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A Corpus-Based Analysis of Bilingual Learners' Moral Judgments: Challenging the Notion of 'Two Souls in a Bilingual Mind'

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Análisis basado en corpus de los juicios morales de los estudiantes bilingües: cuestionando la noción de “dos almas en una mente bilingüe”

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ABSTRACT. This study provides empirical evidence challenging the notion that bilingualism fosters separate cognitive systems. By demonstrating that bilingual learners exhibit flexibility rather than cognitive division in moral judgments across languages, the research contributes to understanding bilingual cognitive processes and offers pedagogical implications for bilingual education. Situated within Taiwan's bilingual education policy, this mixed-methods study investigates moral reasoning among bilingual university students through structured interviews in both L1 (Mandarin Chinese) and L2 (English). Detailed analyses, including lexical and sentiment analysis, reveal no statistically significant differences in moral judgment across languages, though subtle differences in lexical richness, sentiment expression, and reasoning strategies were observed. These findings emphasize the need for scaffolding, culturally responsive teaching, and strategic questioning techniques to enhance learners' cognitive and linguistic engagement in English Medium Instruction (EMI) settings. The study underscores the importance of flexibility and adaptability in bilingual education, challenging the skepticism of 'two souls in a bilingual mind.'

Keywords: Bilingual education; moral judgments; cognitive system; verbal production; higher education.

RESUMEN. Este estudio proporciona pruebas empíricas que cuestionan la noción de que el bilingüismo fomenta sistemas cognitivos separados. Al demostrar que los estudiantes bilingües muestran flexibilidad en lugar de división cognitiva en los juicios morales entre idiomas, la investigación contribuye a la comprensión de los procesos cognitivos bilingües y ofrece implicaciones pedagógicas para la educación bilingüe. En el marco de la política de educación bilingüe de Taiwán, este estudio de métodos mixtos investiga el razonamiento moral entre los estudiantes universitarios bilingües mediante entrevistas estructuradas tanto en L1 (chino mandarín) como en L2 (inglés). Los análisis detallados, que incluyen análisis léxico y de sentimientos, no revelan diferencias estadísticamente significativas en el juicio moral entre idiomas, aunque se observaron diferencias sutiles en la riqueza léxica, la expresión de sentimientos y las estrategias de razonamiento. Estos hallazgos enfatizan la necesidad de andamiaje, enseñanza culturalmente sensible y técnicas de interrogatorio estratégicas para mejorar la participación cognitiva y lingüística de los alumnos en entornos de Enseñanza a través del inglés (EMI, por sus siglas en inglés). El estudio subraya la importancia de la flexibilidad y la adaptabilidad en la educación bilingüe, desafiando el escepticismo de "dos almas en una mente bilingüe".

Palabras clave: educación bilingüe; juicios morales; sistema cognitivo; producción verbal; educación superior.

Introduction

Taiwan's aspiration to designate English as an official language by 2030, as part of the multilingual plan initiated in 2018, has sparked significant debate. While bilingual education has been widely promoted, it has also faced criticism and mistrust from linguists and English language teachers (Fan, 2020; Her, 2023; Liao, 2022; Lin, 2020; Lu & Yuen, 2020). Critics argue that language represents the essence of an individual, and that acquiring a different language requires the acquisition of a secondary essence (Her, 2021, 2022). Kramsch (1993) suggests that language manifests specific cultural standards that lead to distinct political cultures, intellectual styles, and societal values. Some see the implementation of bilingualism in Taiwan as expanding the market for English assessment services, eroding Taiwanese identity, and restricting citizenship to those proficient in English (Her, 2023). However, extensive research provides a variety of persuasive evidence that challenges the assertion that multilingualism fosters different thinking systems across languages.

A seminal study by Scott (1973) showed that bilingual learners exhibited a notable advantage in their creativity and ability to provide viable solutions rapidly. Based on an expanding corpus of scholarly studies, there is little evidence to substantiate the claim that the brains of bilingual individuals operate akin to two distinct entities or linguistic systems within the brain. Such a division would result in the dispersion of an individual's cognitive resources and consequently impede effective reasoning abilities. In contrast, research has shown that bilingual students or children demonstrate superior cognitive abilities to their monolingual counterparts (D'Souza et al., 2021). Furthermore, research has revealed that bilingual children have exceptional performance across various domains of L2 proficiency due to their possession of the requisite language skills in L2, explicitly pertaining to academic subjects. Based on the findings of bilingual scholars, such as Macaro (2015) and Pérez Cañado (2020), individuals who question the advantages of bilingualism may misunderstand the impact of bilingual programs on learners' proficiency in their L1 and in L2, mastery of content, translanguaging abilities between L1 and L2 during classroom activities, and

potential elitism within bilingual education and these allegations potentially threaten the progress of bilingual education.

