Attitudes towards machine translation and languages among travelers

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Abstract

Machine translation (MT), i.e., automatic translation, is a growing field in artificial intelligence with huge impacts on societies and businesses. Despite its importance for traveling and tourism communication, it has not been approached within tourism research. This study aims to fill this gap in knowledge by analyzing how attitudes toward machine translation are related to tourists' profiles, travel behaviors, and language mindsets. It comprises two parts. The first one concerns a sample of 2535 individuals, while the second concerns a sub-sample of 907 language tourists (LTs). Specific research goals are set for each study: (1) to compare individuals with opposing viewpoints on the importance of MT in terms of profiles and attitudes toward languages; and (2) to understand how LTs' profiles and travel experiences differed according to their agreement with the importance of MT in their most significant language trip. Statistical exploratory and inferential analyses have been conducted. We conclude that those with more positive views of MT tend to be younger and less educated, report poorer language skills, and attribute greater importance to the role of English as a lingua franca. Concerning LTs, those who rate MT as less important are more likely to have acquired language skills formally, engage more in cultural activities, and have closer contact with locals during their language trips. Acknowledging the role of MT in their most significant language trip is neither associated with a more unfavorable attitude towards the role of language in tourism nor with perceived diminished travel outcomes.

Keywords Machine translation · Tourism · Languages · Language tourism

1 Introduction

In the past few years, advancements in artificial intelligence (AI) have led to a rampant evolution in the field of machine translation (MT) (Towes 2022). Despite the impact of this technology on society, businesses and individuals, the implications

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of these developments for how individuals communicate across languages have been scarcely analyzed by previous literature (Vieira et al. 2022). Although AI and robotization are increasingly prominent topics in tourism research, MT has thus far been neglected.

Despite the current limitations of MT (Almahasees and Mahmoud 2022; Fuentes-Luque and Santamaría-Urbieta 2020; Stewart 2019), e.g., inaccurate and wrong translations, broken flow of conversation, and latency (Hwang et al. 2022; Liebling et al. 2020), there has been a growing number of users resorting to it—for example, the Google Translate app alone had been downloaded one billion times by March 2021 (Pitman 2021). According to Vieira et al. (2022), MT implies both great advantages and risks (Vieira et al. 2022), and the implications for the tourism sector are unknown.

One of the many aspects that have not been approached in previous literature is how individuals with different profiles perceive MT differently, and how MT influences their travel experience. Therefore, this study addresses the following research question: "How are attitudes toward MT related to tourists' profiles, travel behaviors, and language mindsets (i.e., their beliefs and attitudes towards languages) in the travel context?" This study consists of two parts. In the first part, we analyze to what extent believing in the importance of MT in the travel context is associated with differences in individual profiles and attitudes toward languages in the travel context (N = 2535). The second part of the study concerns language tourists (LTs) exclusively, i.e., individuals who traveled to learn or practice a language (N = 907). We analyze if the perception that MT tools were important when traveling specifically to learn languages is associated with differences in tourist profiles, attitudes, and travel experiences.

Statistical quantitative data analysis was performed using IBM SPSS Statistics v.28 and included exploratory data analysis (descriptive statistics and categorical factor analysis) and inferential analysis.

The sections that follow will first review the literature on MT and IT-mediated tourism experiences, and language tourism. These will be followed by the presentation of the methodology and the results of both parts of the study. To conclude, a discussion of results will shed light on MT use and individual differences in MT use in the tourism context.

2 Literature review

2.1 Machine translation

The use of MT in tourism is a topic that falls within the broader literature on Tourism 4.0 and IT-mediated tourism experiences, which examines how information and communication technologies can transform the tourism industry and shape tourist experience (Stankov and Gretzel 2020). MT is an example of language technology, which is a field of computing that deals with the processing of human languages for various purposes. The impact of language technology on tourism is still largely understudied. However, the recent rampant evolution in large language models such

as ChatGPT has put language technology at the core of the tourism research agenda (Carvalho and Ivanov 2023). Such large language models are likely to transform tourism business models, jobs, operations, and tourists' decision-making (Carvalho and Ivanov 2023; Gursoy et al. 2023; Mich and Garigliano 2023). As language technology is becoming increasingly pervasive, MT deserves careful attention in tourism scholarship.

According to Somers (2011), MT describes computer-based activities concerning translation. More specifically, Hutchins (1995) states that computer-aided translation can encompass both human-aided MT and machine-aided human translation. However, MT focuses on automatizing all the translation process and is related to computerized systems that produce translations, excluding "computer-based translation tools which support translators by providing access to on-line dictionaries, remote terminology databanks, transmission and reception of texts, etc." (p. 431). MT has evolved from its beginnings right after the Second World War using different approaches (Somers 2011). Neural MT has become a popular method based on deep learning technology and a large artificial neural network with capacity for powerful algorithms (Almahasees and Mahmoud 2022; Casacuberta-Nolla and Peris-Abril 2017; Crivellari and Beinat 2020; Klimova et al. 2022; Phan and Do 2020; Sen et al. 2021; Wang 2022; Yamada 2019; Zhao et al. 2021).

Translating a wide range of text types in different languages is nowadays possible due to digitalization and globalization, coupled with advances in computational linguistics and the availability of MT tools like Babylon, DeepL, Google Translate, Microsoft Translator, Systran, and Yandex.Translate (Fuentes-Luque and Santamaría-Urbieta 2020). Even though translated texts often reach a proficiency level of B2 from the Common European Framework of Reference for Languages (Yamada 2019), at present MT in itself still presents limitations that prevent it from rendering similar quality standards to translation processes with human intervention (Almahasees and Mahmoud 2022; Fuentes-Luque and Santamaría-Urbieta 2020; Stewart 2019). In addition to linguistic constraints, sociolinguistic and pragmatic inadequacy has also been identified (Athanasiou and Maragoudakis 2016; Fuentes-Luque and Santamaría-Urbieta 2020; Kalita 2016). Another current weakness of MT is that large parallel datasets are required, many of which are restricted to some specific domains and languages (Toral et al. 2017; Sen et al. 2021).

MT is widespread in commerce, tourism, and education (Athanasiou and Maragoudakis 2016; Zhao et al. 2021). In foreign language learning educational settings, mixed attitudes from instructors and learners towards automated translation have been reported (Ata and Debreli 2021; Deng and Yu 2022). MT is sometimes restricted or not allowed despite the fact that internet access through technological devices is common in multimodal learning environments (Vazquez-Calvo and Cassany 2017). Both the ethicality and accuracy of MT have been questioned (Ata and Debreli 2021). Yet, recent research suggests that correcting mistakes in texts that have been translated automatically fosters second language acquisition in advanced learners and the development of their translation skills (Klimova et al. 2022; Yamada 2019). The integration of MT in the learning process entails critical reflection (Deng and Yu 2022) and it should also contemplate pre-editing source texts (Vazquez-Calvo and Cassany 2017). In English as a foreign language for

tourism courses, automatic translation can be a helpful resource as long as students learn to revise their output (Stewart 2019).

