among adult multilinguals, detailing two L3 classroom studies in particular that were each emblematic of a different approach. Before delving into this issue, firstly we define the construct of metalinguistic awareness and its relevance in second- and third-language learning. Then we focus on the specific context of L3 classes in the US, where the considerable amount of heritage speakers (mainly of Spanish) has created a situation in which the choice of how to go about assessing MA becomes even more important. Beyond the specific context under investigation, the observations made here may also be relevant to multilingual settings outside the US, especially those in which individuals having more than one native language is commonplace.

2.1 The role of MA in foreign-language acquisition and teaching

In the field of language acquisition, MA can be defined as the ability to reflect upon and manipulate the formal properties of language (Pinto, 1999, 2015; Tunmer et al., 1988). Its metacognitive and contemplative nature is a distinctive feature recognized by most scholars, who would also agree that it consists of multiple abilities involving different levels of linguistic analysis (i.e., phonological, orthographic, morphological, etc.) rather than a single skill (e.g., McBride-Chang, 1995). Extensive research highlights the pivotal role of MA in foreign-language acquisition for both monolinguals and bilinguals alike. Bilinguals, in particular,

seem to benefit from higher levels of MA, which appear to enhance their learning strategies and accelerate their understanding of new languages (e.g., Bialystok, 2004; Cenoz et al., 2003; Hofer et al., 2024; Lasagabaster, 2001; Pinto et al., 2002, 2004).

From the perspective of foreign-language teaching, it is well established that metalinguistic skills can be taught (Nagy, 2007). Similarly to the points made above about bilinguals, the main reasons for teaching MA are its positive impact on learners' ability to understand how languages are used in various contexts, and on the confidence with which they eventually are able to engage in such use (El Euch and Huot, 2015). In the field of multilingual teaching, it has been observed that pluralistic approaches such as intercomprehension (e.g., Bonvino and Garbarino, 2022) can develop a learner's ability to reflect on language(s) and thus have an important effect on helping them grow their MA, which in turn positively affects their ability to manage plurilingual input (Bonvino et al., 2024). In light of the above, measuring MA levels with appropriate instruments should have a prominent place in adult language teaching, especially in highly multilingual contexts such as the L3 classroom.

2.2 Multilingual students in L3 classes in the United States

Over the course of the four decades following 1980, the percentage of adults in the United States who reported speaking a language other than English at home nearly doubled (from 9.2% to 16.9%), with the majority of those multilinguals speaking Spanish or a Spanish-based creole language.¹ In response to this growing reality, since at least the 1960s there have been classes offered at the university level in the US specifically to students who already have experience in a prior-learned language other than English (Cavaco, 1974). While most of these classes had historically been for Spanish-speaking students wishing to learn Portuguese, in recent years L3 offerings have expanded to include other target languages such as Italian and French, and in some cases have opened themselves up to speakers of other Romance languages besides Spanish (Travers, 2022). Given longstanding demographic trends, however, most of these bilinguals are indeed still Spanish speakers, many of whom have learned it as a heritage language, defined by Polinsky (2018, p. 10) as “the home/minority language of a bilingual who is dominant in the main societal language.” Speakers of these minority languages have come to be known as heritage speakers (HS), and especially in certain parts of the US sometimes comprise the majority of students in a given L3 class (e.g., Donato and Pasquarelli-Gascon, 2015). Although some researchers have asserted that heritage speakers are lacking in MA, especially relative to other L3 learners (e.g., Carvalho and da Silva, 2006; Polinsky, 2018), few and far between have been organized efforts to actually measure this expected discrepancy, making the issue of how best to assess MA within the HS population crucially relevant.

¹ According to the American Academy of Arts and Sciences, which sources its data from the US Census Bureau's American Community Survey: <https://www.amacad.org/humanities-indicators/public-life/multiilingualism>.

2.3 Testing for MA in a known vs. an unknown language

From a careful survey of methods used in order to test for MA among adult multilinguals, two macro categories can be identified: one in which MA is assessed using a language that a learner already has in their multilingual repertoire, and another category that seeks to introduce the learner to an unknown language in order for their metalinguistic abilities to become apparent. In the former category belong a considerable number of assessments, with some evaluating MA in one (or more) of the languages that a learner already knows well (e.g., D'Angelo and Sorace, 2022; Falk et al., 2015; Hofer et al., 2024; Kemp, 2001; Pinto et al., 1999; Riehl, 2020; Roehr and Gánem-Gutiérrez, 2009), while others adopt the language currently being learned (e.g., Alderson et al., 1997; Sorace, 1985).