The literature has addressed the benefits of promoting bilingualism and the complexities related to self-identity, divergent cognitive processes, marginalized minority groups within bilingualism, and the validity of purported advantages associated with bilingualism (Donnelly et al., 2019). The concern of 'two souls in a bilingual mind' is a matter of ongoing scholarly debate, with divergent perspectives stemming from inherent challenges related to subjectivity and relativity in advocating for bilingual education. Our study refrains from adopting a pre-determined stance. Instead, it examines how bilingual education can impact and uncover the authenticity of students' oral proficiency in the target language. The potential discrepancy between bilingual learners' cognition and verbal abilities in their L1 and the target language within bilingual education is a noteworthy consequence of the increased prevalence of English Medium Instruction (EMI) courses in Taiwanese higher education. This aspect, often overlooked by English language educators and other stakeholders, warrants attention and further investigation.

Literature Review

Bilingual Cognitive Flexibility

As discussed earlier by Scott (1973), bilingual learners show a marked advantage in originality and in the rapid generation of contextually appropriate solutions, corroborating earlier claims that bilingualism can enhance creative and divergent thinking. Accumulating evidence from neurolinguistic and cognitive research provides minimal support for the notion that the bilingual brain functions as two fully segregated linguistic systems; instead, bilingual language use recruits partially overlapping neural and cognitive resources rather than "split" processing modules. Although a rigid division of systems would possibly fragment cognitive resources and impede higher-order reasoning, empirical findings (e.g., Al-Amri, 2023; Tao et al., 2021) show that bilinguals exhibit improved executive control and flexible problem-solving skills

throughout their lifespan. However, some studies report that bilingual children and students often outperform their monolingual peers on tasks tapping executive functions, cognitive flexibility, and problem-solving, including in adapting to academic contexts (D'Souza et al., 2021). Empirical work further indicates that bilingual children frequently attain high levels of L2 proficiency, especially in school-related domains, when they have access to sustained, content-rich exposure and opportunities to mobilize their L2 for academic purposes. Building on the work of bilingual-education specialists such as Macaro (2015) and Pérez Cañado (2020), current scholarship attributes persistent skepticism about the benefits of bilingualism to misunderstandings regarding potential negative effects on L1 development, L2 attainment, content learning, the role of translanguaging practices during instruction, and perceived elitism in bilingual or CLIL-type programs. These interpretations may potentially undermine the ongoing development and implementation of bilingual education, despite the growing evidence supporting its cognitive, linguistic, and academic advantages. In general, the cognitive benefits of bilingualism, particularly in originality, flexible attention, and rapid problem-solving, have been documented in many studies (e.g., Bialystok et al., 2012; D'Souza et al., 2021; Sanches de Oliveira & Bullock Oliveira, 2022; Scott, 1973).

Making Moral Judgments in Dilemma Situations

Individuals face moral dilemmas because they hold conflicting moral principles or values that lead to choosing between options with varying degrees of gain or loss for the individual or group. Hence, the difficulty in making moral judgments or decisions—adopting different moral principles results in different consequences. In *A Theory of Justice*, Rawls (2009) demonstrates the moral values of Western democratic societies, arguing that it is 'justice as fairness'. Although Kohlberg argues that moral development is cross-culturally universal, other scholars, like Schweder (1982), suggest that cultures with cultural factors like religion, divinity, or social values may make different moral judgments when faced with dilemmas. Jensen (2008) proposes a cultural-developmental template that emphasizes the influence of culture on the development of moral thinking. Sachdeva et al. (2011) argued that

the cultural structure can explain why different cultures have different moral codes of conduct, content, and applicability. Additionally, the concepts of community, groups, interdependence and contextual factors such as social roles and social relationships (Shweder, 1982) or emotional factors (Haidt, 2003) also influence moral judgments. For instance, Hwang (2012) pointed out that Chinese culture is influenced by the ideological value of benevolence in Confucianism. An Eastern culture (collectivism) that emphasizes particularism will make different moral judgments based on other “relationships,” while Western culture (individualism) emphasizes universalism and tends to use the same standards to make consistent moral judgments. Ma (1997) also explains that the ‘emotional’ factor strongly influences Chinese moral thinking and judgment. Lee et al. (1997) pointed out that moral judgment varies according to whether people focus on individual behavior or group interests.