In the context of tourism, MT enables access to promotional texts on websites and brochures in different languages (Fuentes-Luque and Santamaría-Urbieta 2020), for example, to publicize Croatian hospitality and tourism companies (Toral et al. 2017) or red tourism in China (Wang 2022). Social media and tourism-related platforms like TripAdvisor or Booking.com have integrated MT, aiming at enhanced efficiency and intercultural communication (Cenni 2019). MT is commonly used in guiding materials and restaurant menus (Fuentes-Luque and Santamaría-Urbieta 2020; Kalita 2016), as well as in automated question-answering systems for tourists (Phan and Do 2020) and to assist professionals when dealing with customers in daily operations. In combination with other analytical tools, MT can be very useful for the tourism industry to examine customer reviews and conduct sentiment analysis (Athanasiou and Maragoudakis 2016). MT is not only valuable for tourist destinations and organizations, but also for travelers, who may resort to automated translations to interpret messages in the local language, for example, to understand shop and road signs in Arabic (Almahasees and Mahmoud 2022).

Nevertheless, MT still has a general linguistic scope nowadays, does not adapt to diverse cultural requirements, and overlooks some specific communicative needs in the tourism domain. Fuentes-Luque and Santamaría-Urbieta (2020) claim that "MT systems would have to be trained so that they are able to identify expressions, adapt them and understand nuances, irony and the colloquial expressions which are common in tourist guidebooks in English, or in any given language" (Fuentes-Luque and Santamaría-Urbieta 2020, p. 78). There is a research gap concerning differences in perceptions of MT use in tourism according to individual characteristics (e.g., education, age, attitudes). In addition, language tourists' behavior and attitudes towards MT and its role in their interactions with the host communities have not been examined either. It is particularly relevant to understand how these tourists perceive MT, since language learning is an important goal for their language trips. This will further enlighten the role of languages and MT in shaping travel experiences.

2.2 Technology, tourism, and friction

Technology has had a significant impact on travel by removing much of the friction associated with tourist trips (Jansson 2007). Nowadays, tourism trips have become more efficient, with tourists retaining a sense of control over their experience. With the plethora of mobile applications available in a smartphone, and thanks to "ubiquitous connectivity" (Falcao et al. 2019, p. 483), tourists can have smoother, more convenient, and more flexible travel experiences (Falcao et al. 2019; Jansson 2007). Smartphones have become "tour guides, travel agencies, locators of restaurants and attractions, maps, ticket booths (…) a travel companion during the entire journey" (Falcao et al. 2019, p. 484) and they can change the tourist experience (Wang et al. 2016). GPS technology has made it harder to get lost, real-time traffic updates have facilitated navigation in unknown crowded cities, and

comparison websites and user-generated content have empowered travelers to make informed and faster decisions, just to cite a few among many other applications of technology in tourism (see Buhalis and Law 2008; Buhalis 2020; Dias and Afonso 2021). MT applications have also significantly reduced language barriers, particularly in short transactional communication (Liebling et al. 2020).

Such technological developments strongly emphasize planning and efficiency, leaving little room for exploration and unpredictability (Gretzel 2010). Removing "friction" more often than not also implies removing social interaction. In fact, smartphones may reduce the need for interacting with locals and "make it very easy for travelers to disengage with the actual surroundings" (Gretzel 2010, p. 46). However, social interaction is an important dimension of the travel experience (Pearce 2005).

In this context, the role of machine translation for "frictionless" travel experiences has yet to be explored. We posit that MT is a technology that may have contradictory impacts on tourists' engagement in the local experience. On the one hand, it may facilitate communication with local residents by removing the need for mediation through tour guides, and by allowing communication about topics and ideas that would otherwise be very difficult to convey through gestures and non-verbal language alone. The introduction of image recognition in applications such as Google Lens also allows tourists to explore the environment and the "linguascape" (i.e. the language of public signs, street names, building and shop signs etc.) (Steciąg and Karmowska 2020).

On the other hand, communication with machine translation may lead to impatience of the interlocutors in more extended conversations, as well as errors, and loss of visual contact (Liebling et al. 2020). With latency in speech translation (i.e., the delay between the input speech and the delivered translation) "magic [may be] gone" in certain circumstances (Liebling et al. 2020). Hence, while MT can remove friction from tourism experiences, annoyance can also increase when tourists and service providers use MT at the expense of acquiring language skills.

2.3 Language tourism

Foreign languages are the centerpiece of the translation process, and they are also the key ingredient of language tourism, understood as "a tourist activity undertaken by those travelers (or educational tourists) taking a trip which includes at least an overnight stay in a destination outside their usual place of residence for less than a year and for whom language learning is a primary or secondary part of their trip" (Iglesias 2016, p. 31). Different typologies of language trips can be identified on the basis of travelers' characteristics (e.g., prior linguistic knowledge, age, and motivations), relationship with the host community (e.g., cultural contact and interaction related to lodging), and educational features (e.g., providers and complements) (Iglesias 2022). The numerous linguistic and cultural benefits of learning a foreign language abroad have been researched (Carvalho and Sheppard 2021a; Tan and Kinginger 2013; Watson et al. 2013; Wolcott 2016), as even short-term stays can facilitate the development of language skills (Hernández 2016;

Issa et al. 2020), cross-cultural development (Chieffo and Griffiths 2009), and interpersonal competences (Baláž and Williams 2004). Intercultural contact between language travelers and between travelers and local residents can lead to enhanced mutual respect and understanding (Iglesias et al. 2019).

The study abroad experience is determined by individual differences (Kinginger 2008). Age, gender, personality traits, linguistic identity, background, competence, and aptitude can be crucial factors (Davidson 2010; Freed 1998; Llanes 2011; Stewart 2010). For Coleman (2013) "both contextual and individual variation contribute, together with social networks, to the essential fluidity and complexity of the study abroad experience" (Coleman 2013, p. 17). The social networks built in the destination, together with sojourners' motivation and attitude, influence contact with the host culture and the development of linguistic skills (Cigliana and Serrano 2016; Isabelli-García 2006). Socialization promotes memorable language tourism experiences (Carvalho and Sheppard 2021b; Iglesias 2017).

According to Allen (2010), context emerges from students' goals, motives, and subsequent actions. Motivation is the basis for language travel (Freed 1998; Pérez-Vidal 2014; Stewart 2010). Allen (2010) characterizes the dynamic nature of language-learning motivation as based on internal and external factors, and distinguishes cognitive motives rooted in learning interests from social motives driven by the desire to communicate with other individuals. Original motivations and expectations can be strengthened or hindered depending on the type of contact with the host community, which can originate different degrees of integration or isolation (Culhane 2004). Therefore, if interpersonal communication is regarded as satisfactory, sojourners become keener on intercultural interaction and second language acquisition (Yashima et al. 2004).

Sustained contact with local residents is a valuable source of input which fosters meaningful social relationships and second language acquisition, so the length of sojourns and the time spent with the host community are relevant (Dewey et al. 2013; Llanes 2011; Magnan and Back 2007; Regan et al. 2009). Longer immersions are linked to more significant progress across linguistic skills (Davidson 2010). Those language travelers who are more willing to communicate with local community members before their trip are more prone to interact with them more and more frequently and are also more satisfied with the experience (Yashima 2004). Besides social networking, cultural sensitivity is another important factor (Baker-Smemoe et al. 2014), as well as language learners' subconscious evaluation of successful communicative achievement, since misunderstandings can affect their self-image negatively (Carvalho 2021a; Pellegrino 2005).