One assessment tool in particular has been used extensively to assess MA in an individual's L1: the TAM-3 (in Italian, *Test di abilità metalinguistiche n.3*; available in many languages) created by Pinto for adolescents and adults 16 and older (Pinto and Iliceto, 2007).² Inspired by Piaget's equilibration model, it distinguishes between the linguistic and metalinguistic levels (Pinto, 1999), and measures the ability to reflect on language, its meanings, and its grammatical forms throughout three subtests: *Comprehension*, *Acceptability*, and *Figurative language*. The first subtest measures comprehension of qualitative, temporal, morphological, and spatio-temporal relationships, with participants being asked to spot differences/similarities in various sentence pairs. The second subtest is of a more metagrammatical and metasyntactic nature, since the subject is asked to identify the errors within a short text, correct them, and explain the type of violation they represent. Finally, the third subtest focuses on creative uses of language in the context of metaphors, slogans, and short poetic verses, and thus measures awareness of the symbolic nature of language. In addition to this innovative incorporation of figurative speech, the TAM-3 has the distinction of being the most widely translated and validated instrument for assessing MA, which has consequently led to its widespread adoption (e.g., El Euch, 2010; Jessner et al., 2015; Woll, 2019).

In a smaller subset of studies, researchers have chosen to adopt, for purposes of testing, a language currently unknown to participants. These studies have used foreign languages such as Basque (Kemp, 2001), Swedish (Gibson and Hufeisen, 2003; Rauch et al., 2012), Dutch (Rauch et al., 2012), Indonesian (Ter Kuile et al., 2011), Russian (Brooks and Kempe, 2013), and Japanese (Huang, 2018), but while retaining a degree of external validity thanks to the real-world nature of the test instrument, it remains necessary to carefully screen participants in order to guard against an undue advantage for anyone with relevant prior linguistic knowledge. For this reason, in a 2014 study by Jackson, the researcher chose to first expose participants to a miniature artificial language in order to later elicit their relative levels of MA, selecting the language-learning paradigm originally designed for use in the LLAMA aptitude test's grammatical inferencing subtest, the Llama_F (Meara, 2005). This was considered particularly appropriate given the highly diverse, multilingual population being

tested, where adopting a natural language could have restricted the pool of participants.

2.4 Testing for MA in the US-based L3 context: the case of heritage speakers

There have so far been two studies, in particular, that have attempted to measure MA within the population of bilingual learners enrolled in a US-based L3 class. In these two separate longitudinal studies, it was found that MA indeed played a decisive role in ultimate attainment.

The first is a recent study by Fiorenza (2019), who examined MA among 42 heritage speakers of Spanish, and related it to their ability to learn L3 Italian. The experiment was carried out at California State University, Long Beach, where almost half the students enrolled are HS of Hispanic origin with different varieties of Spanish as L1. The study measured the students' initial and final competencies in Italian over the course of a semester and compared these with their levels of MA, assessed by administering a version of the TAM-3 that included the *Acceptability* and *Figurative language* subtests. An initial questionnaire was developed to gauge students' self-perceived linguistic knowledge and sociolinguistic background, after which their MA levels were measured by metalinguistic tests in either Spanish (THAM-3, Lasagabaster et al., 2015) or English (MAT-3, Pinto et al., 1999), depending on their self-declared relative proficiency, as well as the number of contexts in which they reported using the two languages. Of the 42 HS participants, 24 were given the MAT-3 in English, while 18 took the THAM-3, with the latter group consisting of L3 learners who reported being highly competent in both spoken and written Spanish. The study found that the participants who received the THAM-3 displayed lower levels of both MA and L3 development (except for an initial advantage in L3 listening comprehension) than their counterparts who took the MAT-3. Despite the application of purely descriptive statistics, the study seems to show that MA was highly associated with achievement in Italian.

In his dissertation study, Travers (2024) looked at 28 Spanish-English bilinguals at Georgetown University who were learning an L3 in the classroom—either Italian, French, or Portuguese. Of these L3 learners, seven were heritage speakers of Spanish raised in Canada or the United States, while five grew up in Spanish-speaking countries and 16 were native speakers of English who learned Spanish later on in life. In order to test for MA, an assessment was developed reminiscent of Jackson (2014) in which students were first given 5 min to study the miniature artificial language created for the Llama_F (Meara, 2005). After responding to a series of 20 dichotomous questions in which test-takers were shown an image similar to what they saw during the 5-min study session and then asked to choose between two possible captions (i.e., the original Llama_F assessment), students were then prompted to explain their choices, typing out their explanations in a Qualtrics survey that automatically populated their earlier responses to each dichotomous question. Responses to this Metalinguistic Awareness Questionnaire (MAQ) were then coded for levels of MA along a six-point scale from 0–5, which allowed for a total score of 75 points across 15 questions. After administering a series of target-language

² See www.pintomatel.com for an up-to-date overview

assessments at the beginning and end of the semester, it was found that students' levels of MA were able to successfully predict L3 grammatical development.

This pair of studies was intended to measure MA within very similar populations of L3 learners, and indeed achieved similar results showing MA to be an important factor in ultimate attainment. However, the fact that each study featured a very different way of assessing MA raises the problem of comparability, which further thoughtful discussion is needed to resolve.