Studies on moral judgment in L1 and L2 uncover significant disparities. Bartels (2008) and Björklund (2000) emphasize the significance of moral standards and circumstances in influencing moral judgment. Bartels (2008) focuses on the influence of different thinking styles, while Björklund (2000) highlights the impact of defense mechanisms and implicit processes. Zhu (2023) delves more into the impact of gender and cultural disparities on ethical decision-making, specifically in the context of the tram and footbridge dilemmas. Cummins and Cummins (2012) contest the dual-process model of moral judgment, proposing that initial judgments are shaped by affect rather than deontological principles. These studies indicate that moral judgment is an intricate and diverse process influenced by various individual and contextual factors. That is, moral judgments are influenced by moral standards and circumstances, and initial judgments are shaped by affect rather than deontological principles.

Language and Cognition

Despite intensive research on bilingualism across several disciplines, there is no comprehensive model of how bilingual speakers use and process their respective languages. Studies frequently focus on a single theory or methodology or only examine a few languages and language

varieties (Filipović & Hawkins, 2019). Bilingual language behavior can be conceptualized as a complex adaptive system, drawing upon the framework proposed by Gell-Mann (1994). Within this framework, several elements interact, resulting in diverse observable outcomes and the emergence of various forms of interlanguages. The investigation of syntactic priming among bilingual individuals (Hartsuiker & Pickering, 2008) yields empirical support for the notion that bilingual speakers possess an understanding of the elements that are either common or distinct across two grammatical systems. Research has demonstrated that processing sentences in one language can influence the processing of syntactically comparable sentences in another language. Reactivating a previously used syntactic structural representation is more effortless than activating an utterly new representation (Traxler & Tooley, 2012).

The Complex Adaptive System Principles (CASP) model, proposed by Filipović and Hawkins (2019) for bilingualism, posits that the rules governing multilingual language behavior represent an intricate adaptive system wherein multiple elements interact in competitive or collaborative ways. The overarching principles of the CASP model for bilingualism delineate the mechanisms encompassing language acquisition, usage, and grammar among bilingual individuals. These mechanisms can be influenced by various factors, including the bilingual individual's level of proficiency, acquisition background, and frequency of language use. Additionally, the specific characteristics of a communicative context, such as interactions between bilingual speakers, one monolingual speaker, or two monolingual speakers (each using a different language), can also shape these mechanisms.

In addition, according to the Thinking for Speaking (TFS) theory proposed by Slobin (2003), the influence of language on cognition becomes evident during language-related tasks such as speaking, listening, writing, and reading. Numerous studies using functional monolingual speakers of a single language have provided evidence that TFS is particular to the language in question, as demonstrated by research (e.g., Slobin, 2003). In recent years, a growing body of research has focused on second language (L2) learners, which has revealed the challenges associated with developing the ability to think and express oneself in an L2 (Koster & Cadierno, 2019). Even experienced L2 learners

have encountered difficulties in this regard, as highlighted by Cadierno (2017). L2 acquisition presents a compelling rationale for documenting the behavioral changes that transpire when individuals transition to a different language (Pavlenko, 2014).

Indeed, the extensive literature on empirical research studies the connection between bilingual individuals' production in their L1 and L2. For instance, the study by Hohenstein et al. (2006) examined language usage patterns extending beyond the notion that individuals' L1 may impact their production of an L2. They investigated the bidirectional transfer of lexical and grammatical elements in adult English and Spanish speakers with varying ages of L2 acquisition by having participants watch video portrayals of motion occurrences and subsequently orally describe them. The findings indicate that bilingual individuals exhibit similar lexical and grammatical patterns in describing motion as monolingual individuals do in each language. Nevertheless, despite the presence of bidirectional lexical transfer among the participants, only grammar transfer from L1 to L2 was observed. In addition, the acquisition of L2 after puberty was found to impact the selection of vocabulary in the L2. However, they also observed that both individuals who acquired the L2 early and those who acquired it later in life demonstrated an influence of the L2 on their selection of vocabulary in their L1. Ultimately, the results pertaining to grammatical transfer and age of learning exhibited a combination of outcomes.