Even though most research on language travel has focused on academic stays exclusively staged by formal education providers (Iglesias 2021), second language acquisition is also achieved through other increasingly popular options, such as service learning, internships, and volunteering (Belyavina 2013; Marijuan and Sanz 2018), in addition to home tuition and au pair stays (Iglesias 2020). Carvalho et al. (2022) have concluded empirically that informal language learning environments are as favorable as formal ones in what concerns the establishment of contact with locals.

The activities undertaken by language tourists (Iglesias 2020) and the type of lodging also influence contact with the host community (Carvalho 2021b; Iglesias 2017, 2020; Juan-Garau and Pérez-Vidal 2007). Homestays can provide more contact opportunities (Carvalho et al. 2022; Schmidt-Reinhart and Knight 2004) and be conducive to linguistic and cultural exchange (Iglesias et al. 2019; Iino 2006). However, their learning and transformational potential can be replaced by frustration and even alienation if no common ground is reached (Diao et al. 2011; Tan and Kinginger 2013), so both sojourners and host families need to make an effort to adapt to each other (Iino 2006). Out-of-class contact favors students' self-confidence and desire to communicate in the target language (Savage and Hughes 2014). On the other hand, study-abroad sojourners are technology-dependent (Stewart 2010), and internet-based communication with family and friends at home can sometimes interfere with their integration in their destination (Kinginger 2008; Levine 2014). How mediation is used as a communicative language activity is worth exploring, taking into account that mediation means "to reformulate, to transcode, to alter linguistically and/or semiotically by rephrasing in the same language, by alternating languages, by switching from oral to written expression or vice versa, by changing genres, by combining text and other modes of representation, or by relying on the resources—both human and technical—present in the immediate environment" (Coste and Cavalli 2015, p. 62–63).

3 Methodology

Data was gathered for a broader mixed-methods study on language tourism (*ANONYMISED).* Following a quantitative approach, 2535 answers were collected between January and May 2021 through an online questionnaire (available in six languages) applied to both people who participated in language tourism (N = 1047) and people who did not participate in language tourism (N = 1476), aged 18 or older.

This study is divided into two parts. The first one concerns the whole sample (N = 2535). The participants were segmented a priori into two subsamples according to their opinion on the importance of MT in the travel context. The purpose of this segmentation was to find out to what extent these differing opinions are associated with differences in terms of profiles and attitudes toward languages in the travel context. An ordinal five-point Likert scale variable ("Technology, such as machine translation tools, makes it easy to travel to any destination, even if you cannot speak the language") was recoded as a binary variable: the categories "strongly agree" and "agree" were aggregated into one category, "agree"; and the remaining categories were merged into the category "not agree" since they clearly do not correspond to agreement.

The second part of the study only concerns a sub-sample of language tourists (LTs)—i.e., individuals who have already traveled to learn or practice a language—with the aim of analyzing how their profiles, attitudes, and travel experiences differ according to their level of agreement that MT played an important role in their most significant language trip. We asked them about their most significant language trip to avoid formulating the same questions multiple times in relation to several

language trips. This sub-sample includes 1,047 LTs, but for this study we considered only the 907 LTs who made their most significant language trip in or after 1990, since before the 1990s free-of-charge MT was not available online (Yang and Lange 2003); therefore, it is not likely that it played any role at all in their language trip. These participants were segmented a priori into two subsamples according to their level of agreement with the statement: "MT tools were very important and/or useful in this trip". The same procedure described above was used to recode this ordinal five-point Likert scale variable into a binary one (i.e., "agree" *vs.* "not agree").

Statistical quantitative data analysis was performed using IBM SPSS Statistics version 28 and included exploratory data analysis (descriptive statistics and categorical factor analysis) and inferential analysis. Descriptive statistics were used to characterize the sample. Twenty-five items derived from previous qualitative studies (Carvalho 2021b; Carvalho and Sheppard 2021a, b; Castillo-Arredondo et al. 2018; Kennett 2002; Redondo-Carretero et al. 2017) were applied to measure the attitudes and beliefs of respondents towards languages in the travel context. Items were measured on a five-point Likert scale, from "1–strongly disagree" to "5–strongly agree". To identify the structure among the items, a nonlinear (categorical) principal components analysis was performed. This method treats ordinal scales, converting categories into numeric values through optimal quantification (Linting et al. 2007a; Linting and van der Kooij 2012; Meulman et al. 2004). The stability of the solution was verified using the nonparametric balanced bootstrap approach with 1000 replications and the Procrustes procedure in order to perform the optimal rotation of the bootstrapped solutions (Linting et al. 2007b). We followed the steps for analysis proposed by Linting and van der Kooij (2012). First, the number of components was established based on the elbow analysis of scree plots, using the eigenvalues of the correlation matrix of the quantified variables, and components were excluded based on the significance level of the variable's loadings on components (assessed by the nonparametric bootstrap results). Second, outlier detection was conducted by analyzing scores of object plots on components: cases with values above the 3.5 absolute value were removed. Third, variables with a total average VAF of at least 0.25 (25% of the variance in the quantified variable explained over components) and significant average loadings on components, based on the 95% bootstrap confidence intervals, were retained. Finally, reliability was measured by Cronbach's alpha coefficient and Hair et al.'s (2019) rules were used. Inferential analysis was applied to compare the segmented subsamples, and it included chi-square tests and *t*-tests of independent samples. The statistical significance level was set at 0.05.

4 Results

4.1 Part 1 Importance of MT in tourism—overall sample

4.1.1 Sample characterization and sociodemographic characteristics

The majority of the respondents (63%) agreed with the importance of MT tools in the travel context. Women accounted for 68% of the sample and there were no gender

differences in terms of agreement with the importance of MT tools for tourism. Respondents' mean age was approximately 38 (M = 37.69, StD = 12.86) and half were 36 or more. Table 1 presents the results of comparing the sociodemographic characteristics of those who agreed and those who did not agree with the importance of MT tools in the travel context. Those who agreed were significantly younger (M = 36.64, StD = 112.62 *vs.* M = 39.23, StD = 13.11; $t(2, 533) = 4.92$, $p < 0.001$, $d = 0.203$). Post-millennials (21%) were significantly more inclined to agree as compared to those born before the 80 s (44%), who were less disposed to agree. A higher percentage of those who agreed were single (53% *vs.* 46% for those who did not agree), and those who did not agree tended to be married or in a non-marital relationship (44% *vs.* 39% for those who agreed) (Table 1).

The majority (81%) were highly educated and 32% were enrolled in a higher education degree. Those who did not agree were more likely to have a post-graduate or a master's degree (38%), while those who agreed had lower qualifications.

Most respondents (64%) had their own income. Those who agreed were significantly more prone to be partially or totally financially dependent (40%) and those who did not agree mostly had their own income (69%). This aspect may be explained by the moderate correlation between age and financial independence ($r_S = 0.37$; $p < 0.001$).

More than half of the respondents (56%) spoke up to three languages either as a mother tongue or as a foreign language. Those who agreed with the importance of MT tools were more likely to speak fewer languages (three or one) and those who did not agree were more likely to speak more languages (five, seven or more).