3 The inherent challenges of testing for MA within the HS population

The issues discussed within the previous sections lead to a series of fundamental theoretical questions when it comes to measuring MA within multilingual adult populations, especially among those who may be considered heritage speakers or who otherwise identify as having more than one native language.

First, if an assessment is adopted that incorporates a known language, how can researchers best determine in which language(s) the test should be administered? While it would be possible to administer the same test of MA in both the heritage and majority language for a given HS population (e.g., Riehl, 2020), the issue of practicality becomes immediately relevant, as the amount of time required of participants is always a precious commodity. Then, whichever test is administered last risks having its internal validity partially compromised as participants either become more fatigued, or better used to the way the test is structured. Finally, it seems logical to think that someone would perform better on a test in their native language, as long as they had been educated and gained literacy in this L1. It may be the case for the HS population, however, that because of their multifaceted linguistic profiles and repertoires, they consider as their L1 a language they may only be able to understand orally, one that they stopped acquiring at some point prior to full proficiency, or something that over the years has been subject to attrition (e.g., Benmamoun et al., 2010). In this situation, the choice of language in which to administer an MA test can become many times more complex.

Complicating the situation even further, in the case of tests that ask questions related to figurative language (as in the TAM-3), native speakers usually have greater awareness of culturally specific concepts, having grown up in a social environment full of other speakers of this same L1. To the extent that test takers within the HS population were deprived of that societal connection, they may be at a distinct disadvantage relative to other native speakers. On the other hand, if the type of assessment adopted contains sections in which test takers are asked to correct and explain ungrammatical utterances (e.g., Alderson et al., 1997; Sorace, 1985), many multilinguals share the experience of being much better able to explain the grammatical peculiarities of a non-native language than they would be of a native language, especially if that non-native language was learned formally as an adult. In that case, it could theoretically be plausible for someone to score *even better* on a test of MA administered in a non-native language. These sharply diverging viewpoints problematize the issue of which language to choose, and may even call into question the decision to adopt a test instrument that incorporates a known language entirely.

On the other hand, by adopting an assessment that incorporates an *unknown* language, while effectively addressing any particular concerns related to the HS population, another issue is raised, namely that of MA then becoming inexorably tied to someone's ability to learn that language. An obvious critique in that case could be due to the circular logic employed if MA were then found to predict L3 development, and the wholly unsurprising nature of that result given the way the predictor variable had just been operationalized. To guard against inadvertently measuring language-learning ability (or even aptitude), it becomes of utmost importance to incorporate a nuanced MA scoring system that allows for the emergence of different levels of awareness, while still making it possible for a test taker to achieve a high score despite not having perfectly understood every detail of the original language-learning paradigm. Even this may not entirely solve the problem, however, since it may be precisely those participants who are more adept at learning the unknown language who then indeed turn out to be the ones with greater MA. For instance, even though several steps were taken to make sure that there were ways to earn points on the MAQ even if someone had responded incorrectly to the original Llama_F question (and similarly, participants earned zero points on the MAQ even if the original Llama_F question had been answered correctly with a lucky guess), there was still a very strong correlation ($r = 0.76$) between the MAQ and Llama_F scores taken on the whole (Travers, 2024). It could therefore be the case that assessments such as the TAM-3 may be better able to provide the type of information that paints a fuller picture of MA, precisely by adopting an approach less inherently tied to someone's ability to learn a language.

In order to answer the preceding series of questions definitively, it becomes necessary to conduct more empirical research into the varying levels of MA within different populations of L3 learners. The first step would be to administer both English and Spanish versions of the TAM-3 to a large enough group of bilinguals so that trends can begin to emerge in terms of how different sociolinguistic backgrounds and levels of proficiency affect a test taker's score in a given language (e.g., El Euch, 2016). Only at that point can it be determined (a) how consequential the decision is to ask the HS population to take one version of the test instead of another, and (b) whether comparing heritage speakers to L3 learners who were raised monolingual simply reinforces a deficit model by creating a situation in which the HS population is being held to an unrealistic standard. Especially given the well-established acknowledgment that bilinguals are never simply two monolinguals combined (Cook, 1991), it may well be that a different approach entirely—one in which MA is assessed using a language equally unknown to all—serves to level the playing field. We furthermore suggest that the MAQ then be tested throughout the same learner population in order to see whether similar results can be achieved regardless of the type of MA assessment employed. In this way, it can more definitively be determined whether, as some have proposed, heritage speakers indeed possess less MA than other types of bilinguals (e.g., Carvalho, 2021; Polinsky, 2018). Then and only then should these empirical findings begin to inform the types of pedagogical decisions that go into sharpening L3 didactics such that the third-language classroom becomes a place where bilingual learners of all stripes are given an equal chance to succeed.

Data availability statement

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

Author contributions

EF: Conceptualization, Investigation, Resources, Writing – original draft, Writing – review & editing. WT: Conceptualization, Funding acquisition, Investigation, Resources, Writing – original draft, Writing – review & editing.

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