Yet, Filipović (2018) shows that English monolingual speakers performed more than their Spanish counterparts in the recognition test, regardless of whether verbalization was involved. However, the bilingual participants' findings provide significant evidence indicating that these individuals tend to adopt a single lexicalization pattern deemed acceptable in both languages. Furthermore, it was found that those who were monolingual in Spanish and those who were L1 Spanish speakers and L2 English speakers consistently distinguished between deliberate and non-intentional occurrences. Interestingly, the L2 speakers predominantly relied on their L1, even though they only used the L2 during the experimental tasks.

Moreover, Koster and Cadierno (2019) studied the impact of language on memory in individuals who speak an L2. They found that native speakers of German (L1) demonstrated a higher level of

precision in their ability to recognize changes in object positions compared to individuals who are native speakers of Spanish (L1). The trial results indicated that Spanish learners of L2 German had a higher level of accuracy in their performance compared to native German speakers (L1). This study supports the impact of task-irrelevant background speech on memory recall for the spatial arrangement of objects in placement scenarios among native speakers of the L1. Additionally, the findings demonstrate that L2 speakers exhibit enhanced accuracy in their memory performance compared to L1 speakers.

There is a lack of uniformity in the behavior of speakers when their languages are very different from one another (Pavlenko, 2011). Individuals often possess a range of linguistic choices and exhibit preferences for specific options based on contextual factors. It has been observed that language competency plays a crucial role in predicting the process of conceptual restructuring inside the bilingual mind. Therefore, our study aims to contribute to the limited body of research by investigating the cognitive and linguistic processes of Chinese (L1) and English (L2) speakers when faced with decision-making dilemmas in distinct L2 contexts.

Research Methods

Context, Participants, and Instrument

The study participants came from a department of applied English at a Taiwanese university. In addition to language courses, the department delivers a significant portion of content courses in English (EMI). Thus, the students are extensively engaged in the use of English and, therefore, are expected to be proficient in it. Hence, English can be regarded as their L2, holding equal significance to their L1—Mandarin Chinese—in terms of attaining academic proficiency and professional efficacy. However, Chinese remains their primary language for social interactions. They utilize the two languages for distinct purposes, so they comprehensively qualify as bilingual learners.

The study was conducted to analyze potential variations in moral judgment among bilingual learners with varying proficiency levels in

their L2. The primary focus was to examine the impact of L2 commands compared to their L1 on moral judgments. We randomly selected 10 freshmen, sophomores, and seniors. Subsequently, we intentionally divided these participants into two groups. One cohort comprised five students with English proficiency at B2 and C1 levels and was labelled as the higher achievers (HA). Conversely, the second cohort consisted of five students with an average English proficiency at B1 according to the Common European Framework of Reference (CEFR), and they were referred to as the lesser achievers (LA).

In contrast to other quantitative investigations on moral judgment, the present study employed mixed methods, specifically interviews and lexical analysis, to delve into more comprehensive data. The participants were presented with hypothetical scenarios involving moral dilemmas, such as the trolley problem and the footbridge dilemma. These scenarios required them to choose between options that may result in varying degrees of gain or loss for individuals or groups. The study focuses on analyzing the participants' judgments and resolutions for each moral dilemma and their discussions about their different elements. They were asked questions like "What would you do in this situation?" and "Why did you choose this option?" These questions aimed to elicit participants' moral reasoning and decision-making processes. Afterwards, the participants' reactions and answers to the questions were examined, and their strategies for addressing moral difficulties were discussed. Subsequently, the primary content of the subject's concern and their discussion regarding the moral dilemma based on their responses and answers to the questions were analyzed. The interview data were then scored using the scoring method.

Following a one-month delay, all students were interviewed again. The period was aimed at mitigating potential biases from the initial interview, during which participants may still recall their responses in the English interviews. The second interview followed the identical protocol and employed identical scenarios as the initial session, and all interviews were done in Chinese. Each interview had a duration of approximately 30 minutes. Subsequently, following the conclusion of the second interview, the same interviewer proceeded to conduct the third interview. In the initial two interviews, each participant was presented with their preferred set of scales. The non-native speakers (NNS)

collaborated with the researchers to analyze and evaluate the similarities and differences in their decision-making processes during interviews conducted in their L1 and L2, respectively. The primary objective of the third interview was to get insight into the learners' process of elaborating on their choices, whether they were similar or different, in the two given scenarios. All interviews were recorded in audio and transcribed.