4.1.2 Beliefs and attitudes towards languages in the travel context

Twenty-five items were used to measure respondents' attitudes and beliefs towards languages in the travel context. The nonlinear (categorical) principal components analysis revealed a three-component structure: benefits of speaking the local language for the travel experience; the primacy of English for traveling; and pragmatic benefits of traveling to learn a language (Table 2). The specifics of the procedure were the following: the scree plots for three to seven dimensions suggested a three-dimensional solution, and almost all the items' loadings on the fourth component were non-significant; five outliers were removed and seven variables, with total average VAF below 0.25, were excluded; the 18 variables retained have significant average loadings on all three components. The final solution has a reasonable fit, it explains about 53% of the variance, and the levels of reliability of the components vary from moderate to very good.

Respondents scored highest on average for the pragmatic benefits of travelling to learn a language, followed by the benefits of speaking the local language for the travel experience, without significant differences between those who agreed and did not agree with the importance of MT (Table 3). As for the primacy of English over other languages for traveling, the average score is slightly above the neutral level of agreement. Those who agreed that the use of MT tools makes it easier to travel to any destination also agreed significantly more with this factor. It should be noted that the majority of respondents (92%) spoke English (either as a mother tongue

Table 1 Overall sample: comparison of sociodemographic characteristics by level of agreement with the importance of MT tools in tourism

Characteristic (%)	Not agree (929)	Agree (1606)	Total (2535)
Gender	$\chi^2(2)=4.919$ ($p=0.085$)		
Female	67.60	68.62	68.24
Male	31.65	31.20	31.36
Nonbinary	0.75	0.19	0.39
Generation	$\chi^2(4)=29.829$ ($p<0.001$)		
Silent (1928–1945)	**0.54**	0.00	0.20
Boomers (1946–1964)	**11.30**	8.16	9.31
Generation X (1965–1980)	**31.97**	27.09	28.88
Millennials (1981–1996)	40.37	43.65	42.45
Post-millennials (1997-…)	15.82	**21.11**	19.17
Marital status	$\chi^2(2)=10.270$ ($p=0.006$)		
Single	46.39	**52.93**	50.53
Married/non-marital partnership	**44.35**	39.41	41.22
Divorced/Widowed	9.26	7.66	8.24
Academic qualifications	$\chi^2(5)=12.337$ ($p=0.030$)		
Less than Secondary Education	0.54	0.81	0.71
Secondary Education	12.59	**14.32**	13.69
Post-Secondary Education	3.23	**5.54**	4.69
Bachelor's	37.46	38.29	37.99
Postgraduate/master's	**38.21**	34.00	35.54
PhD	7.97	7.04	7.38
Attending a higher education degree	$\chi^2(3)=1.844$ ($p=0.605$)		
No	69.00	67.93	68.32
Bachelor's	16.04	17.50	16.96
Master's	9.36	9.84	9.66
PhD'	5.60	4.73	5.05
Income source	$\chi^2(42)=18.295$ ($p<0.001$)		
Having own income	**69.43**	61.02	64.10
Being financially dependent	21.10	**26.28**	24.38
Being partially financially dependent	9.47	**12.70**	11.52
Spoken languages including mother tongue(s)	$\chi^2(6)=32.043$ ($p<0.001$)		
One	0.65	**1.87**	1.43
Two	20.60	22.60	21.90
Three	30.37	**34.60**	33.06
Four	26.80	25.50	26.00
Five	**12.80**	10.12	11.10
Six	4.56	3.69	4.00
Seven or more	**4.23**	1.56	2.54

Note: Bolded values indicate significant associations at the 5% level (results with adjusted residuals positive and higher than 2)

Table 2 Overall sample: nonlinear principal component analysis for items on beliefs and attitudes towards languages in the tourism context

Component and Item's description [a]	Loading	95% Bootstrap CI	Mean (StD)	Eigenvalue	VAT (%)	α
Benefits of speaking the local language for the travel experience			4.08 (0.63)	6.15	34.16	0.88
Knowing how to communicate in the language spoken at the tourist destination, at a fairly reasonable level						
…allows me to have a more authentic experience there	0.78	(0.764, 0.795)				
…allows me to increase my knowledge of the culture and heritage of the destination	0.78	(0.759, 0.794)				
…allows me to increase my knowledge of the local culture and heritage	0.76	(0.741, 0.779)				
…influences my willingness to talk to locals	0.73	(0.713, 0.755)				
…increases my sense of freedom there	0.72	(0.695, 0.736)				
…increases my sense of security there	0.7	(0.682, 0.724)				
…benefits me more than speaking only English	0.67	(0.648, 0.698)				
…earns me more respect in the destination	0.59	(0.564, 0.624)				
I communicate more easily with local residents if I learn a little about their language	0.69	(0.666, 0.714)				
Even if I don't speak the language fluently, being able to say a few sentences makes me feel more welcome when I travel	0.64	(0.610, 0.665)				
Even if you only speak a little bit of the local language, it facilitates contact with locals	0.63	(0.600, 0.659)				
It is important to learn a little of the local language before travelling	0.58	(0.556, 0.612)				
Primacy of English for traveling			3.22 (0.76)	1.96	10.88	0.62
Everyone should be able to speak English to facilitate communication when travelling to other countries	0.72	(0.718, 0.691)				
It is important to learn English in order to make the most out of the trip, no matter what the destination country	0.71	(0.706, 0.674)				
Nowadays, being able to speak English is enough to travel comfortably (as far as communication with others is concerned)	0.63	(0.636, 0.597)				
Learning other languages is of little interest if you can speak English well	0.55	(0.552, 0.503)				
Pragmatic benefits of traveling to learn a language			4.34 (0.84)	1.43	7.96	0.78

Table 2 (continued)

Component and Item's description[a]	Loading	95% Bootstrap CI	Mean (StD)	Eigenvalue	VAT (%)	α
Travelling to learn a language benefits me professionally	0.72	(0.634, 0.764)				
Travelling to learn a language benefits me academically	0.71	(0.628, 0.736)				

Notes: N = 2530. [a]Items measured from "1—strongly disagree", to "5—strongly agree"

or as a foreign language) and only a marginal significant association ($\chi^2(1) = 3.622$; $p = 0.057$) was found between speaking English and agreement with the benefits of MT tools in the travel context: those who did not speak English were more likely to agree with the importance of MT tools for tourism. Indeed, one of the respondents left a comment stating that "The cell phone is the best help when you can't speak English."

4.2 Part 2 Importance of MT in tourism—language tourists

4.2.1 Machine translation tools and LT's travel experiences

Although 61% of LTs agreed that MT facilitates tourism, 81% did not agree that MT tools played an important role in their most significant language trip. Those who did not agree mostly belonged to Generation X (27% *vs.* 15%), while those who agreed tended to be post-millennials (30% *vs.* 21%). There were no statistically significant differences in terms of gender or number of spoken languages between those who agreed and did not agree with the importance of MT tools in their most significant language trip (Table 4).

In terms of trip characterization, most LTs traveled either independently (51%) or participated in short- or long-term exchange programs (45%). A higher percentage of those who did not agree that MT tools were important for their most significant language trip took part in short-term exchange programs (26%, as compared to 17% of those who did not agree), while those who agreed were comparatively more likely to be volunteers (3% *vs.* 1%). The majority of those who agreed had traveled after 2016 (52% *vs.* 35%) (Table 5).