Analysis

Distinct analytical methods were employed to serve varying research objectives. The field notes were initially analyzed, and the audio recordings were transcribed using transcription software. Both interviewers carefully reviewed and cross-checked the transcriptions to ensure precision and uniformity. The transcriptions were employed for both quantitative and qualitative analyses. The study corpus consisted of two sets of English-spoken tokens, representing LA and HA, created using the concordance tool WordSmith Tool (Scott, 2018). This study's reference corpus comprised spoken texts from the British National Corpus (BNC). Subsequently, a comprehensive examination of the English tokens was conducted, encompassing several aspects such as sentiment analysis, word lists, text comprehensibility, lexical richness, and density. The spoken texts of the NS interviewer were also collected and analyzed as a unified corpus to examine the potential impact of his scaffolding speech, including elaboration, rephrasing, and exemplification, on the length of the interviewees' responses. Moreover, t-tests were used to compare the moral judgments of high and low L2 achievers across languages. Statistical significance was calculated using a p-value threshold of 0.05.

For sentiment analysis, we collected the speech texts of individual respondents from two distinct situations. These texts were then input into two separate opinion-mining websites to assess the degree to which the interviewees' speech texts conveyed negative or positive sentiments while discussing the challenges they faced due to their choices. Subsequently, a comparison was made between the machine-generated outcomes and the self-reported difficulty levels to ascertain whether the linguistic expressions employed by bilingual learners

during the English interviews could accurately convey and mirror their respective levels of effort. For our analysis, we curated a collection of lists comprising the most frequently utilized words and phrases found in the LA and HA corpora. Our objective was to investigate potential disparities in the usage of words and phrases between the two bilingual groups, specifically in the context of expressing their opinions. This investigation aimed to discern whether such disparities could be attributed to variations in L2 competence levels. Concerning the lexical density and part of speech of the spoken texts provided by the respondents, we utilized lexical analysis websites to quantify the aforementioned data. The main objective of this study was to examine the potential differences in the utilization of the English lexicon between bilingual learners with high and low proficiency levels. Additionally, we aimed to investigate whether their competency in their L2 influenced their decision-making processes compared to their responses in their L1.

In the third interview, the data were analyzed using the grounded theory methodology (Strauss & Corbin, 1997). The connected themes in the transcripts were generated using MAXQDA (VERBI Software, 2021). The two researchers detected and cross-checked several codings in their study. Our qualitative study employed the content analysis technique, specifically: lexical analysis and thematic analysis (Oliveira et al., 2013).

Results and Discussion

Similar Moral Judgments between Low- and High-L2 Achievers Across Languages

Both HA and LA exhibited comparable decision-making patterns in their L1 and L2. No statistically significant differences were observed in the difficulty ratings or sense of effort experienced by participants. The impact of L2 proficiency on the cognitive processes involved in moral judgment remains inconclusive, as it appears to have no substantial effect across various linguistic contexts. This suggests that moral judgments were mostly influenced by intuition and cultural factors rather than by language. According to Pavlenko (2011), there is a notable

influence of the L1 on the verbal usage of the L2. This influence is particularly evident among learners at the beginner and intermediate levels of L2 proficiency. Advanced L2 users, on the other hand, demonstrate a departure from the patterns of their L1 and start to adopt the patterns of L2 speakers, both in verbal and non-verbal communication.

However, it is worth noting that the individuals we interviewed still need to undergo this restructuring process. The t-test results indicated no statistically significant difference between the two groups when subjected to a challenging decision-making task in two distinct scenarios, one conducted in their L1 and the other in their L2. One potential factor that could contribute to this phenomenon is the operationalization of high and low L2 achievers in our research methodology, wherein both groups consist of L2 majors who possess varying levels of proficiency in their second language, as opposed to non-L2 majors. This exemplifies the imperative and reflects the challenge of precisely and appropriately classifying the ability of L2 learners as either low, intermediate, or advanced users when investigating bilingual individuals' cognitive and linguistic abilities. The research conducted by Helzer et al. (2017) indicates that an individual's moral reasoning remains consistently stable and is not influenced by their proficiency in an L2. Consequently, our current experiment needs to provide initial support for the skepticism surrounding the coexistence of two distinct cognitive states within a bilingual mind. This finding is particularly relevant as bilingual education is being extensively advocated for in Taiwan.

Sentimental, Lexical and Structural Analysis of the Speeches in L1 and L2

The sentiment analysis was conducted on the adjectives employed by the learners to articulate the challenges encountered while reaching a complex decision within the dilemmas, and the findings reveal that high L2 achievers expressed more negative sentiments in their L2 interviews, suggesting superior lexical proficiency and emotional expression. The variation in lexical proficiency between individuals is further supported by the type/token ratio (TTR) and average sentence length (in words) observed in the L2 interviews. High L2 achievers used

a greater number of negative words when describing their difficulties in making judgments, indicating higher lexical skills in their second language. Also, TTR and average sentence length were slightly higher for HA than for LA. Specifically, the TTR values were 12.07% and 11.96% for high and low L2 achievers, respectively, while the average sentence length was 10.64 words for HA and 10.24 words for LA, although these differences are relatively small.

Nevertheless, it is worth mentioning that the interviewer, a native English speaker, had a comparatively greater range of lexical diversity (TTR) and average sentence length while engaging with both high and low L2 achievers. His TTR for HA is 5.81%, whereas for LA is 4.85%. Additionally, the average sentence length for HA is 9.62 words, while for LA it is 10.12. This suggests that bilingual students who excel in their L2 might benefit from employing a greater vocabulary range while conversing with proficient native L2 speakers. Conversely, individuals who struggle in their L2 may require additional lexical variations or support from native L2 speakers to communicate effectively.

The validity of our premise is further supported by the evaluation of the lexical comprehensibility scores of the spoken texts obtained from the groups interviewed. Subsequently, utilizing concordance software, we constructed the most frequently occurring terms and phrases employed by the participants from both groups. These findings are presented in Table 1. The findings indicate that participants commonly employ the first-person pronoun 'I' and its related expressions (e.g., *I think, I will, if I, I don't, so I...* etc.) in their responses to the questions. Given the nature of the problem scenarios prompting the need for elaboration of their judgments, it is expected that L2 students would initiate their verbalization by employing the first-person pronoun 'I' to convey their position, followed by presenting their supporting rationale. The data presented in our study emphasize the significance and potential of engaging L2 learners in bilingual classrooms through the use of referential questions, as opposed to an overreliance on display questions that may impede the development of L2 proficiency and cognitive abilities (Yang & Yang, 2026; Doiz & Lasagabaster, 2023; Lasagabaster, 2023; Lasagabaster & Doiz, 2022).

Table 1. Typical Words and Phrases in Bilingual Learners' Spoken Texts

Words in high achievers	I, the, to, yeah, a, like, because, it, is, so, but, and, not, yes, this, of, think, don't, it's, if, would, that, will, just, decision, I'm, me, people, be, more, my, make, want, other, right
Phrases in high achievers	I think, I don't, if I, I would, to save, don't, I will, so I, but I, have to, want to, to make, save the, because I, it is, like I, the person, I don't want, save more people, I think I, don't want to, I think it's, if I don't, in this situation, but if I, to save the, duty is to,
Words in low achievers	the, to, yes, is, this, so, that, will, a, and, think, in, if, because, it, maybe, save, not, but, it's, just, yeah, one, people, you, have, of, situation, persona, for, do, can, okay, don't
Phrases in low achievers	I will, I think, if I, so I, to save, want to, I don't, I would, save the, because I, maybe I, have to, this situation, the strangers, in this, I can, is not, think I, and the, I have, I think I, I have to, don't want to, I want to, I don't want, save the other, think I will,

In addition, we computed the lexical density (LD), which represents the ratio of contextual words to total words, as well as the part of speech (LC: lexical category) of the oral texts in both groups. The current study reveals that the bilingual students exhibit a comparable language deficiency in the majority of English-spoken texts, specifically below 40% (Ure, 1971). This suggests that the proficiency level of our learners in their L2 is approaching that of a near-native standard. This outcome aligns with the research conducted by Hyltenstam and Österberg (2010), which indicates that there is no statistically significant distinction in language development between proficient L2 learners who are near-native and individuals who are native speakers. Regarding the concept of part of speech, Chou (2018) observes that L2 learners enrolled in L2-immersed programs, such as EMI, exhibit reduced levels of speech anxiety. However, they continue to struggle with the incorrect usage of parts of speech, particularly in certain contextual situations.