The majority of LTs were solo travelers in both subsamples (55%). The only significant difference between subsamples in terms of travel companions is that those who did not agree with the importance of MT were comparatively more inclined to travel with friends (66% *vs.* 51%). There were no differences with respect to funding sources for the trip.

In terms of reasons for the choice of the target language and destination country, LTs who agreed with the importance of MT tools were comparatively more likely to choose the target language because they wanted to travel to countries where the language is spoken (40% *vs.* 32%) and to choose the destination country because it was affordable (17% *vs.* 6%) or because they wanted a different experience from the one they had in another country where the same language was spoken (11% *vs.* 6%), although the latter reason was only marginally significant at 5% level.

Those who agreed more with the importance of MT tools for their trip had a lower level of fluency at the beginning of the trip. While 42% of these travelers considered themselves beginners before the trip, only 26% of those who did not agree were beginners. In contrast, those who did not agree tended to report an intermediate level of fluency (47% *vs.* 32%). There were no differences between both groups in terms of how the trip influenced the level of the target language fluency.

Table 3 Overall sample: Comparison of attitudes and beliefs towards languages in the travel context

Component (M (StD))	Total (2535)	Not agree (929)	Agree (1606)	t-test (df) value (p-value)	d [a]
Benefits of speaking the local language on the travel experience	4.08 (0.63)	4.07 (0.66)	4.09 (0.60)	(1771) − 0.946[b] (0.334)	0.04
Primacy of English for traveling	3.22 (0.76)	3.07 (0.78)	3.31 (0.74)	(1828) − 7.567[b] (<0.001)	0.32
Pragmatic benefits of traveling to learn a language	4.34 (0.84)	4.30 (0.89)	4.35 (0.81)	(2516) − 1.494 (0.135)	0.06

Notes: Scale ranging from "1—strongly disagree", to "5—strongly agree". [a]Effect size (Cohen 1988): small, $d = 0.2$; medium, $d = 0.5$; and large, $d = 0.8$. [b]Levene's F test revealed heteroscedasticity

Table 4 LTs sample: comparison of sociodemographics by the level of agreement with the importance of MT tools in the most significant language trip

Characteristic (%)	Not agree (735)	Agree (172)	Total (907)
Gender	$\chi^2(1)=1.250$ ($p=0.264$)		
Female	70.07	65.70	69.24
Male	29.93	34.30	30.76
Generation	$\chi^2(3)=15.398$ ($p=0.002$)		
Boomers (1946–1964)	4.35	2.33	3.97
Generation X (1965–1980)	**27.21**	15.12	24.92
Millennials (1981–1996)	47.76	52.91	48.73
Post-millennials (1997-…)	20.68	**29.65**	22.38
Spoken languages including mother tongue(s)	$\chi^2(6)=9.688$ ($p=0.138$)		
One	0.82	1.74	0.99
Two	12.11	16.86	13.01
Three	33.20	34.30	33.41
Four	30.88	29.65	30.65
Five	13.74	13.37	13.67
Six	5.03	3.49	4.74
Seven or more	4.22	0.58	3.53

Note: Bolded values indicate significant associations at the 5% level (results with adjusted residuals positive and higher than 2)

Before the trip, LTs mainly learned the target language at school (46%) and by themselves (30%). Once in the destination, most did not take language lessons (58%). Those who did not agree with the importance of MT were significantly more likely to have learned their target language at a language-related bachelor's or master's degree (20% *vs.* 11%) and to have taken language lessons during the trip (44% *vs.* 34%).

Once in the destination, LTs predominantly contacted local residents (53%) and other foreigners (52%). Those who did not agree were more prone to establish intense contact with host families during their stay (15%) as compared to those who agreed (8%).

Both groups differed significantly (5% level) as regards activities carried out at the destination. A higher percentage of those who agreed with the importance of MT tools practiced sports at the destination (24% *vs.* 17%). In contrast, those who did not agree mostly participated in study excursions (38% *vs.* 27%) and visited museums, heritage, and cultural attractions (84% *vs.* 73%). It should be noted that if we consider a higher level of significance (10% level), those who agreed also tended to travel to neighboring countries (31% *vs.* 24%), to take part in nature activities (51% *vs.* 43%), and to engage in volunteering (10% *vs.* 6%), while the other group was more inclined to participate in activities with residents (45% *vs.* 37%) and in shopping (54% *vs.* 47%).

Table 5 LTs sample: comparison of trip characteristics by level of agreement with the importance of MT tools in the most significant language trip

Trip characteristic (%)	Not agree (735)	Agree (172)	Total (907)	Chi-square test (df) value (p-value)
Travel period				(1) 17.507 (<0.001)
Up to 2016	**65.44**	48.26	62.18	
After 2016	34.56	**51.74**	37.82	
Trip characterization				(4) 10.146 (0.038)
Independent trip	50.75	53.49	51.27	
Short-term exchange	**25.71**	16.86	24.04	
Long-term exchange	19.86	23.84	20.62	
AuPair, workaway, work on site	2.45	2.33	2.43	
Volunteering	1.22	**3.49**	1.65	
Solo traveller[a]	55.10	55.81	55.24	(1) 0.029 (0.866)
Trip companion[a]	(330)	(76)	(406)	
With friends	**66.36**	51.32	63.55	(1) 6.038 (0.014)
With family	22.73	28.95	23.89	(1) 1.314 (0.252)
With spouse/partner	18.48	23.68	19.46	(1) 1.066 (0.302)
Trip financing[a]				
Own financing	46.67	50.00	47.30	(1) 0.621 (0.431)
Family	38.91	34.88	38.15	(1) 0.958 (0.328)
Scholarship	28.98	31.40	29.44	(1) 0.392 (0.531)
Money earned at the destination	5.71	6.40	5.84	(1) 0.118 (0.732)
Prize/award	2.72	2.91	2.76	(1) 0.018 (0.893)
Reasons for target language choice[a]				
Interest in the language and/or culture	66.39	68.02	66.70	(1) 0.166 (0.683)
I like to get to know different languages and/or cultures	58.78	52.33	57.55	(1) 2.374 (0.123)
To travel to countries where this language is spoken	31.56	**39.53**	33.08	(1) 4.000 (0.046)
Academic reasons	40.54	33.72	39.25	(1) 2.722 (0.099)
To get a better job in my country	17.55	22.09	18.41	(1) 1.914 (0.167)
For use at work (including business trips)	26.67	27.33	26.79	(1) 0.031 (0.861)
For emigration	8.71	12.79	9.48	(1) 2.708 (0.100)
To communicate with spouse/partner	2.59	1.74	2.43	(1) 0.416 (0.519)
To maintain knowledge of a language spoken by my family	3.13	3.49	3.20	(1) 0.058 (0.810)
It was my parents (or other relatives) that wanted me to	6.67	7.56	6.84	(1) 0.174 (0.677)
Reasons for country choice[a]				
It is the only country where this language is spoken	7.76	9.30	8.05	(1) 0.451 (0.502)
It is the best place to learn this language	35.37	30.81	34.51	(1) 1.283 (0.257)
I wanted a different experience to the one I had in another country where the same language is spoken	6.80	**11.05**	7.61	(1) 3.571 (0.059)
Proximity to where I live	18.23	21.51	18.85	(1) 0.980 (0.322)
More affordable cost of living	6.12	**16.86**	8.16	(1) 21.448 (<0.001)