The findings of our study indicate that the respondents mostly utilized nouns, verbs, and pronouns in their speech. Notably, the L2 LA group exhibited a somewhat higher proportion of pronouns compared to verbs, which suggests potential challenges in expressing whole

sentences verbally. The examination of our spoken texts reveals that pronouns are commonly employed. The reason for this is that our scenarios prioritize the extraction of interviewees' decision-making reasoning, which may result in certain part-of-speech categories being predominantly represented by one or two items. This is especially true if the part-of-speech categories are dominated by a limited set of frequently occurring word-form items, as noted by Culpeper (2009). The results of the lexical analysis revealed slight variations in lexical usage among the two groups. However, it is difficult to draw definitive conclusions regarding the learners' comparable or dissimilar judgments due to their varying levels of lexical competence in their L2. Consequently, we conducted additional interviews to gather more comprehensive evidence.

Interview with the Bilingual Students

This section presents the results from the third-stage interviews, which asked the participants to explain the reasons for similar or different judgments in the given situations. Their responses were classified into distinct thematic categories.

Adaptation to the Target Cultural Norm

Research has indicated that multilingual individuals rely on the cultural norms associated with spoken languages when making judgments. In essence, individuals tended to adhere to a Confucianism framework while making judgments in their native language, Mandarin Chinese, but adopted an Anglophone cultural framework when communicating in their second language, English. It was uncertain if individuals would consciously require a period to assimilate and internalize a different cultural standard before expressing their opinions or if they would instinctively adjust without conscious knowledge. A female student belonging to the HA group stated:

“When I was in the States, it was very normal to place personal interest in the first place. Individualism isn't wrong there. I would not push the man to stop the train because I would commit a crime if I did so. I don't want to run any risk of going to jail. However, when you asked about my decisions in Chinese, I would push down the man to save the passengers on the train because, in Chinese culture, you are expected to sacrifice the small self to

complete a big self. So, that may be the reason why I said differently in L1 and L2.”

Another male student in the LA group also expressed that,

“It made me struggle to decide, as I was wrong no matter which decision I made, eventually. I want to save the passengers on board but cannot kill a life. So, if I had another option, I would jump down the bridge to stop the train by myself. I believe sacrificing my life to save other’s lives is understandable and virtuous in our culture, making my parents proud.”

The participant’s feedback supports the notion that bilingual learners exhibit cognitive flexibility rather than cognitive division. This aligns with Scott’s (1973) and D’Souza et al.’s (2021) cognitive advantages of bilingualism, such as originality and rapid problem-solving abilities. Yet, this scenario may manifest more frequently among bilingual students with advanced language skills. It remains unclear if the participants’ answers are influenced by the cultural norms prevalent in Anglophone countries, which may be a result of their extensive exposure to and potential assimilation into the target language, or if they are only adapting their responses because the interviewer is a native English speaker. Regardless of the cause, bilingual pupils have increased flexibility and imagination when proposing solutions.

Avoidance Strategy in Decision-Making

Another factor that contributed to the divergent judgments of participants was the level of proficiency in the target language. The decision-making process of the respondents would likely be influenced by their limited competence in English as a second language, leading them to struggle in expressing their genuine views accurately. Consequently, they may choose more straightforward replies when commenting on the presented dilemmas. Alternatively, individuals might employ an avoidance tactic to conceal their comparatively limited second language proficiency and an avoidance tactic to deliberate about a decision with uncertainty. In other words, the participants’ responses in their L1 had a higher degree of accuracy in reflecting their genuine views; however, there is no significant difference in their choices between L1 and L2. The modest disparities observed among the participants do not necessarily indicate a shift in their attitudes due to the effect of the English language and its related cultures. Instead, these

variances may be attributed to the participants' inclination towards providing prompt and effortless responses.

The aforementioned explanation was more frequently provided within the lower proficiency group. One female participant in the LA focus group remarked:

My decisions in L1 and L2 might be similar, but I might explain the reasons differently because sometimes it's tough for me to find the right words or phrases to express my real thoughts in L2. In this case, I will try to use only the words I know in L2 to answer.

Another student also remarked:

I have to admit that what I said is not exactly what I meant because I don't think my L2 proficiency is good enough to express my ideas. That's why I just chose a safe answer that I can explain.

Nevertheless, among the cohort displaying superior proficiency, the avoidance technique did not correlate with their L2 proficiency level. Instead, their decision to avoid making a choice stemmed from other influencing factors. As an illustration, a participant from the HA group expressed:

In the train-crash scenario, even if I didn't push the big guy off, I wouldn't commit a crime, and the tragedy was doomed to happen even without my being there. However, if I'm a nurse and didn't warn the doctor that he was injecting the wrong medicine, I might be lawfully guilty because it's my job to monitor or assist the doctor.

The aforementioned concern does not stem from cultural adaptation, as discussed in the first topic, but rather from a desire to mitigate legal penalties or liabilities. The responses observed suggest a potential issue in EMI classrooms where the instructional language (L2) may need to be suitably adapted or adjusted (e.g., through rewording or rephrasing) to facilitate genuine learner engagement. Consequently, there is a risk of inadvertently coercing students into providing inaccurate responses that may diverge significantly from their genuine thoughts. The findings of our experiment indicate that the lexical and part-of-speech analysis demonstrated consistent levels of lexical density and comprehensibility for the interviewer, a native speaker of the L2. This pattern was observed during interviews with HA and LA students. It is worth noting that this phenomenon is frequently observed in contemporary bilingual classrooms in Taiwan EMI classrooms.

Ripple Effects from Life Experiences

The divergence in decision-making between participants in L1 and L2 can be attributed to the impact of recent life experiences. The interviews in the L2 and L1 were separated by a one-month interval, during which the participants' experiences may have influenced their subsequent decisions. A male student from the HA group said:

Recently, I saw the news on TV about a train derailment that killed many passengers, which is very horrible. In the first interview, I might not be so motivated to save the passengers on board, but in the second interview, after watching the news, I would be more willing to push the man down to save the passengers. Sacrificing one life to save many and their families should be worth it.

Another student from the LA group remarked:

My grandmother just died in hospital two weeks ago, which made me sad and believe that life is so fragile. Of course, I wish the doctor could save my grandmother's life. So, if I were the nurse, I would tell the doctor that he would inject the wrong medicine because saving a life is the mission of doctors and nurses. As for the other patients waiting for an organ transplant, they can keep waiting. I know my decision differs from the first, but I have changed my mind.

In addition to considerations about cultural assimilation and linguistic obstacles, moral evaluations may exhibit variability in response to the evolving narrative of an individual's life. Nevertheless, the investigation is ongoing regarding the potential impact of life experiences on the students' decision-making process and whether this would change their choices if they were to be re-evaluated in L2 after one month. The interaction between L2 proficiency, adaptation to the target culture, and life events can collectively impact bilingual students' verbal production and moral judgment in their L2. This observation underscores the intricacy of cognitive functioning in multilingual students.

Conclusion and Implications

In this study, we conducted a small-scale investigation to explore potential variations in moral judgments among bilingual learners when

faced with dilemma challenges in their L1 and L2. The findings indicate no statistically significant differences in moral judgments between L1 and L2, suggesting that bilingual learners exhibit cognitive flexibility rather than cognitive division. This challenges the notion of 'two souls in a bilingual mind' and supports the idea that bilingual individuals can adapt their moral reasoning across languages. The examination of lexical usage revealed comparable patterns of L2 among both high and low achievers, with subtle differences in lexical richness and sentiment expression. These findings highlight the importance of considering individual differences in L2 proficiency when analyzing bilingual cognitive processes. Additionally, the interviews provided further insights into the factors influencing moral judgments, such as personal life experiences, cultural norms, and L2 proficiency. Participants demonstrated adaptability in their moral reasoning, influenced by their cultural context and recent experiences. This underscores the complexity of bilingual cognitive functioning and the need for a nuanced understanding of how bilingual individuals navigate moral dilemmas.

Our research has several pedagogical implications for bilingual education. It is essential for educators to provide extended time and scaffolding support for bilingual learners with lower proficiency levels to facilitate their participation in classroom discussions. Teachers should also be trained to ask strategic questions, encouraging deeper cognitive and linguistic engagement and helping students articulate their thoughts more effectively. Additionally, the phenomenon of bilingual students thinking in their L1 while speaking in their L2 suggests that encouraging exclusive L2 thinking may not be advantageous (Filipović, 2018). Instead, leveraging the cognitive benefits of both languages can enhance communication and problem-solving skills. Educators should emphasize the typological distinctions between languages and their implications, helping students align their language use with the target L2 patterns.

In conclusion, our study challenges the skepticism surrounding the idea of 'two souls in a bilingual mind' and highlights bilingual learners' cognitive flexibility and adaptability. Teachers can better facilitate bilingual students' cognitive and linguistic development by understanding the factors influencing bilingual moral judgments and providing appropriate pedagogical support. Future research should continue to

explore the intricate interplay between language, cognition, and moral reasoning in bilingual individuals, contributing to the broader understanding of bilingual education and cognitive science.

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