Table 5 (continued)

Trip characteristic (%)	Not agree (735)	Agree (172)	Total (907)	Chi-square test (df) value (p-value)
I know people who live in this country	19.73	22.67	20.29	(1) 0.748 (0.387)
Interest in the country's culture	41.22	44.77	41.90	(1) 0.719 (0.397)
The opportunity that arose was for a specific country (e.g., scholarship, prize, partnership agreement)	31.56	28.49	30.98	(1) 0.617 (0.432)
Level of target language fluency at the beginning of the trip				(2) 19.861 (<0.001)
Beginner (A0–A1)	26.39	**42.44**	29.44	
Elementary (A1–A2)	26.67	26.16	26.57	
Intermediate (B1–B2)	**46.94**	31.40	43.99	
How the trip influenced the level of fluency				(4) 5.721 (0.221)
Nothing	0.95	0.58	0.88	
Very little	4.49	5.23	4.63	
Somewhat	17.82	24.42	19.07	
Moderately	36.46	37.21	36.60	
Very much	40.27	32.56	38.81	
How the target language was mainly learned[a]				
At school	45.17	48.31	45.73	(1) 0.384 (0.536)
By myself	29.33	33.90	30.13	(1) 0.964 (0.326)
Through a language course[b]	23.50	19.49	22.79	(1) 0.886 (0.347)
In a language-related bachelor's or master's degree	**20.22**	11.02	18.59	(1) 5.434 (0.020)
With family/friends	20.40	23.73	20.99	(1) 0.649 (0.421)
At an official cultural institute[c]	12.75	10.17	12.29	(1) 0.600 (0.439)
Through private lessons	11.48	8.47	10.94	(1) 0.897 (0.343)
In a bachelor's or master's degree in a field other than languages	9.11	5.93	8.55	(1) 1.253 (0.263)
As a child (it is my mother tongue)	3.64	4.24	3.75	(1) 0.095 (0.758)
Took language lessons at the destination[a]	**44.49**	33.72	42.45	(1) 6.617 (0.010)
Most of the contacts during the stay[a]				
Local residents met at the destination	53.20	48.84	52.37	(1) 1.062 (0.303)
Foreigners met at the destination	52.38	47.67	51.49	(1) 1.236 (0.266)
Friends from home country	30.61	27.91	30.10	(1) 0.485 (0.486)
Teachers	22.31	19.77	21.83	(1) 0.529 (0.467)
Host family	**15.24**	7.56	13.78	(1) 6.919 (0.009)
Spouse/partner	10.61	12.79	11.03	(1) 0.674 (0.412)
Tourist guides	1.77	2.33	1.87	(1) 0.235 (0.628)
Activities[a]				
Tours in the country of destination	85.71	83.14	85.23	(1) 0.734 (0.392)
Visits to museums, heritage, and cultural attractions	**83.54**	72.67	81.48	(1) 10.899 (0.001)
Shopping	53.74	46.51	52.37	(1) 2.921 (0.087)
Nightlife	48.30	48.26	48.29	(1) 0.000 (0.992)
Participation in events (shows, theatre, concerts, sports etc.)	45.44	39.53	44.32	(1) 1.971 (0.160)
Activities with residents	45.03	37.21	43.55	(1) 3.471 (0.062)

Table 5 (continued)

Trip characteristic (%)	Not agree (735)	Agree (172)	Total (907)	Chi-square test (df) value (p-value)
Nature activities	43.13	51.16	44.65	(1) 3.64 (0.056)
Study excursions	**37.96**	26.74	35.83	(1) 7.625 (0.006)
Trips to neighbouring countries	24.22	31.40	25.58	(1) 3.772 (0.052)
Theme or entertainment parks	20.27	19.19	20.07	(1) 0.102 (0.749)
Sports	17.14	**24.42**	18.52	(1) 4.889 (0.027)
Volunteering	6.39	10.47	7.17	(1) 3.471 (0.062)
Level of satisfaction with the trip				(4) 1.430 (0.839)
Not at all satisfied	0.27	0.00	0.22	
Somewhat satisfied	0.27	0.00	0.22	
Neutral	3.67	4.65	3.86	
Much satisfied	26.53	25.00	26.24	
Very much satisfied	69.25	70.35	69.46	
Intention to return				(2) 1.910 (0.385)
No	5.31	4.65	5.18	
Yes	76.60	81.40	77.51	
Perhaps	18.10	13.95	17.31	
Intention to recommend to friends/family				(2) 1.022 (0.600)
No	1.74	1.50	1.54	
Yes	91.86	89.80	90.19	
Perhaps	6.40	8.71	8.27	

Notes: [a]Yes answer; Bolded values indicate significant associations at the 5% level (results with adjusted residuals positive and higher than 2). [b]At a private institution or polytechnic institute/university. [c]e.g., British Council, Instituto Cervantes, Goethe-Institut, Istituto Italiano di Cultura, Romanian Cultural Institute, etc.

There were no differences between both groups with regard to levels of overall satisfaction and intention to return or to recommend the destination to family/friends.

4.2.2 Beliefs and attitudes towards languages in the travel context and travel outcomes

Twenty items were used to measure the outcomes of respondents' most significant language trip. The nonlinear (categorical) principal components analysis revealed a two-component structure: enjoyment of the local experience and personal growth (Table 6). The specifics of the procedure were as follows: the scree plots for three to seven dimensions suggested a three-dimensional solution, and almost all the items' loadings on the fourth component were non-significant; two outliers were removed and eight variables with total average VAF below 0.25 were excluded. The 12 variables retained were restructured into two components, having significant average loadings. The final solution has a reasonable fit, it explains about 63% of

the variance, and the levels of reliability of the components vary from good to very good.

Those who agreed with the importance of MT tools in their most significant language trip had significantly higher average levels of agreement with all dimensions of attitudes and beliefs towards languages in the travel context and with the dimension of personal growth in their most significant language trip. Both enjoyed the local experience equally on average (Table 7).

The results suggest that the use of MT tools by LTs in their language trips neither decreased their positive or enthusiastic attitudes towards the roles of language in the travel context nor diminished their perceptions of personal growth and enjoyment of the local experience. Instead, those who agreed with the importance of MT tools in their trip scored more highly in practically all factors as compared to those who did not agree (Table 7), while not having lower scores in any of the factors.

5 Discussion

While participants in both the second and the first part of the study tended to agree with the general statement that technologies such as MT tools facilitate traveling, in the second part of the study LTs were considerably less prone to agree that such technologies played an important role in their most significant language trip. This result suggests that individuals might believe in the potential usefulness of these tools, even if these did not play an important role in their reported travel experience.

Participants' differences concerning age (in both subsamples) and travel year (in LTs' subsample) may be justified by the developments in neural MT in the last years, which have led to significant improvements in the naturalness and grammaticality of translation output (Gally 2019; Poibeau 2017). According to Gally (2019), the introduction of a neural MT system by Google at the end of 2016 significantly impacted the usability of MT for practical purposes. This might justify why younger individuals and those who reported more recent travel experiences appreciated more the advantages of this technology.

In the first part of the study, we found out that individuals who were more favorable to MT in the travel context were more likely to be young, single, less educated, speak fewer languages, and did not speak English. Agreeing with the importance of MT was associated with believing in the primacy of English in the travel context—i.e., valuing it over other languages –, and with considering that learning English was "enough" while learning other languages was of little interest. Supporters of English as a lingua franca also tended to support comparatively more the importance of MT in communication (Table 8).

In the second part of the study, LTs who did not agree that MT played an important role in their most significant language trip were more likely to speak the target language more fluently at the time of their most significant language trip and to have learned it in more formal contexts, both before and during the trip (Table 9). They also reported a higher level of contact with local host families and higher engagement in activities with locals and culture-related activities. Their higher level of fluency in the local language might have favored integration

Table 6 LTs sample: nonlinear principal components analysis for items on travel outcomes in the most significant language trip

Component and Item's description[a]	Loadings	95% Bootstrap CI	Mean (StD)	Eigenvalue	VAT (%)	α
Enjoyment of the local experience			4.35 (0.60)	6.17	51.40	0.79
Travelling to learn a language allowed me to get to know the local culture better	0.83	(0.800, 0.851)				
I was able to better understand the local culture because I had some knowledge of the language	0.82	(0.796, 0.844)				
Having some knowledge of the language enabled me to have a more authentic experience	0.79	(0.762, 0.818)				
Meeting local residents was easier because I had some knowledge of the language	0.79	(0.760, 0.814)				
Speaking the language made me feel more free	0.78	(0.753, 0.812)				
I was able to solve problems more easily because I could speak the language	0.75	(0.716, 0.787)				
I made friends with locals more easily because I had some knowledge of the language	0.75	(0.712, 0.779)				
Having some knowledge of the language made me feel safer at my destination	0.68	(0.634, 0.723)				
I improved my skills in this language during this trip	0.67	(0.631, 0.715)				
During this trip, I made friends with other foreigners	0.60	(0.541, 0.652)				
Pragmatic benefits			3.97 (1.00)	1.37	11.45	0.88
This trip made me grow more as a person than most other trips	0.71	(0.663, 0.75)				
I learned a lot about myself on this trip	0.71	(0.656, 0.752)				

Notes: N = 2530. [a]Items measured from "1—strongly disagree", to "5—strongly agree"

Table 7 LTs: comparison of attitudes and beliefs towards languages in the travel context and travel outcomes by level of agreement with the importance of MT tools in the most significant language trip

Component (M (StD))	Not agree	Agree	t-test (df) value (p-value)	d[a]
Attitudes and beliefs towards languages in the travel context				
Benefits of speaking the local language on the travel experience	4.22 (0.6)	4.36 (0.51)	$(294) - 3.277$[b] (<0.001)	0.25
Primacy of English for traveling	3.07 (0.8)	3.43 (0.69)	$(289) - 6.080$[b] (<0.001)	0.47
Pragmatic benefits of traveling to learn a language	4.49 (0.74)	4.67 (0.62)	$(294) - 3.186$[b] (0.002)	0.24
Travel outcomes of the most significant language trip				
Enjoyment of the local experience	4.35 (0.61)	4.35 (0.59)	$(903) - 0.097$ (0.461)	0.01
Personal growth	3.89 (1.02)	4.3 (0.81)	$(311) - 5.590$[b] (<0.001)	0.41

Notes: Scales ranging from "1—strongly disagree", to "5—strongly agree". [a]Effect size (Cohen 1988): small, $d=0.2$; medium, $d=0.5$; and large, $d=0.8$. [b]Levene's F test revealed heteroscedasticity

Table 8 Overall sample: agreement with the importance of MT tools in tourism—differences and similarities

	Not agree	Agree
Generation	Millennials	
	Silent, Boomers or Gen X	Post-millennials
Marital status	Married/non-marital partnership	Single
Academic qualifications	Bachelor's	
	Postgraduate/master's	Secondary / Post-secondary Education
Income source	Own income	Partially /totally financially dependent
Spoken languages including mother tongue(s)	2 or 4 languages	
	5, 7 or more languages	1 or 3 languages
Attitudes and beliefs towards languages in the travel context		
Pragmatic benefits of traveling to learn a language	Agree	
Benefits of speaking the local language on the travel experience	Agree	
Primacy of English for traveling	Neutral Agree: less	Neutral Agree: more

and engagement with the local community, whereas for other LTs a higher reliance on MT tools combined with a lower level of fluency might have made communication less spontaneous and led to impatience in more extended conversations (Liebling et al. 2020), thus causing hindrances to more profound contact with locals.

Those respondents who acknowledged the importance of MT in their travel experience reported lower levels of fluency in their target language, and participation in fewer cultural activities in the destination, but higher engagement in nature-based activities, sports, and trips to neighboring countries. They were more likely to be volunteers and less likely to be short-term exchange students. Finally, they tended to

Table 9 Language tourists: agreement with the importance of MT tools in the most significant language trip—differences and similarities

	Not agree	Agree
Generation	Millennials	
	Gen X	Post-millennials
Spoken languages including mother tongue(s)	3 or 4 spoken languages	
Travel period	Up to 2016	After 2016
Trip characterization	Independent trip or long-term exchange	
	Short-term exchange	Volunteering
Trip companion	Solo traveller	
	With friends	-
Trip financing	Own financing, family, or scholarship	
Reasons for target language choice	Interest in the language and/or culture, to know different languages and/or cultures, and academic reasons	
	-	To travel to countries where this language is spoken
Reasons for country choice	Interest in the country's culture, the best place to learn this language, and the opportunity that arose was for a specific country	
	-	More affordable cost of living, and a different experience in another country where the same language is spoken
Level of target language fluency at the beginning of the trip	Intermediate	Beginner
How the trip influenced the level of fluency	Positively (somewhat to very much)	
How the target language was mainly learned	At school or by myself	
	In a language-related bachelor's or master's degree	-
Took language lessons at the destination	Yes	No
Most of the contacts during the stay	Local residents met at the destination, foreigners met at the destination, and friends from home country	
	Host family	-
Activities	Tours in the country of destination, shopping, nightlife, participation in events, activities with residents, and nature activities	
	Visits to museums, heritage, and cultural attractions and study excursions	Sports
Level of satisfaction with the trip	Very much satisfied or satisfied	
Intention to return and to recommend to friends/family	Yes	
Attitudes and beliefs towards languages in the travel context		
Pragmatic benefits of traveling to learn a language	Agree, but less	Around strongly agree
Benefits of speaking the local language on the travel experience	Agree, but less	Agree more
Primacy of English for traveling	Neutral Agree: less	Neutral Agree: more
Travel outcomes of the most significant language trip	Enjoyment of the local experience: Agree	
	Personal growth: Agree, but less	Personal growth: Agree more

choose a destination due to its affordability, as compared to those who did not agree with the importance of MT. Our results also suggest that LTs who seem to have pursued language skills more seriously (or in a more traditional way) assigned less importance to MT tools.

LTs who learned languages in more traditional and formal ways were also less inclined to consider MT important for their travel experience. This may be due to the fact that in formal learning contexts some teachers discourage the use of translation apps among language learners (Groves and Mundt 2015; Vazquez-Calvo

and Cassany 2017). Conversely, individuals who only acquired languages informally may be more prone to integrate translation apps in their language learning to support effective interaction with native speakers (Slatyer and Forget 2020).

Our findings suggest that higher levels of fluency in a language correlate with a lower likelihood of assigning importance to MT tools. These findings corroborate those of previous studies, which pointed out that MT offers more advantages to beginners than to advanced learners (Chung and Ahn 2022; Garcia and Pena 2011; Lee 2020).

Finally, one interesting finding was that for LTs a greater recognition of the role of MT in their most significant language trip was not associated with a less enthusiastic or more unfavorable attitude towards the role of language in the travel context, or with perceived diminished travel outcomes. On the contrary, those who agreed with the importance of MT for the trip had higher average scores in most of these factors as compared to those who did not agree. While these findings may seem surprising, they support the idea that MT use coexists with an interest in language learning and does not necessarily erase it. According to Gally (2018), while MT might weaken practical reasons for language learning, other reasons might prevail, e.g., personal development, cognitive benefits, or fostering critical thinking.

MT is not only a tool for language learning (Klimova et al. 2022; Stewart 2019; Yamada 2019) but also a way of temporarily enhancing existing language skills, thus removing some of the friction caused by not speaking the local language at an optimal level. With MT it is possible to look up words instantaneously during a conversation, clarify written messages sent by locals in apps such as WhatsApp or Line, and double check written messages before sending them to locals. This use of MT might be relevant to sustain foreign language use in contexts of lower fluency, particularly in written communication, instead of switching to a lingua franca like English. Carvalho (2021a) referred to the importance many language tourists attributed to not switching to English, with one research participant underlining that "if you start switching to English once, you're lost" (p. 5), i.e., once one starts interacting with one's hosts in English as a lingua franca instead of in the local language, this pattern of communication becomes harder to reverse and ruins the chances of learning the local language effectively. MT may entail greater benefits for improving socialization opportunities with the locals as compared to relying on weaker language skills alone. However, greater fluency still has further advantages for engagement with locals.

6 Conclusion

This study contributes to the literature on the mediation of IT in tourism by highlighting the complex role that MT plays in shaping tourist experiences. In line with other researchers claiming the potential effect of IT usage in altering travel perceptions and conducts (Wang et al. 2016), we have underscored the idiosyncratic impact of MT on tourists' behaviors and context concerning different experiential dimensions such as language learning and engagement with the local community.

Our study also contributes to the understanding of travelers' perspectives on the use of MT tools according to their profile, language attitudes, and previous language knowledge. More specifically, it contributes to the knowledge of the way LTs integrate this technology in their language trips. Our study also reveals some of the variables that might predispose individuals to resort to MT. We conclude that variables such as age, education, language skills, language attitudes, and language learning environments may have a considerable influence on MT use and attitudes towards MT. This study also contributes to theory building. Technologies are usually considered to remove friction from tourism experiences. Yet, they may also eliminate important elements of the travel experience, like spontaneity and engagement with the local community (Gretzel 2010; Pearce and Gretzel 2012). We postulate that MT plays a paradoxical role in this context, and our findings are aligned with this view. It creates friction in communication due to latency in speech translation, lack of visual contact, and translation errors (Liebling et al. 2020), whereas fluent communication without the need for mediation through technology could ensure a smoother experience and possibly deeper contact with locals (Carvalho 2021b). The substitution of language skills by MT is likely to result in simultaneously greater attrition and poorer engagement in travel experiences. However, MT can also complement and boost tourists' language skills, and thus facilitate communication with locals. Tourists who already have some knowledge of the local language may be able to make more effective use of their language skills. As for tourists who do not speak the local language, they may be able to communicate with locals without having to rely exclusively on non-verbal language. Nevertheless, the benefits of MT-mediated communication may be limited to short superficial communication, and not optimal for longer and more nuanced conversations (Liebling et al. 2020).

Bearing in mind the rapid progress of AI, some inferences and practical implications can be made regarding travelers' stance on MT and its double-edged role in the travel context from different perspectives. In order to capitalize on MT, educational institutions should offer future tourism professionals training on how to use it, raising their awareness of related strengths and weaknesses. Foreign language courses of all levels could take advantage of MT instead of discouraging its use (Vazquez-Calvo and Cassany 2017). Applications like Google Translate or DeepL can facilitate foreign language acquisition and could be employed as a complementary pedagogical resource, for example, to learn vocabulary and its pronunciation, or to foster grammatical accuracy. In this venue, new functions could be added to MT tools, such as bookmarking new words, expressions and grammatical structures, or linking them to language learning tasks which contribute to consolidating users' repertoire.

Likewise, hospitality and tourism companies should train their employees so that technology-mediated communication can be used efficiently and ethically, for example by updating their digital competencies, learning pre and post-text editing strategies, and pinpointing real case studies of communication breakdowns and their practical consequences. Tourism managers and marketers should evaluate the quality and suitability of MT for different tourism contexts, such as destination information, booking services, customer reviews, cultural interpretation, etc. They should also consider the expectations and preferences of different tourist segments regarding MT

use. Moreover, since MT can influence travelers' experiences, it deserves special consideration and can be regarded as an opportunity to personalize how it could be used to adapt to every tourist's need and profile rather than offering a mainstream approach. In turn, software developers should identify the communicative needs of potential users (Fuentes-Luque and Santamaría-Urbieta 2020), i.e., tourists, service providers and educators. New technological advancements should take such needs into account to enhance the affordances of MT with the ultimate purpose of maximizing quality service provision for improved travel experiences. New developments should not only guarantee the validity and reliability of MT but also its practicality so that critical misunderstandings can be reported and avoided while being user-friendly. Other concerns should also be addressed in terms of privacy preservation and diversity needs. Users must be fully aware of the risks and opportunities posed by MT tools (Vieira et al. 2022). Future frictionless MT software should aim at the inclusion of minority languages (Crossley 2018) and diverse accents, besides catering to senior or handicapped population segments as well.

The main limitation of the study is the use of a convenience sample, which impedes the generalization of results. Another limitation is the lack of data for respondents who did not participate in language tourism concerning the influence of MT tools in their tourism experiences. Finally, the lack of previous theory that addresses the role of MT in communication has hindered the formulation of hypotheses for the present study.

Future studies could seek to overcome these limitations. The study of MT use in tourism is a gap ripe for further research. The limitations and risks of the use of this technology are yet to be fully studied (Vieira et al. 2022). The consequences of MT for human interaction in the tourism context are another underexplored field. Further studies could explore to what extent tourists are using MT to engage with local individuals and get closer to the local culture or confirm that MT is just a vehicle for short transactional communication. Another research gap to be filled is how service providers utilize MT in both verbal and written interactions.

Data availability The data that support the findings of this study are not openly available due to reasons of sensitivity and are available from the corresponding author upon reasonable request.

Declarations

Conflict of interest On behalf of all authors, the corresponding author states that there is no conflict of interest. The present work has not been published previously and it is not under consideration for publication elsewhere.

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